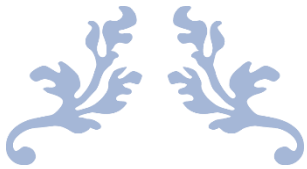


SECOND THEORICAL WORK

Exercise 3

GROUP: ISO2-2022-A01

MEMBERS: LUCÍA DE ANCOS VILLA ALEJANDRO SÁNCHEZ ARCOS

Index:

Statement one

Write, at least the pseudocode of the identified method:

```
3  public class Principal {
4      public Account determineAccount(Client c) {
5
6          if(c.getAge()<18 && c.getStudies() && c.getParentsHouse()) {
7              Account account = new Account("Comfort");
8              return account;
9          }
10         if(c.getAge()<25 && c.getUniversity()==false && c.getParentsHouse()) {
11             Account account = new Account("Come on, you can");
12             return account;
13         }
14         if(c.getAge()>18 && c.getAge()<25 && c.getWork()) {
15             if(c.getParentsHouse()) {
16                 Account account = new Account("Save Now While You Can");
17                 return account;
18             }
19             else {
20                 Account account = new Account("Jump out of the Nest");
21                 return account;
22             }
23         }
24         if(c.getAge()>25 && c.getWork()== true && c.getParentsHouse()==true) {
25             Account account = new Account("Become independent, it's about time");
26             return account;
27         }
28         if(c.getAge()>25 && c.getWork() && c.getParentsHouse()==false) {
29             Account account = new Account("Welcome to Adult Life");
30             return account;
31         }
32
33         return null;
34     }
```

Statement two

Identify the variables that must be considered to test the method

We have to consider five variables: age, studies, parentsHouse, university, work

Statement three

Identify the test values for each one of the variables previously identified, specifying the technique used to obtain each of those values).

Parameter	Equivalence Class	Values	Boundary Values (heavy variant)
client.getAge()	(-∞, 0) [0, 18) [18,25) [25, ∞)	-5 16 22 50	-1 1 17 19 24 26
client.getStudies()	studies no studies	true false client.getStudies()= null *	
client.getParentsHouse()	parent house no parent house	true false client.getStudies()= null *	
client. getUniversity()	university no university	true false client.getUniversity() = null*	
client.getWork()	work no work	true false client. getWork() = null *	

Statement four

Calculate the maximum possible number of test cases that could be generated from the test values.

The maximum number of test cases that could be generated is : 96 (6*2*2*2*2)

Statement five

Define some test suites using each use

CP1: {-5, false, false , false, false}

CP2: {17, true, true, false, false}

CP3: {24, true, true, false, false}

CP4: {19, false, true, true, true}

CP5: {24, false, false, false, true}

CP6: {26, false, true, true, true}

CP7: {26, false, false, true, true}

Statement six

Define test suits to achieve pairwaise coverage by using the proposed algorithm in Lectures. You can check the results by means of the software PICT

client.getAge()	client.getStudies()	client.getParentsHouse()	client.getUniversity()	client.getWork()
1	false	true	true	true
-1	true	false	true	false
17	false	true	false	false
26	true	false	false	true
24	true	true	true	true
17	true	false	true	true
19	false	false	true	false
26	false	true	true	false
1	true	false	false	false
19	true	true	false	true
24	false	false	false	false
-1	false	true	false	true

Statement seven

For code snippets that include decisions, propose a set of test cases to achieve coverage of decisions.

if(c.getAge()<18 && c.getStudies() && c.getParentsHouse())

A	B	C	A and B and C	Dominant Condition
T	T	T	T	A,B,C
T	T	F	F	C
T	F	T	F	B
T	F	F	F	B,C
F	T	T	F	A
F	T	F	F	A,C
F	F	T	F	A,B
F	F	F	F	A,B,C

client.getAge()	client.getStudies()	client.getParentsHouse()	client. getUniversity()	client.getWork()
17	true	true	-	-
17	false	false	-	-

if(c.getAge()<25 && c.getUniversity()==false && c.getParentsHouse())

D	E	F	D and E and F	Dominant Condition
T	T	T	T	D,E,F
T	T	F	F	F
T	F	T	F	E
T	F	F	F	E,F
F	T	T	F	D
F	T	F	F	D,F
F	F	T	F	D,E
F	F	F	F	D,E,F

client.getAge()	client.getStudies()	client.getParentsHouse()	client. getUniversity()	client.getWork()
24	-	true	false	-
24	-	false	true	-

if(c.getAge()>18 && c.getAge()<25 && c.getWork())

G	H	I	G and H and I	Dominant Condition
T	T	T	T	G,H,I
T	T	F	F	I
T	F	T	F	H
T	F	F	F	H,I
F	T	T	F	G
F	T	F	F	G,I
F	F	T	F	G,H
F	F	F	F	G,H,I

client.getAge()	client.getStudies()	client.getParentsHouse()	client. getUniversity()	client.getWork()
19	-	-	-	true
19	-	-	-	false

if(c.getParentsHouse())

J	Dominant Condition
T	J
F	J

client.getAge()	client.getStudies()	client.getParentsHouse()	client. getUniversity()	client.getWork()
-	-	true	-	-
-	-	false	-	-

