

Commenti e modifiche al documento principale

Pagina 1: Commentato [EP1] Etion Pinari 18/11/2020 21:36:00

Job? Implementation seems like the wrong term to use too...

Pagina 1: Commentato [EP2] Etion Pinari 03/12/2020 22:01:00

Added as of 3rd of December

Pagina 2: ha eliminato Etion Pinari 06/12/2020 12:20:00

Users and c

Pagina 2: ha inserito Etion Pinari 06/12/2020 12:20:00

C

Pagina 2: ha inserito Etion Pinari 06/12/2020 12:23:00

G6	Anyone who wants to book a visit to any store should decide their desired time to go.
G7G6	Anyone Users whothat wants to book a visit to a store through the appthe stores should decide their desired time to go shopping among available time slots.Anyone who wants to go in any store should not need to stand in queue in front of it.

Pagina 2: ha formattato Etion Pinari 07/12/2020 19:04:00

Car. predefinito paragrafo

Pagina 2: ha formattato Etion Pinari 07/12/2020 19:04:00

Car. predefinito paragrafo

Pagina 2: ha formattato Etion Pinari 07/12/2020 19:04:00

Car. predefinito paragrafo

Pagina 2: ha formattato Etion Pinari 07/12/2020 19:04:00

Car. predefinito paragrafo

Pagina 2: Tabella formattata Cristian Sbrolli 04/12/2020 22:21:00

Tabella formattata

Pagina 2: ha eliminato Etion Pinari 06/12/2020 12:22:00

G6

Pagina 2: ha inserito Cristian Sbrolli 04/12/2020 22:21:00

Pagina 2: ha eliminato Etion Pinari 06/12/2020 12:22:00

Anyone Users whothat wants to book a visit to a store through the appthe stores should decide their desired time to go shopping among available time slots.

Pagina 2: Formattato	Unknown	06/12/2020 12:22:00
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Tabulazioni: 11,24 cm, Allineato a sinistra

Pagina 2: ha inserito	Cristian Sbrolli	04/12/2020 22:14:00
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Users

Pagina 2: ha inserito	Cristian Sbrolli	04/12/2020 22:30:00
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that

Pagina 2: ha inserito	Cristian Sbrolli	04/12/2020 22:22:00
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a store through the app

Pagina 2: ha inserito	Cristian Sbrolli	04/12/2020 22:16:00
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shopping among available time slots

Pagina 2: ha inserito	Etion Pinari	06/12/2020 20:16:00
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Anyone who wants to go in any store should not need to stand in queue in front of it.

Pagina 2: ha eliminato	Etion Pinari	06/12/2020 12:22:00
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G7	Anyone Users whothat lines up through the appwants to go in any store should not need to stand in queue in front of the store.be able to shop in the chosen market without standing in queue in front of the store.
G7.1	Users that booked a visit through the app should be able to shop without standing in queue in front of the store.
G8	Users that do not use the app should be able to shop without standing in queue in front of the store.

Pagina 2: Tabella formattata	Etion Pinari	06/12/2020 12:22:00
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Tabella formattata

Pagina 2: ha inserito	Cristian Sbrolli	04/12/2020 22:26:00
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G7.1

Pagina 2: ha formattato	Cristian Sbrolli	04/12/2020 22:27:00
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Tipo di carattere: 11 pt

Pagina 2: ha inserito	Cristian Sbrolli	04/12/2020 22:14:00
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Users

Pagina 2: ha inserito	Cristian Sbrolli	04/12/2020 22:29:00
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that

Pagina 2: ha inserito	Cristian Sbrolli	04/12/2020 22:25:00
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lines up through the app

Pagina 2: ha inserito	Cristian Sbrolli	04/12/2020 22:25:00
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be able to shop in the chosen market without standing in queue in front of the store.

Users that booked a visit through the app should be able to shop without standing in queue in front of the store.

Pagina 2: ha inserito	Cristian Sbrolli	04/12/2020 22:13:00
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G8	Users that do not use the app should be able to shop without standing in queue in front of the store.
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Pagina 2: ha formattato	Etion Pinari	06/12/2020 20:18:00
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Car. predefinito paragrafo

Pagina 2: ha eliminato	Etion Pinari	06/12/2020 12:21:00
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two

Pagina 2: ha inserito	Etion Pinari	06/12/2020 21:01:00
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two

Pagina 2: ha eliminato	Etion Pinari	06/12/2020 12:23:00
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G8

Pagina 2: ha inserito	Etion Pinari	06/12/2020 12:23:00
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G8

Pagina 2: ha inserito	Etion Pinari	06/12/2020 12:23:00
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”

Pagina 2: ha eliminato	Etion Pinari	06/12/2020 12:23:00
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”

Pagina 2: ha eliminato	Cristian Sbrolli	04/12/2020 22:20:00
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Pagina 2: ha inserito	Etion Pinari	06/12/2020 12:22:00
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Sub-G9: “Users that booked a visit through the app should be able to shop without standing in queue in front of the store.”

Pagina 2: Formattato	Etion Pinari	06/12/2020 12:22:00
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Rientro: Sinistro: 2,54 cm, Prima riga: 0 cm

Pagina 2: ha eliminato	Cristian Sbrolli	04/12/2020 22:20:00
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Sub-G9: “Customers should be suggested different available stores to go to, if their requested one has no available spaces”

Pagina 2: Formattato	Cristian Sbrolli	04/12/2020 22:20:00
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Rientro: Sinistro: 1,27 cm, Prima riga: 1,27 cm

Pagina 2: Commentato [CS3]	Cristian Sbrolli	04/12/2020 22:19:00
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Questo mi sembra un requirement

Pagina 3: ha inserito	Etion Pinari	07/12/2020 19:26:00
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S13	User pushes turnstile	World
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Pagina 3: ha eliminato	Etion Pinari	07/12/2020 19:26:00
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Pagina 4: Commentato [EP4]	Etion Pinari	18/11/2020 21:26:00
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To be defined

Pagina 5: ha inserito	Etion Pinari	06/12/2020 20:50:00
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8th meeting: Added sections of Alloy code into the document
Duration 1h 06/12/2020

Pagina 5: ha formattato	Etion Pinari	06/12/2020 20:50:00
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Apice

Pagina 5: ha eliminato	Etion Pinari	06/12/2020 20:51:00
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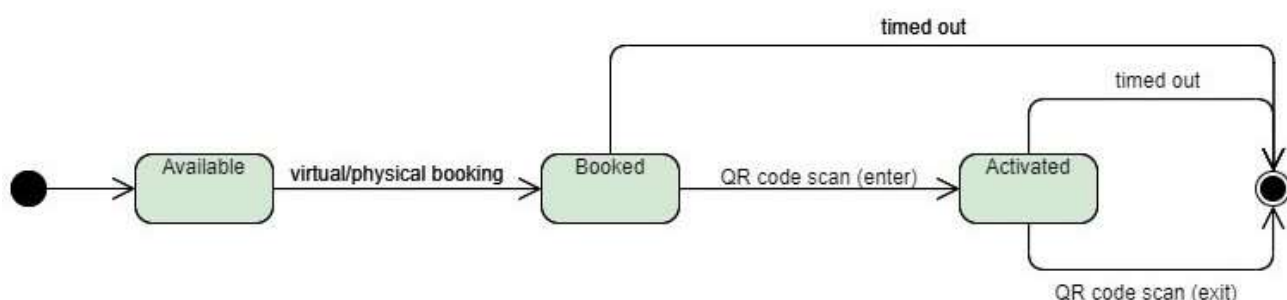
Pagina 5: ha eliminato	Etion Pinari	06/12/2020 20:51:00
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Pagina 5: Formattato	Etion Pinari	06/12/2020 20:51:00
Interlinea: multipla 1,2 ri		
Pagina 6: Formattato	Giorgio Romeo	07/12/2020 00:10:00
Rientro: Sinistro: 1,7 cm, Sporgente 0,63 cm		
Pagina 6: Commentato [GR5]	Giorgio Romeo	23/11/2020 23:19:00
The system asks before the time or the supermarket?		
Pagina 6: Commentato [EP6R5]	Etion Pinari	01/12/2020 19:50:00
Irrelevant, he can choose either way.		
Pagina 6: Commentato [EP7]	Etion Pinari	18/11/2020 21:26:00
To be reworded		
Pagina 6: Commentato [EP8R7]	Etion Pinari	01/12/2020 19:49:00
First definition is fine		
Pagina 6: Commentato [GR9]	Giorgio Romeo	20/11/2020 12:06:00
Maybe it is better to be more generic, e.g., devices.		
Pagina 6: Commentato [EP10R9]	Etion Pinari	01/12/2020 19:50:00
Agreed		
Pagina 6: Commentato [GR11]	Giorgio Romeo	20/11/2020 12:20:00
We could describe the case in which he pays in the automated machines and exits through the turnstiles		
Pagina 7: Commentato [EP12]	Etion Pinari	21/11/2020 18:24:00
More? Less?		
Pagina 7: Commentato [EP13]	Etion Pinari	06/12/2020 19:12:00
To be added		
Pagina 8: ha inserito	Giorgio Romeo	07/12/2020 00:07:00

Pagina 8: Formattato	Giorgio Romeo	07/12/2020 00:07:00
Normale, Nessun elenco puntato o numerato		

Pagina 9: Formattato	Giorgio Romeo	07/12/2020 00:13:00
Interlinea: 1,5 righe		

Pagina 9: ha inserito	Giorgio Romeo	07/12/2020 00:12:00
A.1.		



A.4.1. Ticket's status

Pagina 9: Formattato	Giorgio Romeo	07/12/2020 00:13:00
Interlinea: doppia, Numerazione automatica + Livello:1 + Stile numerazione: 1, 2, 3, ... + Comincia da:1 + Allineamento: A destra + Allinea a: 2,52 cm + Imposta un rientro di: 3,16 cm		

Pagina 9: Commentato [GR14]	Giorgio Romeo	07/12/2020 00:15:00
Va bene?		

Pagina 9: Formattato	Giorgio Romeo	07/12/2020 00:11:00
Normale, Nessun elenco puntato o numerato		

Pagina 9: ha eliminato	Giorgio Romeo	07/12/2020 00:11:00
<p>Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.</p>		

Pagina 9: ha inserito	Giorgio Romeo	07/12/2020 00:40:00
<p>Tickets are crucial to guarantee the virtual (and physical) lining up mechanism. An “<i>Available</i>” ticket becomes “<i>Booked</i>” when it is booked</p>		

Pagina 9: Formattato	Giorgio Romeo	07/12/2020 01:03:00
Giustificato		
Pagina 9: ha formattato	Giorgio Romeo	07/12/2020 00:40:00
Tipo di carattere: Corsivo		
Pagina 9: ha formattato	Giorgio Romeo	07/12/2020 00:50:00
Tipo di carattere: Corsivo		
Pagina 9: ha inserito	Etion Pinari	07/12/2020 19:13:00
, or when a user requires to get a ticket		
Pagina 9: ha inserito	Giorgio Romeo	07/12/2020 00:39:00
either virtually or physically. The user must scan the “Booked” ticket within 5 minutes		
Pagina 9: ha formattato	Giorgio Romeo	07/12/2020 00:43:00
Tipo di carattere: Corsivo		
Pagina 9: ha inserito	Etion Pinari	07/12/2020 19:07:00
of		
Pagina 9: ha inserito	Giorgio Romeo	07/12/2020 01:00:00
his indicated time slot (“Activated” state) in order to enter the store, otherwise the ticket will expire and become useless (5 minutes have been considered a reasonable choice not to be extremely strict and to consider a small human error).		
Pagina 9: ha eliminato	Etion Pinari	07/12/2020 19:08:00
Pagina 9: ha formattato	Giorgio Romeo	08/12/2020 10:14:00
Tipo di carattere: 14 pt		
Pagina 9: ha formattato	Giorgio Romeo	08/12/2020 10:14:00
Tipo di carattere: 14 pt		
Pagina 9: ha eliminato	Giorgio Romeo	07/12/2020 00:53:00
Pagina 9: ha formattato	Giorgio Romeo	08/12/2020 10:14:00
Tipo di carattere: 14 pt		
Pagina 9: ha inserito	Giorgio Romeo	07/12/2020 00:53:00

The user, who owns the ticket, after scanning it to enter the store, will use the same ticket to exit. If the user's ticket becomes unavailable (e.g., the physical ticket is lost, the user's device has low battery) while he is doing the shopping, the user is allowed to exit the store anyway

Pagina 9: Commentato [GR15]	Giorgio Romeo	08/12/2020 10:14:00
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added

Pagina 9: ha eliminato	Etion Pinari	07/12/2020 19:08:00
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doing the

Pagina 9: ha inserito	Etion Pinari	07/12/2020 19:08:00
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after asking for assistance from the

Pagina 9: ha eliminato	Giorgio Romeo	08/12/2020 10:11:00
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the

Pagina 9: ha inserito	Giorgio Romeo	08/12/2020 10:11:00
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a

Pagina 9: ha inserito	Etion Pinari	07/12/2020 19:09:00
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cashier or a manager inside the store

Pagina 9: ha inserito	Giorgio Romeo	07/12/2020 00:58:00
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. In this case, the “*Activated*” ticket will expire after a time equal to the system's estimated average duration of a grocery shop trip from the indicated time slot and it will be considered scanned anyway.

