Black Box Testing

Equivalence Partitioning

With the EP we try to cover all possible scenarios. The maximum number of a phone line can be 8. With this info, we can conclude that any number greater than 8 selected is considered invalid. Any Number less than 1 that is 0 or below is considered invalid. Numbers between 1 to 8 are considered valid.

Phone line:

Invalid	**Valid**	**Invalid**
<0	0-8	>8

The scenarios for cell phones are quite different. There are no maximum numbers of “Cell phones” 1 person can buy and therefore we assume that any number above 1 is valid. This is not a proper solution, but application solutions should be able to handle it. Any number below 1 is considered invalid. The requirements state that 1 cell phone should be purchased regardless of the number of other items purchased.

Cell phones:

Invalid	**Valid**
<=0	>=1

Boundary Value Analysis

2 boundary value test:

In order to perform exhausting testing for each value we look at 2- and 3 boundary values. We look at the extreme ends between partitions of each value.

For phone lines, all numbers below -1 and 9 and above is considered invalid. The valid numbers are any number between 0-8.

Phone line:

Invalid	**Valid**	**Invalid**

(min -1)	(min, +min, -max, max)	(max + 1)
-1	0, 1, 7, 8	9

For cell phones, all numbers below and including 0 is considered invalid.
Cell phones:

Invalid (min -1)	Valid (min, +min)
0	1, 2

3 boundary value test:

With 3 boundary value test, we test values between valid and invalid partitions. This method catches errors at the extreme ends.

Phone line:

Invalid (min -1, min -2)	Valid (min, +min, -max, max)	Invalid (max + 1, max +2)
-2, -1	0, 1, 7, 8	9, 10

Cell phones:

Invalid (min -1, min -2)	Valid (min, +min)
-1, 0	1, 2

Decision Table Testing

Conditions	R1	R2	R3	R4	R5
Phone lines >= 0 and <= 8	**true**	**true**	**false**	**false**	**true**
Cell phones number > 0	**true**	**true**	**true**	**false**	**false**

and < 8					
Internet connection picked (Not needed)	**true**	**false**	**false**	**true**	**false**
Actions					
Buy product	**Y**	**Y**	**N**	**N**	**N**

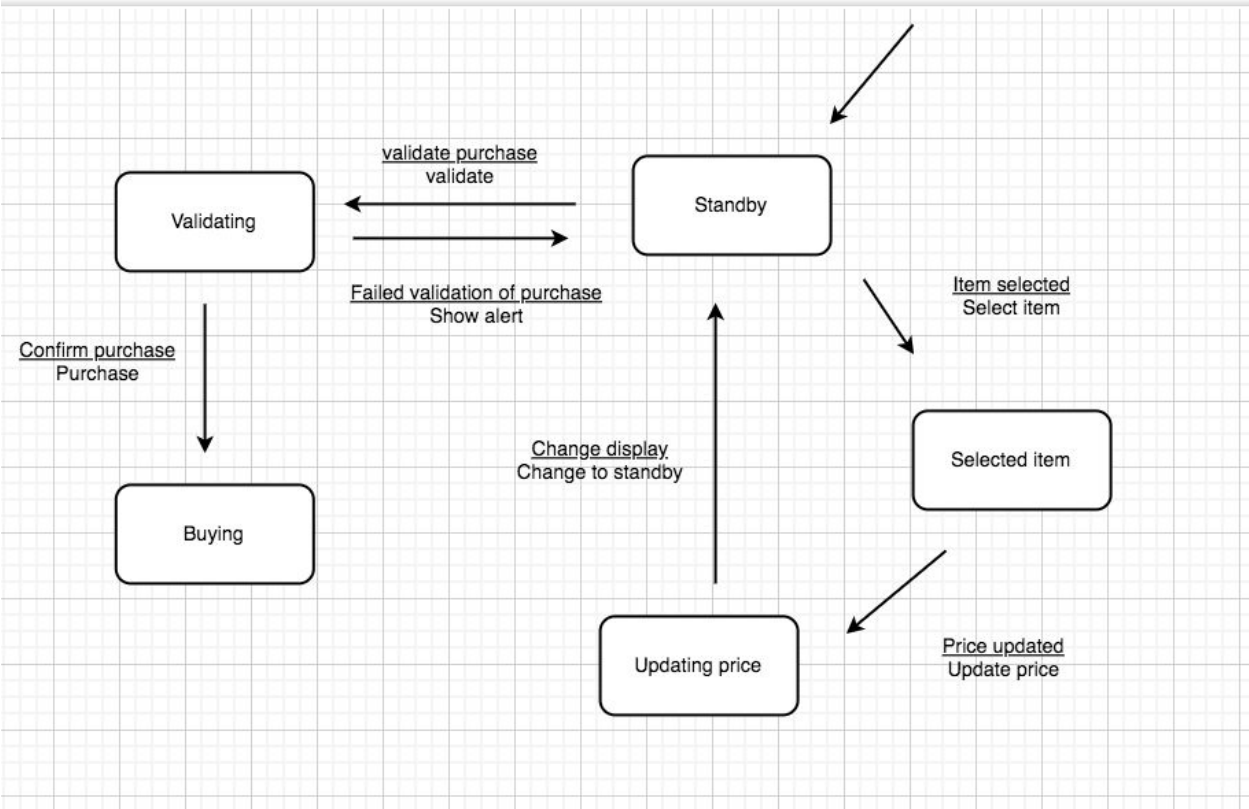
This decision table shows the system behaviour for different input combinations. It is considered a systematic approach where the input combinations and the corresponding behaviour is presented.

