0.0.1 Vehicle Manager -; Mantainance Manager

Retrive car's components status	
Parameter(s)	Car identifier
Pre-condition(s)	Post-condition(s)
The car identifier does not match any vehicle registered in the sys-	Returns a specific error.
tem	
The car identifier matches one	Returns in an encoded form
vehicle registered in the system	the status informations regard-
	ing the vehicle's components.

Retrive car's status	
Parameters	Car identifier
Pre-condition(s)	Post-condition(s)
The car identifier does not match	Returns a specific error.
any vehicle registered in the sys-	
tem	
The car identifier matches one	Returns in an encoded form
vehicle registered in the system	the status informations regard-
	ing the vehicle.

Perform diagnostic on car's components	
Parameters	Car identifier
Pre-condition(s)	Post-condition(s)
The car identifier does not match any vehicle registered in the sys- tem	Returns a specific error.
The car identifier matches one vehicle registered in the system	Returns in an encoded form the updated status informations regarding the vehicle's compo- nents.

Unlock the vehicle	
Parameter(s)	Car identificator
Pre-condition(s)	Post-condition(s)
The car identificator is associ-	Returns a specific error.
ated to no vehicle registered in	
the system.	
The vehicle matched by the car	Returns a specific error.
identificator provided is already	
unlocked.	

The car identificator is associ-	Returns a positive notification.
ated to one vehicle registered in	The vehicle is unlocked.
the system. The vehicle matched	
is locked.	

Lock a vehicle	
Parameter(s)	Car indentificator
Pre-condition(s)	Post-condition(s)
The car identificator is not asso-	Returns a specific error.
ciated to any vehicle registered in	
the system.	
The vehicle matched by the car	Returns a specific error.
identificator provided is already	
locked.	
The vehicle matched by the car	Returns a specific error.
identificator has the engine turn	
on.	
The vehicle matched by the car	Returns a specific error.
identificator has the vehicle's	
keys not inserted in the vehicle's	
panel.	
The vehicle matched by the car	Returns a specific error.
identificator has at least one pas-	
senger inside.	
The vehicle matched by the car	Returns a specific error.
identificator has at least one door	
open.	
The vehicle matched by the car	Returns a specific error.
identificator is not inside a park-	
ing area.	D
The car identificator matches	Returns a positive notification.
one vehicle register inside the	The vehicle is locked.
system. The vehicle matched is	
unlocked. The vehicle matched	
has the engine turned off. The vehicle matched has the vehi-	
cle's keys inserted in the vehicle's	
panel. The vehicle matched has	
no passenger inside. The vehicle	
matched has no door open. The	
vehicle matched is inside a park-	
ing area.	
1115 01100.	

0.0.2 Account Manager -; Authentication Manager

Delete an user account	
Parameter(s)	Account identificator
Pre-condition(s)	Post-condition(s)
No user account is matched by	Returns a specific error. Noth-
the account identificator.	ing is deleted from the system's
	storage.
The account identificator does	Returns a specific error. Noth-
not respect the designed account	ing is deleted from the system's
identificator patter	storage.
The account identificator	Returns a positive notification.
matches one user account stored	The account matched and all re-
in the system's storage.	lated informations are removed
	from the system's storage.

Edit user informations	
Parameter(s)	Account identificator, informa-
	tion field indentifier(s), updated
	information(s)
Pre-condition(s)	Post-condition(s)
No user account is matched by	Returns a specific error. Noth-
the account identificator.	ing is deleted from the system's
	storage.
The account identificator does	Returns a specific error. Noth-
not respect the design account	ing is deleted from the system's
identificator patter	storage.
No information field recorded in	Return a speficic error. No mod-
the system's storage is matched	ification is performed to the in-
by the information field identi-	formations stored in the system's
fier(s).	storage.
The information field identifi-	Return a specific error. No mod-
cators do not respect the de-	ification is performed to the in-
signed information field identifi-	formations stored in the system's
cator pattern.	storage.
The updated informations do not	No modification is performed to
respect the designed input pat-	the informations stored in the
tern.	system's storage.

