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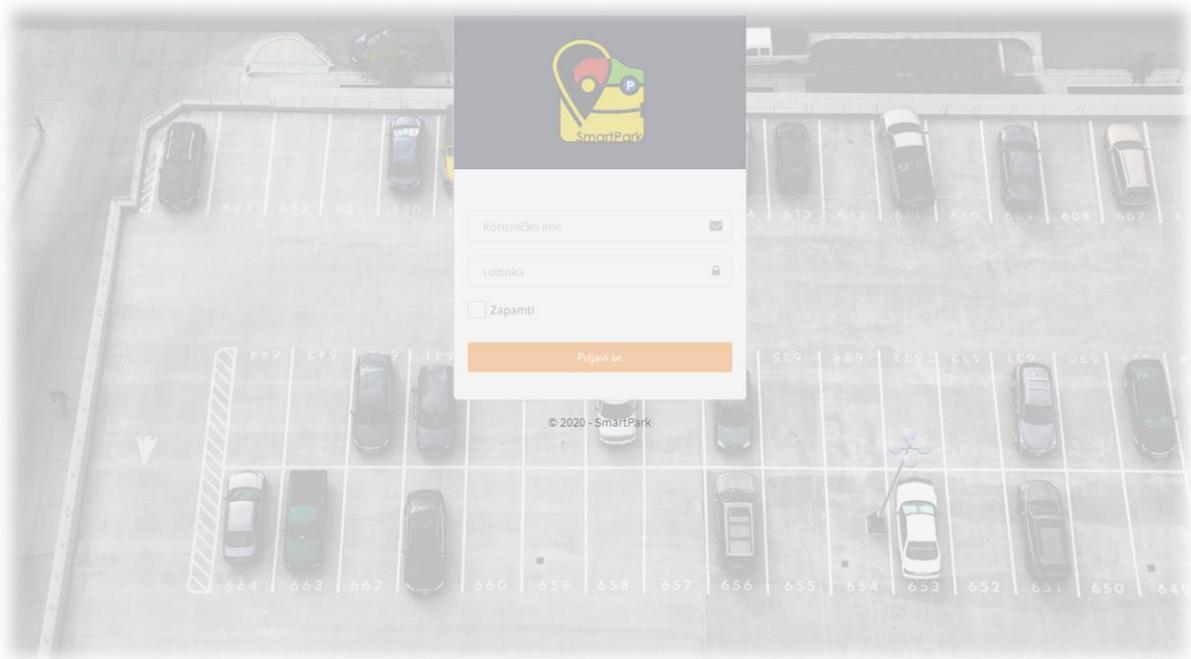
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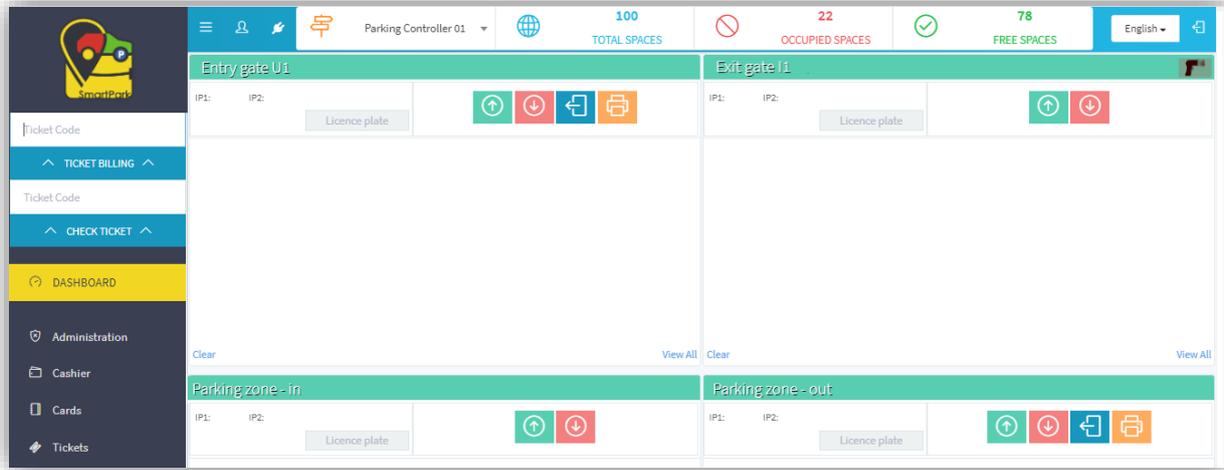
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Smart Park

SmartPark is application designed for parking function control and management. It is used to handle functions from basic adjustments of controlled parking area, like settings for parking controller with its entrance and exit gates, followed by defining of ticket types, prices, user cards, up to various reports generation.



On the application start page, there is dashboard with inspection of current traffic on the gates of controlled parking controller. In every moment, next to the left border of the displayed page, there is side menu with options which are discussed separately in the following sections of this document.

Parking controller is sector (zone, area) on the parking which is controlled separately from other parking zones (if exist). Usually, one parking has one parking controller. Even though, it is possible there are more than one parking controller on the parking, all controlled through same database. If there are more than one, controlled parking controller is chosen by drop down list beneath the upper border of the page. Next to parking controller name, there is display of total places available on parking controller, current number of occupied places and current number of free places.



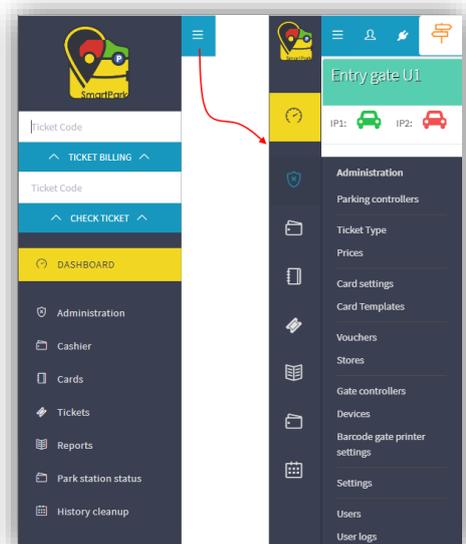
Left to the controller name, there are three commands used for (from left to right):

-  fold and unfold of side menu,
-  logged user settings,
-  checking of the connection to the controller, e.g. connection refresh.

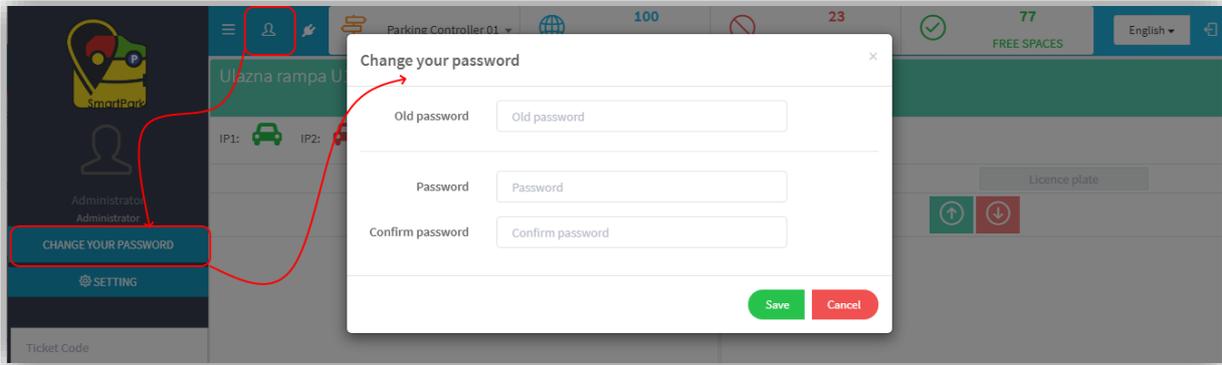
On the other side of the screen, there is drop down list for choosing application interface language and sign out button.



Middle one of the three buttons is for settings related to logged user. By clicking the middle – user button, in the upper part of

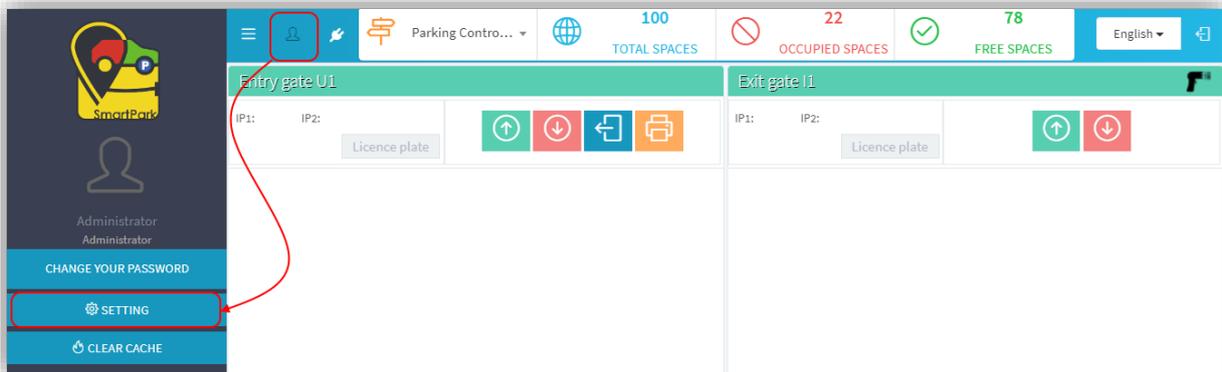


side menu, panel is opened. In this panel, user can change own password, as well as make some work environment settings. Click on button **“CHANGE YOUR PASSWORD”** dialog is opened where old password is to be entered and new password afterwards. For password confirmation, new password should be entered twice (Password, than Confirm password textbox). Change is saved by click on the **Save** button.



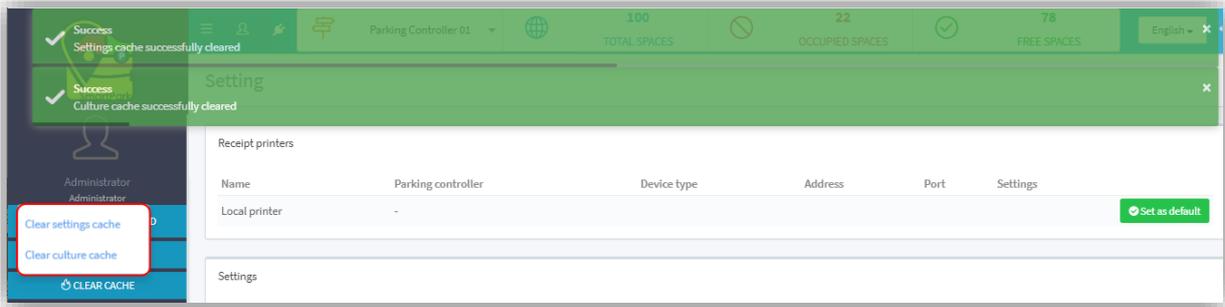
Settings button from the same user panel, opens page with a list of all available active receipt printers. User can choose which one will be set as default printer. For every active printer there is printer name, parking controller it is assigned to, device type, address, communication port and device settings.

Default printer can be one of remote active printers or local printer attached to the computer. In both cases, default printer is set up by click on **“Set as default”** button, in corresponding line of the receipt printer table.



Beneath of the table of receipt printers, there are two additional buttons. First one is used to switch notifications popping on and off. The second one is to turn on and off printing of the card activation receipt.

Third button in the user panel is **“Clear cache”**. It is used for reloading of the new settings in the cases when certain changes are made. All cached data are cleared and new values are loaded. It is possible to clear settings cache, as well as culture cache used for translation of the application interface.

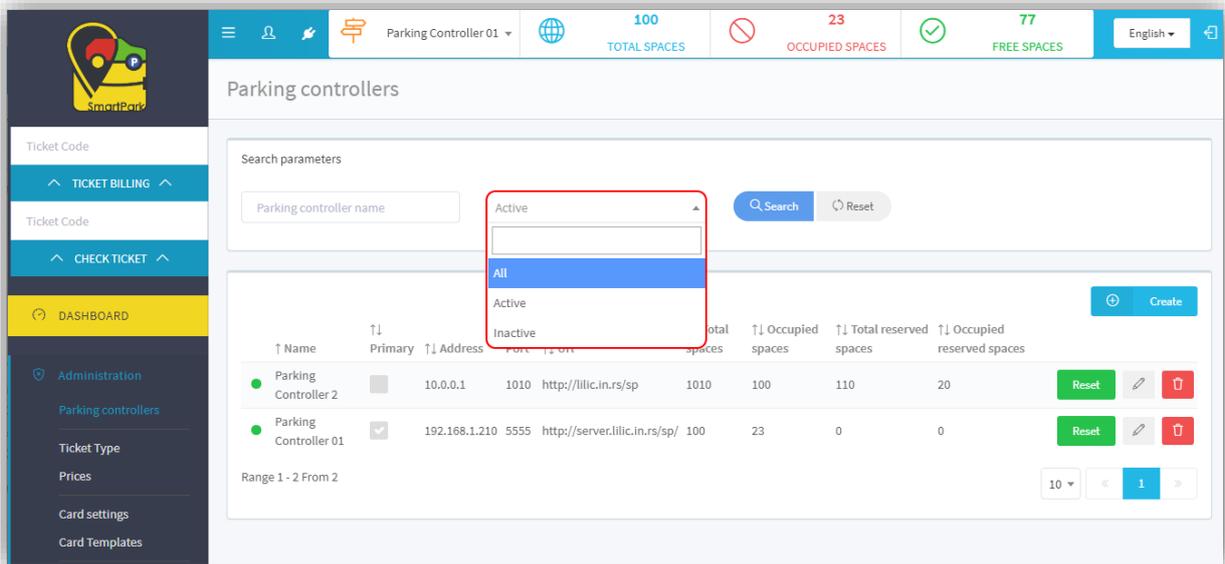


Administration

On the side menu, there are several emphasized command groups: administration, cashier, cards, tickets, reports, park station status and history clean up. By clicking on the command group name (label) in the side menu (when menu is unfold) or by mouse hover over the command group icon (when menu is in the fold state), options underneath the selected command group name are shown.

In command group called **Administration**, there are following commands: parking controllers, ticket types, prices, card settings, card templates, vouchers, stores, gate controllers, devices, barcode gate printer settings, settings, translations, users and user logs. In the following sections of this document, one by one commands from the Administration menu will be presented.

PARKING CONTROLLERS

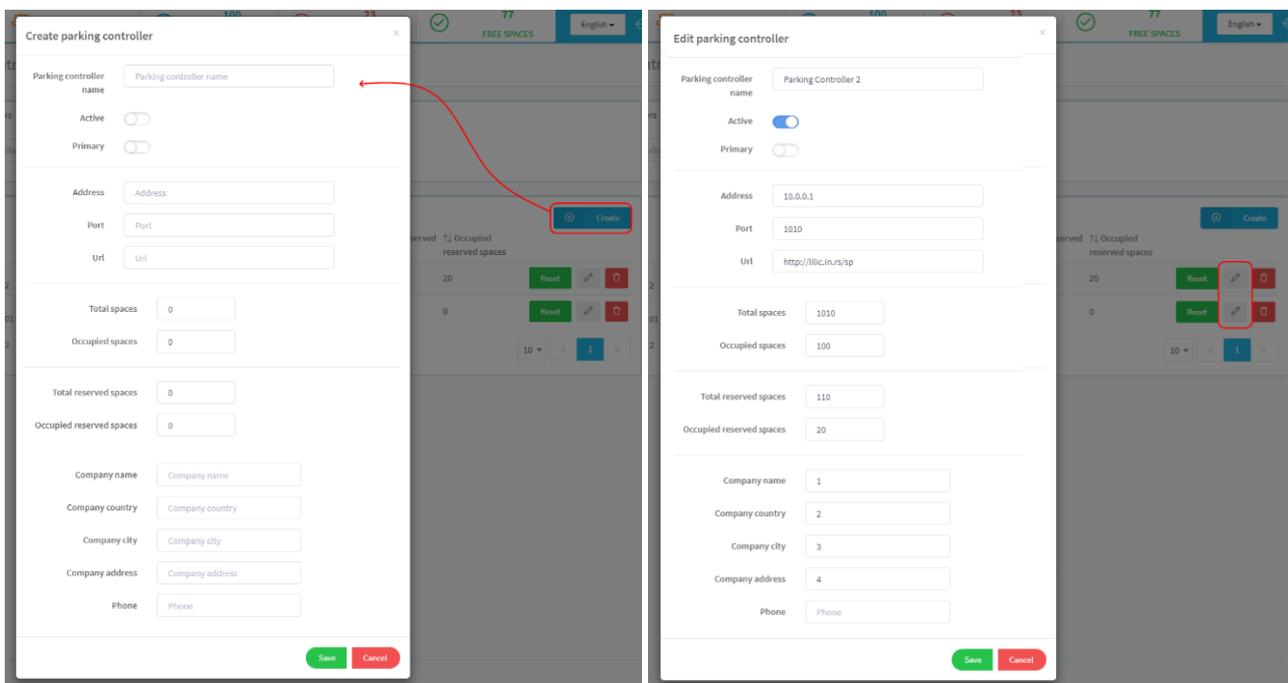


As said before, parking controller is sector (zone, area) on parking which is controlled separately. This application page, shows overview of parking controllers defined in the system. In the upper part of the window there is search panel (the same page structure is used for all other pages of the application). Controllers are searchable by name or status (active or inactive). Click on **Search** button triggers searching by given parameters, while **Reset** button, clears all search criteria and brings back the whole list overview.

On this page, there are possibilities to define new parking controller by clicking the button **Create** and adjust the existing ones by click on the button with pencil icon  (right in the line of particular controller display). Dialog opened while creating new parking controller has the same fields as dialog shown in the case of editing existing one.

In both cases, possibilities are offered for input and/or editing following parameters:

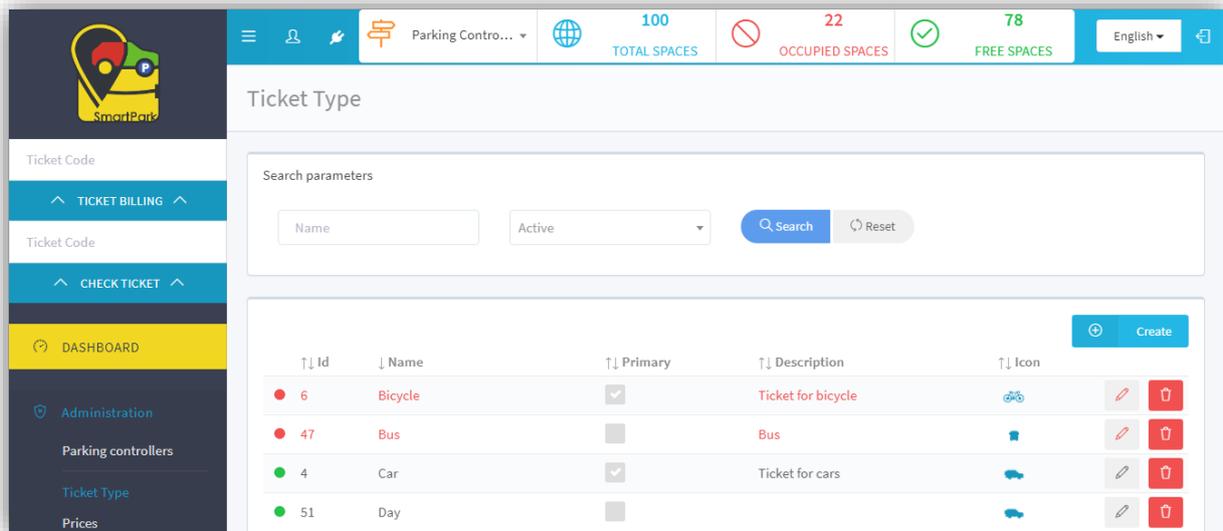
- Parking controller name – assigned name distinguishes controller from other controllers in the system
- Active (on/off) – controller status which determines whether or not controller is currently in function
- Primary (on/off) – parking controller with this property ON is shown by default after user logging on the application
- IP address, port, web link
- Total number of spaces in the parking sector
- Occupied spaces – number of currently occupied spaces
- Total reserved spaces – if there is possibility for space reservation, this is where number of such spaces is set
- Occupied reserved spaces – how many of total reserved spaces are occupied.



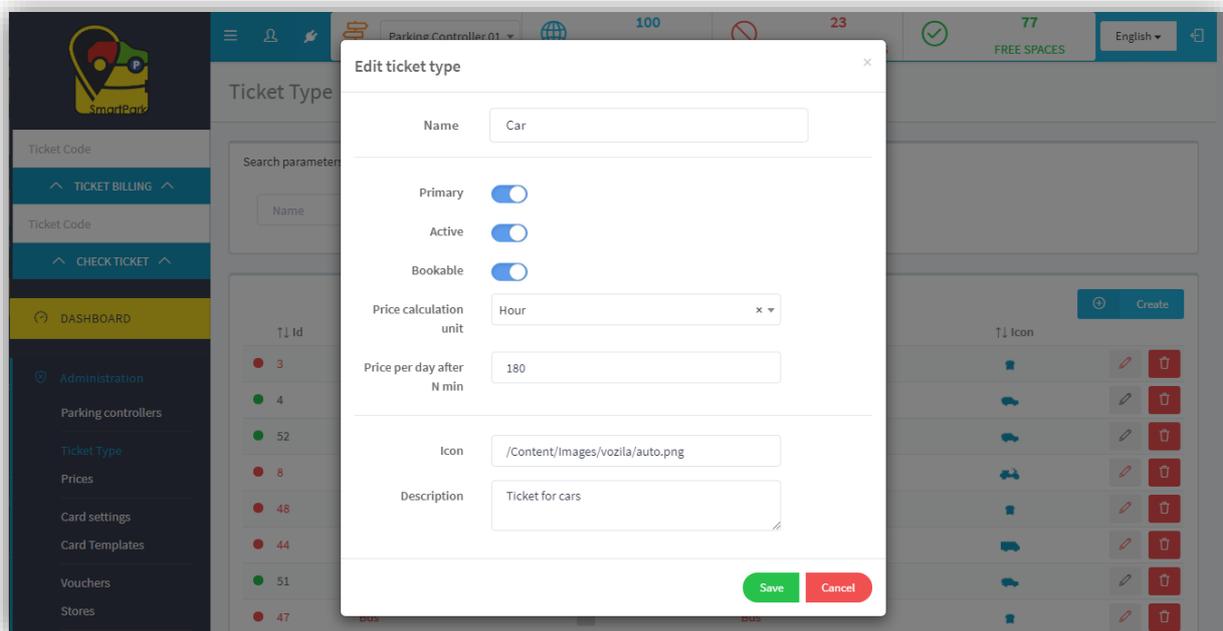
 Button resets devices connected to parking controller, while parking controller delete is done by clicking the far right icon in the controller line . Before deleting, dialog appears with request to confirm delete action.

TICKET TYPES

Ticket types command opens display which offers opportunities to overview, search, create and edit created ticket types.



Search can be performed by name or status (active or inactive). Display table has columns: *ID*, *Name*, *Primary*, *Description* and *Icon*. Table can be sorted with click on the column header. Status of the ticket can be recognized without entering its settings, according to the color of corresponding line in the table. Inactive types are color coded red, while left to the ID-s of those who are active there is green circle. Here, as well as in the previously presented command (and the same goes for all the rest commands in the application), button **Create** opens empty dialog for entering settings for the new ticket type, while button with pencil icon opens dialog with identical fields, but fulfilled with current settings of ticket type and gives possibility for their change.



Fields for entering settings are:

- **Name** of the ticket type
- **Primary** (on/off) – if this property is on, ticket type is considered default and is used for ticket price calculation when specific type is not set.
- **Active** (on/off) – status which determines whether certain ticket type is currently in use

- **Bookable** (on/off) – whether is possible to make a space reservation for certain type of ticket (truck, vehicle...)
- **Price calculation unit** – determines whether price is calculated based on the number of hours spent on parking or based on days.
- **Price per day after N minutes** – if vehicle is parked for less than N minutes, parking price is calculated according to duration of stay (price per hour for every hour started). If vehicle stayed on the parking longer than N minutes, price of day ticket is charged.
- **Icon** (path to file containing used icon) and **Description** of ticket type.

PRICES

As final price is calculated by multiplying price calculation unit by number of units (e.g. price per hour multiplied by number of hours), this is part of the application intended for overview and customization of existing and definition of new price units.

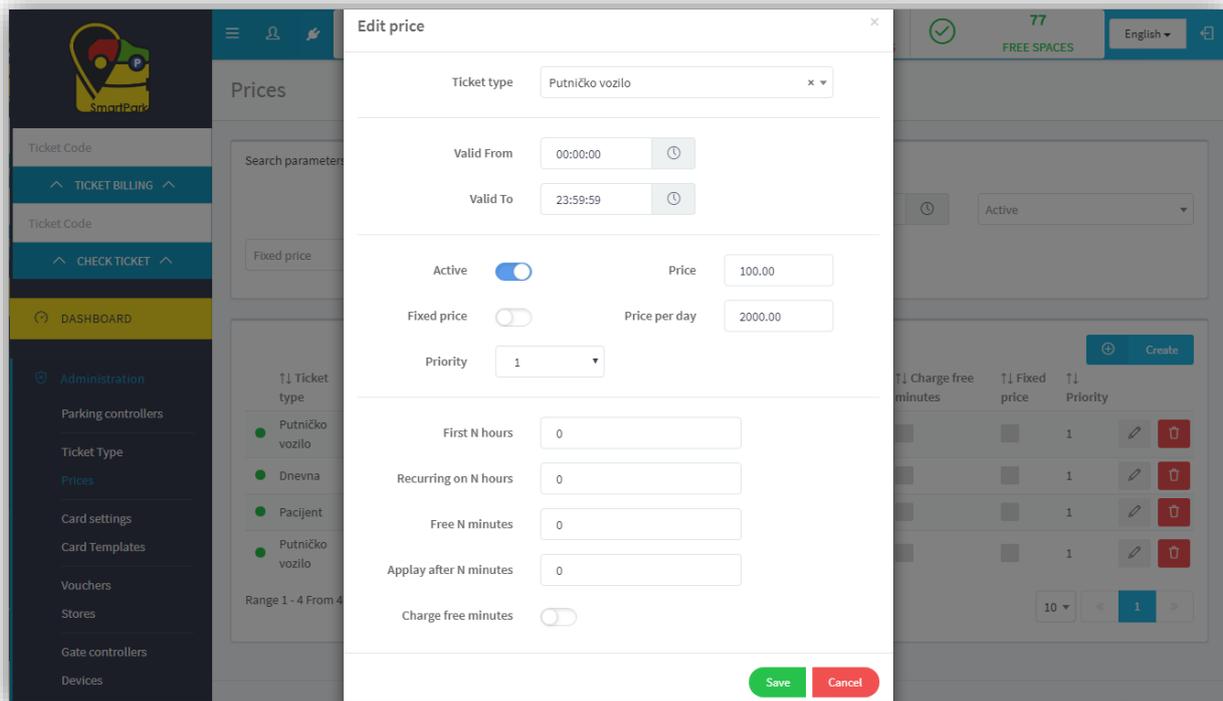
As prices can be defined differently for different ticket types, first search criteria displayed in the search panel is ticket type itself.

