Software Engineering

Started on	Wednesday, 31 March 2021, 2:35 PM
State	Finished
Completed on	Wednesday, 31 March 2021, 3:15 PM
Time taken	39 mins 51 secs
Grade	**13.75** out of 15.00 (**92**%)

Question 1

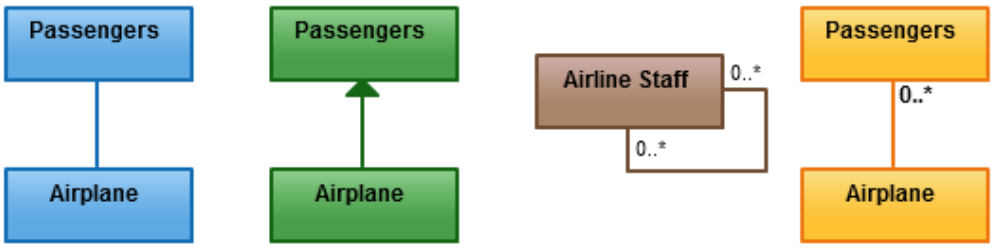
Correct

Mark 2.00 out of 2.00

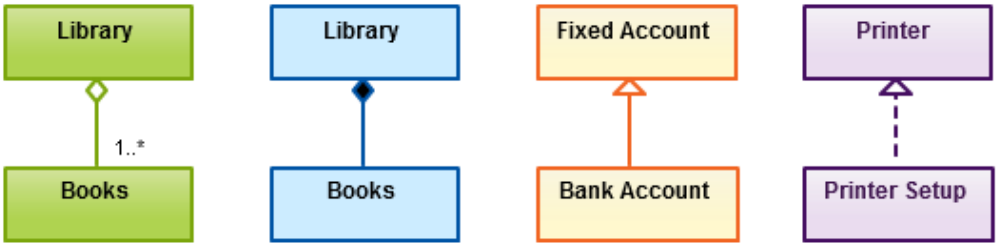
Flag question

Match the illustrative examples below with UML Class Diagram Relationships.

Examples of Relationships in UML Class Diagrams



(a) (b) (c) (d)



(e) (f) (g) (h)

g Inheritance / Generalization ✓

a Association ✓

b Directed Association ✓

f Composition ✓

d Multiplicity ✓

h Realization ✓

e Aggregation ✓

c Reflexive Association ✓

Your answer is correct.

The correct answer is: g – Inheritance / Generalization, a – Association, b – Directed Association, f – Composition, d – Multiplicity, h – Realization, e – Aggregation, c – Reflexive Association

Question 2

Correct

Mark 0.50 out of 0.50

Flag question

We need to perform black box testing for a login screen which allows a maximum of three attempts before the login is locked. Assuming that the user-id is correct, how many test cases will be needed at the minimum for this test?

Answer: 4 ✓

The correct answer is: 4

Question 3

Correct

Mark 1.50 out of 1.50

Flag question

Consider the following *Quadratic Equation Solver (*QES) function **Solve** that takes **3 double** parameters a, b, and c for solving equations of the form $ax^2 + bx + c = 0$. The solutions are passed back through output parameters **r1** and **r2**. The function returns a value designating the equivalence class of the root/s.

The **Solve** *function code is used in other questions too. So if you are getting this for the first time, you may study it well. Of course, the same will be provided in the other questions too where it is used.*

```
00: unsigned int Solve(double a, double b, double c, double& r
1, double& r2)
01: {
02:     unsigned int retVal = 0;
03:     if (0 == a) {
04:         if (0 == b) {
05:             if (0 == c) {
06:                 retVal = 5;
07:             } else {
08:                 retVal = 0;
09:             }
10:         } else {
11:             retVal = 1;
12:             r1 = -c/b;
13:         }
14:     } else {
15:         double disc = b*b - 4*a*c;
16:         if (0 == disc) {
17:             retVal = 2;
18:             r1 = r2 = -b/(2*a);
19:         } else {
20:             if (disc > 0) {
21:                 retVal = 3;
22:                 r1 = (-b + sqrt(disc))/(2*a);
23:                 r2 = (-b - sqrt(disc))/(2*a);
24:             } else {
25:                 retVal = 4;
26:                 r1 = -b/(2*a); r2 = sqrt(-disc))/(2*a);
27:             }
28:         }
29:     }
30:
31:     return retVal;
32: }
```

For checking the statement coverage of **Solve**, a set of 6 test cases are designed below. Match the test cases with the statements it covers in the above code.