Pagina 9: ha formattato	Giorgio Romeo	08/12/2020 10:16:00
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Tipo di carattere: Corsivo

Pagina 9: ha formattato	Giorgio Romeo	08/12/2020 10:16:00
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Tipo di carattere: 14 pt

Pagina 9: ha formattato	Giorgio Romeo	08/12/2020 10:16:00
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Tipo di carattere: 14 pt

Pagina 9: ha formattato	Giorgio Romeo	07/12/2020 00:59:00
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Tipo di carattere: 14 pt

Pagina 9: ha inserito	Giorgio Romeo	07/12/2020 00:10:00
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Pagina 10: Formattato	Etion Pinari	07/12/2020 19:50:00
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Normale

Pagina 10: ha formattato	Etion Pinari	07/12/2020 19:50:00
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Tipo di carattere: 16 pt, Colore carattere: Nero

Pagina 10: ha eliminato	Etion Pinari	06/12/2020 12:02:00
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Functional Requirements:

Pagina 10: Formattato	Giorgio Romeo	08/12/2020 10:15:00
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Giustificato, Rientro: Sinistro: 0,48 cm

Pagina 10: ha inserito	Giorgio Romeo	08/12/2020 09:51:00
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Pagina 10: ha eliminato	Giorgio Romeo	08/12/2020 09:51:00
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Pagina 10: ha inserito	Giorgio Romeo	08/12/2020 09:51:00
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Pagina 10: ha eliminato	Giorgio Romeo	08/12/2020 09:51:00
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Pagina 10: Commentato [EP16]	Etion Pinari	06/12/2020 19:13:00
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Specify management of timeslots.

Pagina 10: Commentato [EP17R16]	Etion Pinari	06/12/2020 19:15:00
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>Take ticket

>

>Max time in

Limitations of time slots

Pagina 10: ha inserito	Etion Pinari	07/12/2020 19:31:00
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These are applied through the means of time slotted (in fractions of an hour) tickets. Every ticket or booked visit will allow users to enter in the store only in the time written on the ticket, plus a brief time variation as not to be extremely strict and as to take into account for a small human error. The system will use time slots as not to have many entrances at the same time and create a queue for the entrance. Afterwards the system will consider the user as being inside a store until the scan in exit is carried out or until a time equal to the

Pagina 10: ha formattato	Etion Pinari	07/12/2020 19:41:00
Inglese (Stati Uniti)		
Pagina 10: ha inserito	Giorgio Romeo	08/12/2020 10:18:00
system's estimated		
Pagina 10: ha inserito	Etion Pinari	07/12/2020 19:58:00
average time		
Pagina 10: ha eliminato	Giorgio Romeo	08/12/2020 10:04:00
time		
Pagina 10: ha inserito	Giorgio Romeo	08/12/2020 10:04:00
duration		
Pagina 10: ha inserito	Etion Pinari	07/12/2020 19:58:00
of a grocery shop trip passes.		
Pagina 10: Commentato [EP18]	Etion Pinari	07/12/2020 20:05:00
Nuovi		
Pagina 10: Commentato [EP19]	Etion Pinari	06/12/2020 19:57:00
Sistema ottimizza tempo ecc. (inferring)		
Pagina 10: ha inserito	Etion Pinari	07/12/2020 20:02:00
The system will allow its registered virtual users to input the products they are willing to buy		
Pagina 10: ha eliminato	Etion Pinari	07/12/2020 20:02:00
Pagina 10: ha inserito	Etion Pinari	07/12/2020 20:02:00
. The system will take into account the average time it takes for its registered users to shop and will use that time to infer how long a trip will last based on what products the user plans on buying.		
Pagina 10: Commentato [EP20]	Etion Pinari	07/12/2020 20:05:00
Nuovi		
Pagina 10: Commentato [CS21]	Cristian Sbrolli	05/12/2020 03:34:00
Tropo vuoto, qua dobbiamo specificare tutte le cose sulla gestione dei time slot e cose così, qui andrebbero dette in generale le funzionalità più importanti!!!		

Pagina 10: ha inserito		Etion Pinari	07/12/2020 20:04:00
said stores.			
A4	All store entrances and exits will have turnstiles gates		
A5	Users in stores will abide to local norms on social distancing		
A4			
Pagina 10: Commentato [EP22]		Etion Pinari	06/12/2020 19:13:00
t			
Pagina 10: ha inserito		Cristian Sbrolli	05/12/2020 03:34:00
Pagina 10: ha eliminato		Etion Pinari	07/12/2020 19:46:00
self check-out			
Pagina 10: ha inserito		Etion Pinari	07/12/2020 19:46:00
self-check-out			
Pagina 11: ha eliminato		Giorgio Romeo	08/12/2020 09:59:00
Pagina 12: Commentato [EP23]		Etion Pinari	07/12/2020 19:14:00
Il tipo di tornelli, i limiti del sistema			
Pagina 12: Commentato [EP24]		Etion Pinari	03/12/2020 23:08:00
Necessary for algorithm not for RASD			
Pagina 12: Commentato [EP25R24]		Etion Pinari	06/12/2020 19:59:00
Street			
Pagina 12: ha eliminato		Etion Pinari	06/12/2020 20:19:00
Pagina 12: Commentato [EP26]		Etion Pinari	03/12/2020 23:13:00
We can actually enforce it because if the shop has no turnstile we just will not deploy our system			
Pagina 12: Commentato [EP27R26]		Etion Pinari	06/12/2020 20:00:00
Da togliere			
Pagina 12: ha inserito		Etion Pinari	06/12/2020 20:19:00
Pagina 12: ha eliminato		Etion Pinari	06/12/2020 20:19:00
Pagina 12: ha inserito		Etion Pinari	06/12/2020 20:19:00
Pagina 12: ha eliminato		Etion Pinari	06/12/2020 20:19:00
Pagina 12: ha inserito		Etion Pinari	06/12/2020 20:19:00

Pagina 12: ha eliminato	Etion Pinari	07/12/2020 19:42:00
Pagina 12: ha inserito	Etion Pinari	07/12/2020 19:42:00

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Pagina 12: ha inserito	Etion Pinari	06/12/2020 20:19:00
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Pagina 15: Formattato	Cristian Sbrolli	05/12/2020 03:34:00
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Rientro: Sinistro: 2,65 cm

Pagina 15: ha inserito	Etion Pinari	07/12/2020 20:03:00
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virtual

Pagina 15: ha inserito	Cristian Sbrolli	05/12/2020 03:33:00
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Pagina 15: ha eliminato	Cristian Sbrolli	05/12/2020 03:33:00
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Pagina 15: Commentato [CS28]	Cristian Sbrolli	26/11/2020 21:18:00
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Only ticket or book a visit too?

Pagina 15: ha inserito	Cristian Sbrolli	04/12/2020 21:58:00
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t least a

Pagina 15: ha inserito	Cristian Sbrolli	04/12/2020 21:58:00
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I.
, there could be then other types of interface to provide more accessibility

Pagina 15: ha inserito	Cristian Sbrolli	04/12/2020 22:02:00
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I.
gates

Pagina 15: ha inserito	Cristian Sbrolli	04/12/2020 22:02:00
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I.
gates

Pagina 15: Commentato [CS29]	Cristian Sbrolli	26/11/2020 21:49:00
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Or some sort or VPN?

Pagina 15: ha inserito	Giorgio Romeo	07/12/2020 00:04:00
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Pagina 16: ha eliminato	Giorgio Romeo	07/12/2020 00:04:00
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Pagina 16: ha inserito	Etion Pinari	07/12/2020 20:09:00
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and mapping

A)

Pagina 50: ha eliminato

Etion Pinari

06/12/2020 20:43:00

R1	The system shall allow users to get a ticket with a date and time that shows when to go to a certain store, virtually
R2	The system shall allow users to get a ticket with a date and time that shows when to go to a certain store, physically
R3	The system shall allow users to book a visit virtually with their desired store, up to the next 7 upcoming days
R4	The system shall allow users to look up on a map available stores where to go to
R5	The system shall ask users how much he or she thinks the trip will last
R6	The system shall allow users to be identified by their phone unique ID
R7	The system shall allow users to be identified by a username of their choosing
R8	The system shall notify the user who has been inactive for 30 seconds while on the confirmation page of booking a ticket, on other available stores he could go to
R9	The system shall allow its users to insert information about which categories or items they want to buy
R10	The system shall infer how long it will take for customers to buy all products
R11	The system shall store data about registered users' habits of expenses
R12	The system shall inform users every 6 hours of the 10 closest stores' available time slots for the day
R12.1	The system shall allow its users to select which store(s) to get informed about, by default none
R12.2	The system shall allow its users to select which time slots he is interested to get informed about, by default none
R13	The system shall allow the user to scan its QR code in entrance through the turnstiles
R14	The system shall allow the user to scan its QR code in exit through the turnstiles or cash register
R15.1	The system shall open turnstiles after a unique QR code scan in entrance, for 5 seconds
R15.2	The system shall open turnstiles after a unique QR code scan in exit, for 5 seconds
R16	The system shall calculate the maximum number of people allowed outside each store as to provide social distancing
R17	The system shall count the number of entrances and exits each day, for each market
R18	The system shall store the number of entrances and exits for each market
R19	The system shall allow store managers to regulate the number of entrances allowed in the store hourly.
R20	The system shall calculate the maximum number of people allowed inside each store as to provide social distancing

R21	The system shall allow store managers to see how many customers have entered the store for the past 7 days
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Pagina 50: Tabella formattata	Etion Pinari	06/12/2020 12:32:00
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Tabella formattata

Pagina 50: ha formattato	Etion Pinari	06/12/2020 12:33:00
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Tipo di carattere: 14 pt, Grassetto

Pagina 50: ha formattato	Etion Pinari	06/12/2020 12:14:00
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Tipo di carattere: 14 pt

Pagina 50: ha formattato	Etion Pinari	06/12/2020 12:33:00
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Tipo di carattere: 14 pt, Grassetto

Pagina 50: ha formattato	Etion Pinari	06/12/2020 12:14:00
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Tipo di carattere: 14 pt

Pagina 50: Commentato [EP30]	Etion Pinari	03/12/2020 20:36:00
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New as of 3 December 2020

Pagina 50: ha formattato	Etion Pinari	06/12/2020 12:14:00
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Tipo di carattere: 14 pt

Pagina 50: ha formattato	Etion Pinari	06/12/2020 12:14:00
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Tipo di carattere: 14 pt

Pagina 50: ha formattato	Etion Pinari	06/12/2020 12:33:00
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Tipo di carattere: 14 pt, Grassetto

Pagina 50: ha formattato	Etion Pinari	06/12/2020 12:14:00
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Tipo di carattere: 14 pt

Pagina 50: ha formattato	Etion Pinari	06/12/2020 12:33:00
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Tipo di carattere: 14 pt, Grassetto

Pagina 50: ha formattato	Etion Pinari	06/12/2020 12:14:00
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Tipo di carattere: 14 pt

Pagina 50: ha formattato	Etion Pinari	06/12/2020 12:33:00
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Tipo di carattere: 14 pt, Grassetto

Pagina 50: ha formattato	Etion Pinari	06/12/2020 12:14:00
Tipo di carattere: 14 pt		
Pagina 50: ha formattato	Etion Pinari	06/12/2020 12:33:00
Tipo di carattere: 14 pt, Grassetto		
Pagina 50: ha formattato	Etion Pinari	06/12/2020 12:14:00
Tipo di carattere: 14 pt		
Pagina 50: Commentato [EP31]	Etion Pinari	03/12/2020 21:41:00
And their qr codes (?)		
Pagina 50: ha formattato	Etion Pinari	06/12/2020 12:14:00
Tipo di carattere: 14 pt		
Pagina 50: ha formattato	Etion Pinari	06/12/2020 12:14:00
Tipo di carattere: 14 pt		
Pagina 50: ha formattato	Etion Pinari	06/12/2020 12:33:00
Tipo di carattere: 14 pt, Grassetto		
Pagina 50: ha formattato	Etion Pinari	06/12/2020 12:14:00
Tipo di carattere: 14 pt		
Pagina 50: ha formattato	Etion Pinari	06/12/2020 12:33:00
Tipo di carattere: 14 pt, Grassetto		
Pagina 50: ha formattato	Etion Pinari	06/12/2020 12:14:00
Tipo di carattere: 14 pt		
Pagina 50: ha formattato	Etion Pinari	06/12/2020 12:33:00
Tipo di carattere: 14 pt, Grassetto		
Pagina 50: ha formattato	Etion Pinari	06/12/2020 12:14:00
Tipo di carattere: 14 pt		
Pagina 50: ha formattato	Etion Pinari	06/12/2020 12:33:00
Tipo di carattere: 14 pt, Grassetto		
Pagina 50: ha formattato	Etion Pinari	06/12/2020 12:14:00
Tipo di carattere: 14 pt		
Pagina 50: ha formattato	Etion Pinari	06/12/2020 12:33:00
Tipo di carattere: 14 pt, Grassetto		
Pagina 50: ha formattato	Etion Pinari	06/12/2020 12:14:00
Tipo di carattere: 14 pt		