The account identificator	Returns a positive notification.
matches one user account stored	The updates are performed cor-
in the system's storage. The	rectly.
information field identificators	
respect the designed informa-	
tion field identificator pattern.	
All the information fields are	
matched by the information field	
identifiers. All the updated in-	
formations respect the designed	
input pattern.	

Verify an user account existence	
Parameter(s)	Account identificator
Pre-condition(s)	Post-condition(s)
No user account is matched by	Returns a specific error
the account identificator.	
The account identificator does	Returns a specific error
not respect the designed account	
identificator patter	
The account identificator	Returns a positive notification
matches one user account stored	
in the system's storage.	

Performe the access to	the system's services
Parameter(s)	Identification credentials, au-
	thentication credentials
Pre-condition(s)	Post-condition(s)
No user account is matched by	Returns a specific error. Sys-
the indentification credentials.	tem's services usage and access
	is not granted. No other action
	is performed.
The authentication credentials	Returns a specific error. Sys-
are not verified	tem's services usage and access
	is not granted. No other action
	is performed.
The identification credentials	Returns a specific error. Sys-
does not respect the designed	tem's services access and usage
input patter.	is not granted. No other action
	is performed.

The indentification credentials match one user account stored in the system's storage. The authentication credentials are verified.

Returns a positive notification. The access and usage to the system's services is granted.

Register an	user account
Parameter(s)	Identification credentials, driv-
	ing license informations, pay-
	ment informations, user informa-
	tions
Pre-condition(s)	Post-condition(s)
The indentification credentials	Returns a specific error. No in-
do not respect the designed in-	formation is stored in the sys-
put pattern.	tem's storage. No other action
	is performed.
The user informations do not re-	Returns a specific error. No in-
spect the designed input patter.	formation is stored in the sys-
	tem's storage. No other action
	is performed.
One user account is matched by	Returns a specific error. No in-
the indentification credentials.	formation is stored in the sys-
	tem's storage. No other action
	is performed.
The driving license informations	Returns a specific error. No in-
are not valid	formation is stored in the sys-
	tem's storage. No other action
	is performed.
The driving license informations	Returns a specific error. No in-
are already stored in the system's	formation is stored in the sys-
storage.	tem's storage. No other action
	is performed.
The payment informations are	Returns a specific error. No in-
not valid.	formation is stored in the sys-
	tem's storage. No other action
	is performed.

The indentification credentials and the user informations respect the designed input pattern. No account is matched by the identification credentials. The driving license informations are not stored in the system's storage. The driving license informations are valid. The payment informations are valid.

Returns a positive notification. All the informations are stored in the system's storage.

0.0.3 Reservation Manage -; Authentication Manager

Create a reservation	
Parameter(s)	Account indentificator, car iden-
	tificator
Pre-condition(s)	Post-condition(s)
The account identificator is not	Returns a specific error. Nothing
associated to any registered ac-	is recorded in the system.
count in the system	
The car identificator is not asso-	Returns a specific error. Nothing
ciated to any registered vehicle in	is recorded in the system.
the system	
The vehicle associated to the	Returns a specific error. Nothing
car identificator provided is cur-	is recorded in the system.
rently unavailable.	
The account identificator is asso-	Returns a positive notification.
ciated to one registered account.	The reservation is created in
The car identificator is associ-	the system, associating it to
ated to one registered vehicle in	the account identificator and the
the system. The vehicle associ-	car indentificator provided, along
ated to the car identificator is	wih the reservation details. The
currently available.	timer associated to the reserva-
	tion is associated.