Coefficients

	a	b	c
(a)	0	3	6
(b)	1	0	1
(c)	0	0	0
(d)	1	2	-35
(e)	1	-6	9
(f)	0	0	5

Statements Covered

(1) 2, 3, 4, 5, 6, 31
(2) 2, 3, 4, 5, 8, 31
(3) 2, 3, 4, 11, 12, 31
(4) 2, 3, 15, 16, 17, 18, 31
(5) 2, 3, 15, 16, 20, 21, 22, 23, 31
(6) 2, 3, 15, 16, 20, 25, 26, 31

(e) 2, 3, 15, 16, 17, 18, 31 ✓

(a) 2, 3, 4, 11, 12, 31 ✓

(c) 2, 3, 4, 5, 6, 31 ✓

(d) 2, 3, 15, 16, 20, 21, 22, 23, 31 ✓

(f) 2, 3, 4, 5, 8, 31 ✓

(b) 2, 3, 15, 16, 20, 25, 26, 31 ✓

Your answer is correct.

The correct answer is: (e) – 2, 3, 15, 16, 17, 18, 31, (a) – 2, 3, 4, 11, 12, 31, (c) – 2, 3, 4, 5, 6, 31, (d) – 2, 3, 15, 16, 20, 21, 22, 23, 31, (f) – 2, 3, 4, 5, 8, 31, (b) – 2, 3, 15, 16, 20, 25, 26, 31

Question 4

Correct

Mark 1.50 out of 1.50

Flag question

Match the following for V Model of SDLC.

Characteristics

(a) ***Acceptance Tester*** **is responsible for**
(b) ***QA Team*** **is responsible for**
(c) ***Building the system right*** **is ensured by**
(d) ***Building the right system*** **is ensured by**
(e) ***Process focus*** **is key for**
(f) ***Product focus*** **is key for**

Activity

(1) Validation
(2) Verification

Building the system right is ensured by Verification ✓

Building the right system is ensured by Validation ✓

Process focus is key for Verification ✓

QA Team is responsible for Verification ✓

Acceptance Tester is responsible for Validation ✓

Product focus is key for Validation ✓

Your answer is correct.

The correct answer is: *Building the system right* is ensured by
– Verification, *Building the right system* is ensured by
– Validation, *Process focus* is key for
– Verification, *QA Team* is responsible for
– Verification, *Acceptance Tester* is responsible for
– Validation, *Product focus* is key for
– Validation