Else

Not J	Dominant Condition
F	J
T	J

client.getAge()	client.getStudies()	client.getParentsHouse()	client. getUniversity()	client.getWork()
-	-	false	-	-
-	-	true	-	-

if(c.getAge()>25 && c.getWork()== true && c.getParentsHouse()==true)

K	L	M	K and L and M	Dominant Condition
T	T	T	T	K,L,M
T	T	F	F	M
T	F	T	F	L
T	F	F	F	L,M
F	T	T	F	K
F	T	F	F	K,M
F	F	T	F	K,L
F	F	F	F	K,L,M

client.getAge()	client.getStudies()	client.getParentsHouse()	client. getUniversity()	client.getWork()
26	-	true	-	true
26	-	false	-	false

if(c.getAge()>25 && c.getWork() && c.getParentsHouse()==false)

O	P	Q	O and P and Q	Dominant Condition
T	T	T	T	O,P,Q
T	T	F	F	Q
T	F	T	F	P
T	F	F	F	P,Q
F	T	T	F	O
F	T	F	F	O,Q
F	F	T	F	O,P
F	F	F	F	O,P,Q

client.getAge()	client.getStudies()	client.getParentsHouse()	client. getUniversity()	client.getWork()
26	-	false	-	true
26	-	true	-	false

Statement eight

For code snippets that include decisions, propose test case sets to achieve MC/DC coverage.

if(c.getAge()<18 && c.getStudies() && c.getParentsHouse())

A	B	C	A and B and C	Dominant Condition
T	T	T	T	A, B,C
T	T	F	F	C
T	F	T	F	B
T	F	F	F	B, C
F	T	T	F	A
F	T	F	F	A, C
F	F	T	F	A, B
F	F	F	F	A, B, C

client.getAge()	client.getStudies()	client.getParentsHouse()	client. getUniversity()	client.getWork()
17	true	true	-	-
17	false	false	-	-
19	true	true	-	-
19	false	false	-	-

if(c.getAge()<25 && c.getUniversity()==false && c.getParentsHouse())

D	E	F	D and E and F	Dominant Condition
T	T	T	T	D, E, F
T	T	F	F	F
T	F	T	F	E
T	F	F	F	E, F
F	T	T	F	D
F	T	F	F	D, F
F	F	T	F	D, E
F	F	F	F	D, E, F

client.getAge()	client.getStudies()	client.getParentsHouse()	client. getUniversity()	client.getWork()
24	-	true	false	-
24	-	false	true	-
19	-	true	false	-
19	-	false	true	-

if(c.getAge()>18 && c.getAge()<25 && c.getWork())

G	H	I	G and H and I	Dominant Condition
T	T	T	T	G, H,I
T	T	F	F	I
T	F	T	F	H
T	F	F	F	H, I
F	T	T	F	G
F	T	F	F	G,I
F	F	T	F	G,H
F	F	F	F	G,H,I

client.getAge()	client.getStudies()	client.getParentsHouse()	client. getUniversity()	client.getWork()
19	-	-	-	true
19	-	-	-	false
17	-	-	-	true
17	-	-	-	false

if(c.getParentsHouse())

J	Dominant Condition
T	J
F	J

client.getAge()	client.getStudies()	client.getParentsHouse()	client. getUniversity()	client.getWork()
-	-	true	-	-
-	-	false	-	-

else

Not J	Dominant Condition
F	J
T	J

client.getAge()	client.getStudies()	client.getParentsHouse()	client. getUniversity()	client.getWork()
-	-	false	-	-
-	-	true	-	-

if(c.getAge()>25 && c.getWork()== true && c.getParentsHouse()==true)

K	L	M	K and L and M	Dominant Condition
T	T	T	T	K, L,M
T	T	F	F	M
T	F	T	F	L
T	F	F	F	L, M
F	T	T	F	K
F	T	F	F	K, M
F	F	T	F	K, L
F	F	F	F	K, L,M

client.getAge()	client.getStudies()	client.getParentsHouse()	client. getUniversity()	client.getWork()
26	-	true	-	true
26	-	false	-	false
24	-	true	-	true
24	-	false	-	false

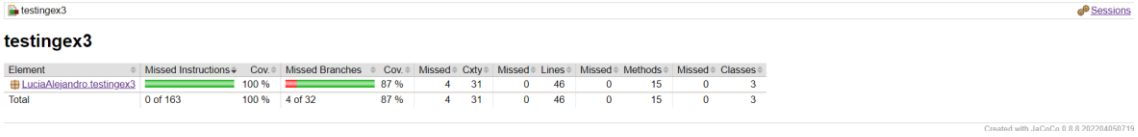
if(c.getAge()>25 && c.getWork() && c.getParentsHouse()==false)

O	P	Q	O and P and Q	Dominant Condition
T	T	T	T	O, P,Q
T	T	F	F	Q
T	F	T	F	P
T	F	F	F	P, Q
F	T	T	F	O
F	T	F	F	O,Q
F	F	T	F	O, P
F	F	F	F	O, P,Q

client.getAge()	client.getStudies()	client.getParentsHouse()	client. getUniversity()	client.getWork()
26	-	false	-	true
26	-	true	-	false
24	-	false	-	true
24	-	true	-	false

Statement nine

Comment on the results of the number of test cases obtained in section 4, 5, and 6, as well as the execution of the oracles: what could be said about the coverage achieved?



As we can see with the test cases generated in section 4,5 and 6 and the execution in eclipse, we achieved a great coverage.