Interpretation:

- Case 1: phone line is between 0-8 and cell phones is between 1-8, both are true and internet connection is picked - the user can buy the products.
- Case 2: phone line is between 0-8 and cell phones is between 1-8, both are true and internet connection is not picked - the user can buy the products.
- Case 3: phone line is not between 0-8 and cell phones is between 1-8. Internet connection is not picked - the user cannot buy the products.
- Case 4: phone line is not between 0-8 and cell phones is not between 1-8, both are false and internet connection is picked - the user cannot buy the products.
- Case 5: phone line is between 0-8 and cell phones is not between 1-8. Both are not true and internet connection is not picked - the user cannot buy the products.

State Transition Testing

item can be a cellphone, internet connection, or phone line.



Interpretation:

State 1: user inputs a correct number of cell phones and phone lines -> price is updated according to items picked -> user decided to buy -> systems validate item count - system validates the purchase

State 2: user inputs an incorrect number of cell phones or phone lines -> system alert user about incorrect item -> user inputs correct item count -> price is updated -> user decided to buy -> systems validates item count -> system validates purchase

Use Case Testing

this use case testing describes a specific use of the system by an actor. This method helps developers to identify test cases that cover the entire system from the beginning of the

transaction to the end of the transaction. In this system, the actor starts the interaction with the system, then they follow the application process step by step.

Use Case 01:

	Step	Description
Main Success Scenario **A: Actor** **S: System**	1	A: Checks “Internet Connection”
	2	S: Updates total price
	3	A: Selects phone line number
	4	S: Updates total price
	5	A: Adds phone(s)
	6	S: Updates total price
	7	A: Clicks “Buy” button
	8	S: Checks phone line number & phone amount are correct
Extensions	1a	A: Leaves “Internet Connection” unchecked Still acceptable within the system
	2a	S: Does not update the price if “Internet Connection” is unchecked
	3a	A: Leaves the “Phone Lines” unchanged at the default value (0) Still acceptable within the system
	4a	S: Does not update the price if “Phone Lines” is unchanged
	8a	S: If “Phone Lines” number is below 0 or above 8, Reject user action and show an error message.
	8b	S: Checks if the cell phone number is <= 0. Reject user action and show an error message.