Question 5

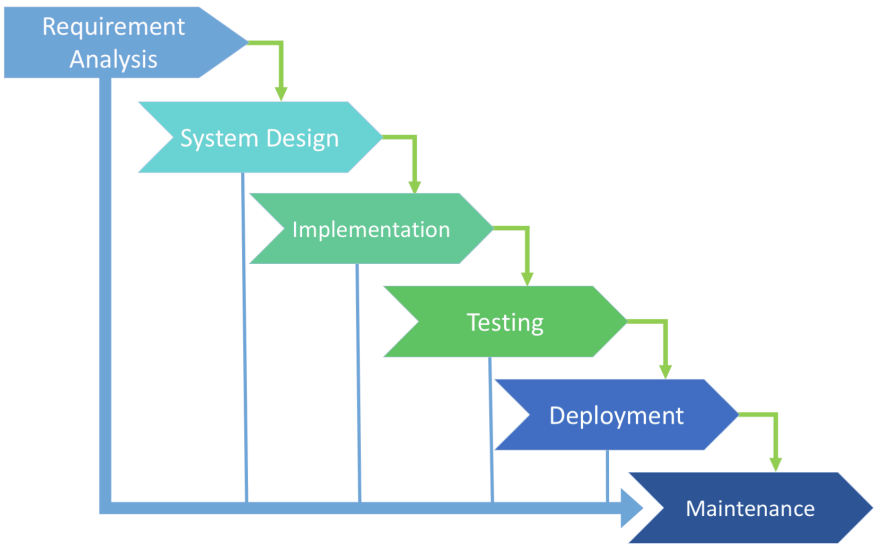
Correct

Mark 2.00 out of 2.00

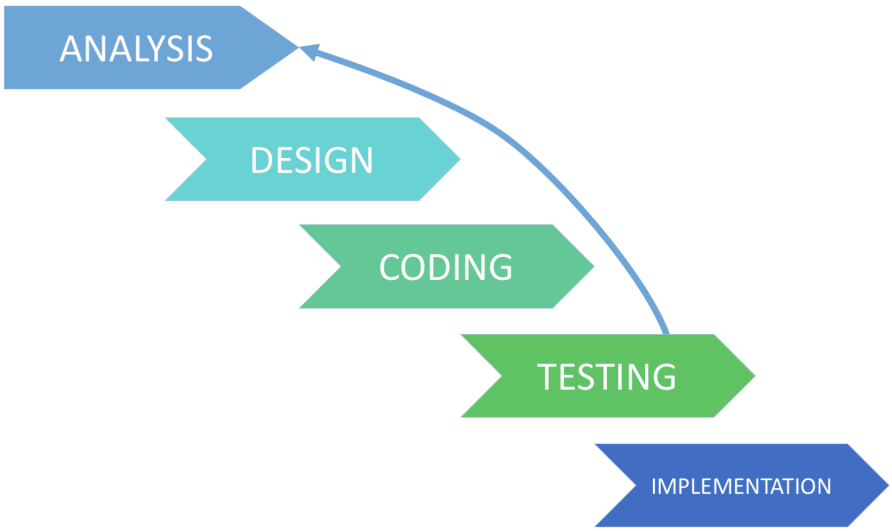
Flag question

Match the following SDLC life-cycle diagrams with their respective names.

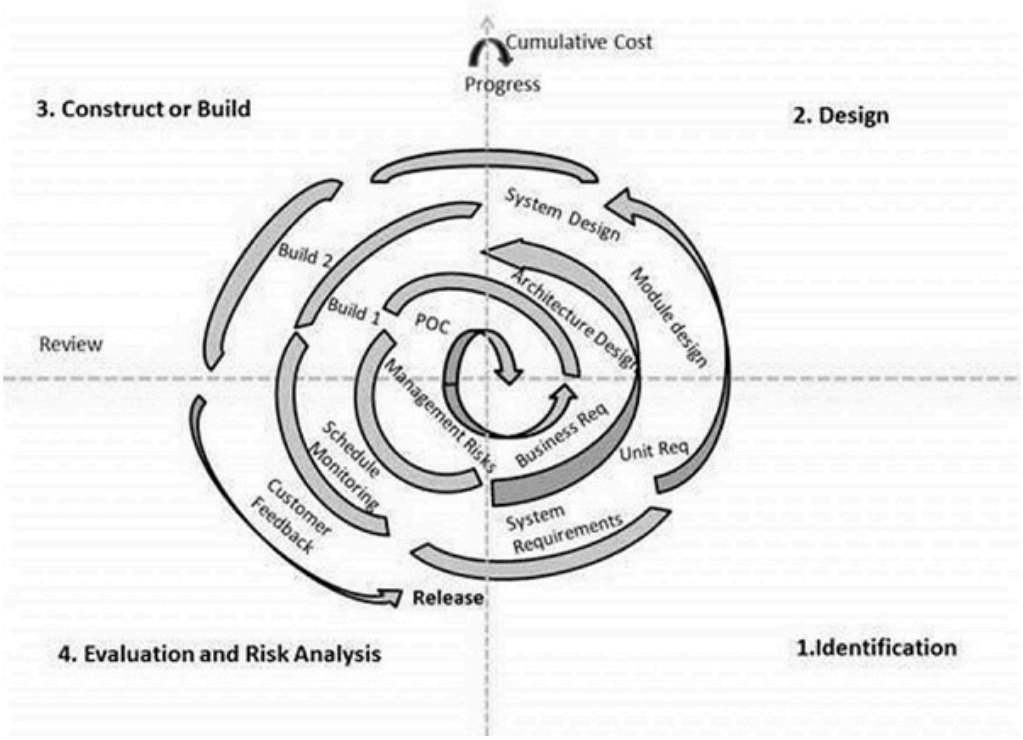
(a)