Pagina 50: ha formattato	Etion Pinari	06/12/2020 12:33:00
Tipo di carattere: 14 pt, Grassetto		
Pagina 50: ha formattato	Etion Pinari	06/12/2020 12:14:00
Tipo di carattere: 14 pt		
Pagina 50: ha formattato	Etion Pinari	06/12/2020 12:33:00
Tipo di carattere: 14 pt, Grassetto		
Pagina 50: ha formattato	Etion Pinari	06/12/2020 12:14:00
Tipo di carattere: 14 pt		
Pagina 50: ha formattato	Etion Pinari	06/12/2020 12:33:00
Tipo di carattere: 14 pt, Grassetto		
Pagina 50: ha formattato	Etion Pinari	06/12/2020 12:14:00
Tipo di carattere: 14 pt		
Pagina 50: ha formattato	Etion Pinari	06/12/2020 12:33:00
Tipo di carattere: 14 pt, Grassetto		
Pagina 50: ha formattato	Etion Pinari	06/12/2020 12:14:00
Tipo di carattere: 14 pt		
Pagina 50: ha formattato	Etion Pinari	06/12/2020 12:33:00
Tipo di carattere: 14 pt, Grassetto		
Pagina 50: Commentato [EP32]	Etion Pinari	03/12/2020 20:30:00
New as of 03 Dec		
Pagina 50: ha formattato	Etion Pinari	06/12/2020 12:33:00
Tipo di carattere: 14 pt, Grassetto		
Pagina 50: ha formattato	Etion Pinari	06/12/2020 12:14:00
Tipo di carattere: 14 pt		
Pagina 50: Commentato [EP33]	Etion Pinari	03/12/2020 22:27:00
What if turnstiles have no inherent qr code scanner?		
Pagina 50: ha formattato	Etion Pinari	06/12/2020 12:14:00
Tipo di carattere: 14 pt		

Pagina 50: ha formattato	Etion Pinari	06/12/2020 12:14:00
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Tipo di carattere: 14 pt

Pagina 50: ha formattato	Etion Pinari	06/12/2020 12:33:00
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Tipo di carattere: 14 pt, Grassetto

Pagina 50: Commentato [EP34]	Etion Pinari	03/12/2020 20:30:00
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New as of 03 Dec

Pagina 50: ha formattato	Etion Pinari	06/12/2020 12:33:00
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Tipo di carattere: 14 pt, Grassetto

Pagina 50: ha formattato	Etion Pinari	06/12/2020 12:14:00
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Tipo di carattere: 14 pt

Pagina 50: ha formattato	Etion Pinari	06/12/2020 12:33:00
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Tipo di carattere: 14 pt, Grassetto

Pagina 50: ha formattato	Etion Pinari	06/12/2020 12:14:00
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Tipo di carattere: 14 pt

Pagina 50: Commentato [EP35]	Etion Pinari	06/12/2020 19:50:00
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LOCKS AFTEWARDS

Pagina 50: ha formattato	Etion Pinari	06/12/2020 12:14:00
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Tipo di carattere: 14 pt

Pagina 50: ha formattato	Etion Pinari	06/12/2020 12:33:00
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Tipo di carattere: 14 pt, Grassetto

Pagina 50: ha formattato	Etion Pinari	06/12/2020 12:14:00
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Tipo di carattere: 14 pt

Pagina 50: Commentato [EP36]	Etion Pinari	03/12/2020 21:04:00
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we might add FR which say that system allows stores to register themselves and input their location

Pagina 50: ha formattato	Etion Pinari	06/12/2020 12:15:00
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Tipo di carattere: 14 pt

Pagina 50: ha formattato	Etion Pinari	06/12/2020 12:33:00
Tipo di carattere: 14 pt, Grassetto		
Pagina 50: ha formattato	Etion Pinari	06/12/2020 12:14:00
Tipo di carattere: 14 pt		
Pagina 50: Commentato [EP37]	Etion Pinari	06/12/2020 19:54:00
Manage timeslot (Goal) : => so that externally there are not many people		
Pagina 50: ha formattato	Etion Pinari	06/12/2020 12:14:00
Tipo di carattere: 14 pt		
Pagina 50: ha formattato	Etion Pinari	06/12/2020 12:14:00
Tipo di carattere: 14 pt		
Pagina 50: ha formattato	Etion Pinari	06/12/2020 12:14:00
Tipo di carattere: 14 pt		
Pagina 50: ha formattato	Etion Pinari	06/12/2020 12:14:00
Tipo di carattere: 14 pt		
Pagina 50: ha formattato	Etion Pinari	06/12/2020 12:14:00
Tipo di carattere: 14 pt		
Pagina 50: ha formattato	Etion Pinari	06/12/2020 12:14:00
Tipo di carattere: 14 pt		
Pagina 16: ha inserito	Etion Pinari	06/12/2020 20:45:00

a. *Users*

There is a subtle difference between the last two functional requirements, in which the last provides the social

R1	The system shall allow users to get a ticket with a date and time that shows when to go to a certain store, virtually
R2	The system shall allow users to get a ticket with a date and time that shows when to go to a certain store, physically
R3	The system shall allow users to book a visit virtually with their desired store, up to the next 7 upcoming days
R4	The system shall allow users to look up on a map available registered stores where to go to
R5	The system shall ask users how much he or she thinks the trip to the store will last
R6	The system shall allow users to be identified by their phone unique ID
R7	The system shall allow users to be identified by a username of their choosing
R8	The system shall notify the user who has been inactive for 30 seconds while on the confirmation page of booking a ticket, on other available stores he could go to
R9	The system shall allow its users to insert information about which categories or items they want to buy
R10	The system shall infer how long it will take for customers to buy all products
R11	The system shall store data about registered virtual users' habits of expenses
R12	The system shall inform users periodically of the (at most) 10 closest stores' available time slots for the day
R12.1	The system shall allow its users to select which store(s) to get informed about, by default none
R12.2	The system shall allow its users to select which time slots he is interested to get informed about, by default none
R12.3	The system shall allow its users to select how often to get notified, by default never
R13	The system shall allow the user to scan its QR code in entrance through the turnstiles
R14	The system shall allow the user to scan its QR code in exit through the turnstiles or cash register
R15.1	The system shall unlock turnstiles after a unique QR code scan in entrance
R15.2	The system shall unlock turnstiles after a unique QR code scan in exit
R15.3	The system shall lock the turnstiles after a push has occurred
R16	The system shall map the QR code of a scan to the right user
R17	The system shall send a reminder to the user when it is time for him to enter the store
R18	The system shall calculate the time it takes the user to go to a shop in which he has an appointment
R19	The system shall manage how many people can enter inside the store for each timeslot
R20	The system shall calculate the maximum number of people allowed inside each store

distance inside stores, so customers might have their personal space while the second to last provides the social distance outside stores, in the sense that people enter divided in sections as to not have crowds outside of the store.

Pagina 16: ha formattato	Etion Pinari	07/12/2020 21:54:00
Tipo di carattere: Grassetto		
Pagina 16: ha formattato	Etion Pinari	06/12/2020 20:46:00
Tipo di carattere: 13 pt		
Pagina 16: ha formattato	Etion Pinari	07/12/2020 21:54:00
Tipo di carattere: Grassetto		
Pagina 16: ha formattato	Etion Pinari	06/12/2020 20:46:00
Tipo di carattere: 13 pt		
Pagina 16: Commentato [EP38]	Etion Pinari	03/12/2020 20:36:00
New as of 3 December 2020		
Pagina 16: ha formattato	Etion Pinari	06/12/2020 20:46:00
Tipo di carattere: 13 pt		
Pagina 16: ha formattato	Etion Pinari	06/12/2020 20:46:00
Tipo di carattere: 13 pt		
Pagina 16: ha formattato	Etion Pinari	07/12/2020 21:54:00
Tipo di carattere: Grassetto		
Pagina 16: ha formattato	Etion Pinari	06/12/2020 20:46:00
Tipo di carattere: 13 pt		
Pagina 16: ha formattato	Etion Pinari	07/12/2020 21:59:00
Tipo di carattere: Grassetto		
Pagina 16: ha formattato	Etion Pinari	06/12/2020 20:46:00
Tipo di carattere: 13 pt		
Pagina 16: ha formattato	Etion Pinari	07/12/2020 21:55:00
Tipo di carattere: Grassetto		
Pagina 16: ha formattato	Etion Pinari	06/12/2020 20:46:00
Tipo di carattere: 13 pt		

Pagina 16: ha formattato	Etion Pinari	06/12/2020 20:46:00
Tipo di carattere: 13 pt		
Pagina 16: ha formattato	Etion Pinari	07/12/2020 21:55:00
Tipo di carattere: Grassetto		
Pagina 16: ha formattato	Etion Pinari	06/12/2020 20:46:00
Tipo di carattere: 13 pt		
Pagina 16: Commentato [EP39]	Etion Pinari	03/12/2020 21:41:00
And their qr codes (?)		
Pagina 16: ha formattato	Etion Pinari	06/12/2020 20:46:00
Tipo di carattere: 13 pt		
Pagina 16: ha formattato	Etion Pinari	06/12/2020 20:46:00
Tipo di carattere: 13 pt		
Pagina 16: ha formattato	Etion Pinari	07/12/2020 21:55:00
Tipo di carattere: Grassetto		
Pagina 16: ha formattato	Etion Pinari	06/12/2020 20:46:00
Tipo di carattere: 13 pt		
Pagina 16: ha formattato	Etion Pinari	07/12/2020 21:55:00
Tipo di carattere: Grassetto		
Pagina 16: ha formattato	Etion Pinari	06/12/2020 20:46:00
Tipo di carattere: 13 pt		
Pagina 16: ha formattato	Etion Pinari	07/12/2020 21:57:00
Tipo di carattere: Grassetto		
Pagina 16: ha formattato	Etion Pinari	06/12/2020 20:46:00
Tipo di carattere: 13 pt		
Pagina 16: ha formattato	Etion Pinari	07/12/2020 21:57:00
Tipo di carattere: Grassetto		
Pagina 16: ha formattato	Etion Pinari	06/12/2020 20:46:00
Tipo di carattere: 13 pt		

Pagina 16: ha formattato	Etion Pinari	07/12/2020 22:01:00
Tipo di carattere: Grassetto		
Pagina 16: ha formattato	Etion Pinari	06/12/2020 20:46:00
Tipo di carattere: 13 pt		
Pagina 16: ha formattato	Etion Pinari	06/12/2020 20:46:00
Tipo di carattere: 13 pt		
Pagina 16: ha formattato	Etion Pinari	07/12/2020 22:00:00
Tipo di carattere: Grassetto		
Pagina 16: ha formattato	Etion Pinari	06/12/2020 20:46:00
Tipo di carattere: 13 pt		
Pagina 16: ha formattato	Etion Pinari	07/12/2020 22:00:00
Tipo di carattere: Grassetto		
Pagina 16: ha formattato	Etion Pinari	06/12/2020 20:46:00
Tipo di carattere: 13 pt		
Pagina 16: ha formattato	Etion Pinari	07/12/2020 22:00:00
Tipo di carattere: Grassetto		
Pagina 16: ha formattato	Etion Pinari	06/12/2020 20:46:00
Tipo di carattere: 13 pt		
Pagina 16: ha formattato	Etion Pinari	07/12/2020 22:00:00
Tipo di carattere: Grassetto		
Pagina 16: ha formattato	Etion Pinari	06/12/2020 20:46:00
Tipo di carattere: 13 pt		
Pagina 16: ha formattato	Etion Pinari	07/12/2020 21:52:00
Tipo di carattere: Grassetto		
Pagina 16: ha formattato	Etion Pinari	06/12/2020 20:46:00
Tipo di carattere: 13 pt		
Pagina 16: Commentato [EP40]	Etion Pinari	03/12/2020 20:30:00
New as of 03 Dec		