Delete current reservation	
Parameter(s)	Account indentificator
Pre-condition(s)	Post-condition(s)
The account identificator is not	Returns a specific error. Nothing
associated to any registered ac-	is recorded in the system.
count in the system	
The account identificator	Returns a specific error. Nothing
matches an existing account	is removed from the system.
with no current reservation	
associated	
The account identificator is asso-	Returns a positive notification.
ciated to one registered account.	The reservation is created in
	the system, associating it to
	the account identificator and the
	car indentificator provided, along
	with reservation details. Exist-
	ing timers are removed.

Update current reservation

Parameter(s)	Account indentificator, event
Pre-condition(s)	Post-condition(s)
The account identificator is not	Returns a specific error. Nothing
associated to any registered ac-	is recorded in the system.
count in the system	
The account identificator	Returns a specific error. Nothing
matches an existing account	is recorded in the system.
with no current reservation	
associated	
The event is not correctly en-	Returns a specific error. Nothing
coded	is recorded in the system.
The account identificator is asso-	Returns a positive notification.
ciated to one registered account.	The reservation associated to the
The event is correctly encoded	matched account is updated with
	the informations containded in
	the encoded event.

Retrieve current reservation details	
Parameter(s)	Account identificator
Pre-condition(s)	Post-condition(s)
The account identificator is not	Returns a specific error.
associated to any registered ac-	
count in the system	
The account identificator	Returns a specific error.
matches an existing account	
with no current reservation	
associated	
The account identificator is asso-	Returns a positive notification.
ciated to one registered account.	Returns the reservation details
The registered account has a cur-	correctly encoded.
rent reservation associated.	

Retrieve specific-reservation details	
Parameter(s)	Account identificator, filtering
	option, ordering option
Pre-condition(s)	Post-condition(s)
The account identificator is not	Returns a specific error.
associated to any registered ac-	
count in the system	
The filtering option provided is	Returns a specific error.
not accepted	

The account identificator	Returns a specific error.
matches an existing account	
with no reservations associated	
The list of reservations retrieved	Returns a specific error.
using the filter option is empty.	
The ordering option provided is	Returns a specific error.
not accepted	
The account identificator is as-	Returns a positive notification.
sociated to one registered ac-	Returns the details of all the
count. The registered account	reservations retrieved applying
has at least one reservation as-	the filtering option in the order
sociated. The filtering option is	specified by the ordering option.
accepted. The ordering option is	The list is returned in a correctly
accepted. The list of reservations	encoded format.
retrieved using the filter option is	
not empty.	

0.0.4 Vehicle Manager -; Authentication Manager

Unlock the vehicle	
Parameter(s)	Car identificator
Pre-condition(s)	Post-condition(s)
The car identificator is associ-	Returns a specific error.
ated to any vehicle registered in	
the system.	
The vehicle matched by the car	Returns a specific error.
identificator provided is already	
unlocked.	
The car identificator is associ-	Returns a positive notification.
ated to one vehicle registered in	The vehicle is unlocked.
the system. The vehicle matched	
is locked.	

Lock a vehicle	
Parameter(s)	Car indentificator
Pre-condition(s)	Post-condition(s)
The car identificator is not asso-	Returns a specific error.
ciated to any vehicle registered in	
the system.	
The vehicle matched by the car	Returns a specific error.
identificator provided is already	
locked.	

The vehicle matched by the car	Returns a specific error.
identificator has the engine turn	_
on.	
The vehicle matched by the car	Returns a specific error.
identificator has the vehicle's	
keys not inserted in the vehicle's	
panel.	
The vehicle matched by the car	Returns a specific error.
identificator has at least one pas-	
senger inside.	
The vehicle matched by the car	Returns a specific error.
identificator has at least one door	
open.	
The vehicle matched by the car	Returns a specific error.
identificator is not inside a park-	
ing area.	
The car identificator matches	Returns a positive notification.
one vehicle register inside the	The vehicle is locked.
system. The vehicle matched is	
unlocked. The vehicle matched	
has the engine turned off. The	
vehicle matched has the vehi-	
cle's keys inserted in the vehicle's	
panel. The vehicle matched has	
no passenger inside. The vehicle	
matched has no door open. The	
vehicle matched is inside a park-	
ing area.	