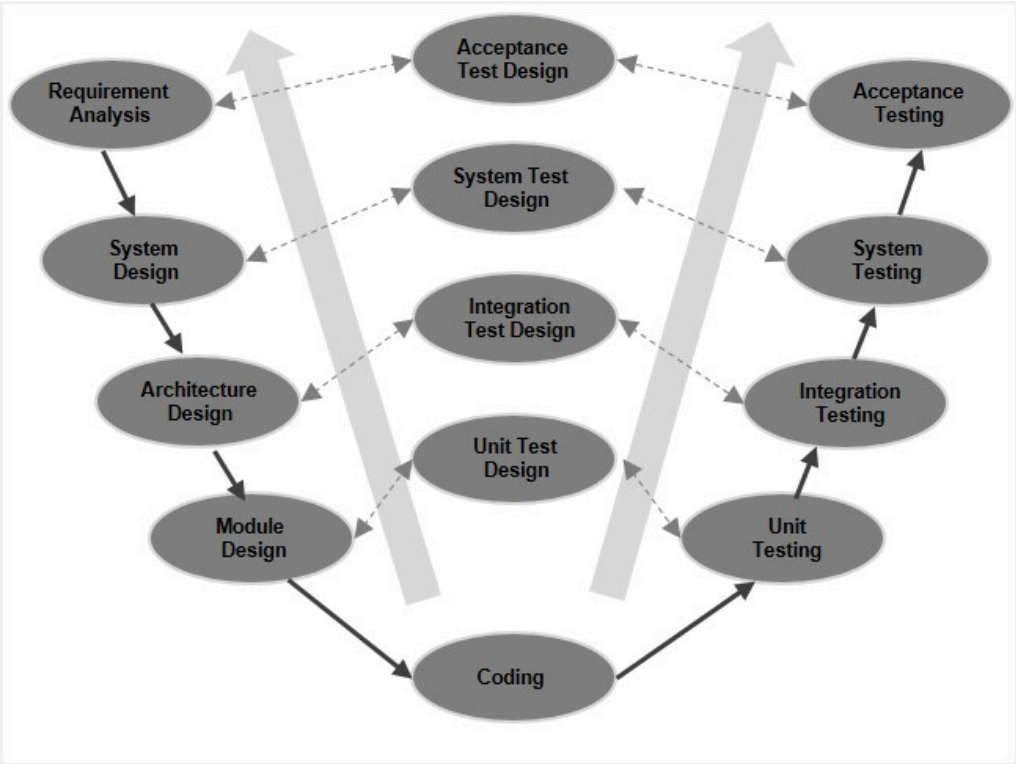
(b)


ANALYSIS
DESIGN
CODING
TESTING
IMPLEMENTATION

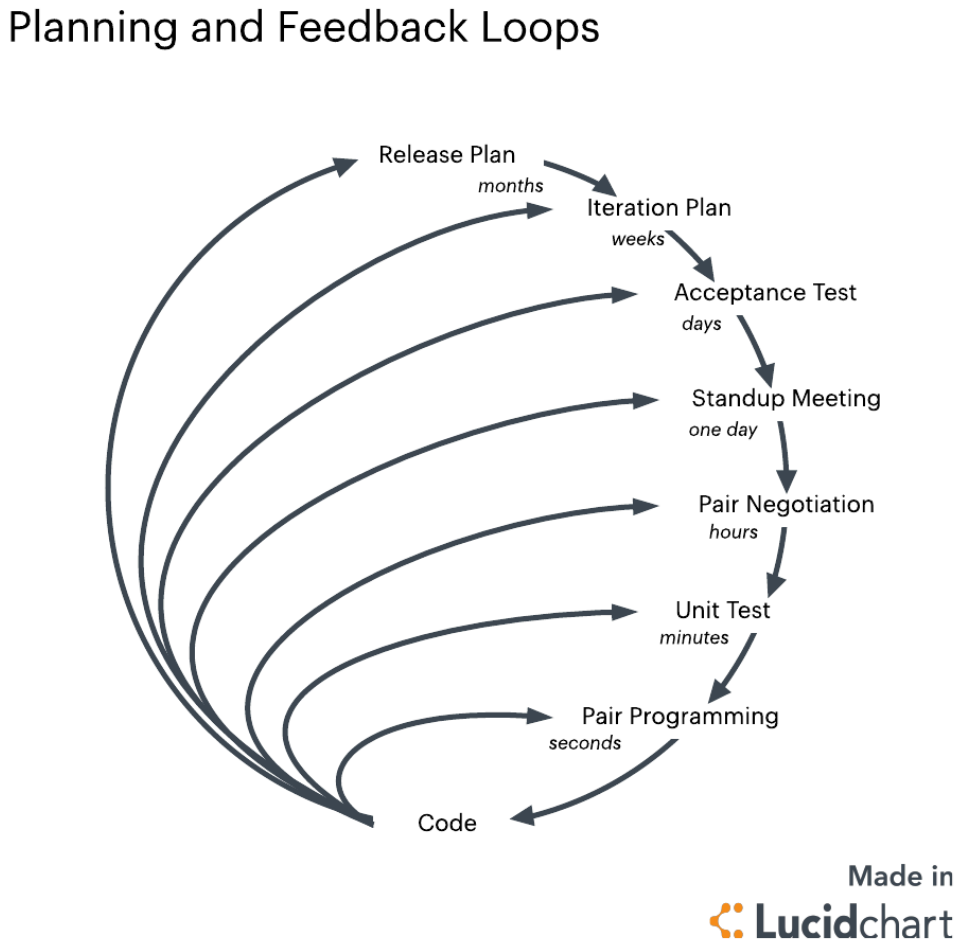
(c)