Pagina 16: ha formattato	Etion Pinari	06/12/2020 20:46:00
Tipo di carattere: 13 pt		
Pagina 16: ha formattato	Etion Pinari	06/12/2020 20:46:00
Tipo di carattere: 13 pt		
Pagina 16: Commentato [EP41]	Etion Pinari	03/12/2020 22:27:00
What if turnstiles have no inherent qr code scanner?		
Pagina 16: ha formattato	Etion Pinari	06/12/2020 20:46:00
Tipo di carattere: 13 pt		
Pagina 16: ha formattato	Etion Pinari	06/12/2020 20:46:00
Tipo di carattere: 13 pt		
Pagina 16: ha formattato	Etion Pinari	06/12/2020 20:46:00
Tipo di carattere: 13 pt		
Pagina 16: Commentato [EP42]	Etion Pinari	03/12/2020 20:30:00
New as of 03 Dec		
Pagina 16: ha formattato	Etion Pinari	06/12/2020 20:46:00
Tipo di carattere: 13 pt		
Pagina 16: ha formattato	Etion Pinari	06/12/2020 20:46:00
Tipo di carattere: 13 pt		
Pagina 16: ha formattato	Etion Pinari	07/12/2020 21:54:00
Tipo di carattere: Grassetto		
Pagina 16: ha formattato	Etion Pinari	06/12/2020 20:46:00
Tipo di carattere: 13 pt		
Pagina 16: Commentato [EP43]	Etion Pinari	06/12/2020 19:50:00
LOCKS AFTEWARDS		
Pagina 16: ha formattato	Etion Pinari	06/12/2020 20:46:00
Tipo di carattere: 13 pt		
Pagina 16: ha formattato	Etion Pinari	06/12/2020 20:46:00
Tipo di carattere: 13 pt		

Pagina 16: ha formattato	Etion Pinari	07/12/2020 21:54:00
Tipo di carattere: Grassetto		
Pagina 16: ha formattato	Etion Pinari	06/12/2020 20:46:00
Tipo di carattere: 13 pt		
Pagina 16: ha formattato	Etion Pinari	07/12/2020 21:54:00
Tipo di carattere: Grassetto		
Pagina 16: ha formattato	Etion Pinari	06/12/2020 20:46:00
Tipo di carattere: 13 pt		
Pagina 16: Commentato [EP44]	Etion Pinari	06/12/2020 20:27:00
Add shared phenomena		
Pagina 16: ha formattato	Etion Pinari	06/12/2020 20:46:00
Tipo di carattere: 13 pt		
Pagina 16: ha formattato	Etion Pinari	06/12/2020 20:46:00
Tipo di carattere: 13 pt		
Pagina 16: Formattato	Unknown	06/12/2020 20:48:00
Tabulazioni: 12,33 cm, Allineato a sinistra		
Pagina 16: ha formattato	Etion Pinari	06/12/2020 20:47:00
Tipo di carattere: Non Grassetto		
Pagina 16: ha formattato	Etion Pinari	06/12/2020 20:47:00
Tipo di carattere: Non Grassetto		
Pagina 16: ha formattato	Etion Pinari	06/12/2020 20:47:00
Tipo di carattere: Non Grassetto		
Pagina 16: ha formattato	Etion Pinari	06/12/2020 20:46:00
Tipo di carattere: Non Grassetto		
Pagina 16: Commentato [EP45]	Etion Pinari	06/12/2020 20:50:00
New, wording is to check		
Pagina 16: Commentato [EP46R45]	Etion Pinari	07/12/2020 19:15:00
Added another FR r18		

Pagina 16: ha formattato	Etion Pinari	06/12/2020 20:49:00
Tipo di carattere: Non Grassetto		
Pagina 16: ha formattato	Etion Pinari	07/12/2020 19:18:00
Tipo di carattere: Non Grassetto		
Pagina 16: ha formattato	Etion Pinari	06/12/2020 20:46:00
Tipo di carattere: 13 pt		
Pagina 16: ha formattato	Etion Pinari	07/12/2020 21:54:00
Tipo di carattere: Grassetto		
Pagina 16: ha formattato	Etion Pinari	06/12/2020 20:46:00
Tipo di carattere: 13 pt		
Pagina 16: Commentato [EP47]	Etion Pinari	06/12/2020 16:48:00
To add: user gets notified when it's his turn, or it is coming close		
Pagina 16: ha formattato	Etion Pinari	07/12/2020 19:17:00
Tipo di carattere: 11 pt		
Pagina 17: ha eliminato	Giorgio Romeo	07/12/2020 00:04:00
Pagina 17: ha formattato	Etion Pinari	06/12/2020 20:43:00
Tipo di carattere: 12 pt, Non Corsivo		
Pagina 17: Formattato	Etion Pinari	06/12/2020 12:19:00
Formattato		
Pagina 17: ha eliminato	Etion Pinari	06/12/2020 12:26:00
<i>Formal Functional Requirements¹</i>		
Pagina 17: ha inserito	Etion Pinari	06/12/2020 12:19:00

a. Store Managers:

¹ Requirements' related actors:

-Red: users -Green: store managers (next page)

Through the store manager actor, we also represent all store stakeholders that have as a goal to have as many people as possible inside stores

R21	The system shall count the number of entrances and exits each day, for each market
R22	The system shall store the number of entrances and exits for each market
R23	The system shall allow store managers to regulate the number of entrances allowed in the store hourly.
R24	The system shall allow store managers to see how many customers have entered the store for the past 7 days
R25	The system shall allow store managers to register their stores
R26	The system shall allow store managers to input the store's location
R27	The system shall allow store managers to input what sections of goods the store has
R28	The system shall allow store managers to input the dimensions of the store

The most important functional requirements for store managers are allowing them to register their stores, and input their location and further details as to allow users to see the store on the map and to allow the system to provide its functionalities towards users.

1. Functional Requirement and Goal Mapping

G1	The store manager should track how many people are inside the store at any point in time
A5	Only one person will enter the store per ticket
R21	The system shall count the number of entrances and exits each day, for each market
R22	The system shall store the number of entrances and exits for each market
R24	The system shall allow store managers to see how many customers have entered the store for the past 7 days

G2	The store manager should regulate the influx of people that can enter inside the store.
A5	Only one person will enter the store per ticket
R15.1	The system shall unlock turnstiles after a unique QR code scan in entrance
R15.2	The system shall unlock turnstiles after a unique QR code scan in exit
R15.3	The system shall lock the turnstiles after a push has occurred
R20	The system shall calculate the maximum number of people allowed inside each store
R23	The system shall allow store managers to regulate the number of entrances allowed in the store hourly

G3	Everybody should be able to maintain social distancing inside the stores.
A2	User which specified a shopping list will spend 90% of their time within that visit in the departments related to the declared list
A4	Users in stores will abide to local norms on social distancing
A5	Only one person will enter the store per ticket
R1	The system shall allow users to get a ticket with a date and time that shows when to go to a certain store, virtually
R2	The system shall allow users to get a ticket with a date and time that shows when to go to a certain store, physically
R3	The system shall allow users to book a visit virtually with their desired store, up to the next 7 upcoming days

R13	The system shall allow the user to scan its QR code in entrance through the turnstiles
R15.1	The system shall unlock turnstiles after a unique QR code scan in entrance
R20	The system shall calculate the maximum number of people allowed inside each store

G4	Everybody should be able to maintain social distancing in front of the stores.
	Users in stores will abide to local norms on social distancing
	All people who are in front of the store have an appointment to enter the store within the next 10 minutes
R1	The system shall allow users to get a ticket with a date and time that shows when to go to a certain store, virtually
R2	The system shall allow users to get a ticket with a date and time that shows when to go to a certain store, physically
R3	The system shall allow users to book a visit virtually with their desired store, up to the next 7 upcoming days

G5	Stores should allow as many customers inside as possible
A2	User which specified a shopping list will spend 90% of their time within that visit in the departments related to the declared list
A3	Data about store departments and items collocation in departments is correct
R1	The system shall allow users to get a ticket with a date and time that shows when to go to a certain store, virtually
R2	The system shall allow users to get a ticket with a date and time that shows when to go to a certain store, physically
R3	The system shall allow users to book a visit virtually with their desired store, up to the next 7 upcoming days
R5	The system shall ask users how much he or she thinks the trip to the store will last
R6	The system shall allow users to be identified by their phone unique ID
R7	The system shall allow users to be identified by a username of their choosing
R8	The system shall notify the user who has been inactive for 30 seconds while on the confirmation page of booking a ticket, on other available stores he could go to

R9	The system shall allow its users to insert information about which categories or items they want to buy
R10	The system shall infer how long it will take for customers to buy all products
R11	The system shall store data about registered virtual users' habits of expenses
R13	The system shall allow the user to scan its QR code in entrance through the turnstiles
R15.1	The system shall unlock turnstiles after a unique QR code scan in entrance

G6	Anyone who wants to book a visit to the stores should decide their desired time to go.
A5	Only one person will enter the store per ticket
R3	The system shall allow users to book a visit virtually with their desired store, up to the next 7 upcoming days
R6	The system shall allow users to be identified by their phone unique ID
R7	The system shall allow users to be identified by a username of their choosing
R13	The system shall allow the user to scan its QR code in entrance through the turnstiles
R15.1	The system shall unlock turnstiles after a unique QR code scan in entrance

G7	Anyone who wants to go in any store should not need to stand in queue in front of it.
A5	Only one person will enter the store per ticket
R1	The system shall allow users to get a ticket with a date and time that shows when to go to a certain store, virtually
R3	The system shall allow users to book a visit virtually with their desired store, up to the next 7 upcoming days
R6	The system shall allow users to be identified by their phone unique ID
R7	The system shall allow users to be identified by a username of their choosing
R13	The system shall allow the user to scan its QR code in entrance through the turnstiles
R15.1	The system shall unlock turnstiles after a unique QR code scan in entrance

Pagina 17: ha formattato	Etion Pinari	07/12/2020 22:03:00
Tipo di carattere: Grassetto		
Pagina 17: ha formattato	Etion Pinari	07/12/2020 22:03:00
Tipo di carattere: Grassetto		
Pagina 17: Commentato [EP48]	Etion Pinari	07/12/2020 19:26:00
Check wording		
Pagina 18: ha formattato	Etion Pinari	07/12/2020 19:23:00
Tipo di carattere: 12 pt, Non Corsivo		
Pagina 18: ha formattato	Etion Pinari	07/12/2020 21:15:00
Tipo di carattere: 16 pt, Grassetto		
Pagina 18: Tabella formattata	Etion Pinari	07/12/2020 20:15:00
Tabella formattata		
Pagina 18: ha formattato	Etion Pinari	07/12/2020 21:15:00
Tipo di carattere: Grassetto		
Pagina 18: ha formattato	Etion Pinari	07/12/2020 21:16:00
Tipo di carattere: 14 pt		
Pagina 18: ha formattato	Etion Pinari	07/12/2020 21:23:00
Tipo di carattere: 16 pt, Grassetto		
Pagina 18: Tabella formattata	Etion Pinari	07/12/2020 20:15:00
Tabella formattata		
Pagina 18: ha formattato	Etion Pinari	07/12/2020 21:23:00
Tipo di carattere: Grassetto		
Pagina 18: Formattato	Cristian Sbrolli	07/12/2020 21:24:00
Tabulazioni: 1,16 cm, Allineato a sinistra		
Pagina 18: ha formattato	Giorgio Romeo	08/12/2020 09:54:00
Tipo di carattere: Non Grassetto		
Pagina 18: Commentato [EP49]	Etion Pinari	06/12/2020 19:50:00
LOCKS AFTEWARDS		

Pagina 18: ha formattato	Giorgio Romeo	08/12/2020 09:54:00
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Tipo di carattere: Non Grassetto

Pagina 18: ha formattato	Giorgio Romeo	08/12/2020 09:54:00
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Tipo di carattere: Non Grassetto

Pagina 18: Commentato [EP50]	Etion Pinari	06/12/2020 20:27:00
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Add shared phenomena

Pagina 18: ha formattato	Etion Pinari	07/12/2020 21:25:00
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Tipo di carattere: 16 pt, Grassetto

Pagina 18: Tabella formattata	Etion Pinari	07/12/2020 20:15:00
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Tabella formattata

Pagina 18: ha formattato	Etion Pinari	07/12/2020 21:25:00
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Tipo di carattere: Grassetto

Pagina 18: Formattato	Cristian Sbrolli	07/12/2020 21:26:00
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Tabulazioni: 1,69 cm, Allineato a sinistra

Pagina 18: Tabella formattata	Etion Pinari	07/12/2020 20:15:00
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Tabella formattata

Pagina 19: Formattato	Cristian Sbrolli	07/12/2020 21:27:00
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Tabulazioni: 1,99 cm, Allineato a sinistra

Pagina 19: ha formattato	Etion Pinari	07/12/2020 21:28:00
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Tipo di carattere: 16 pt, Grassetto

Pagina 19: Tabella formattata	Etion Pinari	07/12/2020 20:15:00
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Tabella formattata

Pagina 19: ha formattato	Etion Pinari	07/12/2020 21:28:00
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Tipo di carattere: Grassetto

Pagina 19: ha formattato	Etion Pinari	07/12/2020 21:30:00
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Tipo di carattere: 16 pt, Grassetto

Pagina 19: ha formattato	Etion Pinari	07/12/2020 21:30:00
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Tipo di carattere: Grassetto

Pagina 19: Formattato	Cristian Sbrolli	07/12/2020 21:33:00
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Tabulazioni: 3,01 cm, Allineato a sinistra

Pagina 19: Formattato	Cristian Sbrolli	07/12/2020 21:30:00
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Tabulazioni: 3,8 cm, Allineato a sinistra

Pagina 19: ha formattato	Giorgio Romeo	08/12/2020 09:54:00
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Tipo di carattere: 12 pt, Non Grassetto, Non Corsivo