Further, in different parts of the day different price units are used for calculation. Considering this, search by time interval is enabled. **Valid From** and **Valid To** time are set by specifying hour-minute-second.

Additional criteria are active or inactive status of price per unit, whether price is fixed or not and the price amount itself.

↑↓ Ticket type	↑ Valid From	↑↓ Valid To	↑↓ Apply after N minutes	↑↓ Charge free minutes	↑↓ Fixed price	↑↓ Priority
Car	00:00:00	23:59:59	100.00	0	0	0
Day	00:00:00	23:59:59	1000.00			1
Patient	00:00:00	23:59:59	0.00			1
Car	00:00:00	23:59:59	0.00	3	0	0

Table for prices per units display has columns equivalent to parameters that need to be set while creating new and updating the existing prices. Table can be sorted by any of its columns by clicking on the column header. Settings for price are:



- **Ticket type** – different ticket types defined by previously presented command can have different associated unit prices used for total price calculation. From drop down list one of the defined ticket types is chosen. Observed unit prices is associated with designated ticket type.
- **Valid from** – starting time in the day (hour-minute-second) from which defined price is used for total price calculation
- **Valid to** – ending time in the day (hour-minute-second) up to which defined price is used for total price calculation
- **Active** (on/off) – parameter designates whether defined price is currently used for total ticket price calculations.
- **Price** – amount used as price per calculation unit (if ticket is set to has **hour** as “price calculation unit”, this would be price per hour)
- **Fixed price** (on/off) – if parameter “fixed price” is set ON, amount given in the “price” field is used for charging, regardless of currently used pricelist on the entire system level.
- **Price per day** – if price is calculated per hour and if valid ticket type has defined parameter “price per day after N minutes”, this setting determines the day ticket price which is applied (this setting has no meaning in the case when associated ticket type has **day** set to be “price calculation unit”)
- **Priority** – is numeric value used to determine which price has priority while calculating total ticket price. This value is expressed as serial number, i.e. priority 1 is the highest of all – first priority. If there are several rules defined in the system which are in “conflict” (e.g. time intervals in which certain price is valid are overlapping) price first used for calculation is one marked with lower priority number.
- **First N hours** – first N hours can be charged at one price, while after N hours, some other price is defined.
- **Recurring on N hours** – defined rule can repeat after each N hours (in case this value is e.g. 5, after 5 hours of stay, next 6th hour is charged same as 1st one, 7th hour is charged as 2nd and so on...)
- **Free N minutes** – when vehicle enters parking, first N minutes are not charged. If user stays longer than N free minutes, parking is charged starting from the moment vehicle passed the entering gate (including first N minutes).

- **Apply after N minutes** – (if set) defines time delay i.e. after how many minutes of stay, the rule will start to apply
- **Charge free minutes (on/off)** – defines whether free minutes should be considered or not when calculating total price.

CARD SETTINGS

The screenshot displays the 'Card settings' page. At the top, there's a navigation bar with a logo and user profile. Below it, a status bar shows '100 TOTAL SPACES', '22 OCCUPIED SPACES', and '78 FREE SPACES'. The main content area is titled 'Card settings' and features a search panel with fields for Card Code, Card Number, Card Type, Active, Plate Number, Vehicle group, and Ticket Type. Below the search panel is a table of issued cards. The table has columns for Card Code, Card Number, Card Type, Use Card Price, Plate Number, Ticket Type, Vehicle group, and Allowed vehicle for group. The table contains several rows, each representing a different card type and its associated details.

Card Code	Card Number	Card Type	Use Card Price	Plate Number	Ticket Type	Vehicle group	Allowed vehicle for group
369369	336699	Template	1,000.00				1
3030303030	5050	Postpaid	0.00				
2020202020	2020202020	Prepaid	20.00				
1231321	1	Postpaid	1,000.00	84184	Car	2	1
123123	0000123123	Template					
1111111	122	Prepaid	125.25	BG125EL	Motor	1	5

User cars of various types are available in the system: prepaid, postpaid, as well as card created and issued according to predefined template. Card owner gets in and out of the parking by scanning the card, with no need to take bar-code ticket. After period of validity is expired, card should be returned to the operator.

Card settings command on **Administration** menu opens display whose upper part contains panel with search fields, while central part holds the table view of issued card. Card table is organized in pages. By default, 10 user cards are visible per page, even though this value can be changed by setting choice in drop down box beneath the lower right angle of the table, just next to buttons used for navigation through pages. Search through the list of card can be done by different parameters:

- **Card code** – unique identifier saved in the card chip, “invisible” from outside without card reader.
- **Card number** – number that is printed on the card. That is the number visible to the user and is used by operator to connect card to its code. By entering value in the field for card code and/or card number, list of card starts to narrow down and only cards whose code/number starts with given characters will be displayed.
- **Status of activity** – status can be active or inactive. In the table of cards, status of the card is color coded, i.e. cards that are inactive at the moment of inspection are displayed red, while active cards are marked with green circle in front of the corresponding table row.
- **Card type** – can be set as one of three values in drop down list: **template**, **prepaid** or **postpaid**, or can be set to “**unknown**” in the situations when card type is not available or not important for the search.

- **Plate number** – registration number of the vehicle for which the card can be used. Plate number field functions the same way as fields for card code or card number – each entered character additionally narrows list of cards, leaving only registration numbers that begins with entered set of characters.
- **Vehicle group** – is category which is defined externally, out of the application and represents the common identifier for group of vehicles (e.g. vehicles owned by one company or client).
- **Ticket type** – drop down list for choosing one of previously defined types of tickets. Ticket type definition is accessed from Administration menu by choosing [the command of the same name](#).

Set criteria are applied by clicking the **Search** button. Button **Reset** clears all criteria and central part of the screen displays the overall list of cards.

Card table view can be sorted by mouse click on the column header. Columns in the table are equivalent to properties set in the process of creating the card.

List of issued cards can be exported to Excel or PDF file, depending on choice made in drop down button marked with the label **Export**. In exported list, cards are grouped by card type.

Cards								
Range: Card Code: , Card Number: -, Card Type: , Active: , Plate Number: , Vehicle group: , Ticket type:								
Card Type: Template								
Card Code	Card Number	Price	Use Card	Price	Plate Number	Ticket type	Vehicle group	Allowed vehicle for group
00000	101	101.45	Yes		NI1591IX	Motor	111	1001
0000000005	5		Yes		NI123IK	Car		
0000000006	0000000006		No					
0000000007	0000000007		No					
0000000008	0000000008		No					
0000123321	123321		No		PI009ML	Car		
0001111111	0001111111		No			Free parking area		
1010101010	1010101010	50,000.00	Yes					
123123	0000123123		No					
369369	336699	1,000.00	Yes					1
Card Type: Postpaid								
Card Code	Card Number	Price	Use Card	Price	Plate Number	Ticket type	Vehicle group	Allowed vehicle for group
0000000001	0000000001	0.00	Yes			Car		
1231321	1	1,000.00	No		84184	Car	2	1

Dialog for data input in the process of creating new card is equivalent to dialog opened by choosing the edit button (one with pencil icon) used to customize existing cards. Data needed for card creation or for editing cards, are equivalent to those used in search panel for filtering the list of cards.

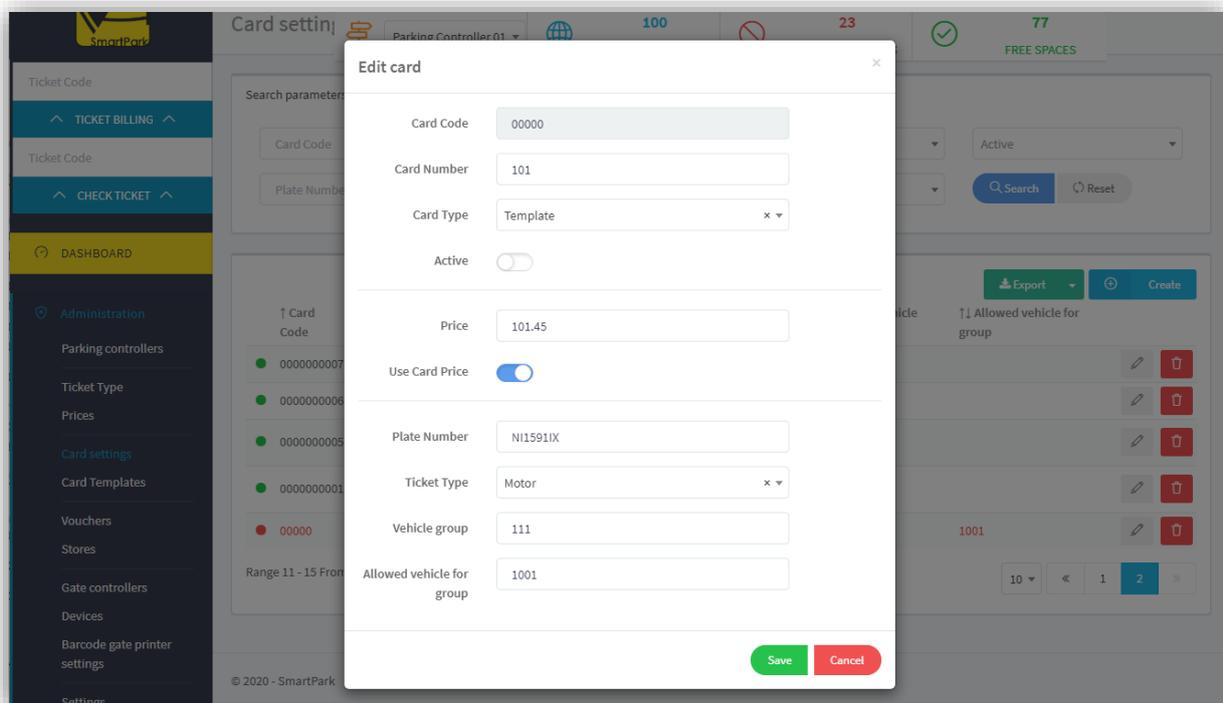
Card code is entered once, during card creation and cannot be changed later. Rest of the card properties are changeable:

- Card number,
- Card type (prepaid, postpaid, template),
- Status (active, inactive),
- Plate number,
- Ticket type ([one of ticket types defined in system](#)),
- Group (group is defined externally, out of the application and is used to be common identifier of particular group of vehicles).

- Allowed vehicles for the group – maximum number of the vehicles that belong to the same group and that are allowed to be at the parking at the same time.

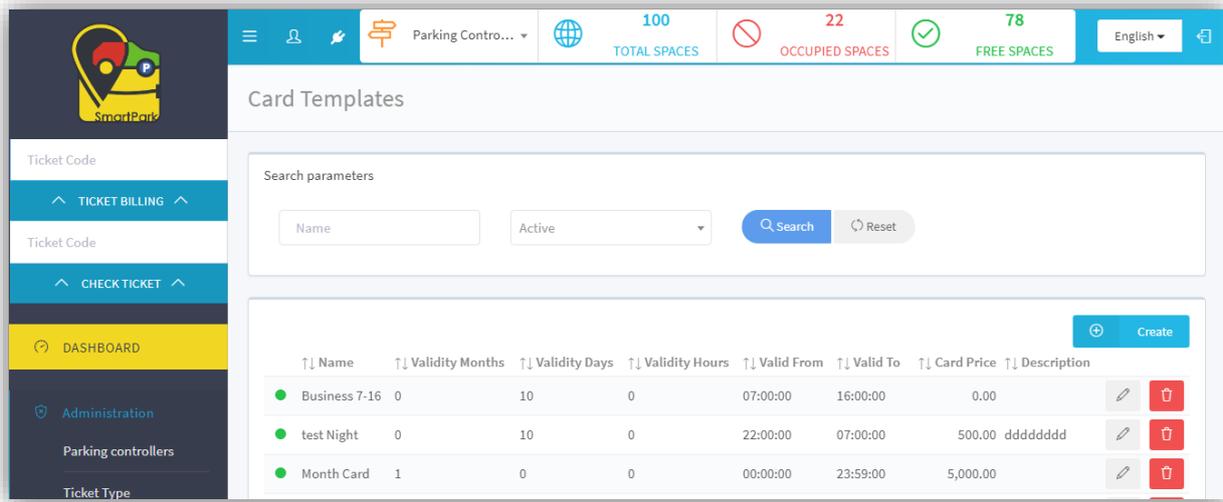
Beside already mentioned, filed **Price** and switch **Use card price** (on/off) are available in the create/edit dialog. Switch defines which price per unit will be used for total price calculation – one from the card or one from global pricelist.

- If numeric value is set in the **Price** field and at the same time switch **Use card price** is turned ON, price defined on the card is used for total ticket price calculation, regardless of settings in global pricelist.
- If numeric value is set in the field **Price**, but switch **Use card price** is OFF, price from global pricelist is used for calculations, regardless of price on the card.
- If switch **Use card price** is ON, but there is no value set in the **Price** field, it is considered for the price to be 0.



CARD TEMPLATES

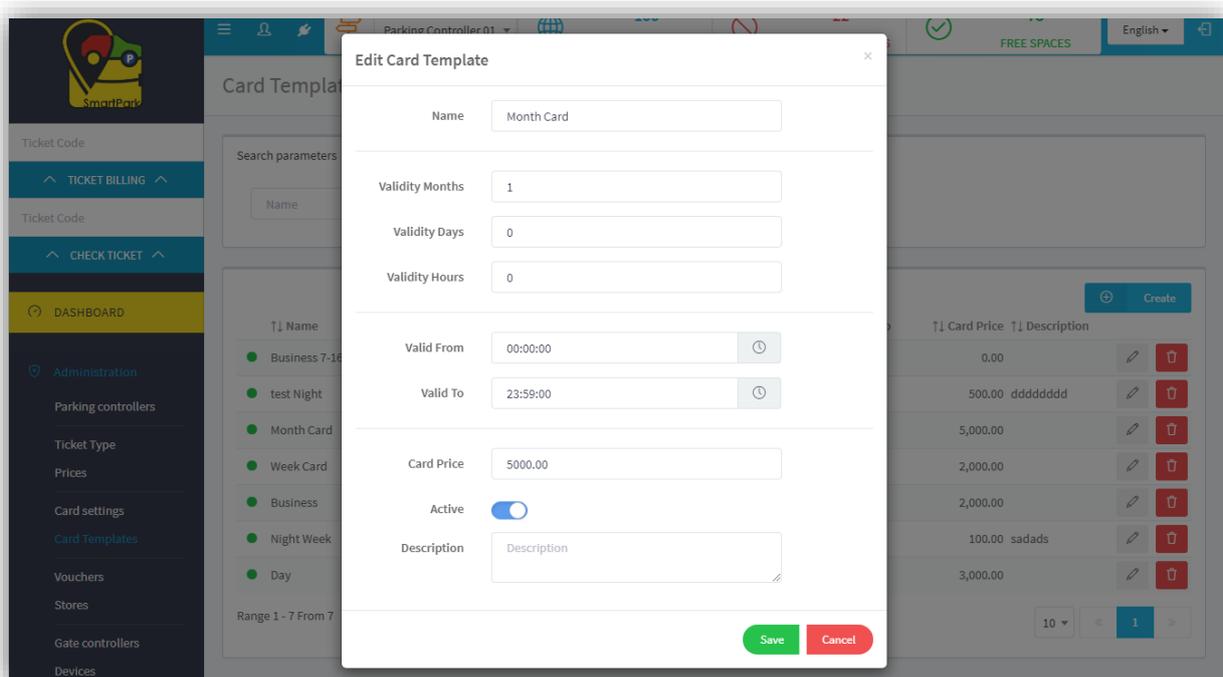
Template type cards are customized in a way to have expiration date and defined period during the day when can be used for paying parking expenses. Searching through list of templates is possible by template name (it operates the same way as previously explained text searches – each entered character narrows the set of displayed card templates) and by template activity status (yes/no).



In the process of creating new or editing existing card template, dialog of identical structure is used (only difference is that dialog for creating new template appears empty, while one for editing previously created template is prefilled with current values for template). Following values can be set for each card template:

- **Template Name**
- **Validity** duration given as number of **Months / Days / Hours**
- **Valid From** and **Valid To** are fields used to set the time period during one day (hour:minute:second) when cards of given template can be used for parking services.
- **Card Price** – this is the real price of the card itself
- **Active** – switch used to change template status
- **Description**

In the example on the picture below, there is template named “Night weekly”. Template says that card has duration period of 7 days and can be used in evening and night hours from 20.00 pm to 08.00 am next day.



VOUCHERS

In certain circumstances (e.g. purchase made in particular shop in shopping mall), users can be granted a vouchers which can be used for parking service payments.

Vouchers have code and serial number. Each voucher has unique code, while all vouchers in the series, have same serial number. Code and/or serial number can be set as search parameters to look for particular voucher or group of vouchers whose codes or serial numbers start with given set of characters. Search can be performed according to voucher status:

- **Available** – designates that voucher is created in the system, but not yet printed. By default, when created, voucher has status Available.
- **Issued** – this is status that voucher gets when it is printed
- **Used** – voucher awarded to client and used for service payment
- **Blocked** – blocked prior to utilization

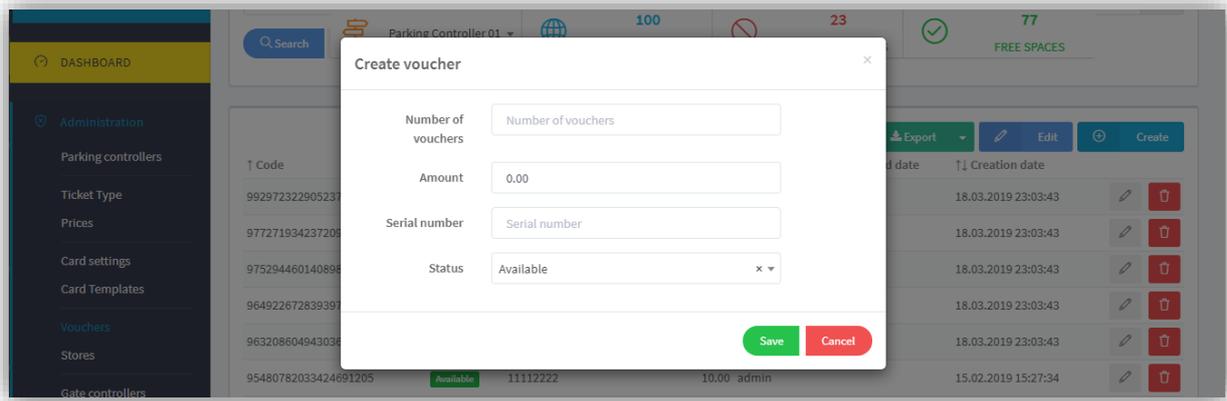
Search can be performed by date of creation, as well as date of utilization. Time based search assumes that start and/or end date is set to specify period during which voucher is created (Creation date from, Creation date to) or used (Used date from, Used date to). Button **Search** triggers search according to set parameters and filters the list of vouchers. Button **Reset** removes all search criteria and shows the whole list of vouchers.

The screenshot displays the 'Vouchers data' management interface. At the top, there are summary statistics: 100 TOTAL SPACES, 23 OCCUPIED SPACES, and 77 FREE SPACES. The search parameters section includes input fields for Code, Serial number, Status, Creation date from/to, and Used date from/to, along with Search and Reset buttons. The main table lists vouchers with columns for Code, Status, Serial number, Amount, Created by, Used date, and Creation date. The Status column is highlighted with a red box, showing values: Used, Available, Blocked, Issued, Available, Blocked, and Issued.

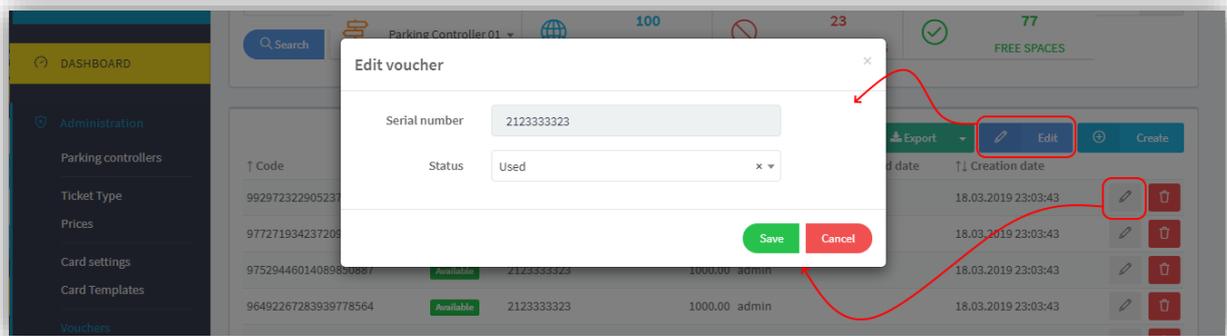
Code	Status	Serial number	Amount	Created by	Used date	Creation date
99297232290523729923	Used	2123333323	1000.00	admin		18.03.2019 23:03:43
97727193423720960006	Available	2123333323	1000.00	admin		18.03.2019 23:03:43
74485278539081830405	Blocked	8800000000000	1002442.00	admin		18.03.2019 23:03:43
94979475394312130561	Issued	8800000000000	1002442.00	admin		18.03.2019 23:03:43
96320860494303662087	Available	2123333323	1000.00	admin		18.03.2019 23:03:43
95152275913762652163	Blocked	fjghjfgj	0.00	admin		15.02.2019 15:27:34
82749376982680606721	Issued	02072019	100.00	admin		13.02.2019 00:50:04

Vouchers are created by click on the button with same name (Create). Dialog is opened with following fields to fulfill:

- **Number of vouchers** – how many vouchers are to be created in series.
- **Amount** – voucher is equivalent to this amount of money. Resources on voucher can be used to pay parking services.
- **Serial number** – created vouchers belong to series with given serial number.
- **Status** – default status is Available

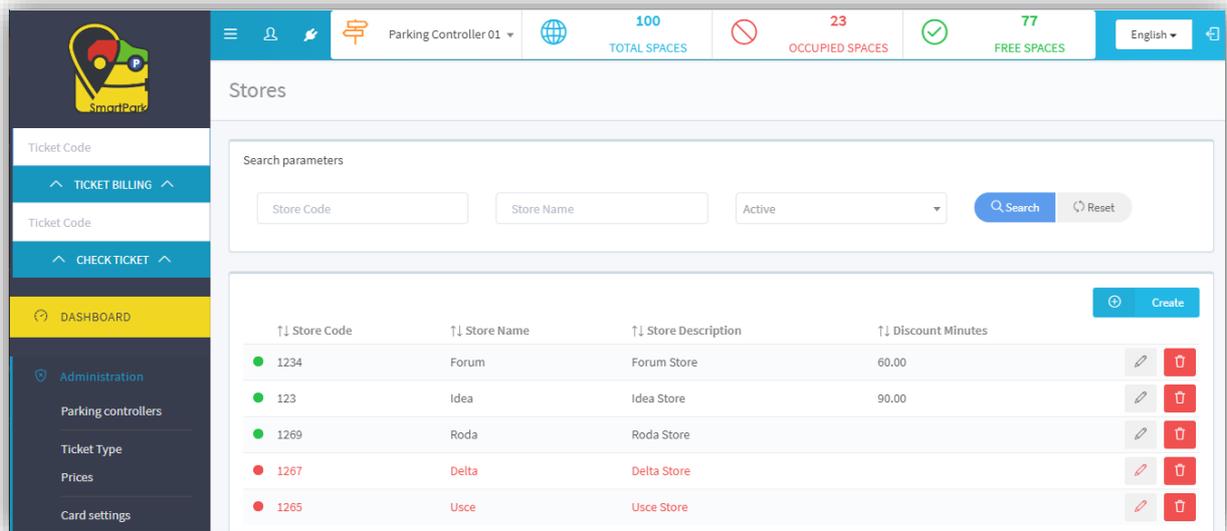


Voucher created in the system can be changed by clicking the button with pencil icon, right in the corresponding table row. Voucher editing mean the change of voucher status. Instead of changing one by one, change can be applied to whole series. Bulk change is done by clicking button **Change**, left to button **Create**. Dialog is opened with a **Serial number** field used to enter and pick series and afterwards set **Status** for whole series.



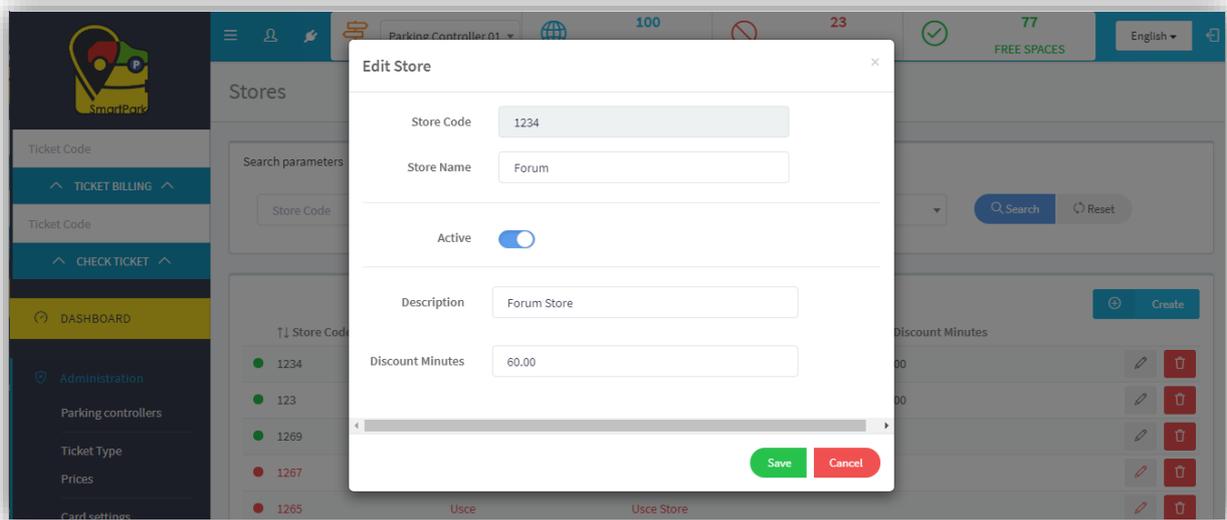
STORES

On the page that is opened by click on the **Stores** command on **Administration** menu, there is a list of all stores authorized to reward clients with a vouchers. As every other entity in the system, list of stores can be searched through by setting characteristic parameters. Parameters that describe store are **Store Code** and **Store Name**. Next to search boxes designed for setting these parameters, there is drop down list that enables search by status (status shows whether store is active or not).