Cumulative Cost
Progress
3. Construct or Build
2. Design
System Design
Module design
Architecture Design
Build 2
Build 1
POC
Review
Management Risks
Business Req
Unit Req
Schedule Monitoring
Customer Feedback
System Requirements
Release
4. Evaluation and Risk Analysis
1.Identification

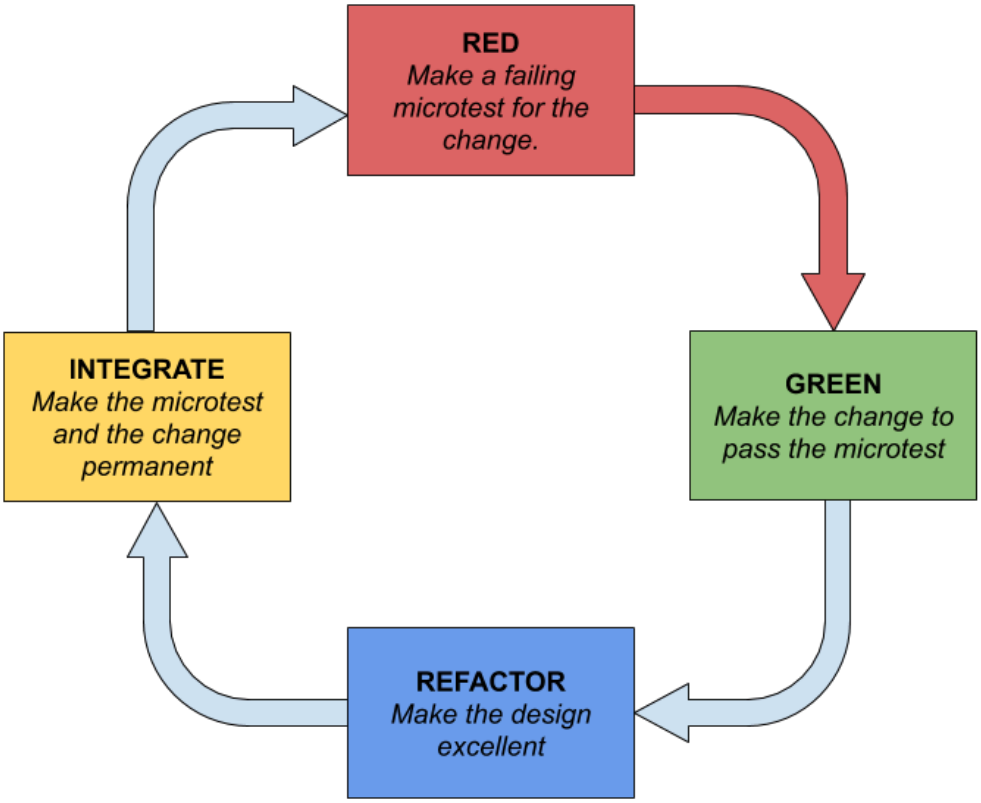
(d)


Requirement Analysis
Acceptance Test Design
Acceptance Testing
System Test Design
System Design
System Testing
Integration Test Design
Architecture Design
Integration Testing
Unit Test Design
Module Design
Unit Testing
Coding