Pagina 19: ha formattato	Etion Pinari	07/12/2020 21:55:00
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Tipo di carattere: 12 pt

Pagina 20: ha formattato	Giorgio Romeo	08/12/2020 09:54:00
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Tipo di carattere: Non Grassetto

Pagina 20: ha formattato	Etion Pinari	07/12/2020 21:34:00
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Tipo di carattere: 16 pt, Grassetto

Pagina 20: ha formattato	Etion Pinari	07/12/2020 21:34:00
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Tipo di carattere: Grassetto

Pagina 20: Formattato	Cristian Sbrolli	07/12/2020 21:33:00
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Tabulazioni: 1,85 cm, Allineato a sinistra

Pagina 20: Formattato	Cristian Sbrolli	07/12/2020 21:35:00
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Normale

Pagina 20: Formattato	Cristian Sbrolli	07/12/2020 21:36:00
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Tabulazioni: 2,22 cm, Allineato a sinistra

Pagina 20: ha formattato	Etion Pinari	07/12/2020 21:36:00
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Tipo di carattere: 16 pt, Grassetto

Pagina 20: ha formattato	Etion Pinari	07/12/2020 21:36:00
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Tipo di carattere: Grassetto

Pagina 20: Formattato	Cristian Sbrolli	07/12/2020 21:37:00
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Normale

Pagina 20: Formattato	Cristian Sbrolli	07/12/2020 21:38:00
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Tabulazioni: 2,38 cm, Allineato a sinistra

[illegible]

Pagina 21: ha formattato	Etion Pinari	07/12/2020 21:39:00
Tipo di carattere: 14 pt, Grassetto		
Pagina 21: ha formattato	Etion Pinari	07/12/2020 21:39:00
Tipo di carattere: Grassetto		
Pagina 21: Commentato [EP51]	Etion Pinari	07/12/2020 21:39:00
Change goal in section 1		
Pagina 21: ha formattato	Giorgio Romeo	08/12/2020 10:05:00
Tipo di carattere: Non Grassetto		
Pagina 21: ha formattato	Giorgio Romeo	08/12/2020 10:05:00
Tipo di carattere: Non Grassetto		
Pagina 21: ha formattato	Etion Pinari	07/12/2020 22:01:00
Tipo di carattere: Non Grassetto, Non Corsivo		
Pagina 21: ha formattato	Giorgio Romeo	08/12/2020 10:05:00
Tipo di carattere: Non Grassetto		
Pagina 21: ha formattato	Etion Pinari	07/12/2020 22:01:00
Tipo di carattere: Non Grassetto, Non Corsivo		
Pagina 21: ha formattato	Giorgio Romeo	08/12/2020 10:05:00
Tipo di carattere: Non Grassetto		
Pagina 21: ha formattato	Etion Pinari	07/12/2020 22:01:00
Tipo di carattere: Non Grassetto		
Pagina 21: ha formattato	Giorgio Romeo	08/12/2020 10:05:00
Tipo di carattere: Non Grassetto		
Pagina 21: ha formattato	Giorgio Romeo	08/12/2020 10:05:00
Tipo di carattere: Non Grassetto		
Pagina 21: ha formattato	Etion Pinari	07/12/2020 21:41:00
Tipo di carattere: 14 pt, Grassetto		
Pagina 21: ha formattato	Etion Pinari	07/12/2020 21:41:00
Tipo di carattere: Grassetto		

Pagina 21: Commentato [EP52]	Etion Pinari	07/12/2020 21:42:00
ADD OTHERS		
Pagina 22: ha formattato	Etion Pinari	07/12/2020 20:10:00
Tipo di carattere: 12 pt, Non Corsivo		
Pagina 22: Formattato	Etion Pinari	07/12/2020 20:09:00
Nessun elenco puntato o numerato		
Pagina 22: Formattato	Etion Pinari	07/12/2020 20:08:00
Rientro: Sinistro: 1,38 cm, Nessun elenco puntato o numerato		
Pagina 22: Formattato	Etion Pinari	07/12/2020 20:08:00
Normale, Rientro: Sinistro: 0,75 cm, Nessun elenco puntato o numerato		
Pagina 22: Formattato	Giorgio Romeo	08/12/2020 09:55:00
Normale, Interlinea: singola, Nessun elenco puntato o numerato		
Pagina 23: ha eliminato	Giorgio Romeo	08/12/2020 09:55:00

Pagina 23: ha eliminato	Etion Pinari	06/12/2020 12:03:00
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Pagina 23: ha formattato	Giorgio Romeo	06/12/2020 23:23:00
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Tipo di carattere: 18 pt

Pagina 24: ha inserito	Etion Pinari	06/12/2020 12:28:00
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Pagina 25: Commentato [GR53]	Giorgio Romeo	04/12/2020 12:11:00
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Prints?

Pagina 31: Commentato [GR54]	Giorgio Romeo	04/12/2020 20:28:00
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Rivedere

Pagina 31: ha eliminato	Etion Pinari	07/12/2020 19:43:00
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5
1)

Pagina 31: ha inserito	Giorgio Romeo	08/12/2020 10:07:00
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5
1)

Pagina 31: ha eliminato	Giorgio Romeo	08/12/2020 10:07:00
--------------------------------	----------------------	----------------------------

6
1)

Pagina 31: ha inserito	Etion Pinari	07/12/2020 19:43:00
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6
1)

Pagina 31: ha inserito	Etion Pinari	07/12/2020 19:43:00
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1)

Pagina 31: ha inserito	Giorgio Romeo	08/12/2020 10:00:00
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,

Pagina 31: ha inserito	Giorgio Romeo	08/12/2020 10:00:00
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,

Pagina 31: ha eliminato	Giorgio Romeo	08/12/2020 09:57:00
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Pagina 31: ha inserito	Giorgio Romeo	08/12/2020 09:57:00
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after asking for assistance from a cashier or a manager inside the store.

Pagina 31: ha inserito	Giorgio Romeo	08/12/2020 10:02:00
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Pagina 31: ha eliminato	Giorgio Romeo	08/12/2020 10:07:00
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Pagina 31: ha eliminato	Giorgio Romeo	08/12/2020 10:00:00
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Pagina 31: ha inserito	Giorgio Romeo	08/12/2020 10:01:00
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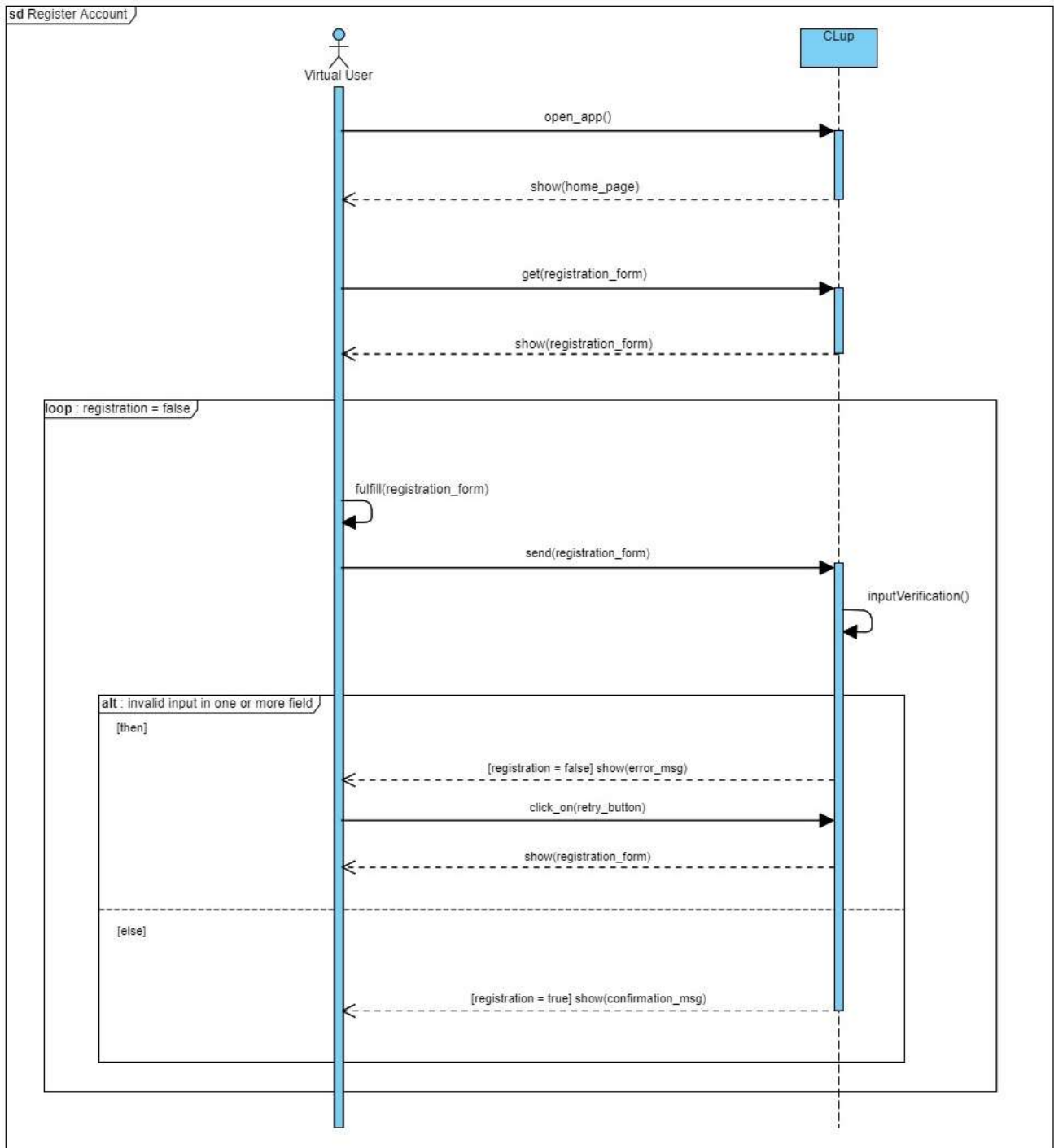
after a time equal to the system's estimated average duration of a grocery shop trip from the indicated time slot.

Pagina 31: ha eliminato	Giorgio Romeo	08/12/2020 10:00:00
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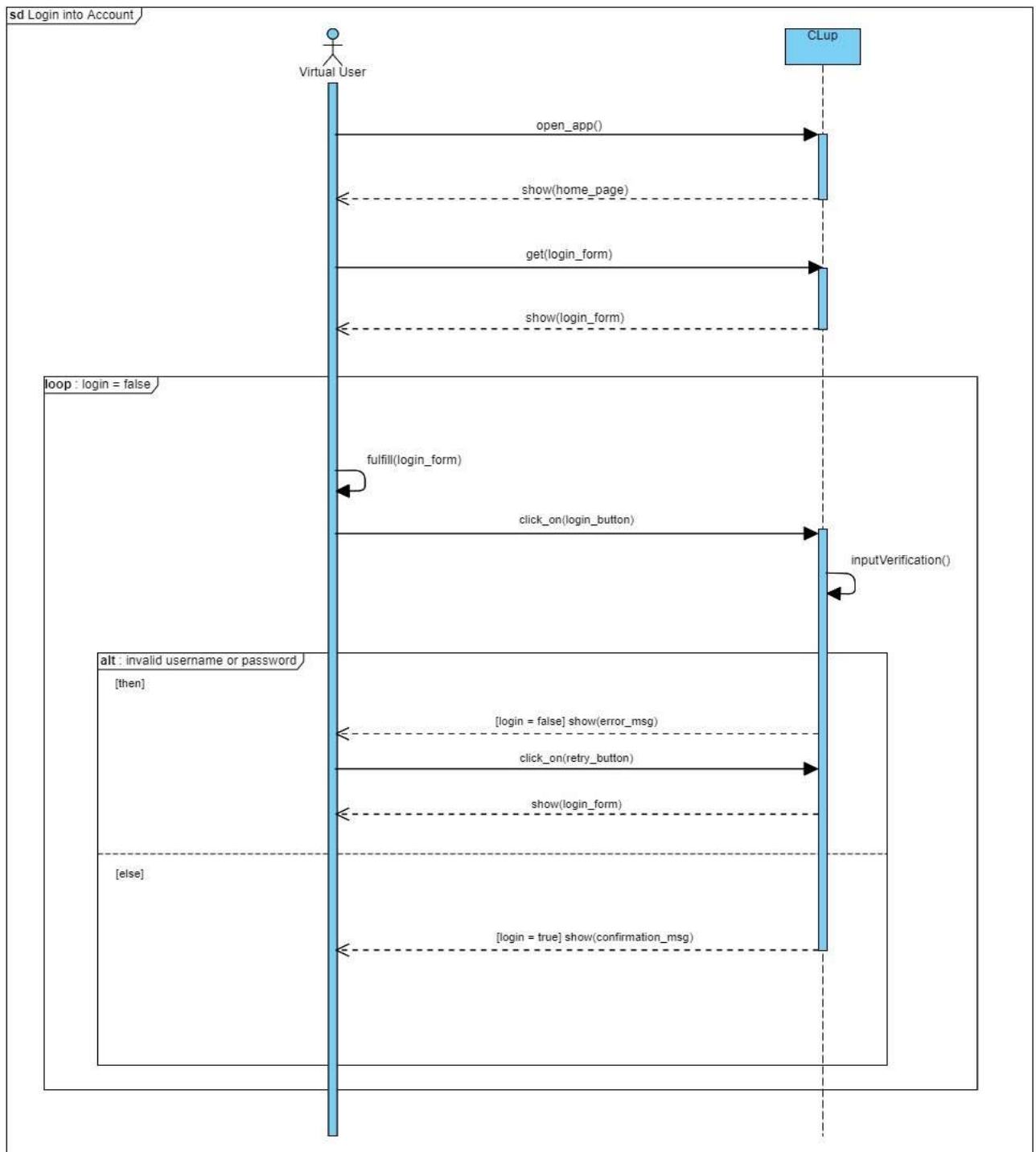
two hours after the time slot indicated in the user's ticket