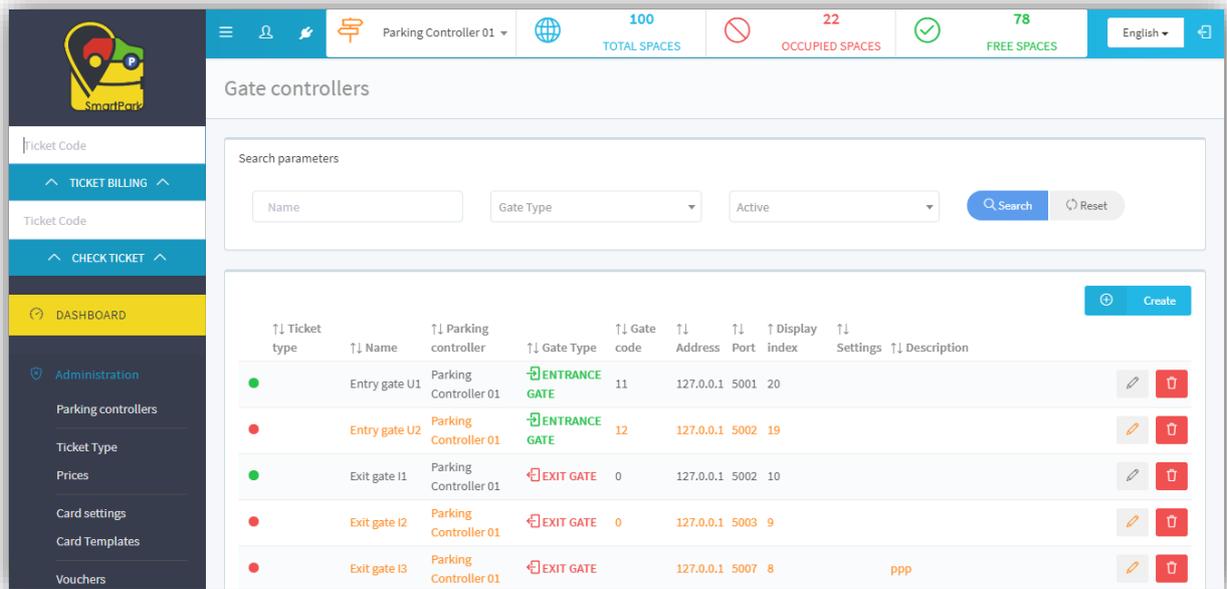
Store creation dialog has fields intended for code and name input, switch to determine store activity status, and text fields for **Description** and **Discount minutes**. Discount minutes are, similarly as vouchers are, way for stores to award customers for purchase. By showing fiscal bill to prove purchase, client is entitled to get discount for parking services. Before calculating total parking ticket price, time spent on parking is diminished by value of this parameter.

If there is a need to change parameters of some previously created store, button to enter edit mode is button with pencil icon. In the edit store dialog it is possible to change described parameters, all but store code which is immutable.

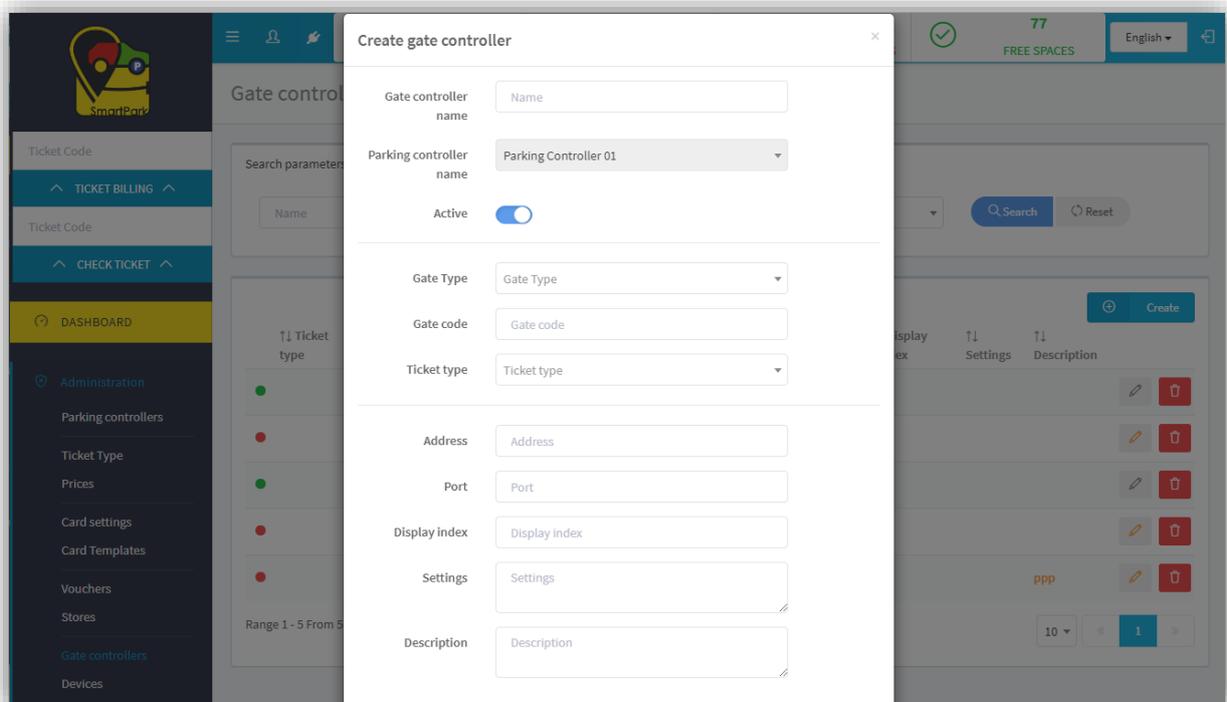


GATE CONTROLLERS

Page which is opened by selecting **Gate Controller** command on **Administration** menu is intended for creation, editing and search gate controllers for each defined parking zone (parking controller). Search can be performed by gate name, gate type (entrance gate or exit gate) and by status (active, inactive or all regardless of status). Button **Search** click applies set criteria of filtering, while **Reset** loads the complete list of gates and clears parameters from search fields.



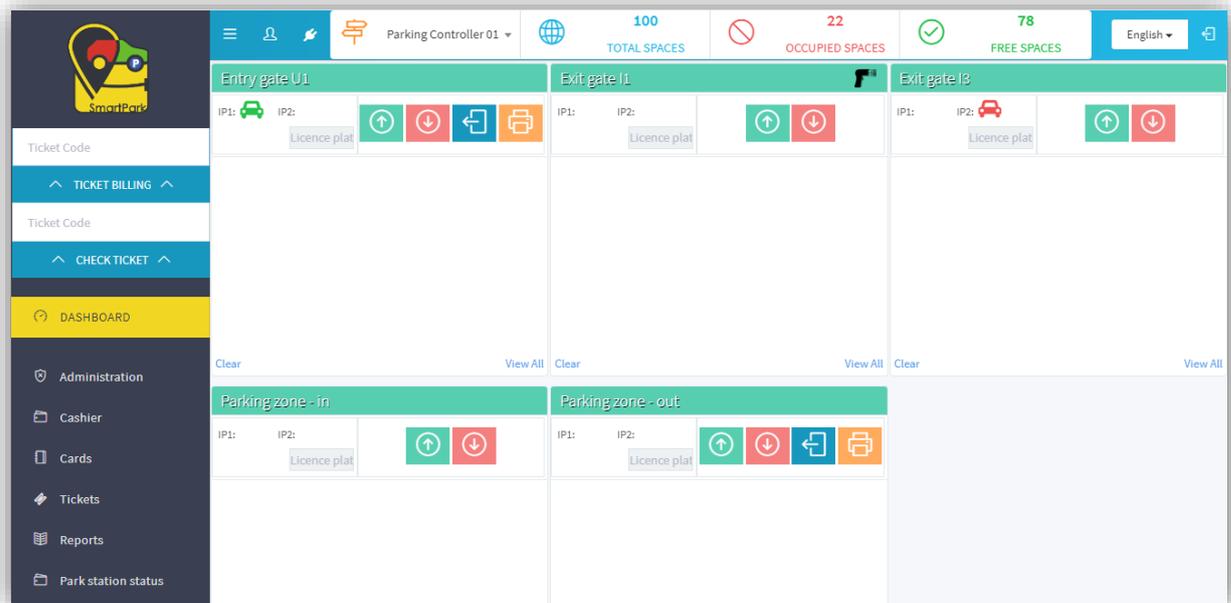
At the beginning of every row in the table, circle of corresponding color marks active (green) and inactive (red) gates. Inactive gates in the system are additionally emphasized with text colored orange in the corresponding row of the table. In the column **Gate Type**, by color as well as by symbol, is pointed out whether certain gate is entrance gate or exit gate. Remaining columns in the table are consistent with the settings made in the process of gate creation and customization. Click on the column header sorts table rows by content in clicked column (one click sets ascending order, second click on header arranges rows in descending order).



Button **Create** click opens dialog with fields created to input the following data for new controller:

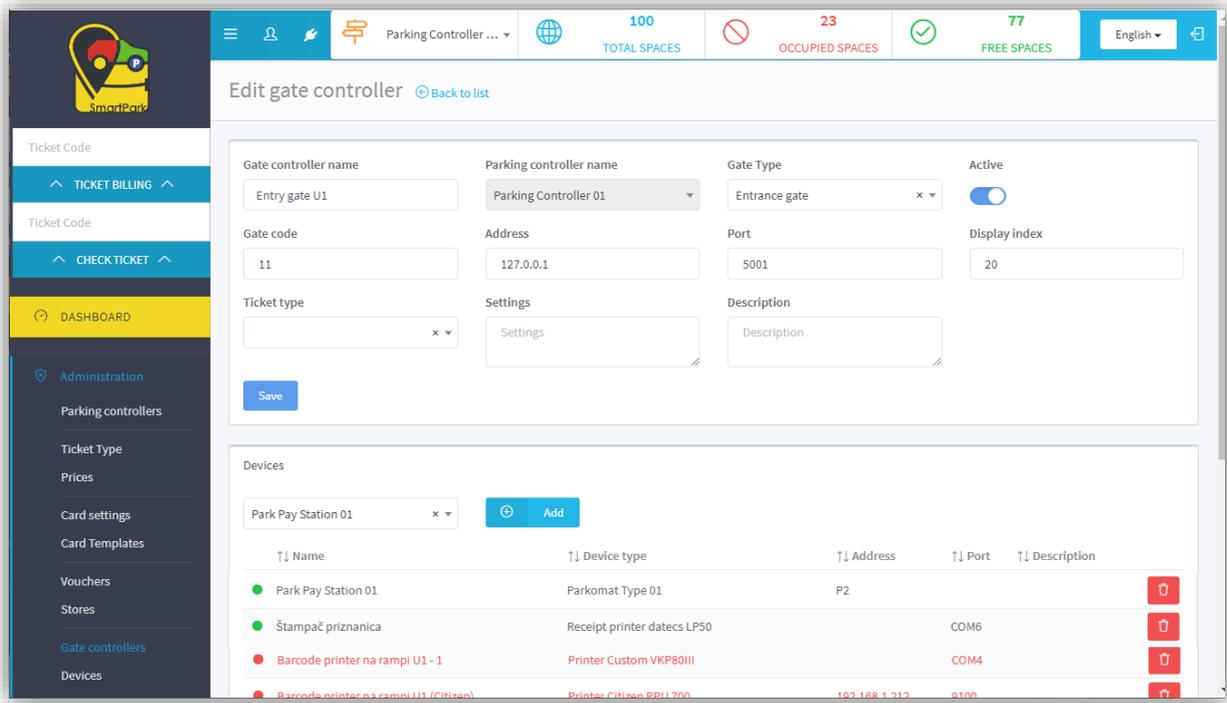
- Gate controller name – symbolic name assigned to the gate

- Parking controller name – if there are more than one [parking controller](#) (independent zones) in the system, by choice made in this drop down list, gate is assigned to corresponding controller.
- Active – switch which changes gate status from active to inactive and vice versa.
- Gate type – shows whether gate is entrance or exit.
- Gate code – two starting digits which are used to code tickets issued on specific gate (for example, code that starts with 11 marks tickets printed on first entrance gate, 12 is second entrance gate...).
- Ticket type – this parameter should be set for entrance gates. If choice is made for this parameter, all vehicles that enter parking through considered gate, by default gets a ticket of chosen [ticket type](#) (vehicle, van, truck, bus...)

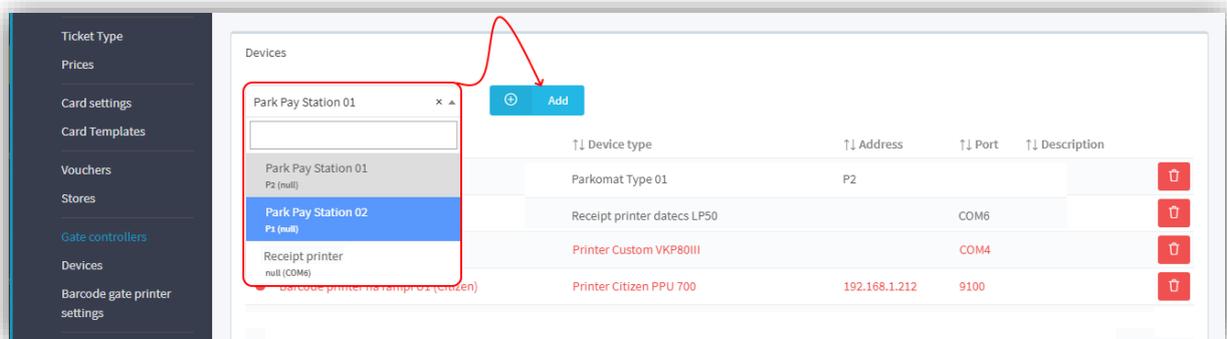


- Display index – number which affects display order for gates on the Dashboard page. Gates with higher values in the field of **Display index** are positioned up and left, while gates with lower display index are displayed right and down in the **Dashboard page**. E.g. if [all gates in the example](#) have active status (two entrance and three exit gates), thanks to display index, Dashboard page will look like shown on the above picture.
- Address and port – sets network address and port for communication with gate controller
- Settings and description – text fields to input additional settings and descriptions, if needed.

Edit mode for existing gate controller is entered by click on the button with pencil icon. On the opened page all above settings can be adjusted. Change is made after click on the **Save** button.

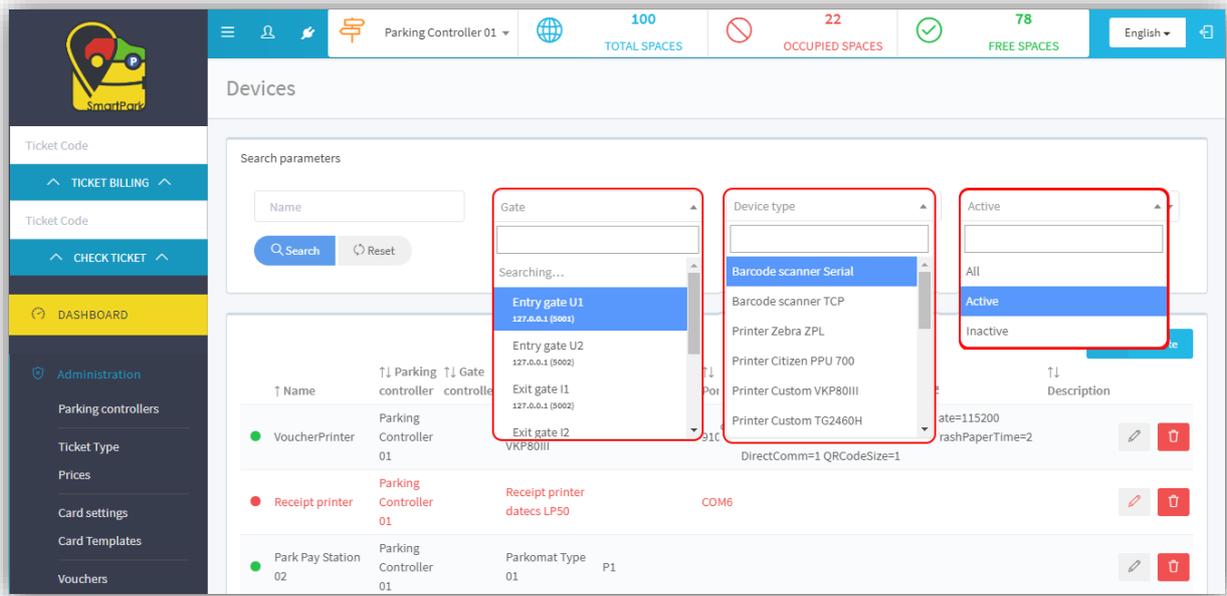


Lower part of this page (page for editing gate controller) contains panel called **Devices**. List of every device associated with certain gate is shown. Associated device can be removed from the gate (released) by click on the button with trash can icon. New devices are “connected” to the gate by choosing device in the drop down list followed by click on **Add** button.

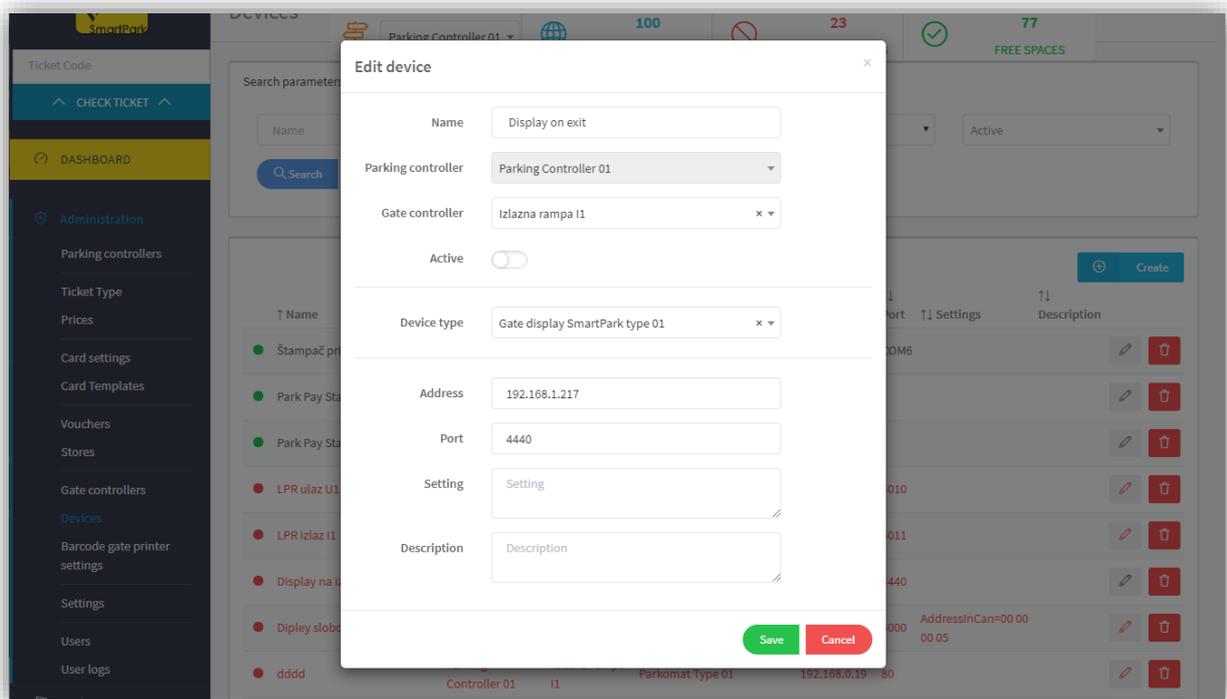


DEVICES

On the page opened by Devices command on the Administration menu, list of all devices in the system is displayed showing device characteristics. List of devices can be filtered by device **Name**, by **Gate** device is assigned to, by **Device type** (printer, bar code scanner, display...), as well as by status of activity (active, inactive or all regardless to status).



Dialog for new device creation and dialog for editing existing ones are the same, with the difference that first one appears empty, while the other is prefilled with current values for considered device.

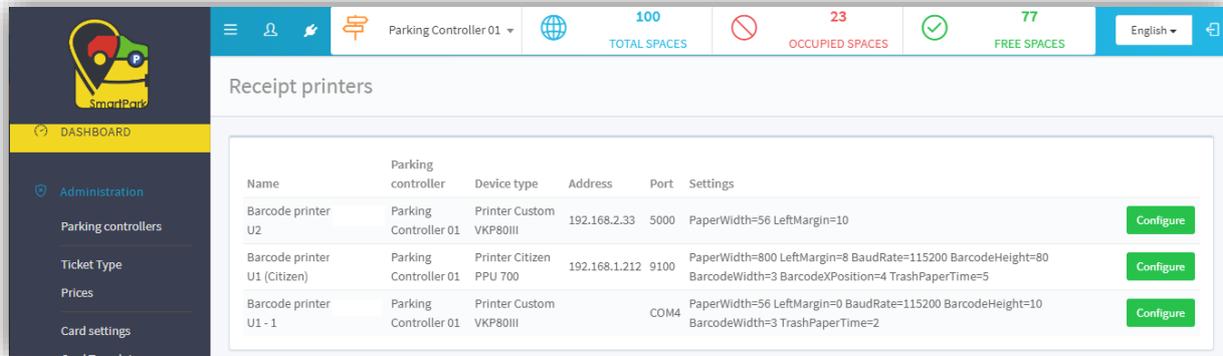


Device settings are:

- Name – symbolic device name
- Parking controller and gate controller – parking zone and gate to which device is connected
- Status of activity – switch to choose whether the device is currently in use or not.
- Device type – one of available device types in the system
- Address and port – network address and port for communication with device
- Setting and Description – text fields used to input additional settings and descriptions, if needed.

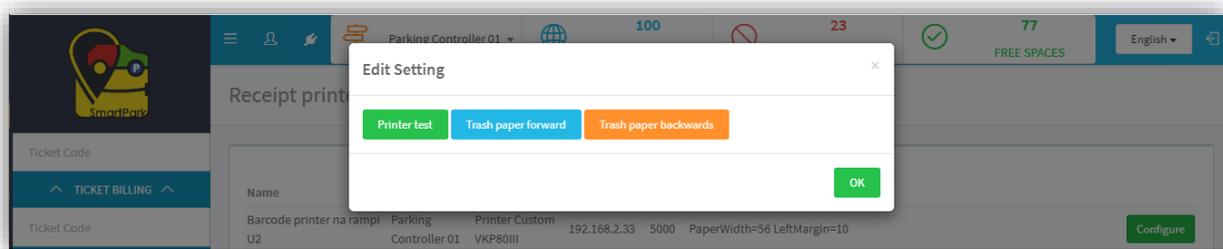
BARCODE GATE PRINTER SETTINGS

This command opens list of all receipt printers. Beside name, for every barcode printer on the gate, it is possible to see which parking controller the printer is assigned to, device type, port and printer settings (settings determines paper width, margin, height and width of barcode, barcode position...)



Name	Parking controller	Device type	Address	Port	Settings	
Barcode printer U2	Parking Controller 01	Printer Custom VKP80III	192.168.2.33	5000	PaperWidth=56 LeftMargin=10	Configure
Barcode printer U1 (Citizen)	Parking Controller 01	Printer Citizen PPU 700	192.168.1.212	9100	PaperWidth=800 LeftMargin=8 BaudRate=115200 BarcodeHeight=80 BarcodeWidth=3 BarcodeXPosition=4 TrashPaperTime=5	Configure
Barcode printer U1 - 1	Parking Controller 01	Printer Custom VKP80III		COM4	PaperWidth=56 LeftMargin=0 BaudRate=115200 BarcodeHeight=10 BarcodeWidth=3 TrashPaperTime=2	Configure

For every active barcode printer there is button marked with **Configure** which exposes three actions: **Printer test**, **Trash paper forward** and **Trash paper backwards**. In case when ticket is printed, but not picked up from the printer, there are two options: ticket can be thrown out of printer or there is possibility to retract ticket back into the device. Behavior in case of unused tickets is defined by click on middle or far right button in edit settings dialog.

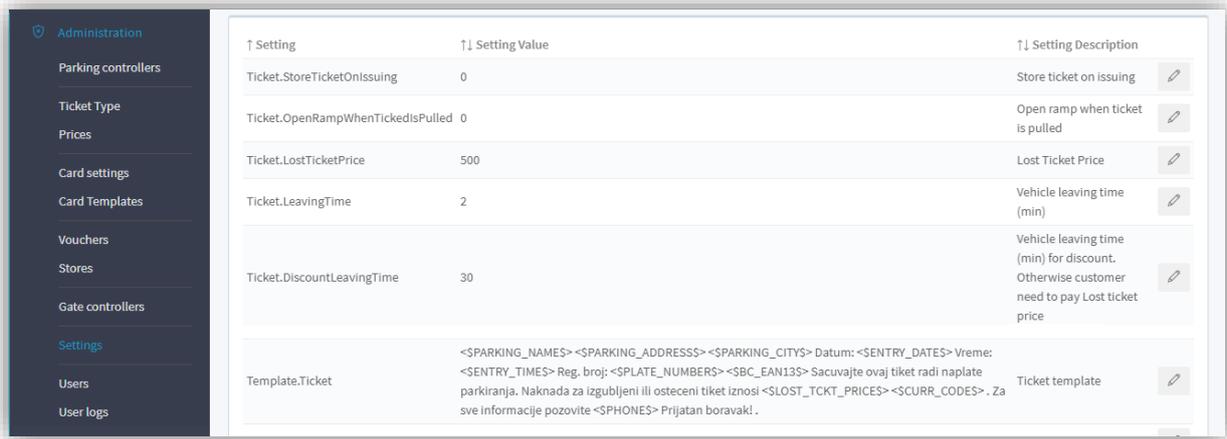


SETTINGS

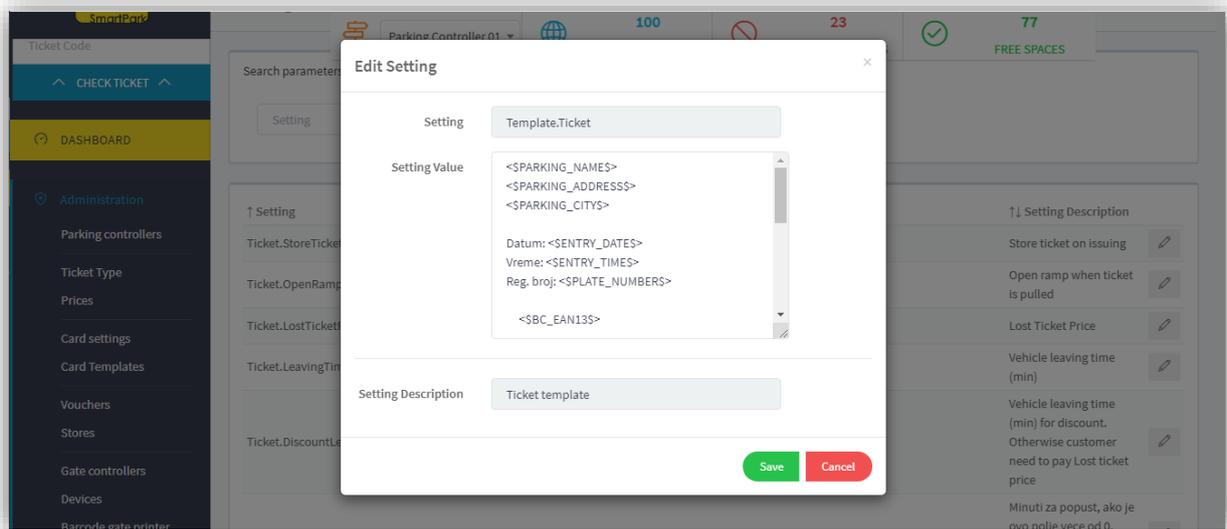
Command **Settings** displays a list of system settings with assigned values, description and provides a possibility of changing current values.