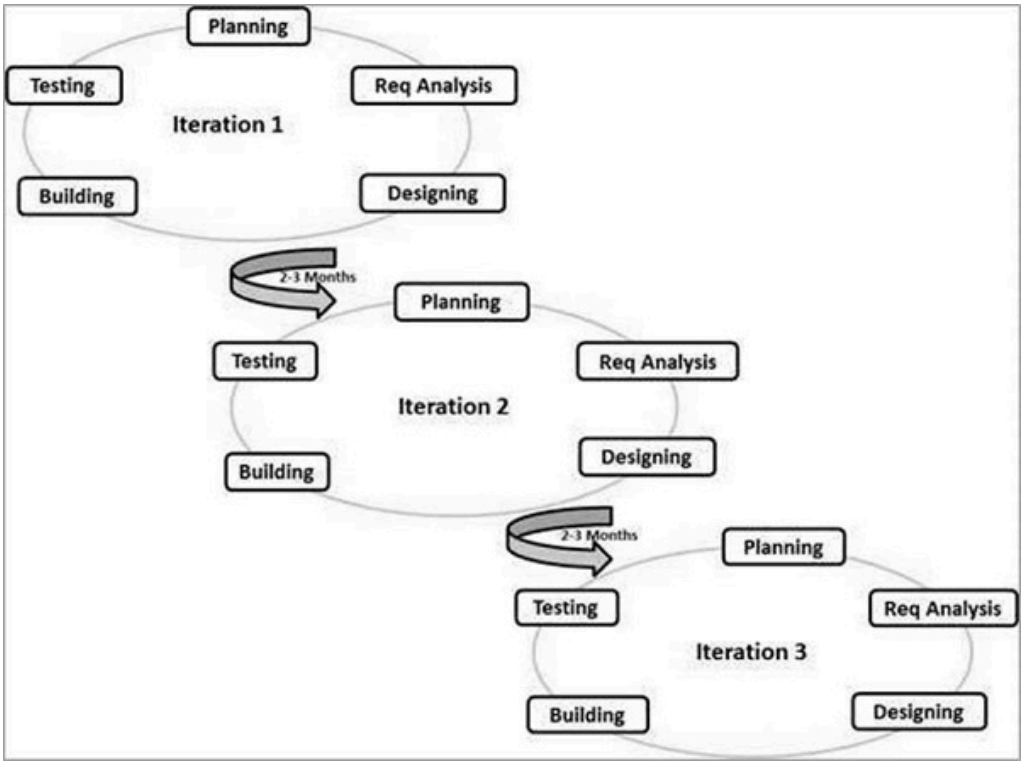
(e)


Planning and Feedback Loops
Release Plan
months
Iteration Plan
weeks
Acceptance Test
days
Standup Meeting
one day
Pair Negotiation
hours
Unit Test
minutes
Pair Programming
seconds
Code
Made in
Lucidchart

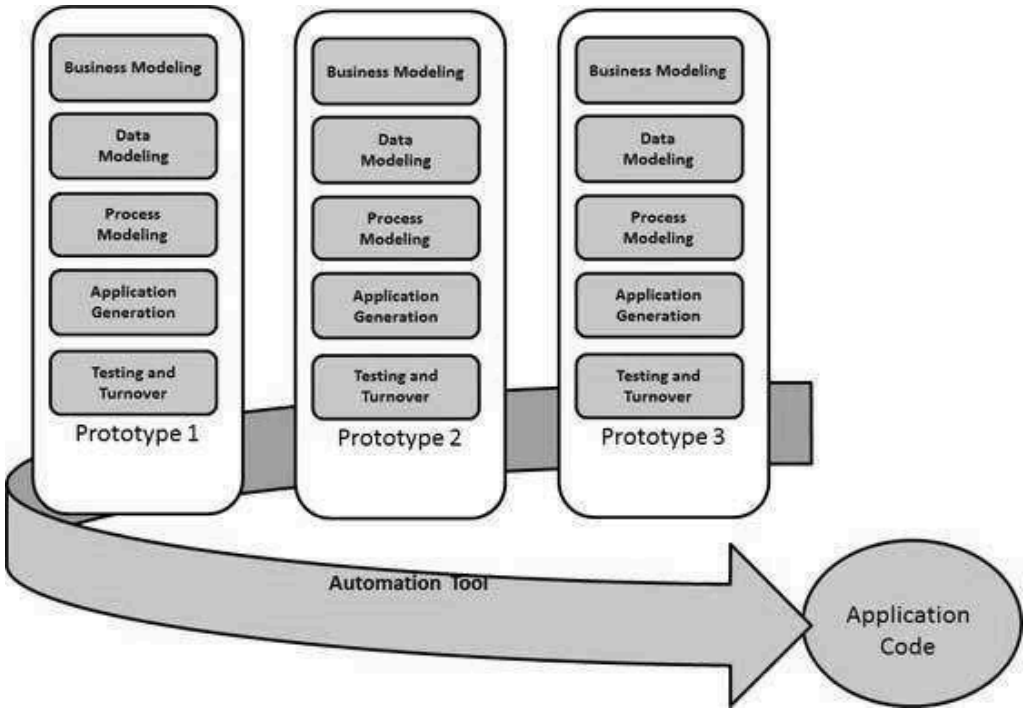
(f)