Pagina 32: ha inserito	Giorgio Romeo	06/12/2020 23:27:00
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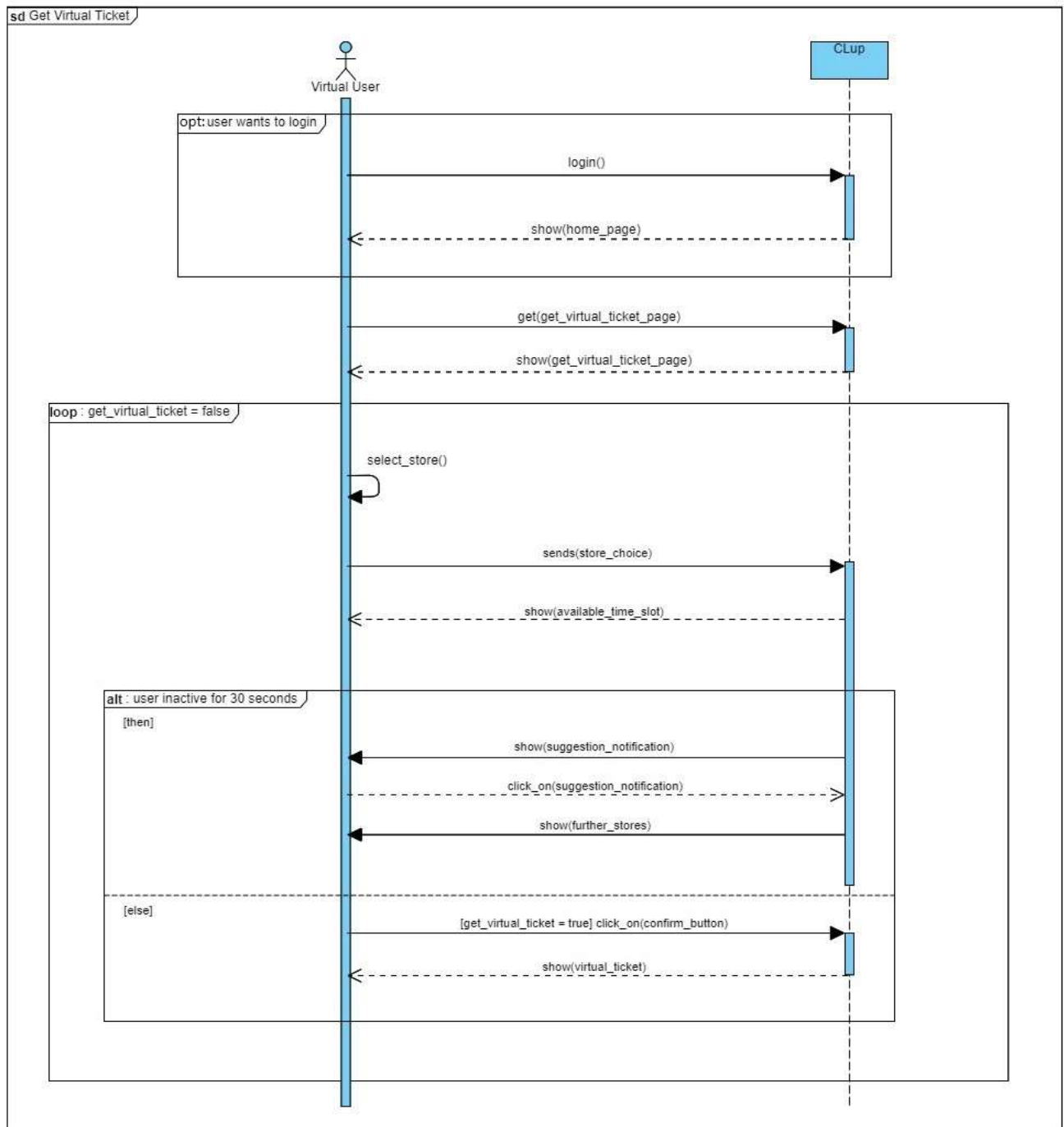
B.2) *Sequence Diagrams*



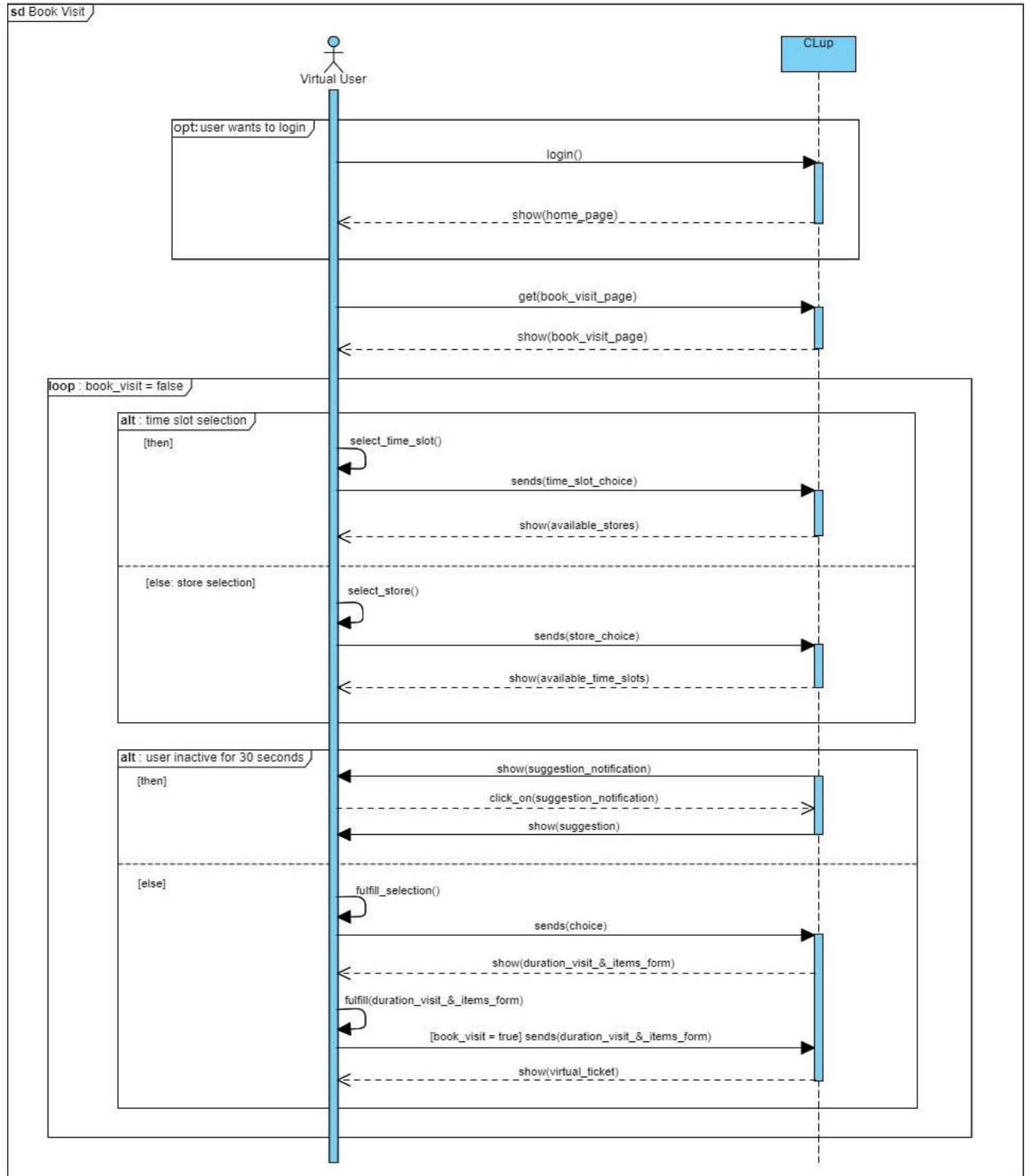
B.3.1) Register Account



B.3.2) Login into Account



B.3.3) *Get Virtual Ticket*



B.3.4) Book Visit

Pagina 33: Formattato	Giorgio Romeo	06/12/2020 23:31:00
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Normale, Nessun elenco puntato o numerato

Pagina 34: Formattato	Giorgio Romeo	06/12/2020 23:34:00
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Normale, Nessun elenco puntato o numerato

Pagina 36: Formattato	Giorgio Romeo	06/12/2020 23:34:00
------------------------------	----------------------	----------------------------

Normale, Nessun elenco puntato o numerato

Pagina 36: Formattato	Giorgio Romeo	06/12/2020 23:29:00
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Rientro: Sinistro: 1,7 cm, Sporgente 0,63 cm, Numerazione automatica + Livello:1 + Stile numerazione: 1, 2, 3, ... + Comincia da:1 + Allineamento: A sinistra + Allinea a: 3,17 cm + Imposta un rientro di: 3,81 cm

Pagina 37: ha eliminato	Giorgio Romeo	06/12/2020 23:52:00
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Pagina 37: ha eliminato	Cristian Sbrolli	04/12/2020 21:57:00
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For example, the dispenser will only have two buttons and a non-touch screen so the system cannot be much interactive.

Pagina 37: ha eliminato	Etion Pinari	07/12/2020 19:44:00
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Pagina 37: ha inserito	Etion Pinari	07/12/2020 19:44:00
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Pagina 38: ha inserito	Etion Pinari	07/12/2020 20:03:00
-------------------------------	---------------------	----------------------------

virtual

Pagina 39: ha inserito	Cristian Sbrolli	04/12/2020 22:04:00
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1.

The following alloy formal analysis has the goal to prove the correct functionality and the formal proof of some of the defined goals for the proposed system. We focus on:

(G3)

*

Pagina 39: ha eliminato	Etion Pinari	07/12/2020 19:45:00
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Pagina 39: Formattato	Cristian Sbrolli	04/12/2020 22:07:00
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Puntato + Livello:1 + Allinea a: 1,27 cm + Imposta un rientro di: 1,9 cm

Pagina 39: ha inserito	Etion Pinari	07/12/2020 19:45:00
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Pagina 39: ha inserito	Cristian Sbrolli	04/12/2020 22:11:00
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The goal of user's safety inside store, modelled as the ability of the system to grant that the maximum number of people inside the store in never exceeded nor tickets are given when the maximum is reached, and given the assumption that people will behave with respect to the local norms (A5

Pagina 39: ha eliminato	Etion Pinari	07/12/2020 20:11:00
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Pagina 39: ha inserito	Etion Pinari	07/12/2020 20:11:00
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4

Pagina 39: ha inserito	Cristian Sbrolli	04/12/2020 22:06:00
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◇).
(G6, G7, G8

Pagina 39: ha eliminato	Etion Pinari	07/12/2020 20:12:00
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G8

Pagina 39: ha inserito	Etion Pinari	07/12/2020 20:11:00
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sub-G9

Pagina 39: ha inserito	Cristian Sbrolli	04/12/2020 22:12:00
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)

Pagina 39: ha inserito	Etion Pinari	07/12/2020 19:45:00
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Pagina 39: ha inserito	Cristian Sbrolli	04/12/2020 22:11:00
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- ❖ *The goals of the users about being able to get tickets and visits in available time slots, so that they do not need to line up in front of the store. These goals are modelled through predicates, showing the correct working of the system, that can give tickets to users both physically through a dispenser and virtually through their devices. Moreover, the advanced functionality of booking a visit is modelled too, with the user choosing both the date and the time slot. The system is shown to work correctly giving tickets only for available time slots.*
- ❖ *(G1, G2) The goals about the shop manager being able to track and regulate the influx of people in the store. This is modelled through a ticket system, that allows to monitor and regulate the maximum number of people admitted inside the store at each timeslot and the current general situation about tickets.*
- ❖ *The soundness of the proposed system, showing that users cannot shop without having their entrance monitored, thus they cannot shop without a ticket or a visit booked. This is modelled with a predicate. The model also considers possible particular cases as the fact that users could lose their ticket after the entrance, with the system recognizing this and correctly considering concluded such a ticket after the end of its time slot.*