Some of available settings are:

- Lost ticket price
- Default discount minutes
- Ticket template
- Date and time format
- Leaving time ...



Editing settings assumes update of setting value, while setting description and name cannot be changed.

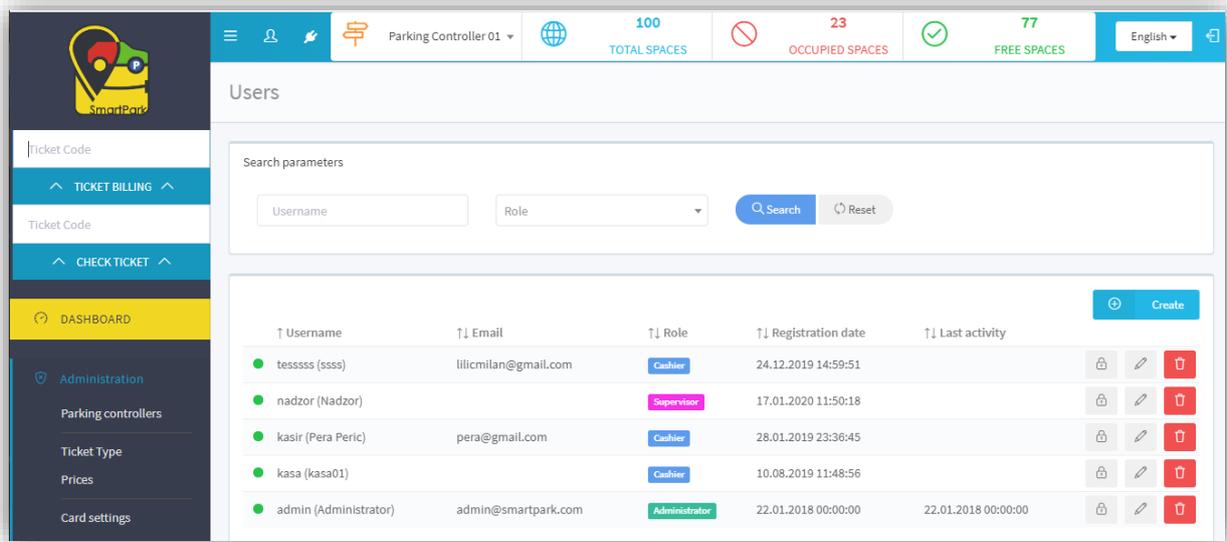


USERS

List of created user accounts can be accessed by click on **Users** command of Administration menu. Users can have following roles in the system, starting from the bottom level role i.e. role with the lowest permissions:

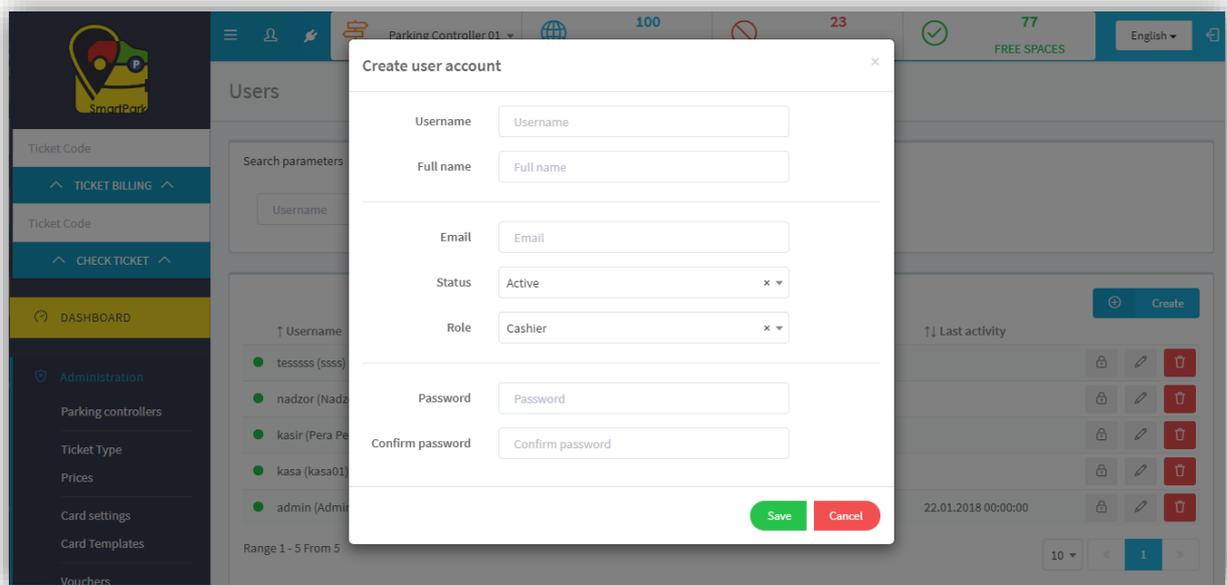
- Cashier
- Supervisor
- Administrator

List of the users can be searched by user name or by role that user has in the system.

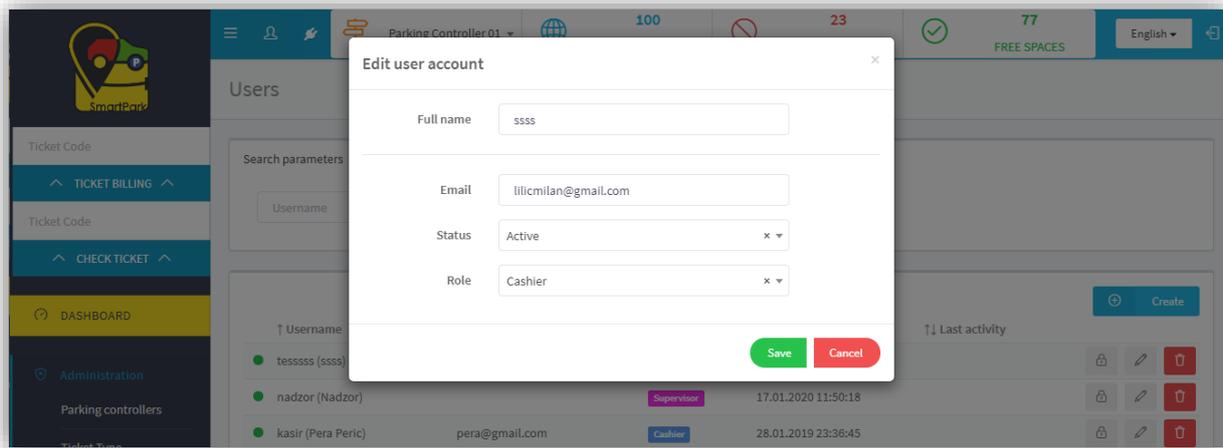


In the process of user account creation, administrator is expected to provide following data:

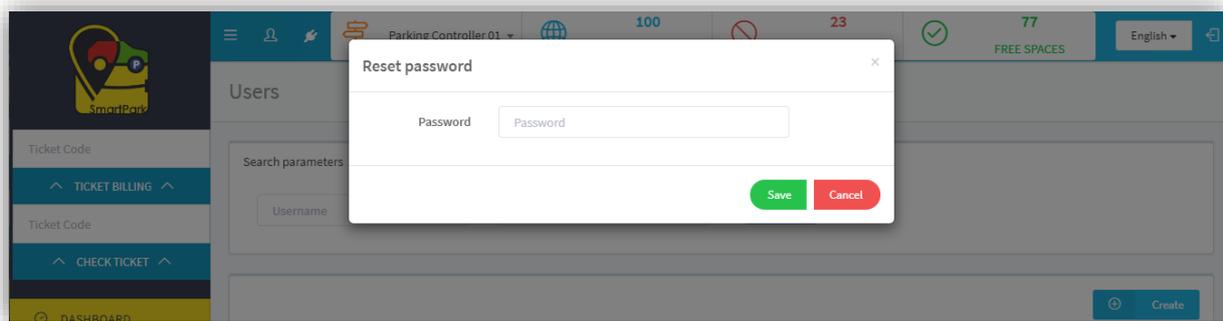
- User name – name of the user in the system
- Full name – first and the last name of the user. First column in the user table marked as “Username” contains user name followed by full name in the brackets.
- E-mail address
- Status – can be active, inactive (created, but not yet verified), blocked (was active, but now is deactivated for some reason)
- Role – cashier, supervisor or administrator
- Password – for security reasons, next to the password field, there is additional field for password confirmation. For password to be accepted, value entered into those fields have to be exactly same.



For existing user it is possible to update full name, e-mail address, to assign new status to the user, as well as change authorization level by assigning role different from previous.



Next to the left edge of the Edit button (one with pencil icon) which exists for every other entity in the system, there is additional button marked with lock icon. This button is used for password reset. It opens dialog where new password is to be entered. Unlike password change as described at the beginning [of this document](#) which refers to the situation when logged user wants to change his/hers own password, this is where administrator can reset password for any user in the system.

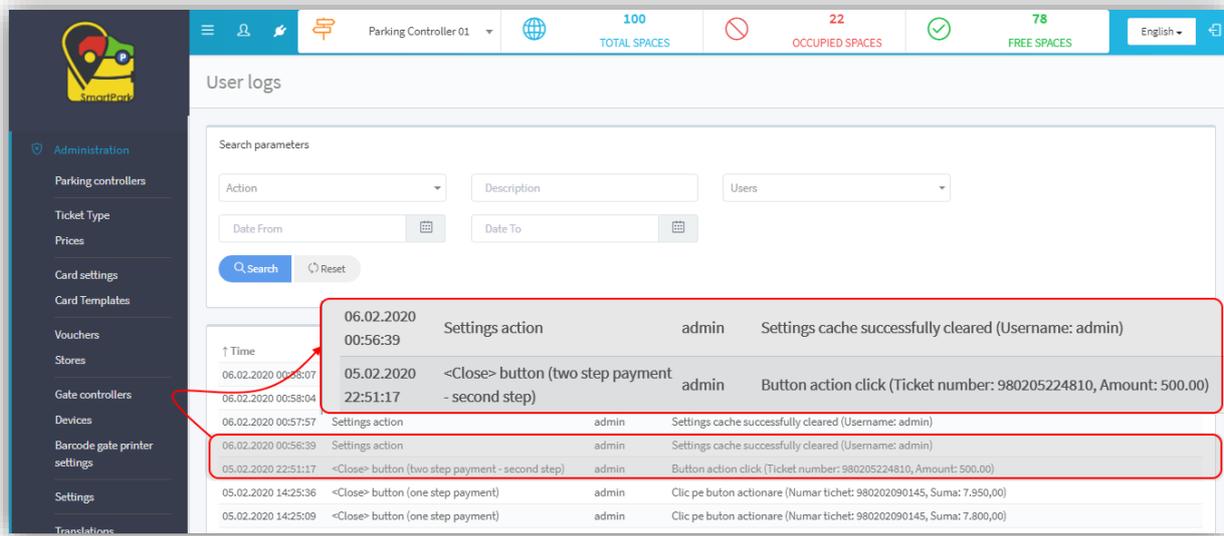


USER LOGS

Last in the list of the commands on Administration menu is User logs. It opens page with detail review of activities for each user. For each user, regardless to assigned permissions, all actions are logged: settings changed, transaction created, profile updated... User activities are organized in the table with columns:

- Time – date and time when action is performed
- Action – identification of performed action. The actions that are logged in the system are:
 - button action click,
 - user account action
 - settings action
 - transaction action
 - ticket action
 - booked ticket action
 - card action
 - card template action
 - card turnover action
 - price action
 - discount action
 - API booking action
 - API ticket action
 - clear data action
 - <Close> button (one step payment)
 - <Pay> button (one step payment)
 - <Close> button (two step payment)
 - <Pay> button (two step payment)
 - <Close> button (two step payment - second step)
 - <Pay> button (two step payment - second step)

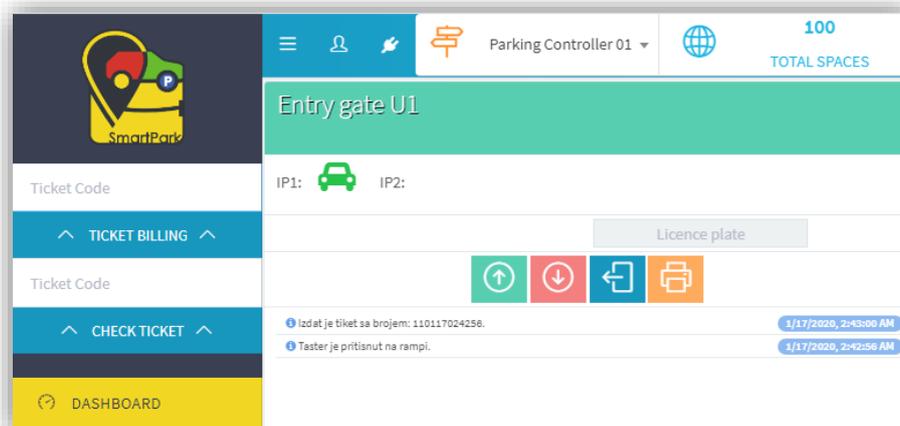
- User name – identifies user who triggered the action
- Description – gives details about an action. E.g. for each ticket payment two logs are registered...
 - *Ticket action* – in the description column there is log “Parking payment – Ticket payment (Price: xxx, ID: xxx)”
 - *Transaction action*, in description it is noted “Parking payment – Create transaction (Price: xxx, ID: xxx)” ext.



Logs can be searched by action type, activity description, user who triggered action and time interval during which the action is performed.

Dashboard

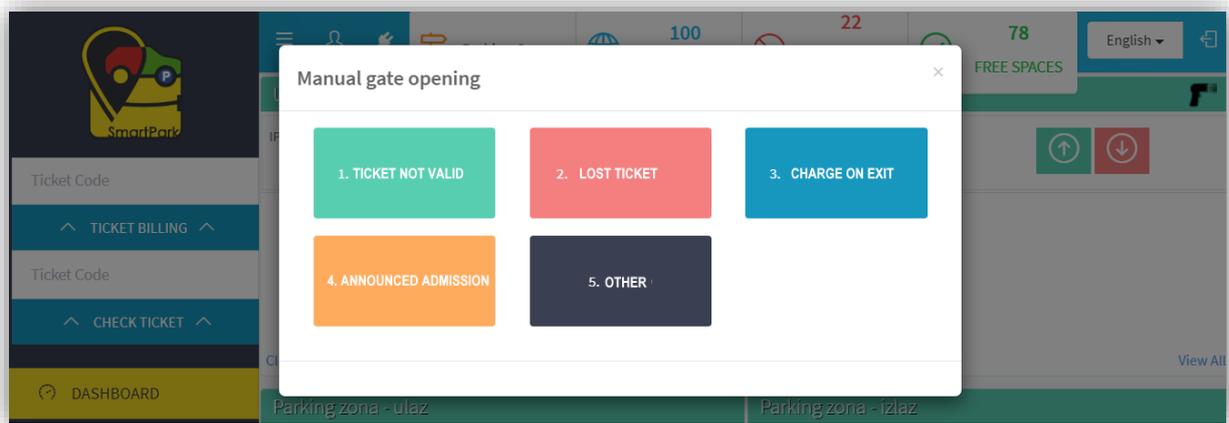
Dashboard command on the application side menu, opens review of all active gates on chosen parking controller. Gates are displayed in order that is specified by [gate code](#). When vehicle approaches the entrance gate and step on the first inductive loop IP1, green car is shown on the screen as signal of the activity on the gate. When customer pushes the button (first picture) log “button is pressed on the gate” appears, followed by notification which refers to issued ticket number. Similar situation is when customer uses card to enter the parking. Ticket is not issued, but card is scanned and log appears with showing of card number (“card ‘xxxxxxxxx’ is used on the gate”).



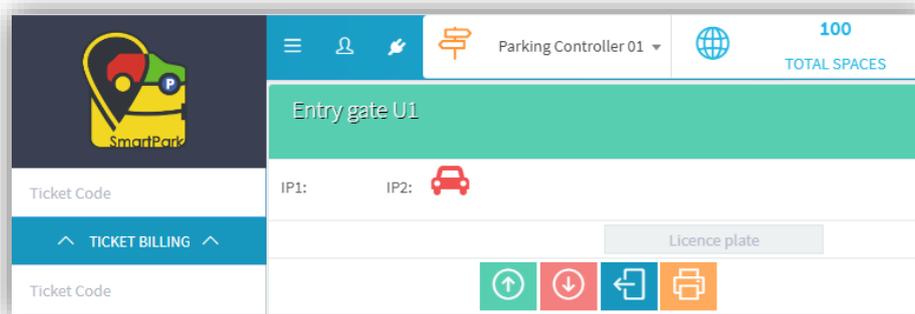
At the same time, with each vehicle passed through entrance gate, in the list of active tickets one record is added. This record saves information about issued ticket number, which gate the ticket is printed on, time of printing, card type. If customer entered the parking by printing ticket, column *Card type* shows “barcode ticket”. Anyway, ticket is marked as not paid and indicator that vehicle with particular ticket or card number is “in the parking area”. On the ribbon docked to the top edge of the screen, displayed number of free spaces for appropriate parking controller is decreased.

Ticket number	Entry gate	Entry time	Price paid	Cash	Card	Check time	Payment	Plate Number	Ticket type	Card Type	Cashier
3030303030		16.12.2019 14:48:21		<input type="checkbox"/>					Car	Postpaid	
110117024256		25.12.2019 11:34:18		<input type="checkbox"/>					Car	Barcode ticket	
111021222821	Ulazna rampa U1	21.10.2019 22:28:21		<input type="checkbox"/>						Barcode ticket	

If needed, it is possible to raise and put down the ramp with *Ramp up* and *Ramp down* buttons on the dashboard. In the case of “manual” ramp opening, it is necessary to provide reason for such action: ticket not valid, ticket lost, charge at exit, announced admission or other.



Two more available buttons are button for enabling and disabling entrance gate, and button for “manual” ticket printing .

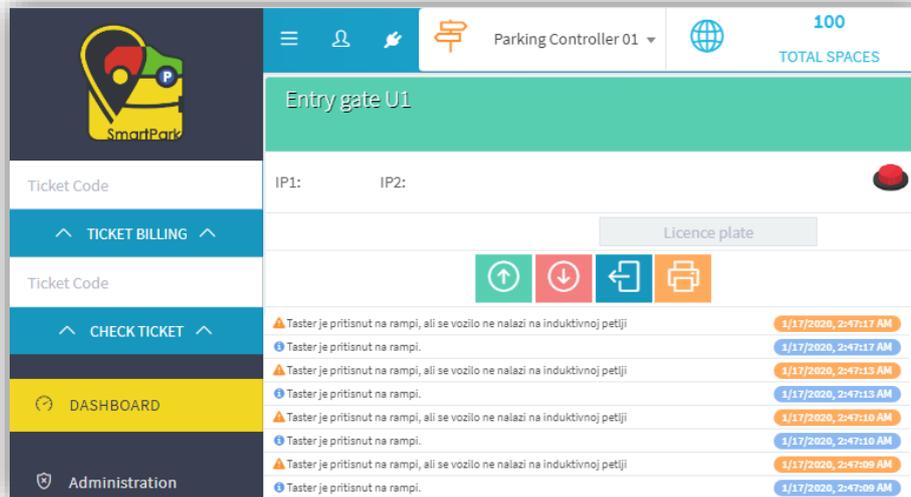


When vehicle steps on the second inductive loop IP2 red car is shown, ramp goes up and vehicle enters the parking.

In system settings, minimum time is defined that should pass between two subsequent presses on the button for printing tickets at the entrance gate. If customer presses button multiple times, with interval between two

presses shorter than the specified minimum, request for printing will be ignored. If repeated button press occurs after minimum time interval between two tickets issuing elapsed, ticket will be issued and printed normally.

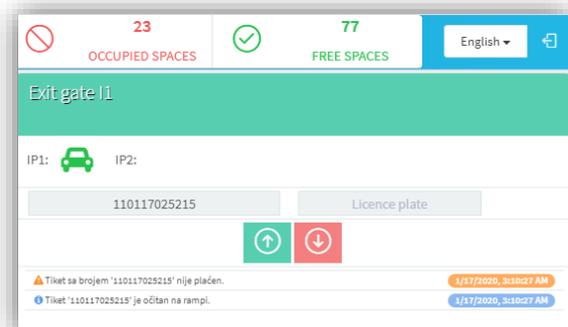
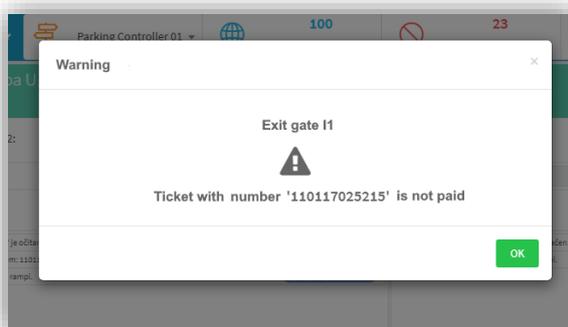
If vehicle is NOT on the first inductive loop and button for ticket printing is pressed, log appears "button is pressed on the gate, but vehicle is not on the inductive loop".



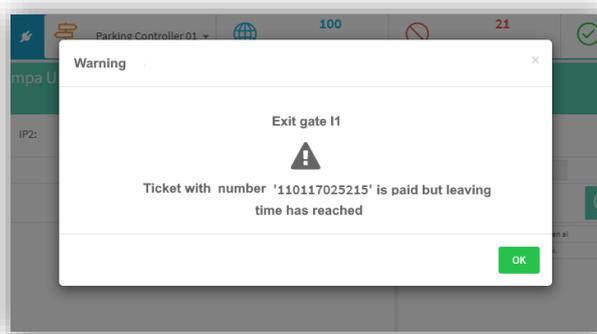
At the exit gate, there are two inductive loops to register approach and passing through the gate. Signalization of stepping on and off the inductive loops is same as one on the entrance gate.

After vehicle steps on the first inductive loop, it is necessary to scan ticket or card. Log appears on corresponding gate "Ticket 'xxxxxxxx' is scanned on the gate". If scanned ticket is not paid for, warning pops up on the screen showing the information which ticket and on which gate tried to exit without paying. Attempt is saved as gate log "Ticket number 'xxxxxxxx' not paid".

If ticket is paid, ramp goes up, vehicle goes over second inductive loop and leaves the parking area. That is the moment when ticket goes from active to archived tickets and indicator that vehicle is no longer in the parking area is set. Automatically, number of free spaces increases.



After ticket payment is done, customer has certain time to leave the parking. This time interval is set on the system level. If approved time is exceeded, customer has to pay additional amount for the time elapsed from the moment when previous payment was done. It is regulated in a manner that new ticket with the same number is formed, with time of entrance equal to payment time for the first ticket (original ticket with leaving time exceeded).



Described situation is illustrated on the picture below. When paid, ticket stays in the [list of active tickets](#) until vehicle is in the parking area. If leaving time limit is exceeded, customer is charged with additional ticket that covers up parking fee starting from the moment of previous up to the moment of new payment. In other words, application is handling this case as if vehicle left the parking at the moment first bill was paid, and immediately after that entered parking again.

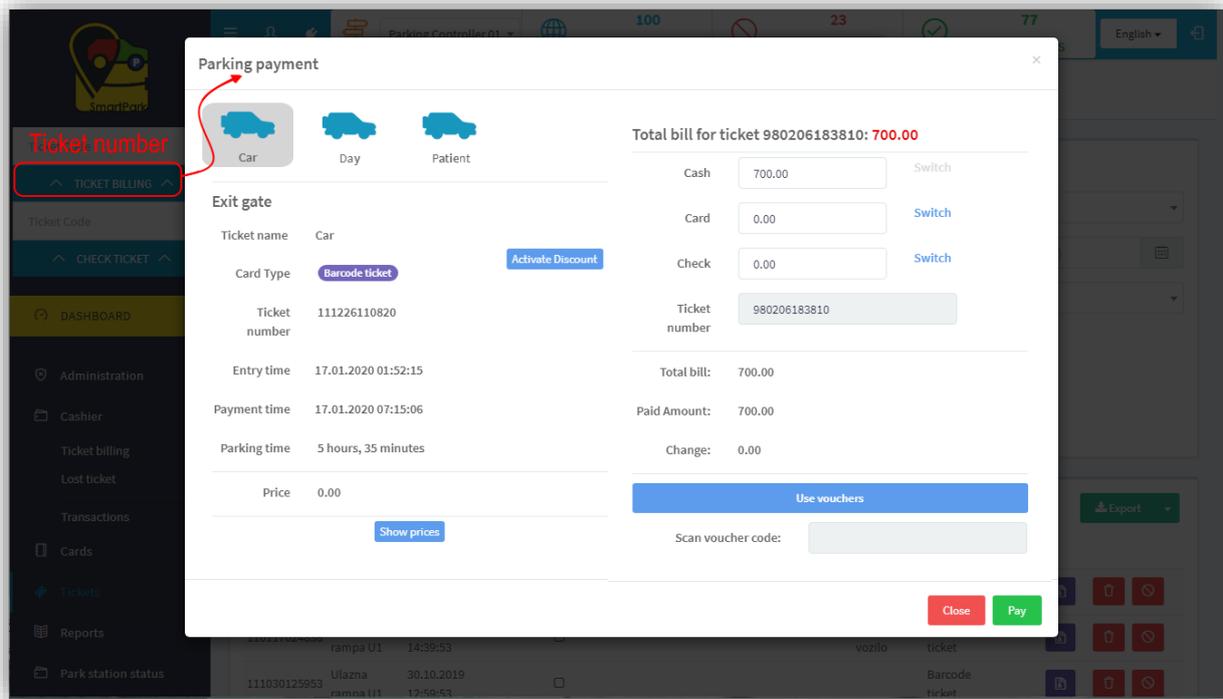
After additional cost is covered, both tickets (with same number) goes to [ticket archive](#). First one for which leaving time was exceeded (lower one of the two marked on the picture) has empty column “Exit gate” because based on that ticket no vehicle has left the parking area, while “Exit time” column shows value equal to “Payment time”.