Add new vehicle	
Parameter(s)	Encoded vehicle plate, encoded
	vehicle frame id, encoded vehicle
	informations
Pre-condition(s)	Post-condition(s)
The informations in input are	Returns a specific error. Nothing
not encoded in a correct way.	is recored in the system's stor-
	age.
The vehicle plate provided	Returns a specific error. Nothing
matches the plate of an already	is recorded in the system's stor-
registered vehicle in the system.	age.
The frame id provided matches	Returns a specific error. Nothing
the frame id of an already regis-	is recorded in the system's stor-
tered vehicle in the system.	age.

The informations in input are encoded correctly. The vehicle plate provided does not match the plate of any vehicle registered in the system. The frame id provided does not match the frame id of any vehicle registered in the system.

Returns a positive notification. All the informations provided as input are correctly recorded in the system. An unique identificator is associated to the registered vehicle.

Remove a vehicle	
Parameter(s)	Car identificator
Pre-condition(s)	Post-condition(s)
The car identificator provided is	Returns a specific error. Nothing
associated to any vehicle regis-	is removed from the system.
tered in the system.	
The car identificator matches a	Returns a specific error. Nothing
vehicle currently used.	is removed from the system.
The car identificator matches a	Returns a positive notification.
vehicle not used.	The informations regarding the
	vehicle matched by the identifi-
	cator provided are correctly re-
	moved from the system.

Update vehicle's informations	
Parameter(s)	Car identificator, encoded new
	informations
Pre-condition(s)	Post-condition(s)
The informations in input are	Returns a specific error. Nothing
not encoded in a correct way.	is recored in the system's stor-
	age.
The car identificator provided is	Returns a specific error. Nothing
associated to any vehicle regis-	is removed from the system.
tered in the system.	
The informations in input are en-	Returns a positive notification.
coded in a correct way. The	The informations regarding the
car identificator matches a vehi-	vehicle matched by the identifi-
cle registered in the system.	cator provided are correctly up-
	dated with the one provided in
	input.

0.0.5 Area Manager -; Authentication Manager

Insert a new area	
Parameter(s)	Encoded area details
Pre-condition(s)	Post-condition(s)
The encoded area details are not	Returns a specific error. Nothing
correctly encoded.	is recorded in the system.
The encoded area details are cor-	Returns a positive notifica-
recly encoded.	tion. The details are correctly
	recorded in the system.

Delete an area	
Parameter(s)	Area identificator
Pre-condition(s)	Post-condition(s)
The area identificator does not	Returns a specific error. Nothing
match any area registered in the	is removed from the system.
system.	
The area identificator matches	Returns a positive notification.
one registered area in the system.	The details are correctly re-
	moved from the system.

Update area details	
Parameter(s)	Area identificator, encoded area
	details
Pre-condition(s)	Post-condition(s)
The area identificator does not	Returns a specific error. Nothing
match any area registered in the	is removed from the system.
system.	
The encoded area details are not	Returns a specific error. Nothing
correctly encoded.	is recorded in the system.
The area identificator matches	Returns a positive notifica-
one registered area in the system.	tion. The details are correctly
The encoded area details are cor-	recorded in the system.
recly encoded.	

Retrieve area details	
Parameter(s)	Area identificator
Pre-condition(s)	Post-condition(s)
The area identificator does not	Returns a specific error.
match any area registered in the	
system.	

The area identificator matches	Returns a positive notification.
one registered area in the system.	The matched-area details are re-
	turned in a correctly encoded for-
	mat.

0.0.6 Policies and Fares Manager -; Authentication Manager

Insert a rule	
Parameter(s)	Encoded rule
Pre-condition(s)	Post-condition(s)
The rule is not encoded correctly.	Returns a specific error. Nothing
	is stored in the system.
The rule is encoded correctly.	Returns a positive notification.
	The encoded rule is inserted in
	the system.

