

Concordia University



SOEN-6481 SOFTWARE SYSTEMS REQUIREMENTS SPECIFICATION

TICKET VENDING MACHINE (FALL 2019)

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Contents

1.1	Problem 1	2
1.1.1	iGo Description	2
1.1.2	Scope of Use	2
1.2	Problem 2	3
1.2.1	Context of Use Model	3
1.3	Problem 3	5
1.3.1	Domain Model	5
1.4	Problem 4	6
1.4.1	Use Case Model	6
Glossary		11
Acronyms		12

Deliverable - 1

1.1 Problem 1

1.1.1 iGo Description

The product iGo is a software solution for TVM (Ticket Vending Machine) which allows user to purchase tickets, recharge their OPUS card and get information about the different tickets Soci[Pleaseinsert “PrerenderUnicode–”intopreamble]t[Pleaseinsert “PrerenderUnicode–”intopreamble] de transport de Montr[Pleaseinsert “PrerenderUnicode–”intopreamble]al (STM)(Société de transport de Montréal) offers. iGO products is designed to server people in Montreal, Quebec, Canada who use STM metros and buses. STM offers two ticketing methods: Rechargable Card OPUS Card and Non-Rechargable Card limited use cards. With OPUS card user can make unlimited trips in STM buses and metros for a particular period, which is the recharge cycle of the card.

User who wish recharge their OPUS card are first required to place their card in the card reader slot in TVM, they can then select the type of purchase they want to make and can select the mode of payment they wish to use. Currently, iGo supports cash and card payments. Users who want to purchase a Non-rechargable can select from a list of options based on the type of trip they wish to make. The purchase will be considered successfull only after the payment has been authenticated(in case of card payments) and is successfull. After a sucessfull purchase the user have the option to select the mode through which they wish to receive receipt. iGo supports 3 type of receipt delivery: Paper, email and SMS receipts.

iGo will also internally generate a transaction when the user interacts with the system. The transaction is recorded irrespective of whether the purchase is successfull or not. These transactions helps track the purchase in case of any failure in the system. At bottom bar of the TVM display, a helpline number is displayed at all times in case user needs any kind of assistance.

1.1.2 Scope of Use

The product iGo at this moment is restricted to server in Montreal city only. iGo is a software system and does not include the development, maintenance or deployment of the physical devices needed to develop a TVM. iGo does not provide any online platform or device application to recharge OPUS card or purchase ticket.

1.2 Problem 2

1.2.1 Context of Use Model

Factor	Description
User	
Role	User is the customer/passenger to purchase tickets
Experience	The experience depends on the how frequent the user is using the TVM, System is designed keeping in mind of a new user without any system knowledge
Education	System is designed assuming that customer can atleast read English.
Physical Characteristics	The physical TVM should be designed in such a way that even the physically challenged customer with wheel chair should also access the TVM.
Cognitive Characteristics	The cognitive knowledge of a user should be counted as minimal, the system is designed keeping in mind of new user
Location	The location of user must be inside Montreal city.
Age	The system should offer reduced fares according to the user's age.
Profession	The system should offer reduced fares for students.
Special Variant Preferences in UI	For special need people with visual impairment system should offer voice messages.
Task	
Choice in system use	Number of tasks in the system should be divided individually, so that the user can choose the options such as purchasing for a single trip, buying a monthly pass etc
Complexity	Since the users can be with minimal knowledge on the TVM, tasks should be simple and straight forward
Demands	Available tasks should be able to satisfy user requirements with context of use. For example system should not issue more tickets that the number of passengers

Workflow Con- trollability	The workflow of each task in TVM machine should be easily controllable by the user. For example user should be able to navigate back to the main menu, user should be able to cancel the ticket selection or transaction etc.
Safety	The task payment should be made safer, in such a way that the card payment authentication is kept confidential. Even the user information if stored should be maintained confidential.
Criticality	Task criticality should be divided based on the how important the task is and how often it is used/reused.
Frequency	The TVM can be used any number of times by any number of users, so the TVM should be able to guide each user based on the current information available with respect to trains or buses.
Temporal Char- acteristics	According to user requests that are dependant to date, the system should validate the request based on current date.
Environment	
Physical Envi- ronment	The TVM will be placed in metro stations, the passengers will be able to buy ticket/passes before there journey in train/bus. The factors like lights on the TVM machine for the visibility, space available to access the TVM, is the place allocated is too noisy should be taken care.
Technical Envi- ronment	The TVM will be connected to the data server where the user informations can be retrieved, it will be connected to the bank server to authenticate the credit/debit cards.
Social Environ- ment	The TVM must support at least two languages including English and French since the official language of Quebec is French.