Second ticket with identical number has “Entry time” equal to “Payment time” of the first ticket. Payment time for the second – automatically generated ticket is real time when second payment is made. If vehicle left the parking within designated time limit, column “Exit gate” displays which gate had been used for exit (this is case in the picture below).

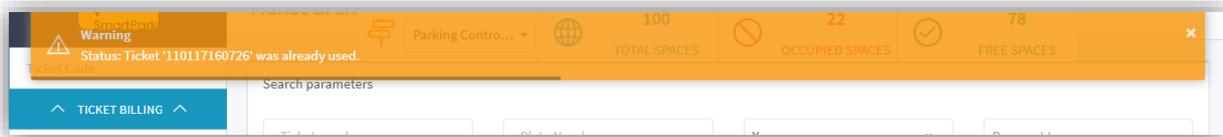
Ticket number	Entry gate	Entry time	Price paid	Cash	Card	Check	Payment time	Plate Number	Ticket type	Card Type	Cashier	Exit gate	Exit time
110117024606	Entry gate U1	17.01.2020 04:04:34	100.00	100.00	0.00	0.00	17.01.2020 04:11:17		Car	Barcode ticket	admin	Exit gate I1	17.01.2020 04:11:52
110117024256	Entry gate U1	17.01.2020 03:51:42	100.00	0.00	100.00	0.00	17.01.2020 03:55:55		Car	Barcode ticket	admin	Exit gate I1	17.01.2020 03:56:15
110117024256	Entry gate U1	17.01.2020 03:47:00	100.00	100.00	0.00	0.00	17.01.2020 03:51:42		Car	Barcode ticket	admin	Exit gate I1	17.01.2020 03:51:42
110117024908	Entry gate U1	17.01.2020 03:40:27	100.00	100.00	0.00	0.00	17.01.2020 03:44:17		Car	Barcode ticket	admin	Exit gate I1	17.01.2020 03:45:04

CHECK TICKET and TICKET BILLING (from dashboard)

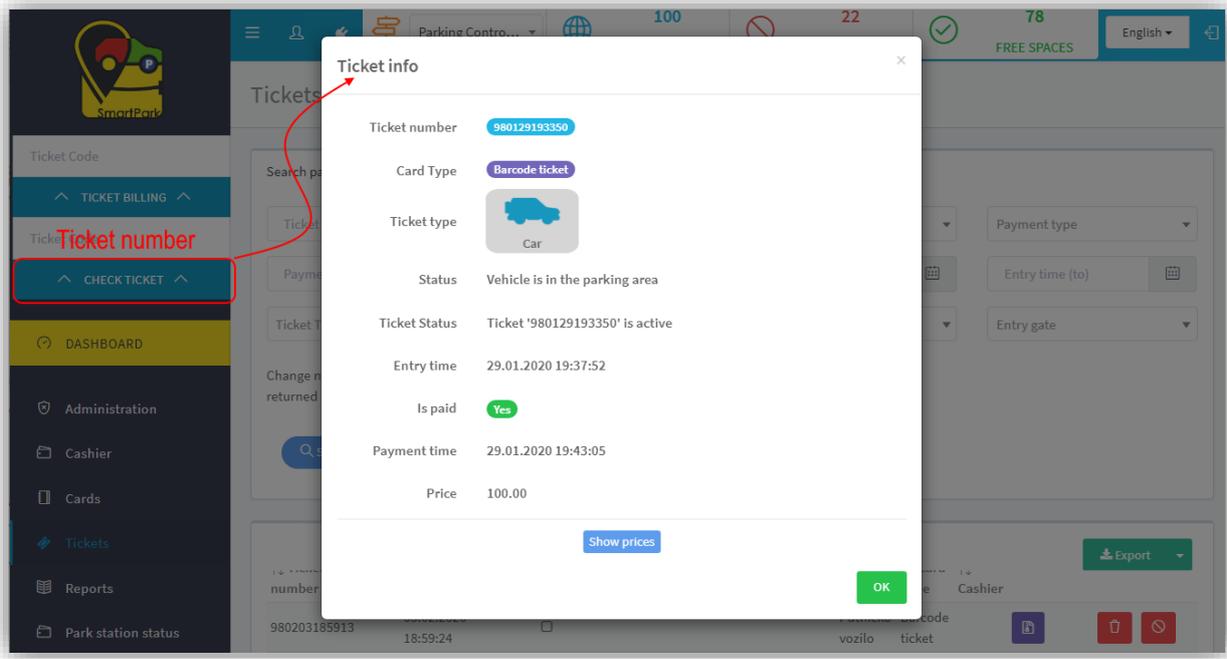
On the application side menu, just above Dashboard button, there are two text fields used to input the ticket code for the ticket to be checked or charged. If ticket is not paid yet, typing ticket number in the textbox just above **Ticket billing** button, followed by click on this button, opens dialog for charging parking service (same dialog appears when charging is performed through **Cashier** menu or via **Ticket** menu by click on ticket number in the first column).



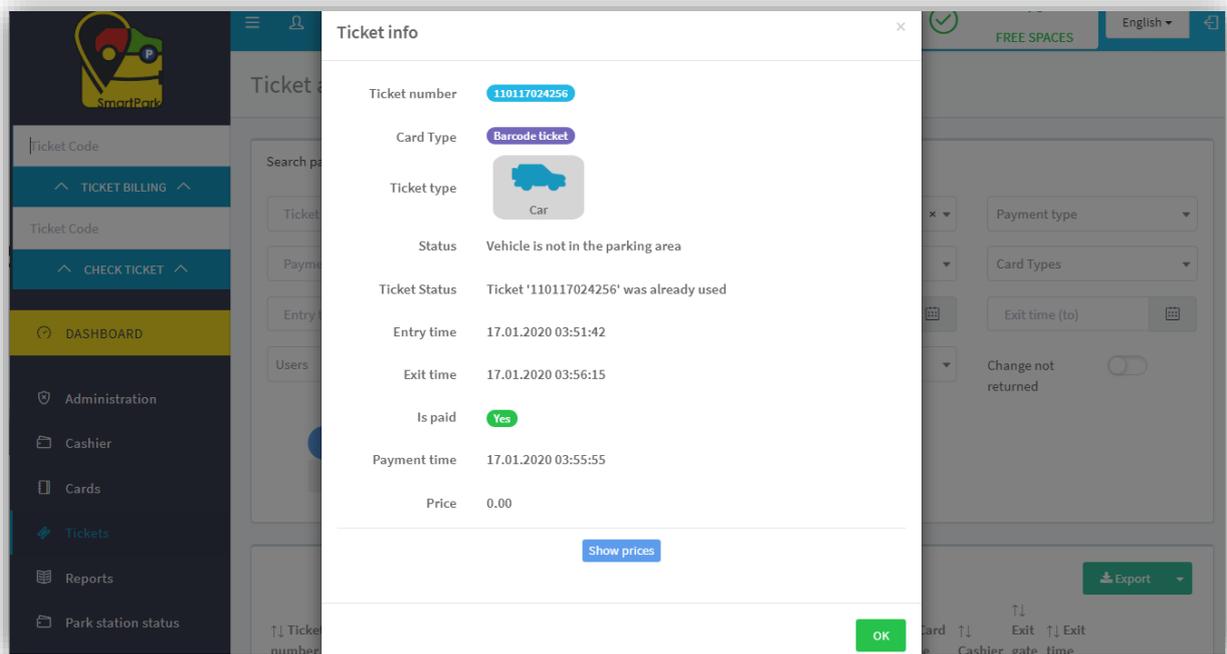
If entered number corresponds to ticket which is paid for, click on **Ticket billing** button triggers announcement docked to upper edge of the screen with inscription “*Status: Ticket 'xxxxxxx' was already used*”.



Typing ticket or card number in the textbox above “**Check ticket**” button and subsequent click on the button displays information about selected ticket. If the debt is not paid yet, **Ticket info** dialog shows ticket/card type, status “*Vehicle is in the parking area*”, ticket status “*Ticket 'xxxxxxx' is active*” and entry time.



If debt is settled, ticket info shows status "Vehicle is not in the parking area" and ticket status "Ticket 'xxxxxxxx' was already used".

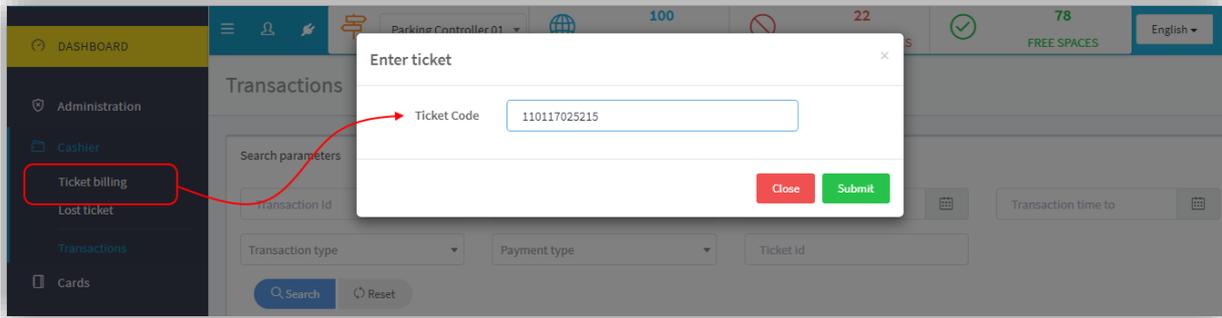


Cashier

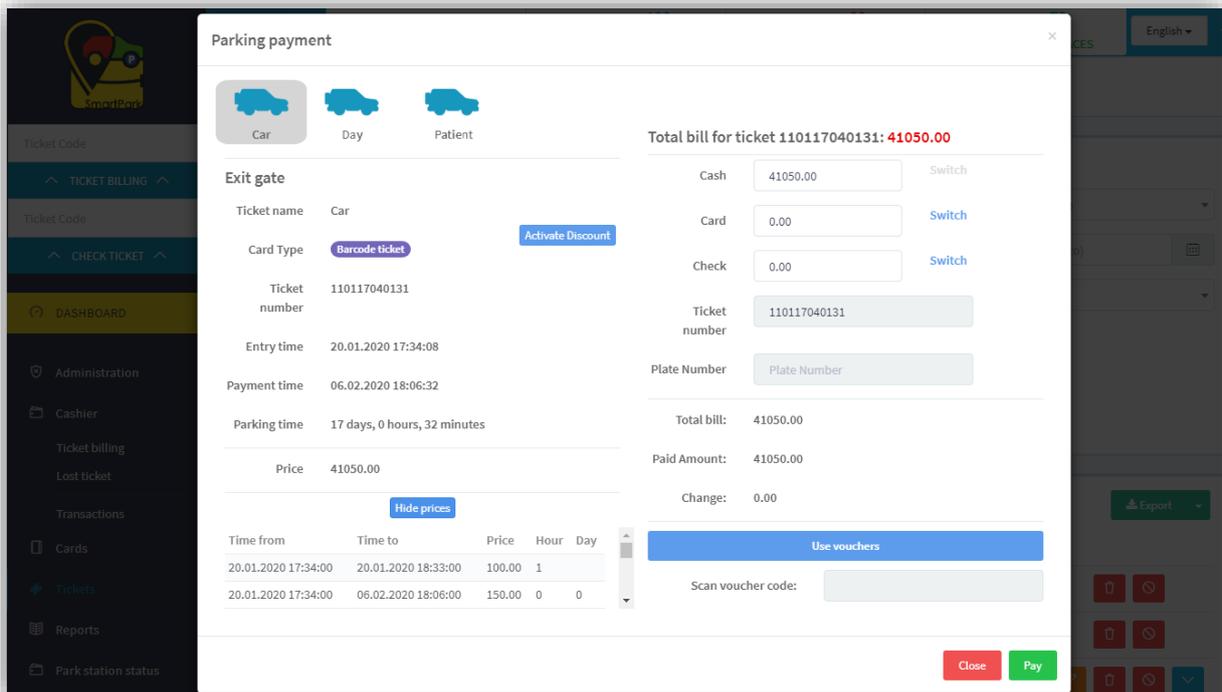
Commands on **Cashier** menu can be used to perform ticket charging, lost ticket charging and overview of transactions in the system.

TICKET BILLING

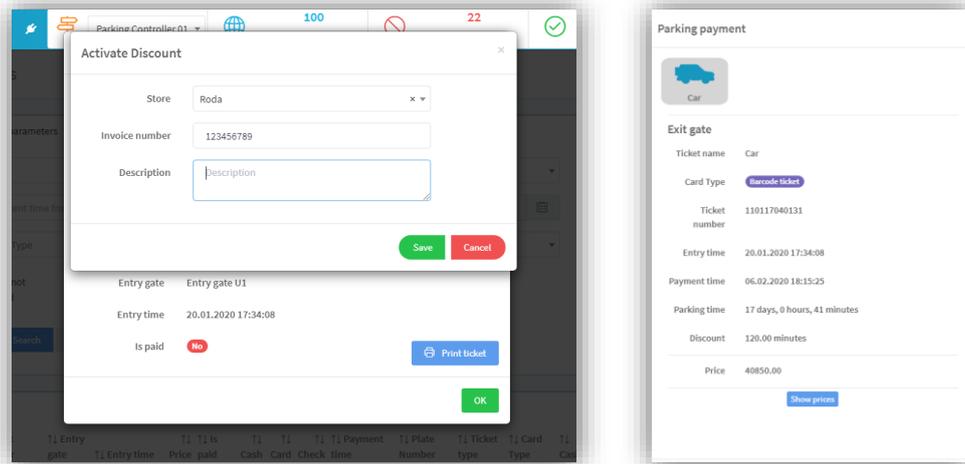
Execution of **Ticket billing** command opens *Enter ticket* dialog with textbox for input number of ticket/card to be charged.



Button **Submit** opens “Parking payment” dialog. Price that is automatically displayed in payment dialog refers to default ticket type (usually that is a passenger vehicle). When charging a bill, operator can change default [ticket type](#) with the actual one – passenger vehicle, truck, day ticket... According to chosen ticket type, price is determined as basis for total debt calculation.



If customer made a purchase in some of the stores that are registered in the system, parking discount can be approved by entering the receipt number. Discount is activated by press on the corresponding button (Activate discount). Dialog is opened where name of the store should be specified, as well as invoice number as proof of purchase.



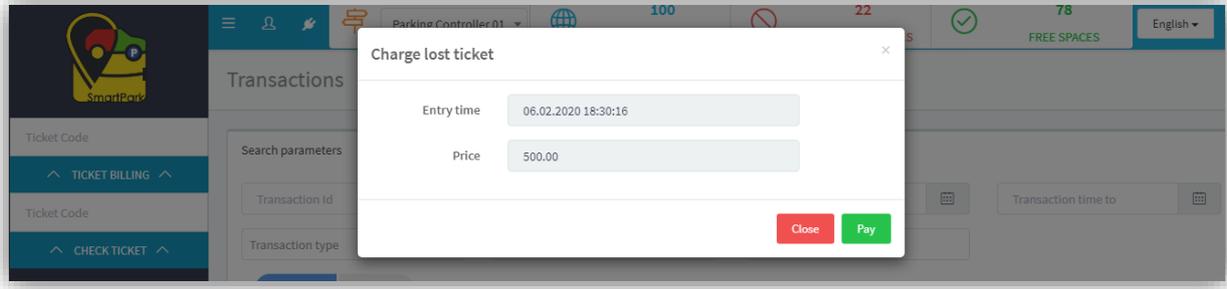
By discount activation, button **Activate discount** is no longer available (because only one discount can be activated per ticket). Beneath parking time note which shows total time spent on parking, approved discount appears expressed as minutes. In this dialog, below parking time, price and (possibly) discount, there is **Show prices** button which opens details specification for price calculation.

Right part of the dialog is used to specify payment method (cash, card or check). As discount can be awarded in a form of voucher as well, button **Use vouchers** enables text field where number of voucher can be entered and the final price is reduced by value of the voucher. Button **Pay** triggers the transaction and create [transaction log](#).

↑↓ Id	↑↓ Parking controller	↑↓ Username	↑↓ User shift	↑ Transaction time	↑↓ Transaction type	↑↓ Description	↑ Amount	↑↓ Cash amount	↑↓ Card amount	↑↓ Check amount	Export	Create
50812	Parking Controller 01	admin	FIRST	06.02.2020 18:27:09	CREDIT	Parking payment ()	40,850.00	40,850.00	0.00	0.00		

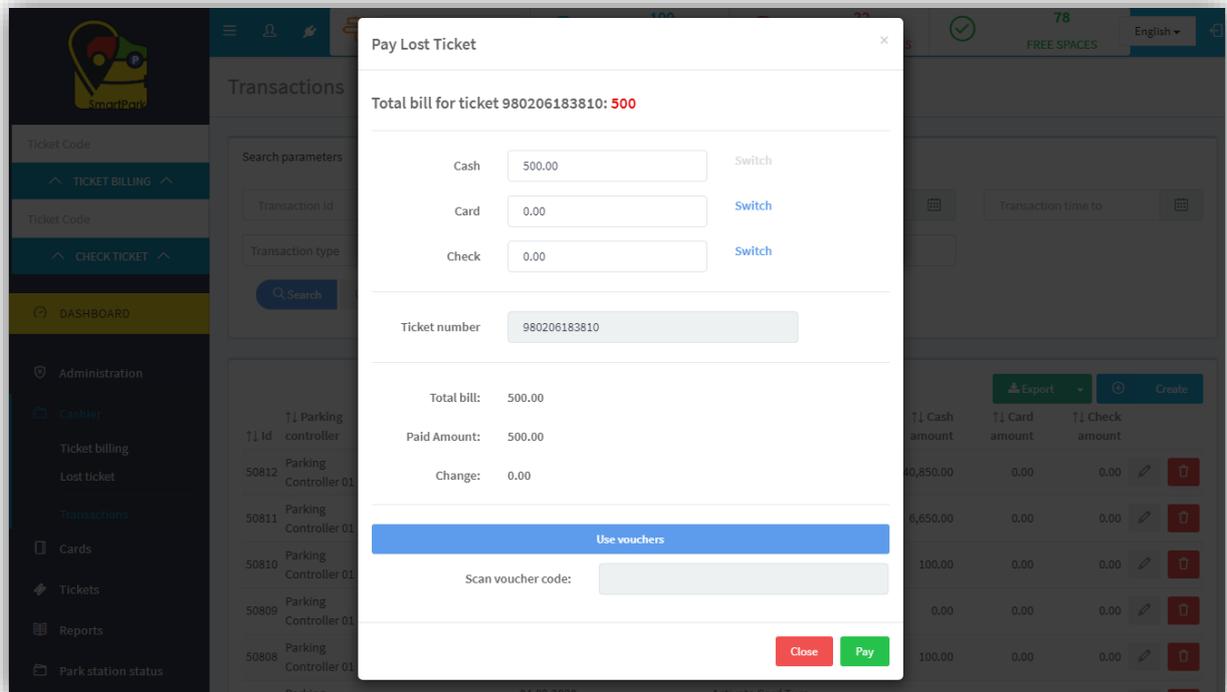
LOST TICKET

In the situation when customer loses ticket or card, some fixed amount is charged. This amount is defined in application [settings](#). Price is constant, defined in application settings and entry time on the ticket is noted to be equal to the time when lost ticket is generated.



In dialog opened by pressing command **Ticket** → **Lost ticket** on the side menu, two buttons are available: **Pay** and **Close**. Button **Close** cancels lost ticket generation, while button **Pay** opens “**Pay lost ticket**” dialog. Operator is expected to specify method of payment. If customer pays for the lost ticket right away, which is confirmed by one more click on **Pay** button, ticket is registered in the list of active tickets marked as “paid” and entry time equal to payment time. Customer has defined leaving time to exit parking area.

As for paying regular ticket, voucher can be used when to pay price of a lost ticket as well. That’s way button **Use voucher** is available in this dialog. If pressed, text field for voucher code input is opened.



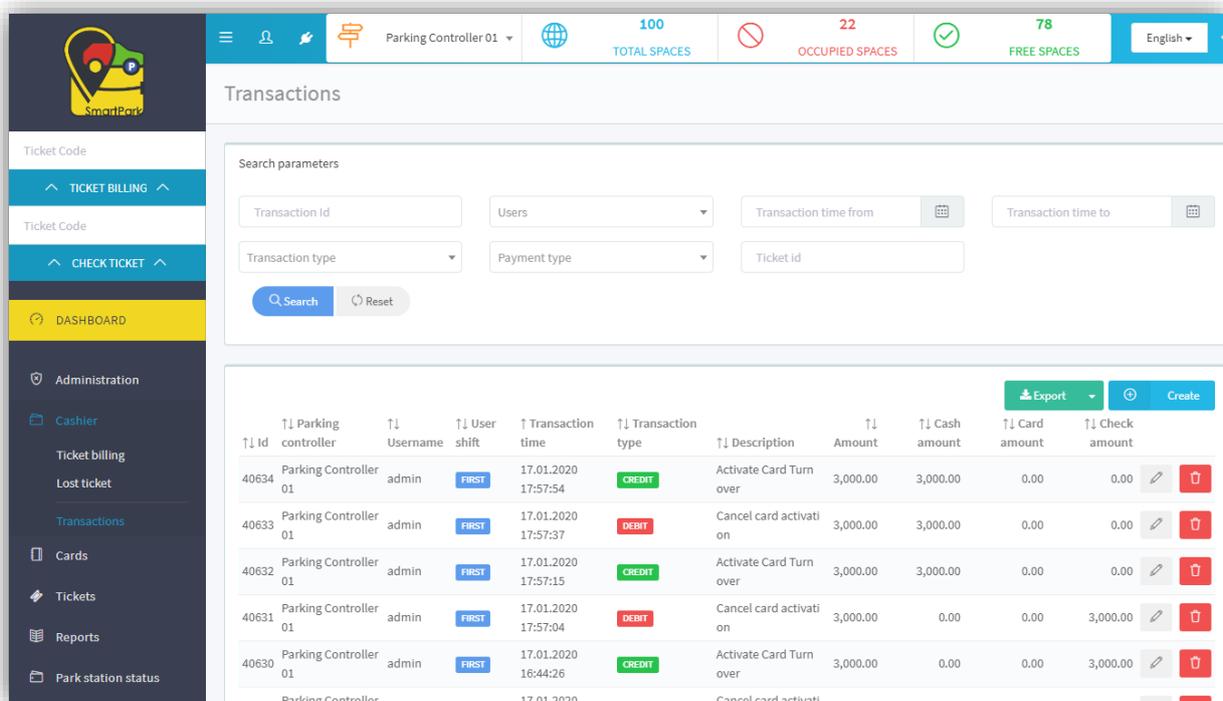
↑↓ Ticket number	↑↓ Entry gate	↑ Entry time	↑↓ Price paid	↑↓ Is paid	↑↓ Cash	↑↓ Card	↑↓ Check	↑↓ Payment time	↑↓ Plate Number	↑↓ Ticket type	↑↓ Card Type	↑↓ Cashier	Export
980206183810		06.02.2020 18:48:24	500.00	<input checked="" type="checkbox"/>	500.00	0.00	0.00	06.02.2020 18:48:24		Car	Lost ticket	admin	    

In the picture above, generated ticket of “lost ticket” type is shown. Ticket price was charged at the same time the ticket was created, so payment time is equal to entry time. Status “vehicle is in the parking area” is set (until vehicle leave parking area through exit gate). From the moment the payment is done, customer has system defined time to drive the vehicle out of the parking area.

TRANSACTIONS

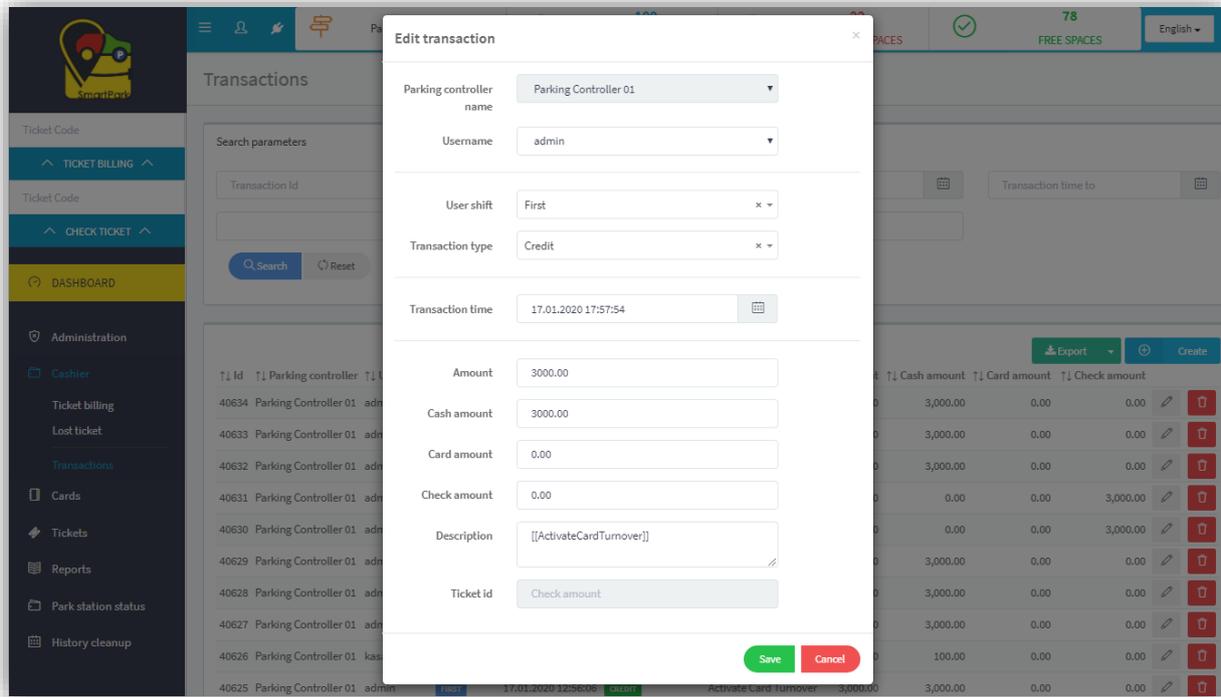
Command **Transactions** on **Cashier** submenu allows review, filter and export the list of all transactions made in the system. For each transaction facts to be saved and displayed are:

- Transaction ID – unique identification of transaction
- Parking controller – parking area (parking zone) where service is provided and charged
- Username – operator who made the transaction
- User shift – work shift when transaction is made (first, second, third)
- Transaction time – date and time of charging
- Transaction type – “**credit**” is tag for bill collection, “**debit**” marks transaction of change return
- Description
- Amount – total amount and the next three columns with specification of payment method (cash amount, card amount, check amount)



↑↓ Id	↑↓ Parking controller	↑↓ Username	↑↓ User shift	↑ Transaction time	↑↓ Transaction type	↑↓ Description	↑ Amount	↑↓ Cash amount	↑↓ Card amount	↑↓ Check amount	Export	Create
40634	Parking Controller 01	admin	FIRST	17.01.2020 17:57:54	CREDIT	Activate Card Turn over	3,000.00	3,000.00	0.00	0.00	 	
40633	Parking Controller 01	admin	FIRST	17.01.2020 17:57:37	DEBIT	Cancel card activation	3,000.00	3,000.00	0.00	0.00	 	
40632	Parking Controller 01	admin	FIRST	17.01.2020 17:57:15	CREDIT	Activate Card Turn over	3,000.00	3,000.00	0.00	0.00	 	
40631	Parking Controller 01	admin	FIRST	17.01.2020 17:57:04	DEBIT	Cancel card activation	3,000.00	0.00	0.00	3,000.00	 	
40630	Parking Controller 01	admin	FIRST	17.01.2020 16:44:26	CREDIT	Activate Card Turn over	3,000.00	0.00	0.00	3,000.00	 	
	Parking Controller			17.01.2020		Cancel card activation					 	

At the end of each row in the table there is button for updating values regarding corresponding transaction . All values that describe transaction can be changed, except parking controller and ticket ID. Beside edit button, in each row, there is a button which can be used to delete transaction .