Update a rule	
Parameter(s)	Rule indentificator, encoded rule
Pre-condition(s)	Post-condition(s)
The rule identificator does not	Returns a specific error. Nothing
respect the designed input pat-	is changed in the system.
ter.	
No rule is matched by the rule	Returns a specific error. Nothing
identificator.	is changed in the system.
The rule is not encoded correctly.	Returns a specific error. Nothing
	is stored in the system.
A rule is matched by the rule	Returns a positive notification.
identificator. The rule is encoded	The rule matched is correctly up-
correctly.	dated with the encoded rule

Delete rule	
Parameter(s)	Rule identificator.
Pre-condition(s)	Post-condition(s)
The rule identificator does not	Returns a specific error. Nothing
respect the designed input pat-	is changed in the system.
ter.	
No rule is matched by the rule	Returns a specific error. Nothing
identificator.	is changed in the system.
A rule is matched by the rule	Returns a positive notification.
identificator.	The rule matched by the rule
	identificator is delete correctly
	from the system.

Retrieve rule	
Parameter(s)	Rule identificator.
Pre-condition(s)	Post-condition(s)
The rule identificator does not	Returns a specific error. Nothing
respect the designed input pat-	is changed in the system.
ter.	
No rule is matched by the rule	Returns a specific error. Nothing
identificator.	is changed in the system.
A rule is matched by the rule	Returns a positive notification.
identificator.	The encoded rule mapped by the
	rule identificator is returned.

$\textbf{0.0.7} \quad \textbf{Vehicle Manager} \rightarrow \textbf{Mantainance Manager}$

Assign mant	ainance task
Parameter(s)	Car identifier, employee identi-
	fier, encoded scheduling time, en-
	coded task informations.
Pre-condition(s)	Post-condition(s)
The input provided is not en-	Returns a specific error.
coded correctly.	
The car identifier does not match	Returns a specific error.
any vehicle registered in the sys-	
tem	
The car identifier matches one	Returns a specific error.
vehicle already scheduled for	
mantainance.	
The employee identifier does not	Returns a specific error.
match any registered employee in	
the system.	
The scheduling time provided	Returns a specific error.
conflicts with the already defined	
scheduling of the employee.	
The input provided is correctly	Returns a positive notification.
encoded. The car identifier	The mantainance task is cre-
matches a vehicle not yet sched-	ated, recording the scheduling
uled for mantainance. The em-	time and the task informations,
ployee identifier matches one reg-	associating it to the employee
istered employee.	specified. A unique mantainance
	task identifier is assigned to the
	mantainance task.

Remove mantainance task

Parameter(s)	Mantainance task identifier
Pre-condition(s)	Post-condition(s)
The mantainance task identi-	Returns a specific error.
fier does not match any task	
recorded in the system	
The mantainance task identifier	Returns a positive notification.
matches one task.	All the informations regarding
	the task are correctly removed
	from the system.

Update man	tainance task
Parameter(s)	Mantainance task identifier, car
	identifier, employee identifier,
	encoded scheduling time, en-
	coded task informations.
Pre-condition(s)	Post-condition(s)
The encoded input provided is	Returns a specific error.
not encoded correctly.	
The car identifier does not match	Returns a specific error.
any vehicle registered in the sys-	
tem	
The employee identifier does not	Returns a specific error.
match any registered employee in	
the system.	
The scheduling time provided	Returns a specific error.
conflicts with the already defined	
scheduling of the employee.	
The mantainance task identi-	Returns a specific error.
fier does not match any task	
recorded in the system	
The input provided is encoded	Returns a positive notification.
correctly. The mantainance task	The mantainance task is up-
identifier matches one recorded	dated, recording the new task in-
mantainance task. The car iden-	formations and scheduling time,
tifier matches one registered ve-	associating it to the employee
hicle. The employee identifier	specified.
matches one registered employee.	
The scheduling time does not	
conflict with the already defined	
employee mantainance schedule.	