4.1 Signatures

sig Market{
dispensers: some TicketDispenser,

```

cashDesks: some CashDesk,
entrances: some QRCodeReader, //Representing the entrance of the market, with turnstiles and
relative QRCode reader
freeExit: some QRCodeReader, //Representing the exit for users that did decide to not buy or
that did not find what they wanted
manager: one StoreManager,
departments: set Department,
ticketManager : one TicketSystem
}{
freeExit & entrances = none
freeExit & cashDesks.reader = none
entrances & cashDesks.reader = none
}

```

```

sig TicketSystem{
maxUsersPerSlot: one Int,
insideMarket: set Ticket,
line: set Ticket,
pastTickets: set Ticket,
currentTimeSlot: one TimeSlot,
currentDate: one Date,
availableSlots: Date -> TimeSlot
}{ //no ticket is in more different states at the same time
#(insideMarket & line)=0
#(insideMarket & pastTickets)=0
#(line & pastTickets)=0
//all tickets insideMarket are tickets booked for the current Date and Time Slot
all t: Ticket | t in insideMarket implies (t.ticketDate = currentDate and t.ticketTimeSlot =
currentTimeSlot)
//Available Dates and Time Slots are the ones for which the number of tickets is less than the max
number admitted to grant safety and that
// are not Dates or Slots different from the current for which there are past tickets (No available
Slots in past dates)
all d:Date, ts:TimeSlot | (d->ts) in availableSlots iff (#((insideMarket + line) & ticketDate.d &
ticketTimeSlot.ts) < maxUsersPerSlot and
no t: Ticket | t in
pastTickets and (t.ticketDate != currentDate and d=t.ticketDate or t.ticketTimeSlot !=
currentTimeSlot and d=t.ticketDate and ts=t.ticketTimeSlot ))
maxUsersPerSlot > 0
}

sig TicketDispenser{
distributedTickets: set PhysicalTicket
}

```

sig QRCode{}

sig QRCodeReader{
scanned: set QRCode
}

sig CashDesk{
reader: one QRCodeReader
}

sig StoreManager {}
abstract sig SafetyStatus{}
one sig Safe extends SafetyStatus{}
one sig UnSafe extends SafetyStatus{}

abstract sig User {
userStatus: one SafetyStatus
}

sig VirtualUser extends User{
userVTickets: set VirtualTicket,
userVisits: set Visit,
userDevice: some SmartDevice
}

sig PhysicalUser extends User{
userPTickets: set PhysicalTicket
}

sig Date{}
sig TimeSlot{}

abstract sig Ticket{
ticketDate: one Date,
ticketTimeSlot: one TimeSlot,
ticketCode: one QRCode
}
sig PhysicalTicket extends Ticket{}
sig VirtualTicket extends Ticket{}
sig Visit extends Ticket{
shoppingListCategories : set Category,
shoppingListItems : set Item
}

sig Item{}

*sig Category{
products: some Item
}*

*sig Department{
categories: some Category
}*

*sig SmartDevice{
localizationDevice: lone GPS
}*

sig GPS{}

4.2 Utilities

*//gets all the qr code readers that scanned the given ticket
fun scannedBy[t: Ticket] : set QRCodeReader {
 scanned.(t.ticketCode)
}*

*//gets all tickets managed by the given ticket system
fun getAllTickets[ts: TicketSystem] : set Ticket {
 ts.insideMarket + ts.line + ts.pastTickets
}*

*//gets all the visits and tickets of the given virtual user
fun getUserTicketsAndVisits[u: VirtualUser] : set Ticket {
 u.(userVTickets + userVisits)
}*

*//gets the ticket that manages the given ticket
fun getTicketManager[t: Ticket] : one TicketSystem{
 (line + insideMarket + pastTickets).t
}*

*////checks if the two markets are the result of a new ticket insertion
pred checkEqualStateMarketPlusNewTicket[t: Ticket, m,m1 : Market]{
 m1.ticketManager.(pastTickets + insideMarket) = m.ticketManager.(pastTickets + insideMarket)
 and
 m1.ticketManager.line= m.ticketManager.line + t and*

```

m1.dispensers=m.dispensers and m1.cashDesks=m.cashDesks and m1.entrances=m.entrances and
m1.freeExit=m.freeExit and m1.manager=m.manager and m1.departments=m.departments
}

```

```

//checks if the two users are the result of a new virtual ticket insertion
pred checkEqualStateVUserPlusNewTicket[t: VirtualTicket, u,u1: VirtualUser]{
u1.userVTickets=u.userVTickets + t and u1.userVisits = u.userVisits and u1.userDevice =
u.userDevice
}

```

```

//checks if the two users are the result of a new visit insertion
pred checkEqualStateVUserPlusNewVisit[v: Visit, u,u1: VirtualUser]{
u1.userVTickets=u.userVTickets and u1.userVisits = u.userVisits + v and u1.userDevice =
u.userDevice
}

```

```

//checks if the two users are the result of a new physical ticket insertion
pred checkEqualStatePUserPlusNewTicket[t: PhysicalTicket, u,u1: PhysicalUser]{
u1.userPTickets=u.userPTickets + t
}

```

4.3 Facts

```

//No market gives more tickets per time slot than the max allowed by the shop manager
fact{
all m: Market, d: Date, t: TimeSlot |
    let marketTickets= getAllTickets[m.ticketManager] |
        #(marketTickets & ticketDate.d & ticketTimeSlot.t) <=
m.ticketManager.maxUsersPerSlot
}

```

```

//definition of user safety
fact{
all vu: VirtualUser | vu.userStatus = Safe iff
    ( no t: Ticket, ts: TicketSystem | t != none and t in (vu.userVTickets +
vu.userVisits) and
        t in ts.insideMarket and #(ts.insideMarket) > ts.maxUsersPerSlot
    )
all pu: PhysicalUser | pu.userStatus = Safe iff
    ( no t: Ticket, ts: TicketSystem | t != none and t in pu.userPTickets and
        t in ts.insideMarket and #(ts.insideMarket) > ts.maxUsersPerSlot
    )
}

```

//each ticket can be scanned at most 2 times: 2 times is a past ticket that has entered and exited, 1 time is only entered, 0 times is in line

fact {

all t:Ticket |

#scannedBy[t] <= 2 and

//ticket is past if it has been scanned 2 times, one at entrance and one at exit

((#scannedBy[t] = 2) implies (let ts = getTicketManager[t] | t in ts.pastTickets and

#(scannedBy[t] & (ticketManager.ts).entrances) = 1 and #(scannedBy[t] &

((ticketManager.ts).freeExit + (ticketManager.ts).cashDesks.reader) = 1)) and

//ticket is inside if it has been scanned 1 time at entrance

(#scannedBy[t] = 1 iff let ts = getTicketManager[t] | t in ts.insideMarket and #(scannedBy[t]
& (ticketManager.ts).entrances) = 1) and

//ticket is in line if it has been scanned 0 times and it is not referring to a past Date, if the latter
is true then the ticket is past (ticket invalidated because of user not presenting)

(#scannedBy[t] = 0 implies ((no t1: Ticket | t1 != t and getTicketManager[t1] =

getTicketManager[t] and t1 in getTicketManager[t1].pastTickets and #scannedBy[t1] = 2 and
(t1.ticketDate !=

getTicketManager[t1].currentDate and t.ticketDate = t1.ticketDate or

t1.ticketTimeSlot !=

getTicketManager[t1].currentTimeSlot and t.ticketDate = t1.ticketDate and

t.ticketTimeSlot=t1.ticketTimeSlot)) implies

t in

getTicketManager[t].line else t in getTicketManager[t].pastTickets))

}

//each physical ticket is generated by one dispenser belonging to the ticket's market

fact{

all pt: PhysicalTicket | one d: TicketDispenser | pt in d.distributedTickets and dispensers.d =
ticketManager.((line + insideMarket + pastTickets).pt)

}

//no same Ticket in two different markets' TicketSystem, in any of the states (inside, past, in line)

fact {

no disj ts1,ts2: TicketSystem |

#(getAllTickets[ts1] & getAllTickets[ts2]) != 0

}

//no same dispenser/cash desks/departments/ticketManager for disjoint markets

fact {

no disj m1,m2: Market |

#(m1.dispensers & m2. dispensers + m1.cashDesks & m2.cashDesks +

m1.departments & m2.departments + m1.ticketManager & m2.ticketManager) != 0

}

```
//each ticket has a different QRCode
fact {
  no disj t1,t2: Ticket |
    #{t1.ticketCode & t2.ticketCode}!= 0
}
```

```
//each category is associated to a Department in each Market
fact{
  all disj d1,d2: Department | departments.d1 = departments.d2 implies no c: Category | c in
  d1.categories and c in d2.categories
}
```

```
//different markets have no same QRcodeReader
fact{
  all disj m1,m2: Market | (m1.freeExit + m1.entrances + m1.cashDesks.reader) & (m2.freeExit +
  m2.entrances + m2.cashDesks.reader) = none
}
```

```
//each Device has a different GPS device
fact {
  all disj d1,d2: SmartDevice |
    (d1.localizationDevice != none and d2.localizationDevice != none) implies d1.localizationDevice
    != d2.localizationDevice
}
```

```
//each ticket system is associated to one and only one market
fact{
  all t: TicketSystem |
    #{ticketManager.t} = 1
}
```

```
//eachQRCodeReader is associated to a desk, an entrance or an exit
fact {
  all qr: QRCodeReader | #{freeExit.qr + entrances.qr + reader.qr} = 1
}
```

```
//each QRCode is associated to one ticket
fact{
  all c: QRCode | #{ticketCode.c} = 1
}
```

```
//each ticket dispenser is associated to one market
fact{
  all td: TicketDispenser | #{dispensers.td} = 1
}
```

//each cashDesk is associated to one market

```
fact{
all cd: CashDesk | #(cashDesks.cd) = 1
}
```

//each department is associated to one market

```
fact{
all d: Department | #(departments.d) = 1
}
```

//each item is associated to one category

```
fact{
all i: Item | #(products.i) = 1
}
```

//each GPS is associated to a SmartDevice

```
fact {
all g: GPS | #(localizationDevice.g) =1
}
```

//each SmartDevice is associated to a Virtual User

```
fact {
all sd: SmartDevice | #(userDevice.sd) =1
}
```

//each category is associated at least to one department

```
fact{
all c: Category | #categories.c >= 1
}
```

//each ticket of any type belongs to a correct type of user

```
fact{
all vt: VirtualTicket | #(userVTickets.vt) = 1
all pt: PhysicalTicket | #(userPTickets.pt) = 1
all vs: Visit | #(userVisits.vs) = 1
}
```

4.4 *Dynamic Model*

//G3. User inside stores are safe

```
assert allUsersInsideStoresAreSafe{
all u: User | u.userStatus= Safe
}
```

//G7. If there are available time slots in the current date, user can get a ticket and be put in line

```

pred vUserGetsTicket[m,m1: Market, u,u1: VirtualUser]{
  some ts: TimeSlot | ts in m.ticketManager.currentDate.(m.ticketManager.availableSlots) and
    some t: Ticket | t.ticketDate = m.ticketManager.currentDate and
      t.ticketTimeSlot = ts and
        t in m1.ticketManager.line and
        checkEqualStateMarketPlusNewTicket[t, m,m1] and
        checkEqualStateVUserPlusNewTicket[t, u,u1]
}

```

//G8. If there are available time slots in the current date, physical user can get a ticket from the dispenser

```

pred pUserGetsTicket[m,m1: Market, u,u1: PhysicalUser]{
  some ts: TimeSlot | ts in m.ticketManager.currentDate.(m.ticketManager.availableSlots) and
    some t: Ticket | t.ticketDate = m.ticketManager.currentDate and
      t.ticketTimeSlot = ts and
        t in m1.ticketManager.line and m1.dispensers.distributedTickets
        =m.dispensers.distributedTickets + t and
        checkEqualStateMarketPlusNewTicket[t, m,m1] and
        checkEqualStatePUserPlusNewTicket[t, u,u1]
}

```

//G6. If the selected date and time slot are available, virtual user can book a visit in that date and time slot

```

pred vUserBooksVisit[m,m1: Market, u,u1: VirtualUser,ts: TimeSlot, d: Date]{
  (d->ts) in m.ticketManager.availableSlots and
    some v: Visit | v.ticketDate = d and v.ticketTimeSlot = ts and
      checkEqualStateVUserPlusNewVisit[v,u,u1] and
      checkEqualStateMarketPlusNewTicket[v,m,m1]
}

```

//User cannot shop whitout having registered their entrance scanning QRCode

```

assert noExitWithoutEntering{
  no t: Ticket | (one qrReader: QRCodeReader | t.ticketCode in qrReader.scanned and qrReader in
    (Market.freeExit + Market.cashDesks.reader)) and
    no qrReader: QRCodeReader | t.ticketCode in qrReader.scanned and
      qrReader in Market.entrances
}

```

Pagina 39: ha formattato	Cristian Sbrolli	04/12/2020 22:04:00
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Tipo di carattere: (Predefinito) +Corpo (Calibri), 12 pt