Tickets

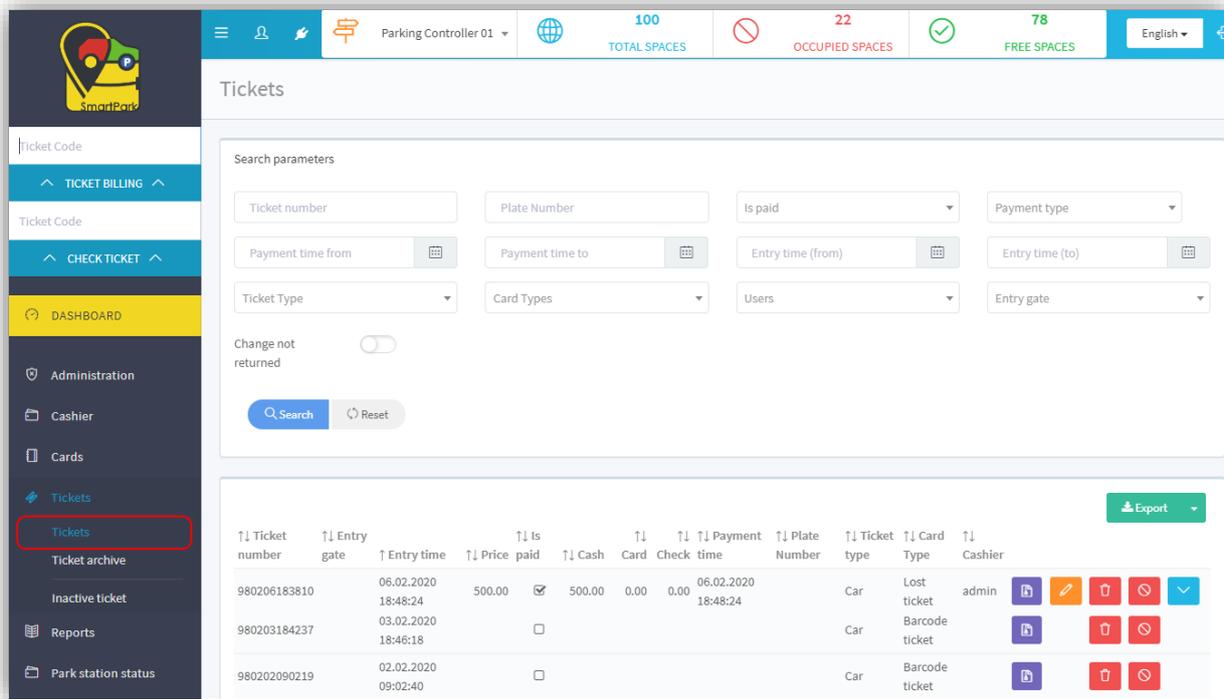
This menu has three commands: Tickets, Ticket archive and Inactive ticket.

TICKETS

Page, opened by pressing **Tickets** command, as its central content has list of active tickets. Active tickets refer to the vehicles which are still inside the parking area, whether paid or not. When vehicle comes to entrance gate, ticket is created and printed, ramp goes up and vehicle enters the parking area. Created and printed ticket is registered in the list of active tickets on this page. Following values are saved and displayed for each ticket:

- Ticket number – number of printed ticket or number of the user card used to enter the parking area
- Entry gate – name of the entry gate customer used to get into the parking
- Entry time – date and time vehicle passed the gate. From this time forward, total price calculation period starts
- Price – amount to be paid. Price is calculated at the moment customer requests to be charged.
- Is paid – tag that determines whether payment is done or not
- Cash – amount paid in cash
- Card – amount paid by cards
- Check – amount paid by check
- Payment time – date and time the bill collection is done
- Plate number – vehicle registration number
- [Ticket type](#) – one of many ticket types defined in the system – is chosen during payment process

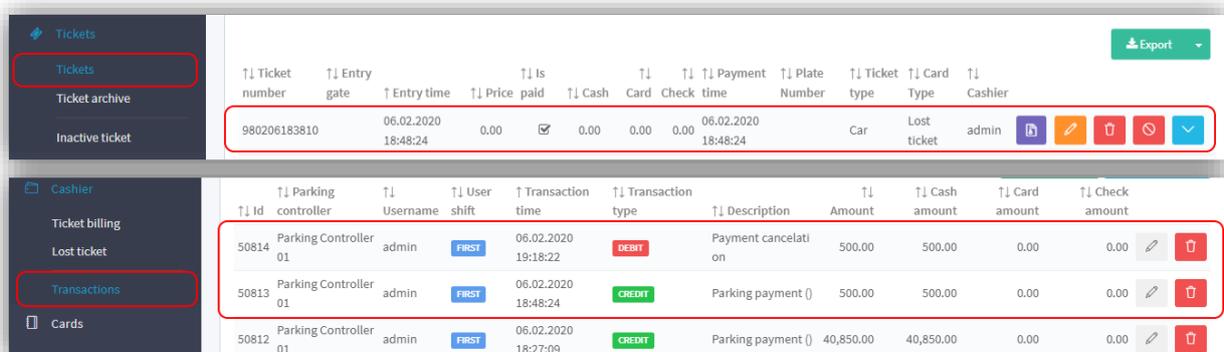
- Card type – if customer entered the parking by user card, type of card is displayed in this column. If customer entered by printing ticket on entrance gate, in this column there is inscription “barcode ticket”
- Cashier – operator who collected the bill



Right in the row of each active ticket there are three buttons whose purposes are (right to left):

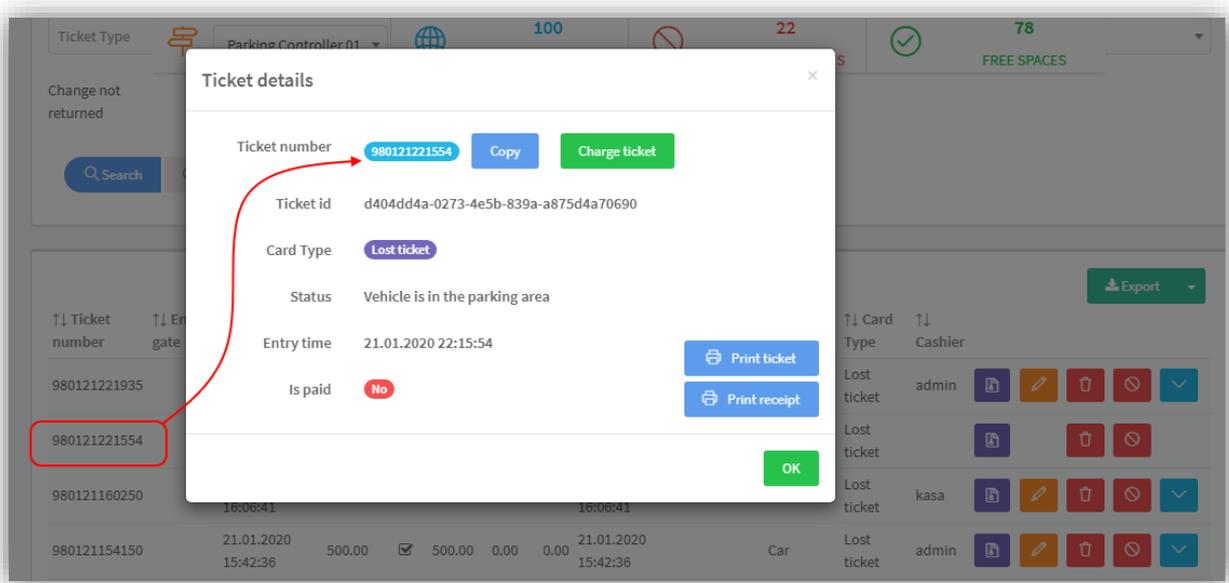
-  „manual“ ticket transfer to archive in the situations when transfer is not performed automatically (e.g. customer did not show at the pay desk yet)
-  delete ticket
-  payment cancelation

Ticket cancelation is performed for example, in the case of mistake during payment. Canceling ticket reset ticket price to zero and in the list of transactions opposite transaction is generated (transaction of type “debit”) to annul primary transaction (of type “credit”).



Upper screenshot in the picture above shows canceled ticket with price reset to zero, and the lower one shows corresponding transactions of credit and debit type.

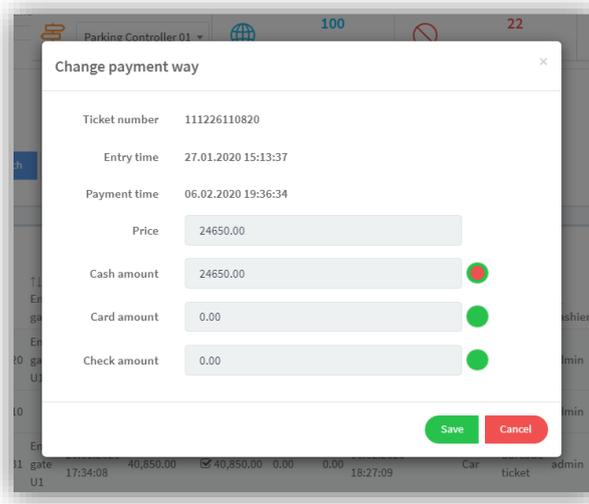
Details about ticket are displayed in dialog which pops-up when clicked on the ticket's or card's number in the first column of the table. If ticket is not charged, dialog like one on the picture below appears providing some info (ticket/card number, ticket ID, card type, ticket type, status which tells whether vehicle is in the parking area, entrance gate and entrance time). Also, couple of buttons are available. Button **Copy** copies ticket number into clipboard so it can be pasted into any field for search by ticket number. Button **Print ticket** sends ticket to printer (after ticket is charged, below button used to print ticket, another button appears for printing receipt – **Print receipt**).



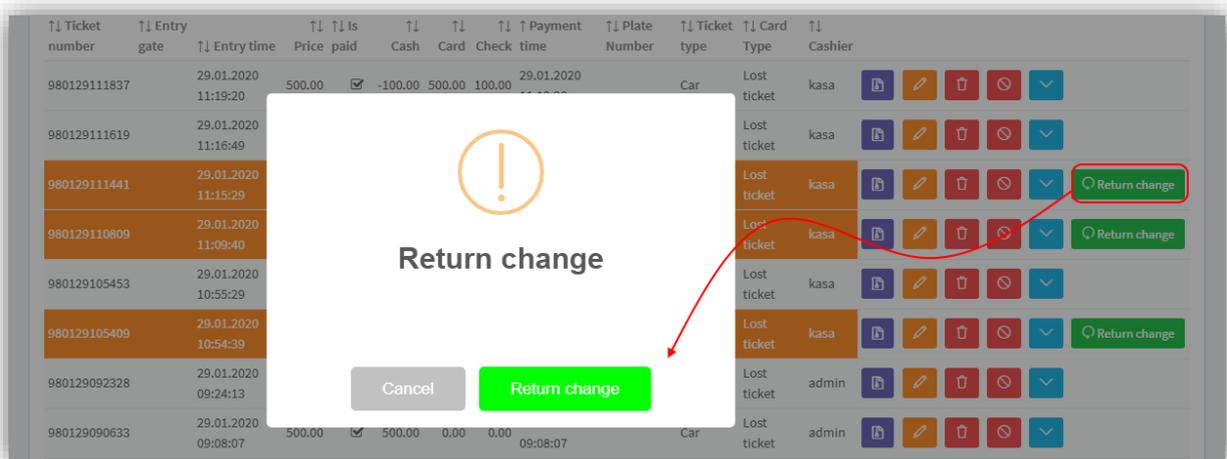
Button **Charge ticket** opens dialog for parking payment – same as one that is opened by command **Ticket billing** on the **Cashier** menu (described in previous chapter). After providing information needed for payment, followed by click on the button **Pay**, display of the charged ticket in the list of active tickets is updated with checkmark which indicates that ticket **Is paid** for, with information about payment method and about type of ticket. Starting from moment of payment, customer has defined time (for example 15 minutes) to drive the vehicle out of the parking area. In that period, ticket stays in the list of active tickets – i.e. as long as vehicle is in the parking zone, corresponding ticket is in the set of active tickets.



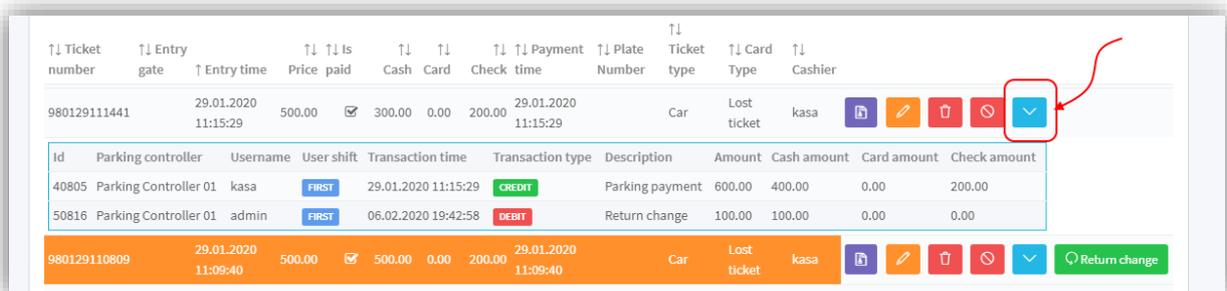
In the right side of the table row where ticket is listed, two more buttons appear. Button with pen icon is used for editing data about payment method (cash, card, check), while button opens insight into details about all transactions that refers to the particular ticket.



One of possible scenarios is that parking meter doesn't return change to the customer. In that case, in the list of active tickets one more button with inscription **Return change** is visible for the observed ticket. Such tickets in the list of active tickets are emphasized with orange color.



By confirmation of change return, in the list of all transactions for this ticket, next to **Parking payment** transaction, transaction **Return change** is created. Thereby, for each transaction username of the operator who made the transaction is logged.



Pressing Export button generates Excel or PDF file containing table of tickets which can be downloaded.

Above the list of active tickets, as it was in the case of previously described entities, there are controls for setting search criteria. Searching is possible by: ticket number, plate number, according to status of payment (paid or not), by payment method, entering time, payment time, ticket type, card type, user (operator) who made a charge, entrance gate and by parameter which “says” if there is change to return. When search is made by time of entry or payment, it is possible to set the interval to search within.

In the case of lost ticket, customer has to pay some fixed price defined in the application settings. When customer pays the price of lost ticket, item is generated in the list of tickets with entry time equal to payment time, column entrance gate has no value, but as vehicle is in the parking area, ticket is inserted into list of active tickets.

TICKET ARCHIVE

Ticket from active goes to the list of archived if debt is paid and vehicle left the parking area in estimated time. In archive, there are also tickets which are “manually” archived, for example in case when it is established that some ticket is excess ticket and there is no vehicle in the parking ticket is assigned to.

Fields for search through archive list are the same as for active tickets, with additional possibility to search by exit gate and exit time.

Also, there are some additional columns in this list: exit gate and exit time. As for command buttons available for each row in the table, delete button is missing, because it is not allowed to delete tickets from archive.

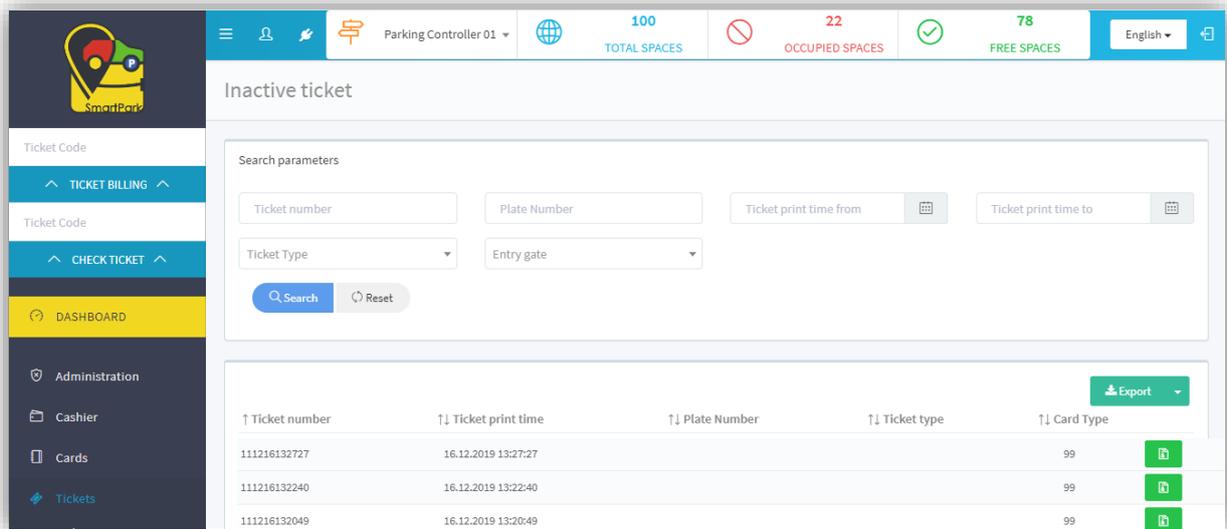
↑↓ Ticket number	↑↓ Entry gate	↑↓ Entry time	↑↓ Price paid	↑↓ Is Cash	↑↓ Card	↑↓ Check	↑↓ Payment time	↑↓ Plate Number	↑↓ Ticket type	↑↓ Card Type	↑↓ Cashier	↑↓ Exit gate	↑↓ Exit time				
980203185913		03.02.2020 18:59:24	500.00	<input checked="" type="checkbox"/>	0.00	0.00 500.00	03.02.2020 18:59:24		Car	Lost ticket	admin		03.02.2020 18:59:24				
980203184237		03.02.2020 18:46:18	500.00	<input checked="" type="checkbox"/>	0.00	0.00 500.00	03.02.2020 18:46:18		Car	Lost ticket	admin		03.02.2020 18:46:18				
980202090219		02.02.2020 09:02:40	500.00	<input checked="" type="checkbox"/>	0.00	500.00 0.00	02.02.2020 09:02:40		Car	Lost ticket	admin		02.02.2020 09:02:40				
980202090145		02.02.2020 09:02:07	500.00	<input checked="" type="checkbox"/>	0.00	500.00 0.00	02.02.2020 09:02:07		Car	Lost ticket	admin		02.02.2020 09:02:07				

INACTIVE TICKET

Ticket behavior immediately after it is created is controlled by application settings. Possibilities are to send the ticket directly to the list of active tickets or to use list of inactive tickets as mid-step. If setting **Ticket.StoreTicketOnIssuing** is set to 1, each issued ticket automatically goes to list of active tickets. If setting **Ticket.StoreTicketOnIssuing** is set to 0, after being issued, ticket goes to the list of inactive tickets first. When vehicle steps on and after that gets off the second inductive loop on the entry gate, ticket is transferred from inactive into the list of active tickets and it is considered that vehicle is in the parking area.

For inactive ticket following properties are logged and displayed: ticket number, ticket print time, plate number (if it is available), ticket type and card type. Inactive ticket can be “manually” transferred into list of active tickets by click on button at the end of each table row.

List filtering can be performed by several parameters: ticket number, plate number, print time interval, ticket type and entry gate where ticket was printed. Whole or filtered list of inactive tickets can be exported into Excel or PDF format.

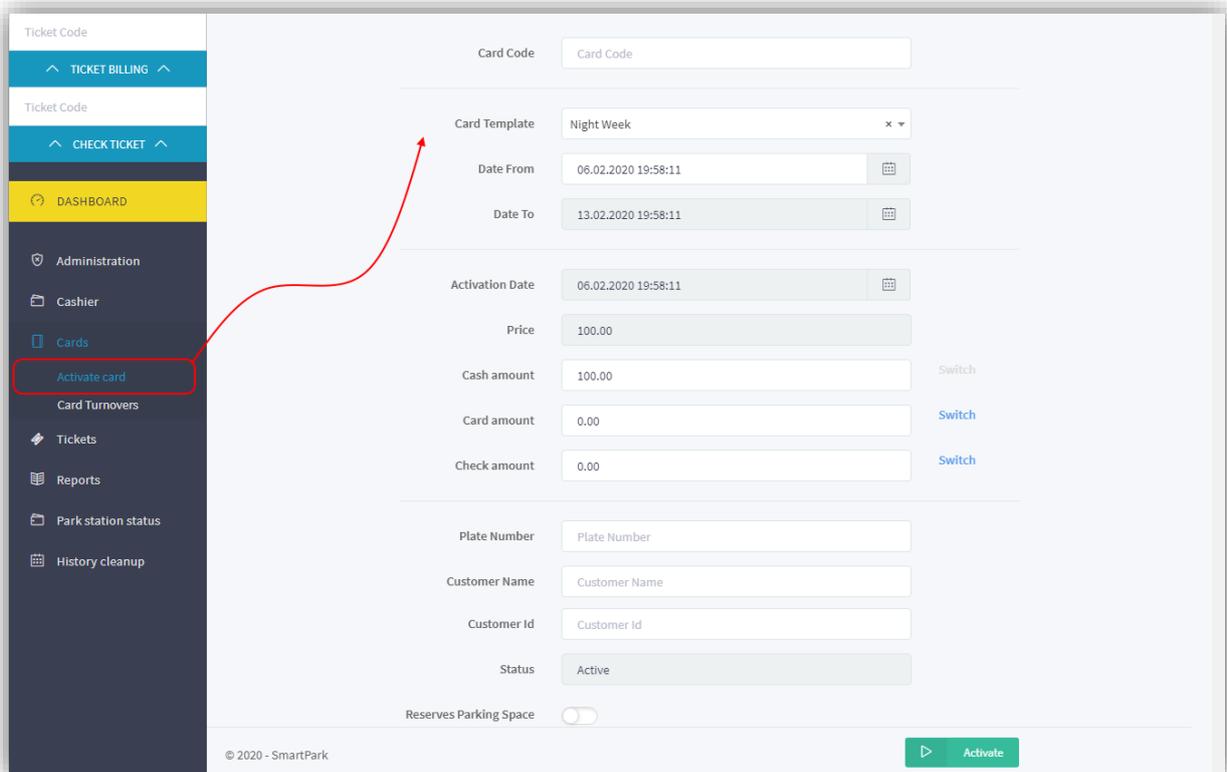


Cards

On the **Cards** submenu there are two commands: **Activate card** and **Card turnover** to control and review history of usage of template cars in the system.

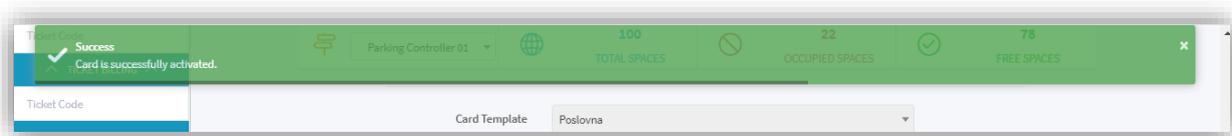
ACTIVATE CARD

Card created on the page that opens from menu [Administration](#) → [Card settings](#) has to be activated to be used. Command Activate card opens page with multiple fields. Some of them are to be fulfilled by operator, while others are populated automatically.



Obligatory fields are **Card Code** and **Card Template**. In the process of card creation it is specified whether card is postpaid, prepaid or template. Which of defined templates will be used for card is to be defined in the process of card activation.

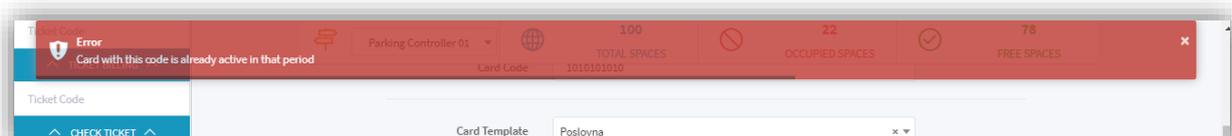
Default value for starting date (Date From) is current date, while end date (Date To) of card validity will be automatically fulfilled according to chosen template. Activation date is also automatically fulfilled with current date. Same goes for price, since it is read from template definition of the chosen template. Operator needs to specify payment method (cash, card or check) and optionally input values for: plate number, customer name, customer id. Reserves parking space is option that is off by default, but it is possible to turn it on by corresponding switch. If all data are correctly entered, first of all card code, by click on button **Activate** notification appears docked to upper edge of the screen with a message **“Success, card is successfully activated”**.



If card code is incorrect or card with specified code is not created previously in the [“Card settings”](#) page, click on button **Activate** pops-up red message bar with notification **“Error: Card does not exist”**.

Error message should also be displayed when in create dialog for card, in [card settings](#) page, status for card is set to inactive by switching off the corresponding switch. If operator tries to activate card which is set to inactive, application throws same error as if card is not created at, with a message **“Error: Card does not exist”**

If operator tries to activate card which is already activated within the given time period, error message appears in a form of red ribbon with an inscription **“Error: Card with this code is already active in that period”**.

