Assignment 3:Black Box Testing

Program 1: Shipping Cost

1. Shipping Method AS variable S
   Customers Residents Location AS L
   Total Purchase As. TP
2. Valid equivalence classes:
   S : {1 as standard shipping} shipping method is standard shipping I number it as 1
   {2 as next-day shipping} shipping method is next-day shipping I number it as 2
   L: {CIN} customers live in CA, IL, NY
   {other states which sales tax is not 6 percent } customers live in other states in USA
   TP:{TP > 50} total purchase should be greater than 50 dollar for waiving.
   { 0 < TP <= 50} total purchase less than 50 dollars
   Invalid:
   S{0 as neither standard shipping or next-day shipping} Shipping method is invalid method I number it as 0.

   L: {not live in USA AS NU} customer is not living in USA, not deliverable outside USA

   TP {TP < 0} total purchase less than 0 is invalid
3. Weak normal test

Unique id	Description	Input value			Expected value
		S	L	TP	Total cost
1	Live in CA, IL, NY, and standard shipping more than 50 dollar	1	CIN	51	51*106%
2	Live in other states with sale tax 9 %, chose next-day shipping, total purchase 25 dollar	2	Other	25	25*109% + 25

4. Weak robustness test

Unique id	Description	Input value			Expected value
		S	L	TP	Total cost
1.	Shipping method is not standard shipping or next-day shipping, and live in CA, NY, IL states and total purchase is 51 dollar	0	CIN	51	No valid shipping method
2.	Standard shipping and not live in USA and total purchase 25 dollar	1	NU	25	Not deliverable

3	Next-day shipping with live in other states with 9% sale tax and total purchase is -10 dollar	2	Other	-10	Error

5. Strong normal test

Unique id	Description	Input value			Expected value
		S	L	TP	Total cost
1	Standard shipping with live in CA, IL, NY states with total purchase 51 dollars	1	CIN	51	51 * 106%
2	Standard shipping with live in CA, IL, NY states with total purchase 25 dollars	1	CIN	25	25*106% + 10
3	Live in other states with sale tax 9 %, chose standard shipping, total purchase 51 dollar	1	Other	51	51 * 109%
4	Live in other states with sale tax 9 %, chose standard shipping, total purchase 25 dollar	1	Other	25	25* 109%+ 10
5	Next-day shipping with live in CA, IL, NY states with total purchase 51 dollars	2	CIN	51	51*106% + 25
6	Next-day shipping with live in CA, IL, NY states with total purchase 25 dollars	2	CIN	25	25*106% + 25
7	Live in other states with sale tax 9 %, chose next-day shipping, total purchase51 dollar	2	Other	51	51*109% + 25
8	Live in other states with sale tax 9 %, chose next-day shipping, total purchase 25 dollar	2	Other	25	25*109% + 25

6. Strong robustness Test

Unique id	Description	Input Value			Expected value
		S	L	TP	Total cost
1	Other shipment with live in CA, IL, NY states with total purchase 51 dollars	0	CIN	51	No valid shipping method
2	Other shipment with live in CA, IL, NY states with total purchase 25 dollars	0	CIN	25	No valid shipping method
3	Other shipment with live in other states with total purchase 51 dollars	0	Other	51	No valid shipping method
4	Other shipment with live in other states with total purchase 25 dollars	0	Other	25	No valid shipping method
5	Standard shipping with live in outside of USA states with total purchase 51 dollars	1	NU	51	Not deliverable
6	Standard shipping with live in outside of USA states with total purchase 25 dollars	1	NU	25	Not deliverable
7	Next-day shipping with live in outside of USA states with total purchase 51 dollars	2	NU	51	Not deliverable
8	Next-day shipping with live in outside of USA with total purchase 25 dollars	2	NU	25	Not deliverable
9	Standard shipping with live CA,IL, NY with 6% sale tax and total purchase is -10 dollar	1	CIN	-10	Error
10	Standard shipping with live in other states with 9% sale tax and total purchase is -10 dollar	1	Other	-10	Error
11	Next-day shipping with live in other states with 6% sale tax and total purchase is -10 dollar	2	CIN	-10	Error

12	Next-day shipping with live in other states with 9% sale tax and total purchase is -10 dollar	2	Other	-10	Error

7. Boundary value test and special value analysis
   For boundary value testing and special value test,
   TP: 0, 2, 25, 49, 50, 52: since normal boundary value test pick up just above minimum, median number and below maximum, so for 1 <= TP <= 50, and TP >=51, I pick up 2, 25, 49, 52, and for special value test case, I will pick 0, 50. This is two special turning point for different results.
8. Additional test cases

Unique id	Description	Input value			Expected value
		S	L	TP	Total Cost
1	Standard shipping , live in CA, IL, NY with total purchase 0	1	CIN	0	0
2	Standard shipping , live in CA, IL, NY with total purchase 2	1	CIN	2	2 * 106% + 10
3	Standard shipping , live in CA, IL, NY with total purchase 25	1	CIN	25	25 * 106% + 10
4	Standard shipping , live in CA, IL, NY with total purchase 49	1	CIN	49	49 * 106% + 10
5	Standard shipping , live in CA, IL, NY with total purchase 50	1	CIN	50	50 * 106% + 10
6	Standard shipping , live in CA, IL, NY with total purchase 052	1	CIN	52	52 * 106%
7	Standard shipping , live in other states with tax sale 9% with total purchase 0	1	Other	0	0
8	Standard shipping , live in other states with tax sale 9% with total purchase 2	1	Other	2	2 * 109% + 10
9	Standard shipping , live in other states with tax sale 9% with total purchase 25	1	Other	25	25 * 109% + 10
10	Standard shipping , live in other states with tax sale 9% with total purchase 49	1	Other	49	49 * 109% + 10

11	Standard shipping , live in other states with tax sale 9% with total purchase 50	1	Other	50	50 * 109% + 10
12	Standard shipping , live in other states with tax sale 9% with total purchase 052	1	Other	52	52* 109%

Program 2:

1. Valid:
   {singular noun end in y with a consonant before y } this condition will change y to ies
   {singular noun end in y with vowel before y} this condition will add s at behind
   {singular noun end with ch, sh, s, x, z} this condition will add es
   {singular noun end with o with a consonant before o} this condition will add es
   {singular noun end with f or fe } this condition will drop f or fe and add ves at last of words
   {special nouns} this condition words have special plural forms
   {some normal nouns} this condition will add s at end of words
   {rest of nouns and other singular words} this include some nouns have same singular and plural form, and word is not a noun, results should return original word.
   Invalid:
   F:{it's not an English word} when it's not an English word
   G:{invalid input word form} for example if we type in "an ball". It's two words
2. Test cases:

Unique id	Description	Input	Expected output
1	singular noun end in y with a consonant before y	Candy	candies
2	singular noun end with f or fe	leaf	leaves
3	special nouns	child	Children
4	singular noun end with ch, sh, s, x, z	box	boxes
5	rest of nouns and other singular words	fish	fish

6	singular noun end in y with vowel before y	Toy	toys
7	singular noun end with o with a consonant before o	potato	potatoes
8	some normal nouns	apple	apples
9	Invalid input word form	An ball	Error. Two word type in
10	Invalid word	sdere	Error: It's not an English word

3. For boundary value: I will pick up longest word and shortest word to do the test, because if the longest word and shortest word works, maybe the word length between the ranges will work as well.
4. Boundary tests:

Unique id	description	input	Expected vaule
1	this is one of longest word	pneumonoultramicroscopicsilicovolcanoconiosis	pneumonoultramicroscopicsilicovolcanoconiosis
2	The shortest word in english	I	I