

## USE CASE DESCRIPTION:

ID	NAME	PRIMARY ACTOR	PRE-CONDITION	DESCRIPTION	EXTIONSTION POINTS	TRIGGER	POST- CONDITION
UC1	SELEC T DRINK	CUSTOME R	<ol> <li>Machine In Service</li> <li>Adequate Stock</li> </ol>	<ol> <li>Customer Press         Keyboard Pad To         Select A Drink</li> <li>Machine Check The         Stock Level According         To The Drink_Code</li> </ol>	<ol> <li>Reject If Out_Of_Stock =         True</li> <li>User Cancel Order</li> </ol>		1. ORDER HAS BEEN PLACED
UC2	PAYME NT	CUSTOME R	1. Cash_Box_Full	<ol> <li>Customer Inserted Coins According To Drink Price</li> <li>Machine Give User Change</li> </ol>	<ol> <li>Refund If Cash_Box_Full =         True &amp; User Cancel &amp;         Change Failed</li> <li>Change If Coins &gt; Price</li> <li>Print Receipt</li> </ol>	UC1	1. PAYMENT COMPLETED
UC3	GET DRINK S	CUSTOME R	<ol> <li>Payment Success</li> <li>Drink Is Available</li> </ol>	<ol> <li>Machine Dispensing Drinks And Poll Into Cup</li> <li>User Get Drinks</li> </ol>	Drink_Not_Available	UC2	IDLE
UC4	CANCE L ORDER	CUSTOME R	Order Has Not Been     Confirmed	User press keyboard pad to cancel before confirm their order	If Coins Were Inserted, Refund	UC1 & UC2	IDLE
UC5	CONFI R-M ORDER	CUSTOME R	Payment Has Been Completed	<ol> <li>User Press "Enter" To Confirm This Order</li> <li>Machine Start To Prepare Drink</li> </ol>		UC2	1. PREPARING DRINKS
UC6	REFUN D	CUSTOME R	Coins Were Inserted,     Order Has Not Been     Confirmed	When Machine Failed     Or User Cancel The     Order, Return The     Coins Were Inserted	1. Machine failed	UC4	REFUND COINS

UC7	CHANG E	CUSTOME R	1. COINS WERE INSERTED	When Coins inserted >     Price, Machine gives     customer change			
UC8	COLLE CT CASH	ENGINEER	<ol> <li>Cash_Box_Full</li> <li>Door Is Opening</li> <li>Identity Authenticated</li> </ol>	<ol> <li>Engineer authentic his identity</li> <li>Engineer collects money in cash box</li> </ol>	1. Failed To Authenticate		CASH_BOX_isE mpty
UC9	ADD STOCK	ENGINEER	<ol> <li>Door Is Opening</li> <li>Out_Of_Stock = True</li> <li>Identity Authenticated</li> </ol>	<ol> <li>Engineer authentic his identity</li> <li>engineer adds ingredient and cups into machine</li> </ol>	1. Failed To Authenticate		STOCK = ADEQUATE
UC10	TESTIN G	ENGINEER	<ol> <li>Door Is Opening</li> <li>Identity Authenticated</li> </ol>	<ol> <li>Engineer authentic his identity</li> <li>engineer does some tests on machine</li> </ol>	1. Failed To Authenticate		
UC11	CLOSE THE DOOR	ENGINEER	1. Door Is Opening	<ol> <li>Engineer finished his job</li> <li>Engineer closes the door</li> </ol>			IDLE
UC12	AUTHE NTICAT E	ENGINEER & SERVICE OPERATO R	<ol> <li>System Working</li> <li>Machine Is Online</li> </ol>	<ol> <li>User want enter machine system</li> <li>User enter his pin or username and password</li> </ol>	<ol> <li>Alarm, If Timeout For Waiting Passcode</li> <li>Inform Operator, If Timeout For Waiting Passcode</li> <li>Create New Account Via Master Password By Operator</li> </ol>	UC8, UC9, UC10	IDENTITY AUTHENTICATE D
UC13	CHECK BALAN CE	SERVICE OPERATO R	<ol> <li>Identity Authenticated</li> <li>Machine Is Online</li> </ol>	<ol> <li>Operator login system</li> <li>Operator check the level of stock and cash</li> </ol>	Uc15 — Download     Information		