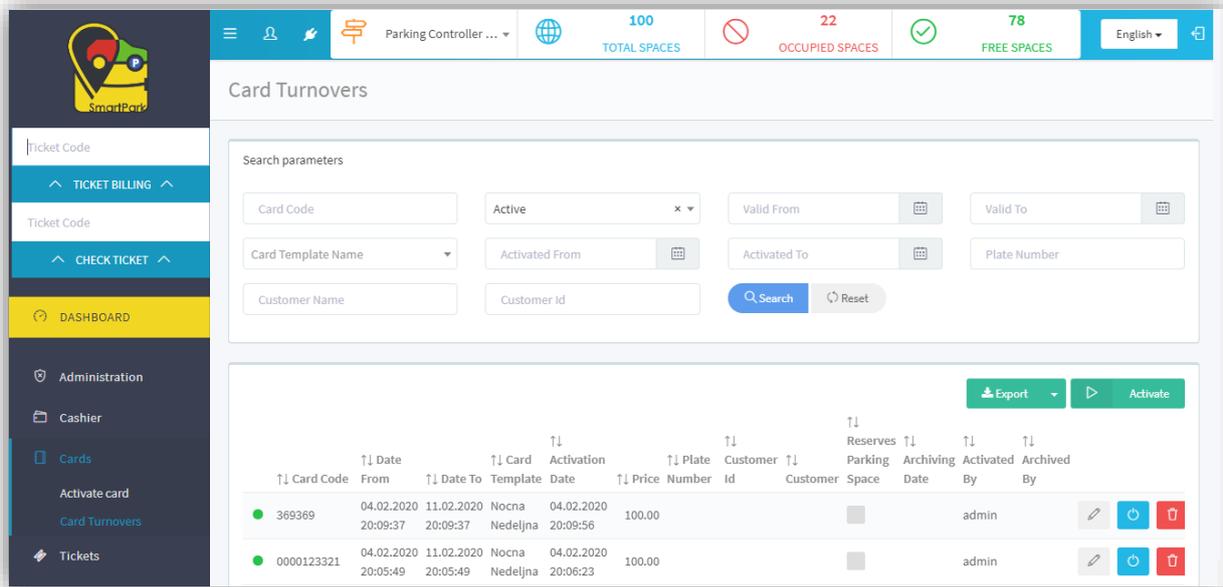


CARD TURNOVERS

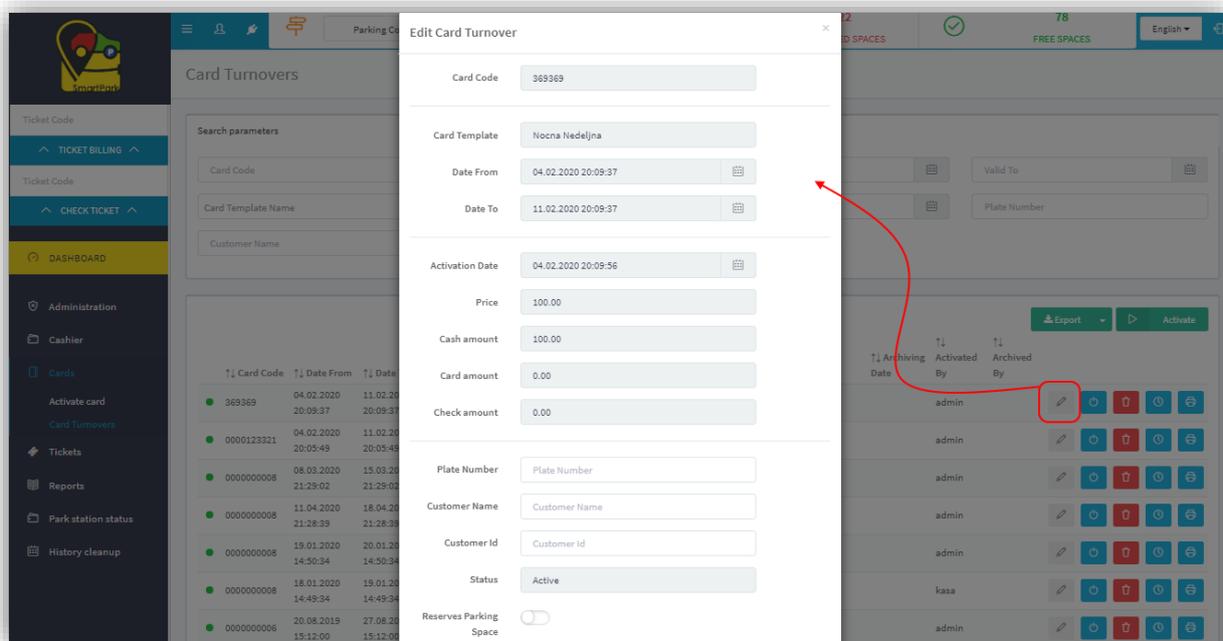
Card turnovers shows history of all template card activations. Card status can be active, canceled or archived. In front of the table row with active card displayed, there is green circle, archived cards are marked with gray circle and canceled ones are marked red. Data saved and displayed in table view for each card activation are:

- Card code
- Date and time from – to designates period when card can be used according to defined template
- Card template (night, day, business...)
- Date and time of activation
- Price
- Plate number
- Customer ID
- Customer (plate number, customer ID and customer name are not obligatory fields)

- Reserved parking space – checkmark which shows whether customer has reserved space in the parking
- Archiving date – if card is archived
- Archived by – operator who performed archiving



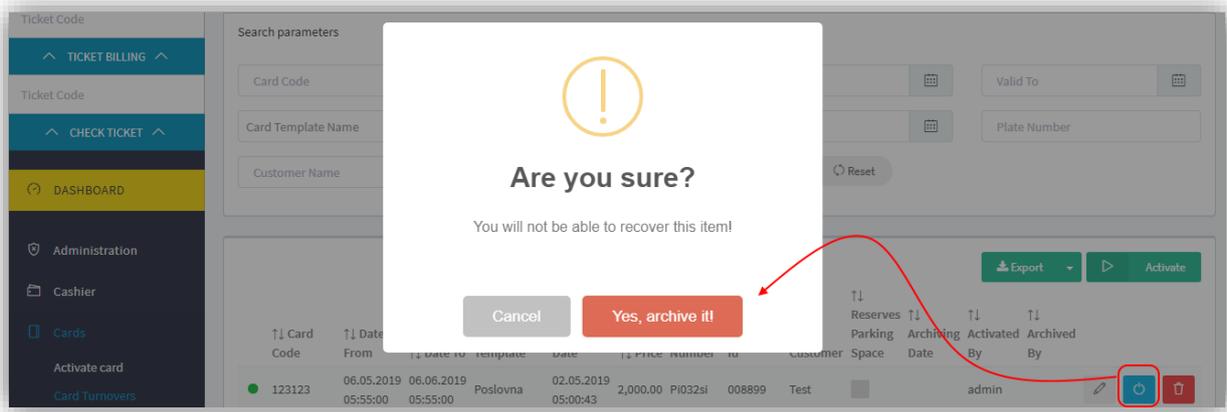
Next to the right edge of the table row there are buttons used to trigger action over record displayed in corresponding row.



First button with pencil icon is used for editing. Information about activation that can be added later or changed are plate number, customer name, customer id and indicator to show whether card assumes reserved parking space. Remaining data about activation is immutable and only can be overviewed.

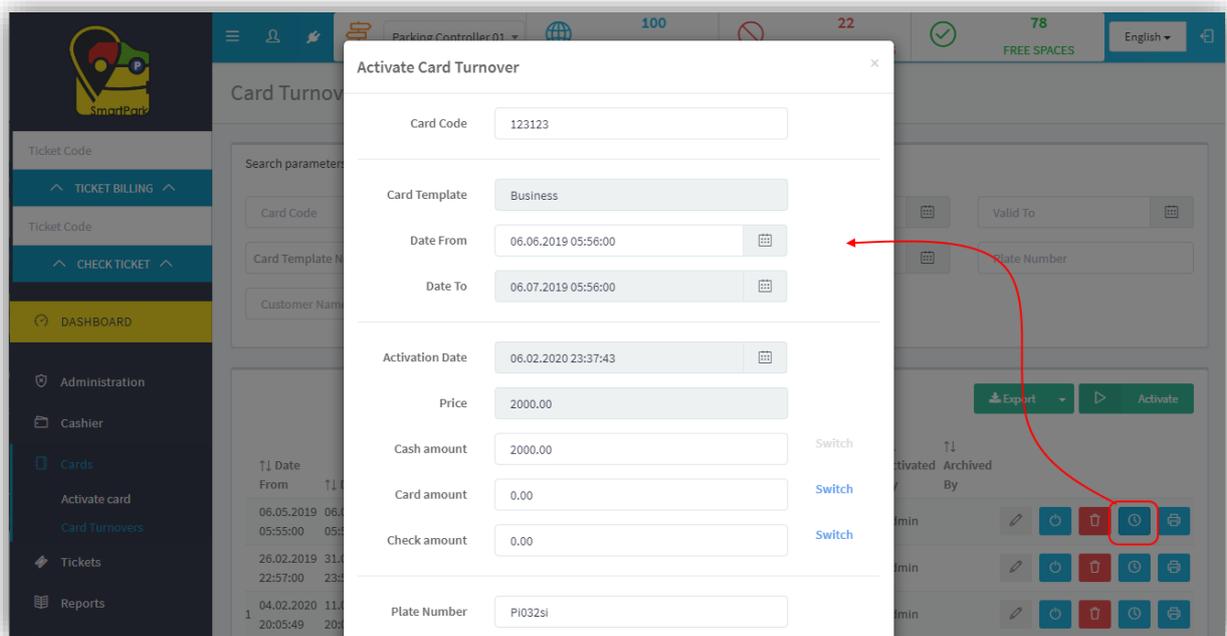
 Second button is used to send card to archive. Activation of the card that is activated with one template can be extended indefinite number of times. Activation extension assumes defining new validity period (new time interval), but template cannot be changed. In order to activate card with different template, card needs to be archived first. When tries to send card to archive, operator will see warning with question “Are you sure?”

Card which is archived can be activated again. New activation can be done by click on button **Activate** in the upper right corner above the card turnovers table. This button opens the same dialog as one presented on the page [Activate card](#). New activation of previously archived card gives possibility to choose some other template from the list of created templates.



Third button is  and is used to cancel card activation. Since moment of cancelation, activation is not valid any more (regardless of set dates) and card can be activated again with new settings for type of template and validity period.

Fourth button  is used to extend card activation. Activation extension gives possibility of setting new period of validity, but template cannot be changed.



Last in a row is button for printing activation . For cards which are canceled or archived, only edit button and print activation button are available.

Panel with search fields offers multiple criteria for filtering card turnovers: filter by card code, activation status (active, canceled or archived), validity period (valid from and valid to), card template name, activation time (can be set as period within which activation was performed Activated from – Activated to), plate number, customer name and/or ID.

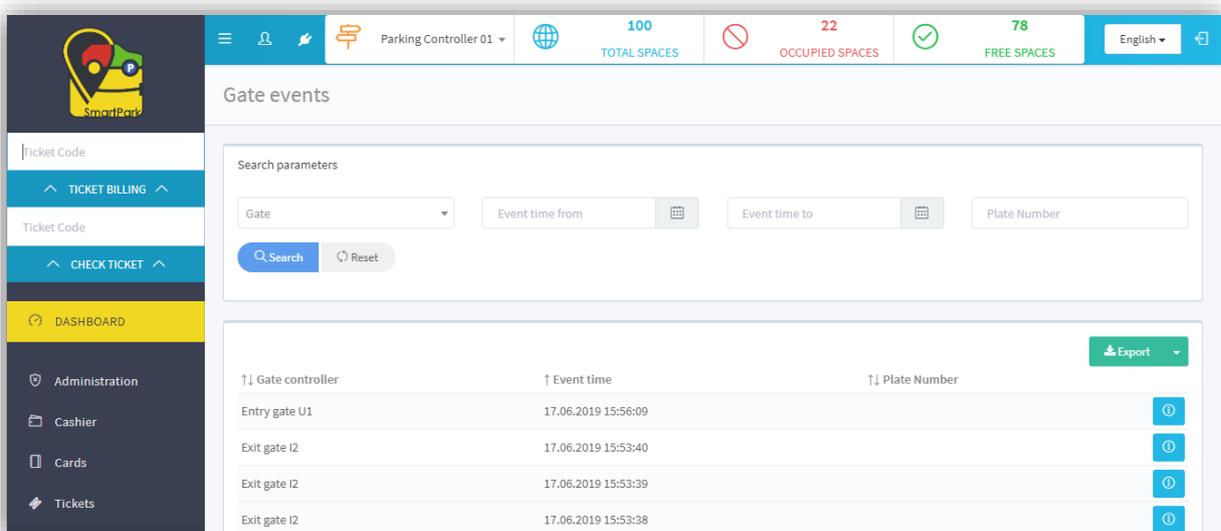
Complete or filtered list of card activations can be exported into Excel or PDF file by clicking button Export in the upper right corner above the table. Items in generated list is grouped by status of activity.

Card Turnovers											
Range: Card Code: , Status: Active, Valid From: , Valid To: , Card Template: , Activated From: , Activated To: , Plate Number: , Customer Name: , Customer Id:											
Status: Active											
Card Code	Date From	Date To	Card Template	Activation Date	Price	Plate Number	Customer Name	Reserves Parking Space	Archived	Activated By	Archived By
0000000008	18.01.2020 14:49:34	19.01.2020 14:49:34	Dnevna	18.01.2020 14:49:38	3,000.00			No		kasa	
Status: Archived											
Card Code	Date From	Date To	Card Template	Activation Date	Price	Plate Number	Customer Name	Reserves Parking Space	Archived	Activated By	Archived By
0000000008	17.01.2020 17:58:33	18.01.2020 17:58:33	Dnevna	17.01.2020 17:58:38	3,000.00			No	18.01.2020 09:05:19	admin	kasa
0000000008	18.01.2020 14:46:27	19.01.2020 14:46:27	Dnevna	18.01.2020 14:46:33	3,000.00			No	18.01.2020 14:49:32	kasa	kasa
11:47:12											

Reports

GATE EVENTS

First of provided reports is gate events. This report gives overview of every single entry and exit event on each gate of parking controller. Table can be sorted by content in any column by click on the column header. Registered data for each event are: gate controller name where event occurred, date and time of event occurrence and plate number (if it is noted). Identical form of report can be exported into .xlsx or .pdf format by pressing button **Export** 

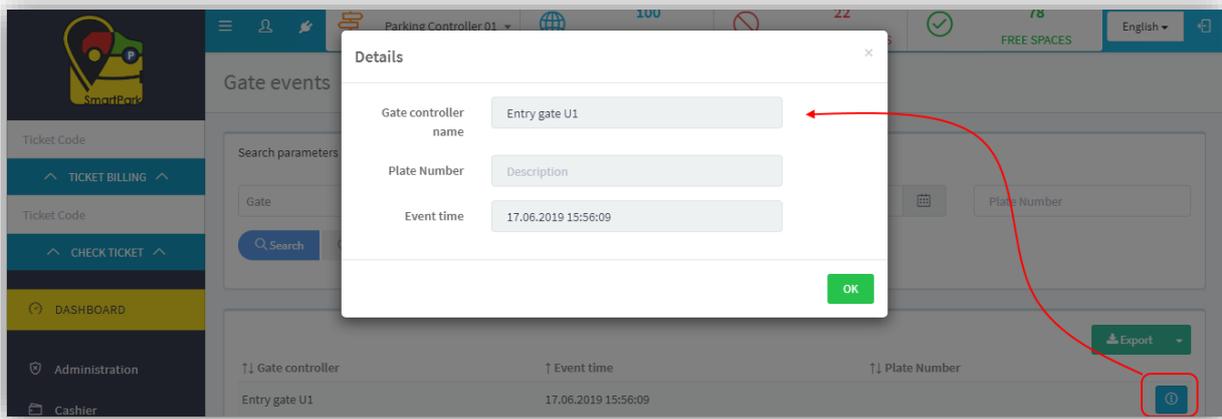


Gate controller	Event time	Plate Number
Entry gate U1	17.06.2019 15:56:09	
Exit gate I2	17.06.2019 15:53:40	
Exit gate I2	17.06.2019 15:53:39	
Exit gate I2	17.06.2019 15:53:38	

Complete report can be exported or just filtered part of the report. Filtering can be done by setting search parameters into search fields:

- Gate
- Event time from – to determines time interval within which entries and exits are searched for
- Plate number

Click on the button at the end of the table row , opens pop-up dialog with details about certain event.



EVENTS

Report **Events** gives list of all events that can happen in the system: parking is full, manual gate opening, vehicle is not on the inductive loop, card is read on the gate, vehicle exit, vehicle entrance, ticket request, ticket read on the gate, plate number read on the gate, ticket with number is not paid, ticket is paid but leaving time is reached, unallowed ticket type, device message, gate printer message, gate controller message, pay station message.

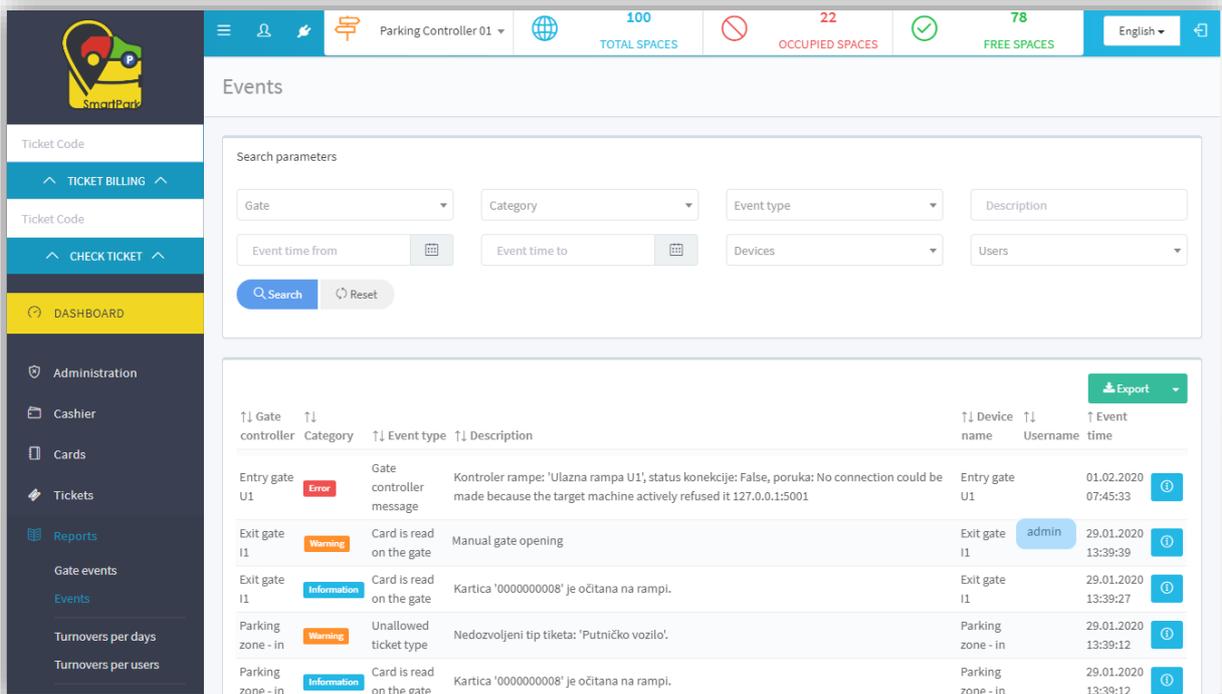
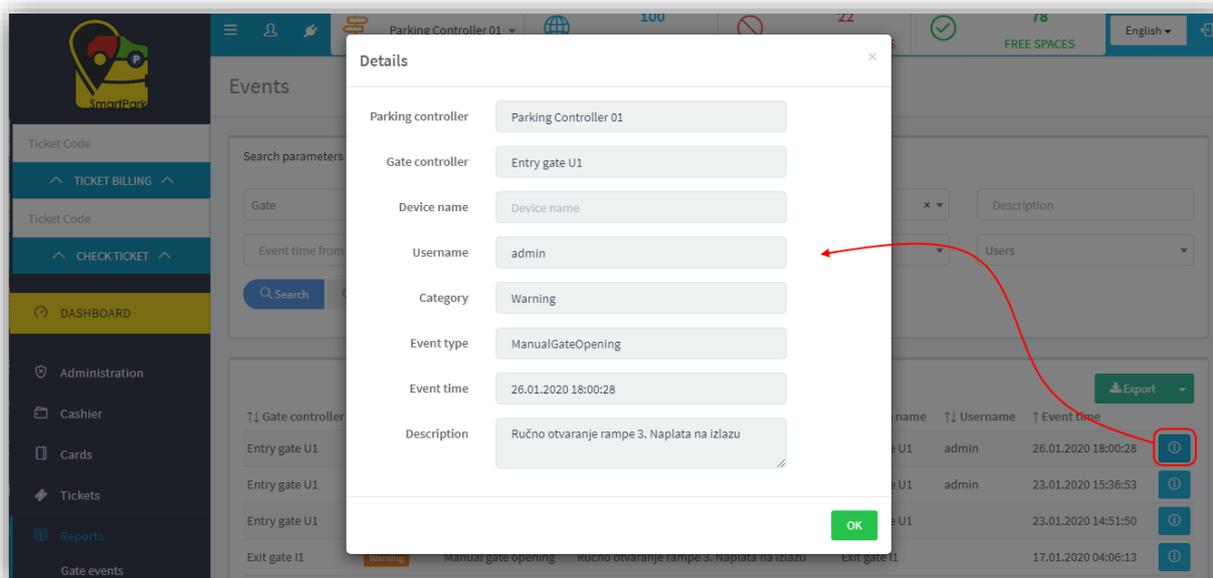


Table for event display has in its first column **Gate controller** name, next one is **Category** of event (Information, Warning, Error). After category there are: Event type, Description, Device name (name of the device which initiated the event – barcode printer on the gate, display of free spaces, receipt printer, display on exit...), username (if event is initiated by operator, it is logged who initiated the event, e.g. manual ramp up and ramp down) and Event time. This table is also sortable by any column with click on column header.

As for previous report (gate events), insight into details about particular event is done by click on info button at the end of each row in the table. Info button click opens pop-up information dialog.



Events can be filtered by:

- Gate
- Event category – information, warnings, errors
- Event type – describes nature of event (ticket issued, ticket read...)
- Description
- Time interval from – to when event occurred
- Device that triggered the event
- Operator

Complete or partial report can be exported to Excel or PDF file.

TURNOVERS PER DAYS

Turnover per day is initially displayed for previous and current day. If insight into some other time period is needed, time interval should be set by choosing values in calendar like controls **Event time from** and **Event time to** in upper panel of the page and then click the **Search** button.

Besides by time period, search can be performed by payment type (cache, card, check).

↑↓ Date	↑↓ Card Type	↑↓ Ticket type	↑↓ In count	↑↓ Out count	↑↓ Paid tickets	↑↓ Income	↑↓ Income cash	↑↓ Income cards	↑↓ Income checks	↑↓ Surplus
16.01.2020	Lost ticket	Car	0	2	0	0.00	0.00	0.00	0.00	0.00
16.01.2020	Barcode ticket	Car	0	5	3	4,200.00	4,100.00	100.00	0.00	0.00
16.01.2020	Barcode ticket	Day	0	1	1	4,000.00	4,000.00	0.00	0.00	0.00
17.01.2020	Postpaid	Car	0	1	1	100.00	100.00	0.00	0.00	0.00
17.01.2020	Lost ticket	Car	0	35	35	14,300.00	14,300.00	1,000.00	0.00	1,000.00
17.01.2020	Barcode ticket	Car	0	14	14	3,600.00	3,300.00	300.00	0.00	0.00
17.01.2020	Template Card Activation		0	1	1	3,000.00	3,000.00	0.00	0.00	0.00
18.01.2020	Template Card Activation		0	2	2	6,000.00	6,000.00	0.00	0.00	0.00
20.01.2020	Lost ticket	Car	1	1	2	1,000.00	500.00	500.00	0.00	0.00
20.01.2020	Barcode ticket	Car	0	3	3	24,000.00	17,000.00	7,000.00	0.00	0.00

Cross sections are made each day at midnight. Report is displayed with item grouping by days, card type and ticket type. For example, for 17.01.2020 one item is displayed for all passenger's vehicles which entered using barcode ticket, separate item is formed for passenger's vehicles which entered on a same day, but using postpaid card, and a separate one is for day cars with barcode.

Also, in the report for observed day, there is item that shows how many template card activations happened during that day.

17.01.2020	Postpaid	Car	0	1	1	4,000.00	4,000.00	0.00	0.00	0.00
17.01.2020	Lost ticket	Car	0	1	1	100.00	100.00	0.00	0.00	0.00
17.01.2020	Barcode ticket	Car	0	35	35	14,300.00	14,300.00	1,000.00	0.00	1,000.00
17.01.2020	Barcode ticket	Day	0	14	14	3,600.00	3,300.00	300.00	0.00	0.00
17.01.2020	Template Card Activation		0	1	1	3,000.00	3,000.00	0.00	0.00	0.00

Report table per every day, ticket type and card type displays following columns:

- In count – how many customers entered parking area using card and ticket of listed type
- Out count – how many customers left parking area using card and ticket of listed type
- Paid tickets – how many payments have been made for listed types of card and ticket
- Income – amount of expected income based on number of payments
- Income cash – amount paid by cash
- Income cards – amount paid by cards
- Income checks – amount paid by checks
- Surplus – if expected income and real amount are not equal, this column shows the difference

Report can be exported into Excel or PDF file by click on **Export** button.

TURNOVERS PER USERS

Turnovers per users resembles the previous with difference in grouping method. In this case, grouping is not by days, but by user (operator), card type and ticket type for chosen time period.

First, time period for report should be set. Within set period, summary is made for each user showing number of handled customers with specified card type and ticket type. In given time period, displayed table can additionally be filtered by user (operator) and payment type. In dropdown list for each user in the system, username is displayed followed by authorization level approved to user.