1.3 Problem 3

1.3.1 Domain Model

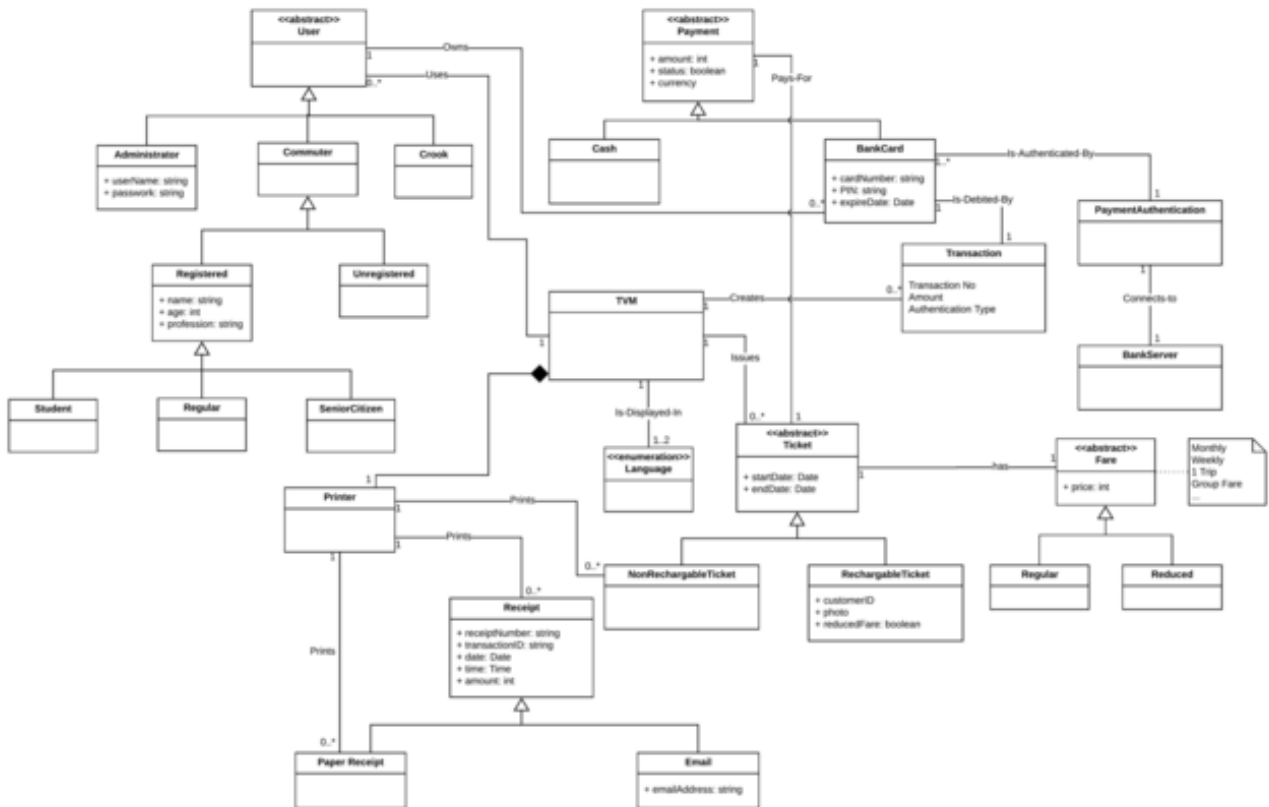


Figure 1.1: Change Language Use Case Model

1.4 Problem 4

1.4.1 Use Case Model

Use Case: Change Language

Number	1	
Name	Change Language	
Summary	User wants to change to desired language	
Priority	4	
Preconditions	N/A	
Postconditions	User is able to change to desired language	
Primary Actor(s)	TVM Customer	
Secondary Actors(s)	TVM and Administrator	
Trigger	User has chosen to change language	
Main Success Scenarios	Step	Action
	1	User can select the desired language
	2	The application is displayed in desired language
Extensions	N/A	
Open Issues	1	Language available to be decided by the customer