UC14	INFOR MED	SERVICE OPERATO R	<ol> <li>Identity Authenticated</li> <li>Machine Is Online</li> </ol>	If level of coins or stock too low, machine inform operator			
UC15	DOWN LOAD INFOR MATIO N	SERVICE OPERATO R	<ol> <li>Identity Authenticated</li> <li>Machine Is Online</li> </ol>	Operator login system     Operator make     requests to download     accounts information     from the machine for a     particular accounting     period			
UC16	RE- ENTER PIN	SERVICE OPERATO R	Identity Has Not Been     Authenticated	<ol> <li>User enter a wrong pin to login the system</li> <li>User re-enter the pin</li> </ol>		UC12	
UC17	CREAT E NEW ACCOU NT	SERVICE OPERATO R	<ol> <li>Identity Authenticated</li> <li>Master Password</li> <li>Machine Is Online</li> </ol>	1. A master password available which can be used create new accounts in case the machines memory has been wiped due to hardware failure		MACHINE SYSTEM FAILED	
UC18	RETUR N STOCK LEVEL	SERVICE OPERATO R OR CUSTOME R	<ol> <li>Operator Request</li> <li>Or Processing Purchase</li> </ol>	User Get The Level Of Stock, Include Cups And Ingredient	UC14 — INFORM OPERATOR	UC1, UC13	
UC19	RETUR N CASH BOX LEVEL	SERVICE OPERATO R OR CUSTOME R	<ol> <li>Operator Request</li> <li>Or Processing Purchase</li> </ol>	User Get The Level Of Cash Box	UC14 — INFORM OPERATOR	UC1, UC13	
UC20	DOWN LOAD RECIP ES	SERVICE OPERATO R	1.Identity Authenticate 2. Machine Is Online	<ol> <li>Operator Login System</li> <li>Download New Recipes To Make New Product</li> </ol>			

TASK2: REQUIREMENTS

QUALITY	Requirement	Criteria
SPEED	Drinks should be prepared as soon as possible	Drinks should be delivered within 2 minutes after customer completed the payment and confirmed.
EASE OF USE	The vending machine shall be intuitive and self-explanatory	95% customers shall be able to buy drinks within two minutes of encountering the product for the first time
RELIABILITY	Machine should have small Mean-Time-To-Failed	Can be defined in terms of a percentage (say, 0.01%)
SIZE	Memory size of machine should be enough to maintain daily use	Can be defined in terms of a precise number (say, 1TB)
ROBUSTNESS	Machine can restart after failed in a short time	Can be defined in terms of a precise time (say, 5 minutes)

TASK3: STATECHART

STATES	EVENTS
Heat	Heating water, Overheat
Stop_heat	Stop heating water, remind to dispense
Error_state	report error to main system and exit

STATES	EVENTS
CHECK_RECIPES	Check Recipes Of Drink Code
CHECK_STOCK_LEVEL	Check Stock Level Of Cups And Ingredient
DISPENSING	Mix Water_Hot With Ingredient, Poll Water Into Cups, Discard Unavailable Drink, Refund
DISCARD	Discard Unavailable Drink

STATES	EVENTS
INITIAL STATE	Create New Order
ACCEPT ORDER	Check Recipes, Check Stock Level, Process Order
CONFIRM ORDER	Confirm Order, Cancel Order, Exit
COLLECT COINS	Collect Coins, Confirm Payment, Refund If Time_Out
REFUND	Exit
PREPAR ORDER	Heat Water, Dispensing Drink, Deliver Drink
FINISH ORDER	Store Order
REQUEST SERVICE	Inform External
ENGINEERING MODE	Debugging

## stop heat [water hot] / dispensing HEATS WATER HEATER SUB SYSTEM Drink dispensing sub system CHECK STOCK LEVEL ERROR STATE STOP\_HEAT CEHCK\_RECIPES do: check cups stock level, do: report error and do: stop heat check\_stock do: check ingredient of checkingredient stock level selected drink stop heater prepare\_dispersing [stock\_available] / dispensing dispensing [dispensing] / reduce\_stock [water\_hot] DISPENSING heat [water\_not\_hot] do: mix hot water with ingredient DISCARD [overheat] HEAT ERROR\_STATE do: discard not available do: heat water [error\_state] do: handle error drink when there is state and tell main error state system drink\_not\_available send\_recipes / return\_stock\_level return stock level [error\_state] / refund Drinks machine main system create\_order [drink\_code] engineering [receive\_request] ACCEPT\_ORDER do: process order return\_drink [drink\_available] engineering\_mode collect\_coins [change < 0] do:support the engineering mode confirm\_order [stock\_available] COLLECT COINS FINISH ORDER PREPARE ORDER derliver\_drink [drink\_available do: deliver drink collect\_doins [change = 0] / confirm\_order do: collect coins time\_out: 30s do: make drinks record order into CONFIRM ORDER Datebase system [confirm = true] do: confirm order again cancel\_order [confirm = false] / refund [error\_state or cancel or time\_out] / exit CHANGE(REFUND) do: refund or change collect\_coins [change > 0 or time\_out] / refund out of stock [stock not available] / request service

stop\_heat [error\_state] / exit

prepare\_order / heat