Username	Card Type	Ticket type	Out count	Paid tickets	Income	Income cash	Income cards	Income checks	Surplus
admin	Postpaid	Car	1	1	100.00	100.00	0.00	0.00	0.00
admin	Lost ticket	Car	53	92	41,550.00	39,550.00	3,400.00	3,500.00	4,900.00
admin	Barcode ticket	Car	34	34	107,300.00	97,188.89	7,400.00	2,711.11	0.00
admin	Barcode ticket	Day	4	4	200,000.00	200,000.00	0.00	0.00	0.00
admin	Template Card Activation		18	18	25,000.00	25,000.00	0.00	0.00	0.00
kasa	Lost ticket	Car	8	50	25,000.00	24,420.00	1,400.00	1,000.00	1,820.00

Report per operator, beside username, card type and ticket type, has following columns:

- Out count – number of handled parking area leaving
- Paid tickets – number of made payment
- Income – amount of expected income based on number of payments
- Income cash – amount paid by cash
- Income card – amount paid by cards
- Income check – amount paid by checks
- Surplus – if expected income and real amount are not equal, this column shows the difference

Exported Excel or PDF report look like on the picture below:

Turnovers per users									
Range: Date From: 14.01.2020 00:00:00, Date To: 08.02.2020 23:59:59, Payment type:									
<i>Username: admin</i>									
Card Type	Ticket type	Out count	Paid tickets	Income	Income cash	Income cards	Income checks	Surplus	
Postpaid	Car	1	1	100.00	100.00	0.00	0.00	0.00	
Lost ticket	Car	53	92	41,550.00	39,550.00	3,400.00	3,500.00	4900.00	
Barcode ticket	Car	34	34	107,300.00	97,188.89	7,400.00	2,711.11	0.00	
Barcode ticket	Day	4	4	200,000.00	200,000.00	0.00	0.00	0.00	
Template Card Activation		18	18	25,000.00	25,000.00	0.00	0.00	0.00	
Total:				373,950.00	361,838.89	10,800.00	6,211.11	4,900.00	
<i>Username: kasa</i>									
Card Type	Ticket type	Out count	Paid tickets	Income	Income cash	Income cards	Income checks	Surplus	
Lost ticket	Car	8	50	25,000.00	24,420.00	1,400.00	1,000.00	1820.00	
Barcode ticket	Car	1	1	100.00	100.00	0.00	0.00	0.00	

PARKING TURNOVER ANALYTICS

Transaction description	Date	Card Type	Ticket type	Price	Cash	Cards	Checks	Surplus
Parking payment (981223151340) - Vehicle is in the parking area	23.12.2019 15:14:05	Lost ticket	Pacient	30.00	30.00	0.00	0.00	0.00
Parking payment (0000000008) - Vehicle is in the parking area	23.12.2019 15:14:36	Template	Car	3,900.00	3,900.00	0.00	0.00	0.00
Parking payment (981223150050) - Vehicle is in the parking area	23.12.2019 15:39:39	Lost ticket	Car	30.00	0.00	0.00	0.00	-30.00
Parking payment (111221132913) - Vehicle is in the parking area	24.12.2019 15:19:17	Barcode ticket	Car	7,400.00	7,400.00	0.00	0.00	0.00
Parking payment (111221132913) - Vehicle is in the parking area	24.12.2019 15:22:05	Barcode ticket	Car	100.00	100.00	0.00	0.00	0.00

Report named Parking turnover analytics gives detail overview of all singular payments, as well as information if the vehicle is still in the parking area or not. Columns for this overview are:

- Transaction description – ticket number or card number that the payment is based on and statement which tells if vehicle is in the parking area or vehicle left the parking area
- Date – date and time of payment
- Card Type – determines based on what card type payment is made – prepaid, postpaid, template, barcode ticket, lost ticket, template card activation
- Ticket type – passenger’s vehicle, motorcycle, office car, day card...
- Price – total amount for listed parking service
- Cash – part of total amount, paid in cash
- Cards – part of total amount, paid by cards
- Checks – part of total amount, paid in checks
- Surplus – difference between expected income and real amount

Filtering can be done by time interval (from-to) the turnover is made within, card type and payment method.

PARKING TURNOVER SYNTHETICS

Next report named Parking turnover synthetics contains same data as previous one, but in a form of summary display. Data are grouped by card type, ticket type and by the status of presence in the parking area (i.e. “vehicle is in the parking area” or “vehicle is not in the parking area”). This means that following statistics are presented as separate items:

- Expenses charged for passenger’s vehicles that entered parking by barcode tickets and still ARE in the parking area
- Expenses charged for passenger’s vehicles that entered parking by barcode tickets and ARE NOT in the parking area
- Expenses charged for passenger’s vehicles that entered parking with prepaid card and still ARE in the parking area
- Expenses charged for passenger’s vehicles that entered parking with prepaid card and left parking area

○ ...

SmartPark

Parking Controller 01

100 TOTAL SPACES

22 OCCUPIED SPACES

78 FREE SPACES

English

Parking turnover synthetics

Search parameters

01.12.2019 00:00:00 24.01.2020 23:59:59 Card Type Payment type

Search Reset

Export

Transaction description	Card Type	Ticket type	Number	Price	Cash	Cards	Checks	Surplus
Parking payment (Vehicle is in the parking area)	Template	Car	1	3,900.00	3,900.00	0.00	0.00	0.00
Parking payment (Vehicle is not in the parking area)	Postpaid	Car	1	100.00	100.00	0.00	0.00	0.00
Parking payment (Vehicle is in the parking area)	Lost ticket	Car	248	84,880.00	74,190.00	9,020.00	5,010.00	3,340.00
Parking payment (Vehicle is in the parking area)	Lost ticket	Patient	3	30.00	30.00	0.00	0.00	0.00
Parking payment (Vehicle is in the parking area)	Barcode ticket	Car	40	330,200.00	314,740.00	15,360.00	100.00	0.00
Parking payment (Vehicle is not in the parking area)	Barcode ticket	Car	7	800.00	500.00	300.00	0.00	0.00

Table columns are same as it was in the previous case, with one difference. Instead of **Date** column with payment date and time for each and every payment separately, in this case there is **Number** column that holds the total number of vehicles which passed through parking gates under given conditions.

Search criteria are same as for analytics: date and time interval, card type and payment method.

DISCOUNT HISTORY REPORT

As previously mentioned, customer can get [discount for parking services](#) based on purchase made in registered stores. Discount can be granted in the form of **value vouchers** or in the form of **discount minutes**. When voucher is used, service price is decreased by value of the voucher. On the other hand, discount minutes are approved to customer who has a receipt from certain stores, and parking time is decreased by [specified time](#).

SmartPark

Parking Controller 01

100 TOTAL SPACES

22 OCCUPIED SPACES

78 FREE SPACES

English

Discount history report

Search parameters

01.01.2020 00:00:00 08.02.2020 23:59:59 Store

Search Reset

Export

Invoice Number	Discount Time	Ticket Code	Discount	Description	Discount Minutes	Store Name
999888	16.01.2020 12:20:27	111226225135	0.00		120.00	Delta
123456789	20.01.2020 15:03:31	110117040131	0.00		120.00	Roda
123456789	20.01.2020 15:05:25	980120135140	0.00		120.00	Roda
123456789	20.01.2020 15:53:07	110117151849	0.00		120.00	Usce
789654123	20.01.2020 15:57:35	110117151904	0.00		60.00	Forum
654654	28.01.2020 09:53:50	980128083347	0.00		120.00	Roda
123456789	06.02.2020 18:15:25	110117040131	0.00		120.00	Roda

Table holds: invoice number, discount time (time when discount was approved), ticket number, discount (value of voucher), description, discount minutes and store name. If discount is expressed as currency value, approved amount is registered in the **Discount** column. If discount is in the form of discount minutes, in the **Discount** column zero value is shown, but the column **Discount minutes** shows number which is used to decrease total parking time before calculation of final price.

Filtering the table is possible by date interval (from – to) and store which granted the discount.

TURNOVER VEHICLES PER PLATE NUMBER

This report refers to vehicles with recorded registration number. For each vehicle with recorded plate number some information are logged and displayed in this table: entry or exit time, gate controller ID, gate controller name and plate number.

Search can be made by time interval (from – to) and gate controller name. Report can be downloaded in Excel or PDF format.

Time	Gate controller id	Gate controller name	Plate Number
31.05.2019 13:15:29	11	Entry gate U1	CŠ 781CŠ
31.05.2019 13:21:25	11	Entry gate U1	UH042UH
31.05.2019 13:22:44	11	Entry gate U1	ČR 992ČR
31.05.2019 13:24:14	11	Entry gate U1	OJ 141OJ

GATE CONTROLLER VEHICLE COUNT

Gate controller vehicle count report does not show separate and singular transfers through gates, but for each gate in parking controller total number of transfers, within specified time interval, is shown. Default time interval is starting from midnight in a previous day, up to the moment of generating report. Time interval for analysis can be customized, as well as parking controller the report refers to.

In the table, there are gate controller ID, gate controller name, total number of vehicles that passed through gate and number of vehicles with read license plate. Export to Excel or PDF format is available, same as for other reports.

Gate controller id	Gate controller name	Number of vehicles	Number of vehicles with read license plate
29	Ulazna rampa desno (kod tri ulaza)	3076	3076
28	Ulazna rampa levo (kod tri ulaza)	2696	2696
27	Izdvojen ulaz (kod tri ulaza)	3370	3370
26	Izlaz desno (rucna naplata)	3453	3453
25	Izlaz levo (rucna naplata)	2373	2373

VISITORS TICKET SUMMARY

Ticket number	Entry time	Entry gate controller name	Exit time	Exit gate controller name	Card Type	Ticket type	Plate Number	Price	Cash	Cards	Checks	Surplus	Is paid	Parking time
111227153721	27.12.2019 15:37:21	Entry gate U1	15.01.2020 11:49:05		Barcode ticket	Car		0.00	0.00	0.00	0.00	0.00	☑	52:11:44
111227153701	27.12.2019 15:37:01	Entry gate U1			Barcode ticket	Car		0.00	0.00	0.00	0.00	0.00	☑	
111227153638	27.12.2019 15:36:38	Entry gate U1			Barcode ticket	Car		0.00	0.00	0.00	0.00	0.00	☑	

In this report, for each read card or ticket displayed data are:

- Ticket number
- Entry time – date and time when vehicle entered parking by using ticket/card with displayed number
- Entry gate – gate where ticket was issued or card read on entrance (in a case of lost ticket, this column is empty)
- Exit time – date and time when vehicle left parking by using ticket/card with displayed number
- Exit gate – gate where ticket or card was read on exit
- Card type – e.g. barcode card, postpaid, prepaid, lost ticket...
- Ticket type – e.g. passenger's vehicle, motorcycle...
- Plate number – if recorder, plate number is visible in this column
- Price – parking fee (for lost ticket this is some fixed amount determined in the system, for other tickets' types, price is calculated when customer pays for service)
- Cash – amount paid in cash
- Cards – amount paid by paid cards
- Check – amount paid by check

- Surplus – difference between price and paid amount
- Is paid – checkmark which shows whether price is paid or not
- Parking time – if vehicle left the parking, this column shows for how long it was on the parking

In order to display this report, user has to set time interval (from-to) for which an overview is to be made. By default, that is current and previous day, but can be set to any interval using calendar like controls in the search panel.

Report can be filtered by ticket/card number, plate number, entry and/or exit gate and payment method.

Same as for other reports, export to Excel or PDF format is available.

PARKING TOLLGATE TRAFFIC SUMMERY REPORT

The screenshot displays the 'Parking tollgate traffic summary report' interface. At the top, there are status indicators: 100 TOTAL SPACES, 22 OCCUPIED SPACES, and 78 FREE SPACES. The search parameters section includes a date range from 01.09.2019 00:00:00 to 08.02.2020 23:59:59 and a dropdown for 'Gate'. Below the search panel is a table with the following data:

Gate controller id	Gate controller name	Card Type	In count	Out count	Total
11	Entry gate U1	Template	8	0	8
11	Entry gate U1	Postpaid	1	0	1
11	Entry gate U1	Barcode ticket	213	0	213
21	Exit gate I1	Template	0	5	5
21	Exit gate I1	Postpaid	0	1	1
21	Exit gate I1	Barcode ticket	0	38	38
27	Parking zone - in	Template	0	3	3

This report also gives summery report for traffic per gate, but with more details than it is presented by “[Gate controller vehicle count report](#)”.

For this report to be formed, it is expected to determine time frame for summing the recorded data. If gate is not chosen, report is formed for all gates (both entry and exit gates) on the parking controller. Otherwise, only traffic for chosen gate is displayed.

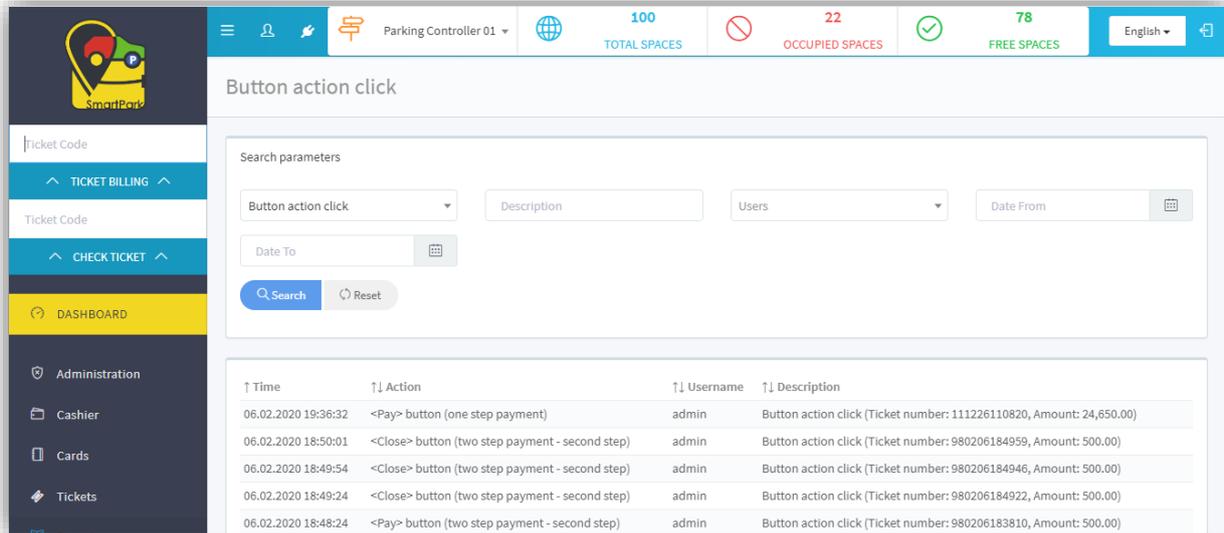
Grouping of data is done by gate and card type, i.e. for each gate there are several items in the report, one for every card type used on that gate. Each item shows number of entries, number of leavings and total number of vehicles that passed through gate in a given time interval. For example: one item shows that on entry gate U1, X vehicles entered the parking area in the designated time period by using barcode ticket; separate item shows that on the same gate in the same period, Y vehicles entered the parking by using postpaid card...

PAYMENT LOG

Report called “Payment log” gives overview of all actions in any application dialog used for payment. Every click on button **Pay** is logged, as well as every click on button “**Close**” in the dialogs for ticket payment opened whether by commands on [Cashier](#) menu, or by [Billing ticket button](#) on the application side menu (above Dashboard button) or by click on ticket number in the list of [active tickets](#) (Tickets menu).

Logged values are:

- Time – date and time action occurred
- Action – whether click on <Pay> or click on <Cancel> button was performed,
- Username – identifies user who performed the action,
- Description – contains card number and price per card or ticket for which the payment dialog had been opened whether the payment was performed or canceled.

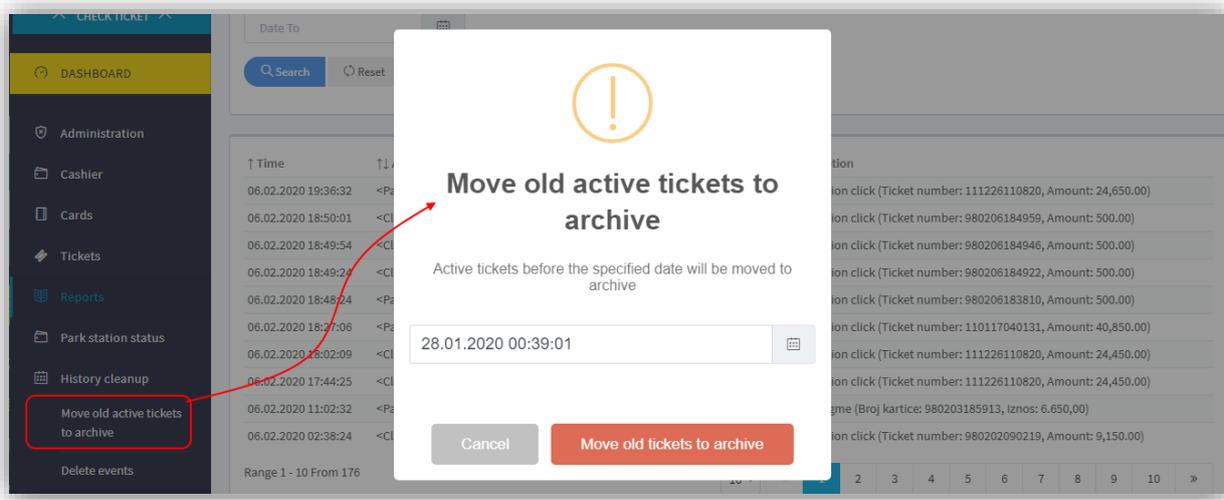


For any of displayed columns in the table, there is appropriate field in the search panel which enables payment logs filtering by one or more set conditions.

(Note: system logs payment in two steps when lost ticket is charged from the Cashiers menu. As first step, dialog “Charge lost ticket” is opened. In the next step, after click on Pay button dialog “Pay lost ticket” appears for specification of payment method. In all other cases of payment, payment in one step is logged)

History cleanup

ARCHIVE ACTION



In the case when automatic ticket transfer from active to archived tickets was not performed, accumulation of ticket in active ticket group can occur (for example, no vehicle left parking area using ticket with certain number and therefore ticket stayed in the group of active ones). This is a reason why, from time to time, it is needed to change status of some tickets from active to archived.

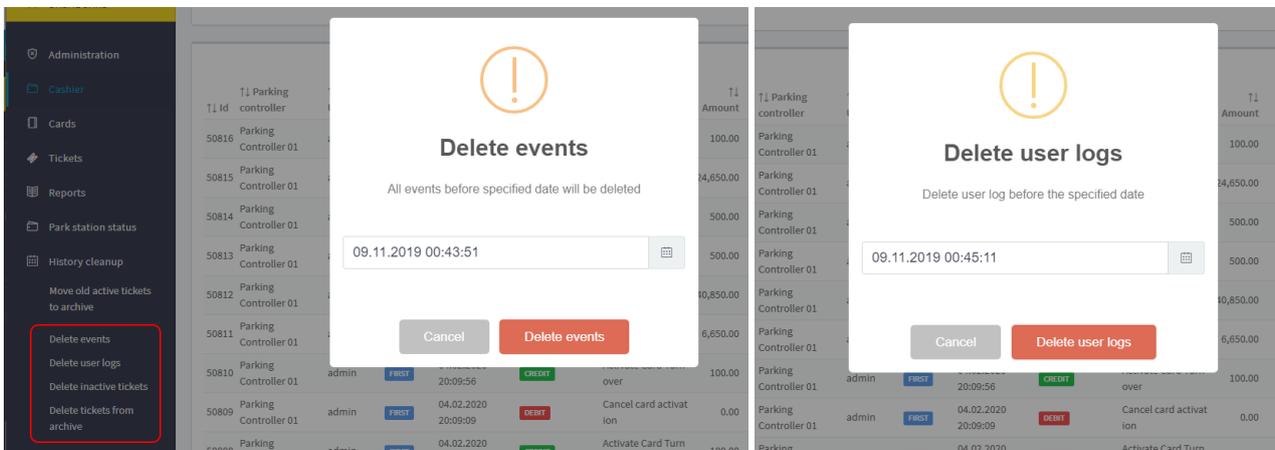
By clicking **Move active tickets to archive** command on History cleanup menu, pop-up dialog appears where operator can set limit date for archiving. All tickets created before set date, if still active, will be transferred to archived group. Archiving is triggered by click on button **“Move old tickets to archive”**, while **Cancel** button is used to quit the command without any changes in the system.

DELETE ACTIONS

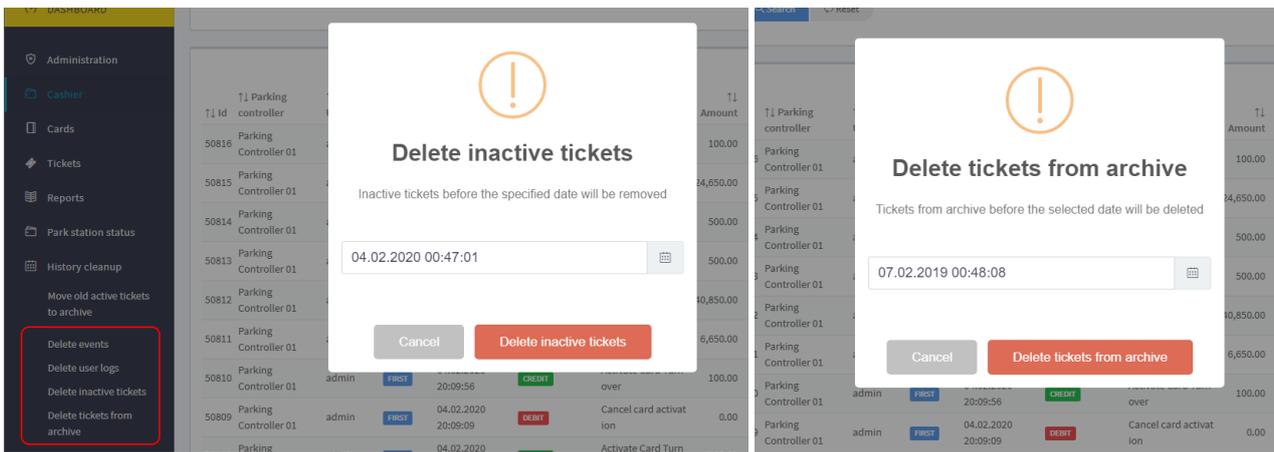
Over time, records are accumulated in the system, so it is recommended or even necessary to disburden database from record that are not needed any more. In the situation like this, one of the offered commands on the History cleanup menu can be performed:

- **Delete events**
- **Delete user logs**
- **Delete inactive tickets**
- **Delete tickets from archive**

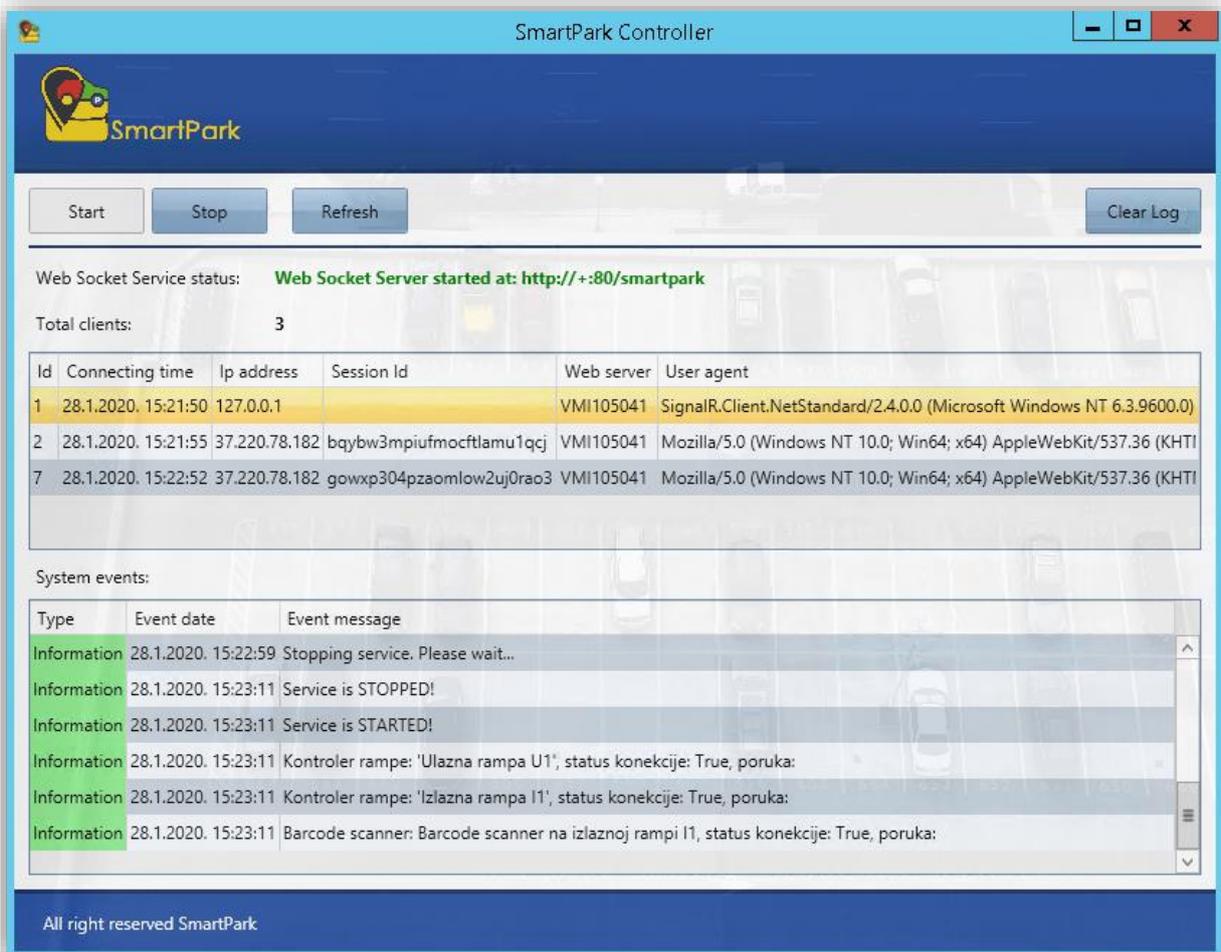
Same as for archiving, click on any of the delete commands throws warning about the triggered action with request to set limit date. All events, user logs, inactive or archived tickets created before set date, will be permanently deleted from the database.



Delete is confirmed by click on button **“Delete...”**, while **Cancel** quits initiated action.



Parking controller



Parking controller is separate web application used to manage parking controller resources and devices. If there are more than one, for each independent parking zone (or parking controller) in the parking space, one instance of this application is started. Start button establishes the connection with devices associated to parking controller. Stop button stops all services. Refresh button re-establishes connection with devices and refreshes displays. **System events** table (in the bottom part of the application window) displays details for all events occurred since last log clear – date when event occurred and event message.

For every user (administrator, cashier or supervisor) who is logged to application one item in the **Total clients** table is logged. This log shows time when user approached the application, IP address the approach is made from, along with session id, web server and user agent.

Park station status

This command is call for separate web application (Smart pay) used to handle paying terminals on the parking controller.