Pagina 39: ha formattato	Cristian Sbrolli	04/12/2020 22:04:00
---------------------------------	-------------------------	----------------------------

Tipo di carattere: (Predefinito) +Corpo (Calibri), 12 pt

Pagina 40: ha formattato	Cristian Sbrolli	05/12/2020 00:06:00
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Tipo di carattere: (Predefinito) +Corpo (Calibri), 12 pt

Pagina 40: ha formattato	Cristian Sbrolli	04/12/2020 22:04:00
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Tipo di carattere: (Predefinito) +Corpo (Calibri), 12 pt

Pagina 41: ha formattato	Cristian Sbrolli	04/12/2020 22:04:00
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Tipo di carattere: (Predefinito) +Corpo (Calibri), 12 pt

Pagina 41: ha formattato	Cristian Sbrolli	04/12/2020 22:04:00
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Tipo di carattere: (Predefinito) +Corpo (Calibri), 12 pt

Pagina 42: ha formattato	Cristian Sbrolli	05/12/2020 00:11:00
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Tipo di carattere: 22 pt

Pagina 42: Formattato	Cristian Sbrolli	05/12/2020 00:09:00
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Numerazione automatica + Livello:1 + Stile numerazione: 1, 2, 3, ... + Comincia da:1 + Allineamento: A sinistra + Allinea a: 0,63 cm + Imposta un rientro di: 1,27 cm

Pagina 42: ha formattato	Cristian Sbrolli	05/12/2020 00:10:00
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Tipo di carattere: 12 pt

Pagina 42: ha formattato	Cristian Sbrolli	04/12/2020 22:04:00
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Tipo di carattere: (Predefinito) +Corpo (Calibri), 12 pt

Pagina 43: ha formattato	Cristian Sbrolli	05/12/2020 00:13:00
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Tipo di carattere: 22 pt

Pagina 43: Formattato	Cristian Sbrolli	05/12/2020 00:13:00
------------------------------	-------------------------	----------------------------

Numerazione automatica + Livello:1 + Stile numerazione: 1, 2, 3, ... + Comincia da:1 + Allineamento: A sinistra + Allinea a: 0,63 cm + Imposta un rientro di: 1,27 cm

Pagina 43: ha formattato	Cristian Sbrolli	04/12/2020 22:04:00
---------------------------------	-------------------------	----------------------------

Tipo di carattere: (Predefinito) +Corpo (Calibri), 12 pt

Pagina 43: ha formattato	Cristian Sbrolli	04/12/2020 22:04:00
Tipo di carattere: (Predefinito) +Corpo (Calibri), 12 pt		
Pagina 43: Formattato	Cristian Sbrolli	04/12/2020 22:46:00
Rientro: Prima riga: 0,63 cm		
Pagina 46: ha formattato	Cristian Sbrolli	04/12/2020 22:04:00
Tipo di carattere: (Predefinito) +Corpo (Calibri), 12 pt		
Pagina 46: Formattato	Cristian Sbrolli	05/12/2020 00:14:00
Numerazione automatica + Livello:1 + Stile numerazione: 1, 2, 3, ... + Comincia da:1 + Allineamento: A sinistra + Allinea a: 0,63 cm + Imposta un rientro di: 1,27 cm		
Pagina 46: ha formattato	Cristian Sbrolli	05/12/2020 00:15:00
Tipo di carattere: 22 pt		
Pagina 46: ha formattato	Cristian Sbrolli	04/12/2020 22:04:00
Tipo di carattere: (Predefinito) +Corpo (Calibri), 12 pt		
Pagina 46: ha formattato	Cristian Sbrolli	04/12/2020 22:04:00
Tipo di carattere: (Predefinito) +Corpo (Calibri), 12 pt		
Pagina 46: ha formattato	Cristian Sbrolli	04/12/2020 22:04:00
Tipo di carattere: (Predefinito) +Corpo (Calibri), 12 pt		
Pagina 47: ha formattato	Cristian Sbrolli	04/12/2020 22:04:00
Tipo di carattere: (Predefinito) +Corpo (Calibri), 12 pt		
Pagina 47: Formattato	Cristian Sbrolli	05/12/2020 03:22:00
Rientro: Sinistro: 1,27 cm, Interlinea: multipla 1,2 ri, Nessun elenco puntato o numerato		
Pagina 47: ha eliminato	Cristian Sbrolli	05/12/2020 01:05:00
Pagina 47: ha inserito	Cristian Sbrolli	05/12/2020 01:05:00

4.5 Results

run vUserGetsTicket for 5
run vUserBooksVisit for 5
run pUserGetsTicket for 5
check noExitWithoutEntering for 5

check *allUsersInsideStoresAreSafe* for 5

StoreManager, exactly 1 *TicketDispenser*, exactly 1 *CashDesk*, exactly 2 *VirtualUser*, exactly 1 *PhysicalUser*, exactly 4 *Ticket*

5 commands were executed. The results are:

#1: **Instance found.** *vUserGetsTicket* is consistent.

#2: **Instance found.** *vUserBooksVisit* is consistent.

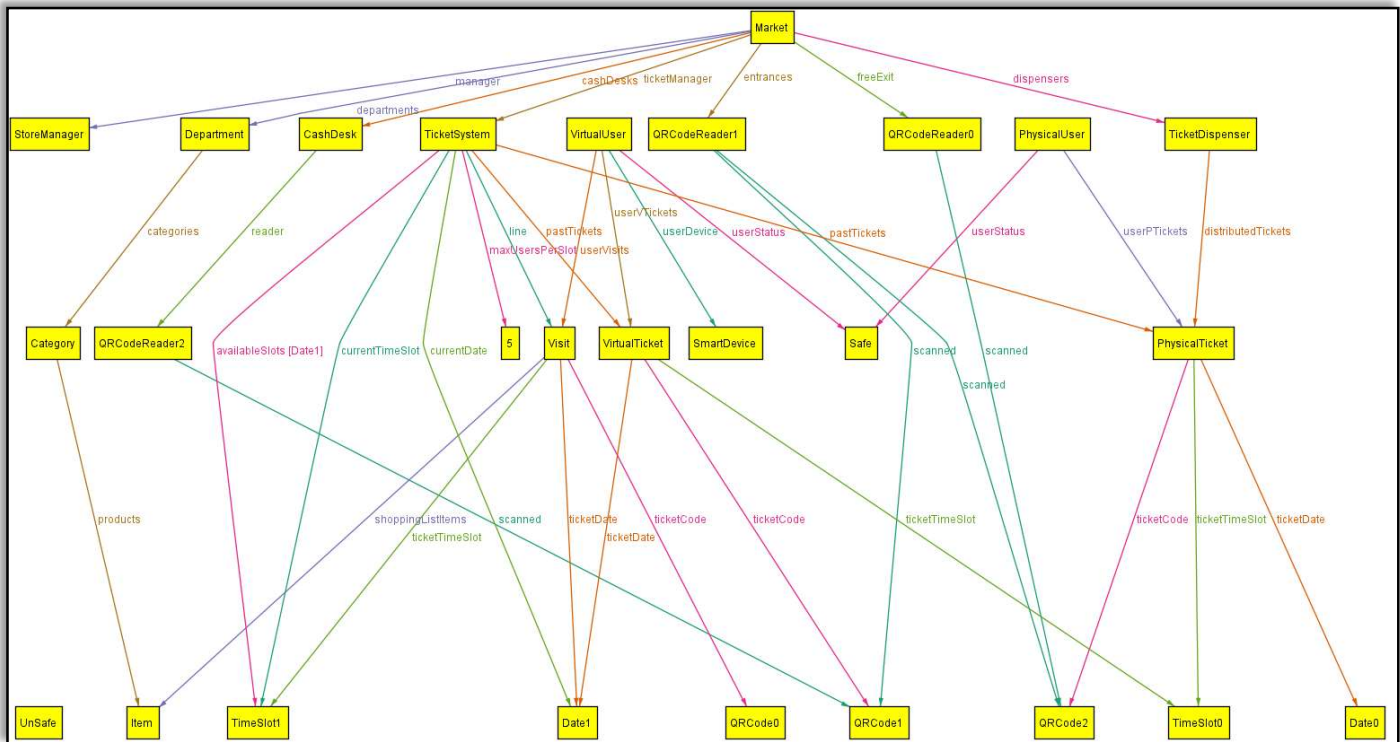
#3: **Instance found.** *pUserGetsTicket* is consistent.

#4: No counterexample found. *noExitWithoutEntering* may be valid.

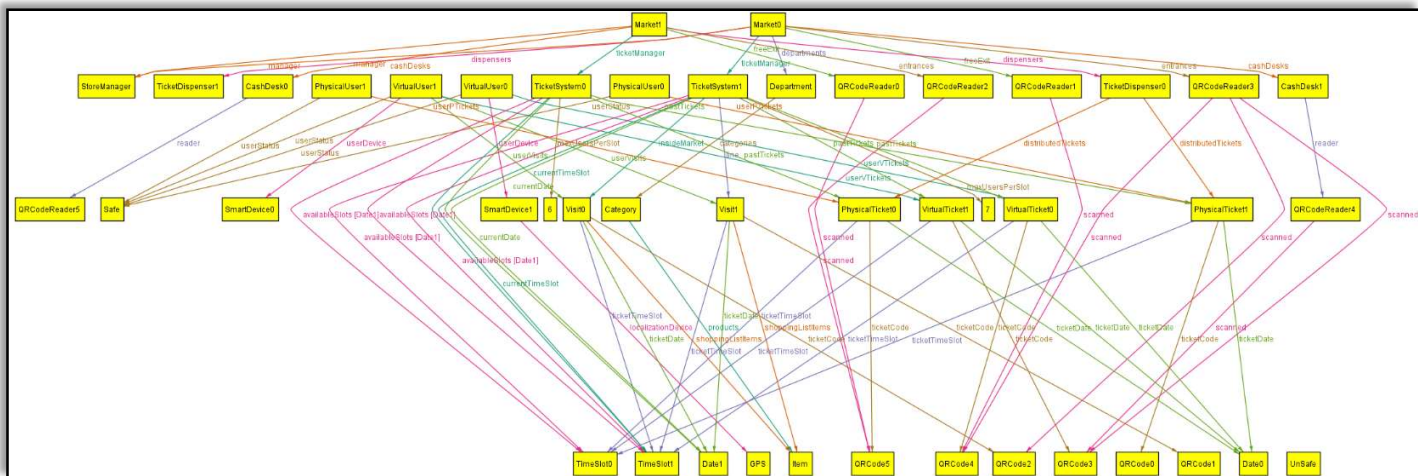
#5: No counterexample found. *allUsersInsideStoresAreSafe* may be valid.

4.6 Generated World

Here we report a simple and a more complex world generated by the alloy model.



The simple one is easy to understand, and highlights the properties mentioned in paragraph 4.1, it is clear the association between tickets and users, either physical or virtual, and the correct modelling of the situation of the market (only one market reported for ease of reading).



The model can also generate more complex and multi-market worlds, of more difficult reading, but still correct. Here is reported one example:

Pagina 47: ha formattato	Cristian Sbrolli	05/12/2020 03:22:00
Tipo di carattere: (Predefinito) +Corpo (Calibri), 12 pt		
Pagina 47: Formattato	Cristian Sbrolli	05/12/2020 01:05:00
Interlinea: multipla 1,2 ri, Numerazione automatica + Livello:1 + Stile numerazione: 1, 2, 3, ... + Comincia da:1 + Allineamento: A sinistra + Allinea a: 0,63 cm + Imposta un rientro di: 1,27 cm		
Pagina 47: Commentato [CS55]	Cristian Sbrolli	04/12/2020 22:55:00
Tdb cosa vogliamo far vedere		
Pagina 47: ha formattato	Cristian Sbrolli	05/12/2020 03:26:00
Tipo di carattere: (Predefinito) +Corpo (Calibri), 12 pt		
Pagina 48: Formattato	Cristian Sbrolli	05/12/2020 03:28:00
Allineato a sinistra		
Pagina 49: Formattato	Cristian Sbrolli	05/12/2020 03:26:00

Normale

Pagina 49: ha formattato	Cristian Sbroli	05/12/2020 03:03:00
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Tipo di carattere: 14 pt

Pagina 49: Formattato	Cristian Sbroli	05/12/2020 03:03:00
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Rientro: Sinistro: 1,27 cm, Nessun elenco puntato o numerato

Pagina 49: Formattato	Cristian Sbroli	05/12/2020 02:18:00
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Normale, Nessun elenco puntato o numerato

Pagina 49: Formattato	Cristian Sbroli	05/12/2020 01:50:00
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Rientro: Sinistro: 1,27 cm

Modifiche Intestazione e piè di pagina

Modifiche caselle di testo

Modifiche caselle di testo Intestazione e piè di pagina

Modifiche note a piè di pagina

Pagina 17: ha eliminato	Etion Pinari	06/12/2020 12:26:00
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¹ Requirements' related actors:

-Red: users -Green: store managers (next page)

Through the store manager actor, we also represent all store stakeholders that have as a goal to have as many people as possible inside stores

Modifiche note di chiusura