Use Case: View Ticket Plans

Number	2	
Name	View Ticket Plans	
Summary	User has viewed different ticket plans	
Priority	1	
Preconditions	N/A	
Postconditions	User has viewed different ticket plans	
Primary Actor(s)	TVM Customer	
Secondary Actors(s)	Data Store	
Trigger	User has chosen to view ticket plans	
Main Success Scenarios	Step	Action
	1	User selects the language
	2	System asks the ticket type
	3	User selects the ticket type
	2	System displays ticket plans
Extensions	N/A	
Open Issues		NA

Use Case: Buy Tickets

Number	3	
Name	Buy Ticket	
Summary	Customer buy a ticket using TVM	
Priority	1	
Preconditions	Customer has access to a valid payment method	
Postconditions	Customer has received the ticket and the receipt	
Primary Actor(s)	TVM Customer	
Secondary Actors(s)	Payment Authentication, Bank Server, Data Store	
Trigger	Customer has chosen to buy a ticket	
Main Success Scenarios	Step	Action
	1	Customer selects the language
	2	System displays ticket plans
	3	Customer chooses a ticket plan
	4	System asks for payment method
	5	Customer selects a payment method
	6	Customer makes a payment
	7	System asks for type of receipt
	8	Customer selects the type of receipt
	9	System prints receipt and ticket
	10	Customer removes receipt and ticket
	11	System displays welcome message
Extensions	Step	Branching Action
	6a	The payment is not successful
	6b	System displays message that payment is not successful
	6c	System exits and displays welcome message
Open Issues		NA



Figure 1.2: Change Language Use Case Model

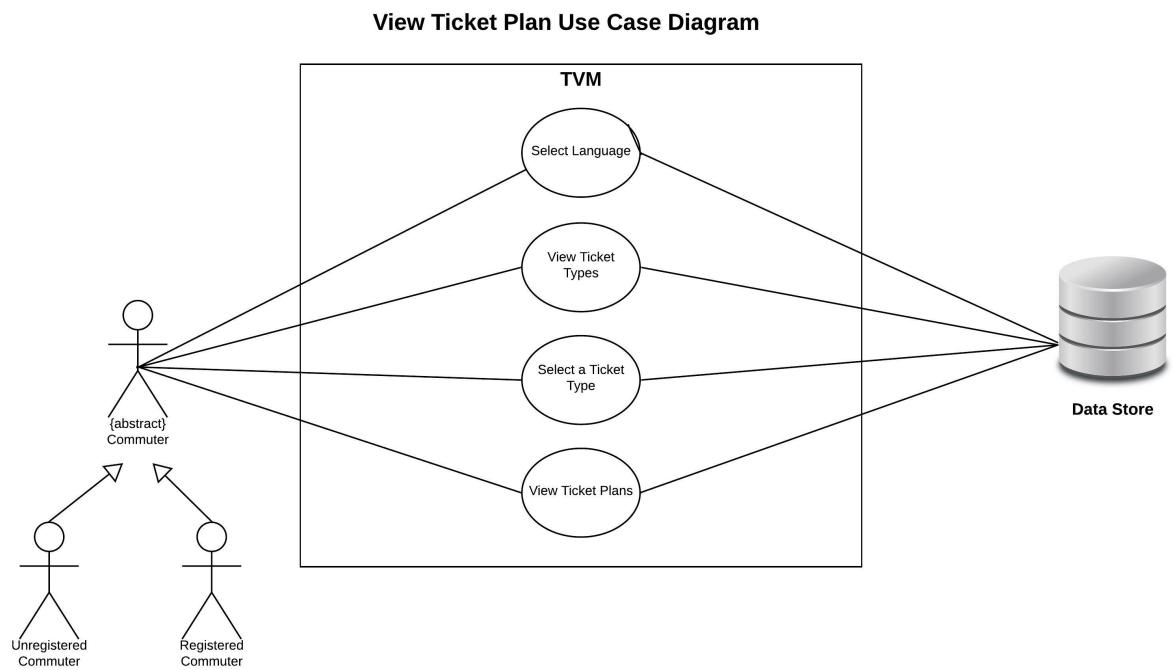


Figure 1.3: View Ticket Plans

Glossary

iGo The online Ticket Vending Machine Web Application integrating with STM system. 2

Non-Rechargable Card One time use and throw card.. 2

OPUS The online Ticket Vending Machine Web Application integrating with STM system. 2

Rechargable Card A card that can be recharged to be used monthly, weekly.. 2

TVM The online Ticket Vending Machine Web Application integrating with STM system. 2

Acronyms

STM Société de transport de Montréal. 2