RED
Make a failing microtest for the change.
GREEN
Make the change to pass the microtest
REFACTOR
Make the design excellent
INTEGRATE
Make the microtest and the change permanent

(g)


Planning
Testing
Req Analysis
Iteration 1
Building
Designing
2-3 Months
Planning
Testing
Req Analysis
Iteration 2
Building
Designing
2-3 Months
Planning
Testing
Req Analysis
Iteration 3
Building
Designing

(h)



a Waterfall ✓

f TDD ✓

h RAD ✓

c Spiral ✓

e XP ✓

g Agile ✓

d V ✓

b Iterative ✓

Your answer is correct.

The correct answer is: a – Waterfall, f – TDD, h – RAD, c – Spiral, e – XP, g – Agile, d – V, b – Iterative

Question 6

Correct

Mark 1.50 out of 1.50

Flag question

Consider the following *Quadratic Equation Solver* (QES) function **Solve** that takes **3 double** parameters a, b, and c for solving equations of the form $ax^2 + bx + c = 0$. The solutions are passed back through output parameters **r1** and **r2**. The function returns a value designating the equivalence class of the root/s.

The **Solve** *function code is used in other questions too. So if you are getting this for the first time, you may study it well. Of course, the same will be provided in the other questions too where it is used.*

```
00: unsigned int Solve(double a, double b, double c, double& r
1, double& r2)
01: {
02:     unsigned int retVal = 0;
03:     if (0 == a) {
04:         if (0 == b) {
05:             if (0 == c) {
06:                 retVal = 5;
07:             } else {
08:                 retVal = 0;
09:             }
10:         } else { // Linear equation
11:             retVal = 1;
12:             r1 = -c/b;
13:         }
14:     } else {
15:         double disc = b*b - 4*a*c;
16:         if (0 == disc) {
17:             retVal = 2;
18:             r1 = r2 = -b/(2*a);
19:         } else {
20:             if (disc > 0) {
21:                 retVal = 3;
22:                 r1 = (-b + sqrt(disc))/(2*a);
23:                 r2 = (-b - sqrt(disc))/(2*a);
24:             } else {
25:                 retVal = 4;
26:                 r1 = -b/(2*a); r2 = sqrt(-disc))/(2*a);
27:             }
28:         }
29:     }
30:
31:     return retVal;
32: }
```

For checking the path coverage of **Solve**, a set of 6 test cases are designed below. Match the test cases with the paths it covers in the above code.

Coefficients			
	a	**b**	**c**
(a)	4	-12	9
(b)	4	0	9
(c)	6	-22	20
(d)	0	0	0
(e)	0	5	3
(f)	0	0	27

Paths Covered

(1) 2-3-4-5-6-31
(2) 2-3-4-5-8-31
(3) 2-3-4-11-12-31
(4) 2-3-15-16-17-18-31
(5) 2-3-15-16-20-21-22-23-31
(6) 2-3-15-16-20-25-26-31

(b) 2-3-15-16-20-25-26-31 ✓

(a) 2-3-15-16-17-18-31 ✓

(d) 2-3-4-5-6-31 ✓

(f) 2-3-4-5-8-31 ✓

(e) 2-3-4-11-12-31 ✓

(c) 2-3-15-16-20-21-22-23-31 ✓

Your answer is correct.

The correct answer is: (b) – 2-3-15-16-20-25-26-31, (a) – 2-3-15-16-17-18-31, (d) – 2-3-4-5-6-31, (f) – 2-3-4-5-8-31, (e) – 2-3-4-11-12-31, (c) – 2-3-15-16-20-21-22-23-31

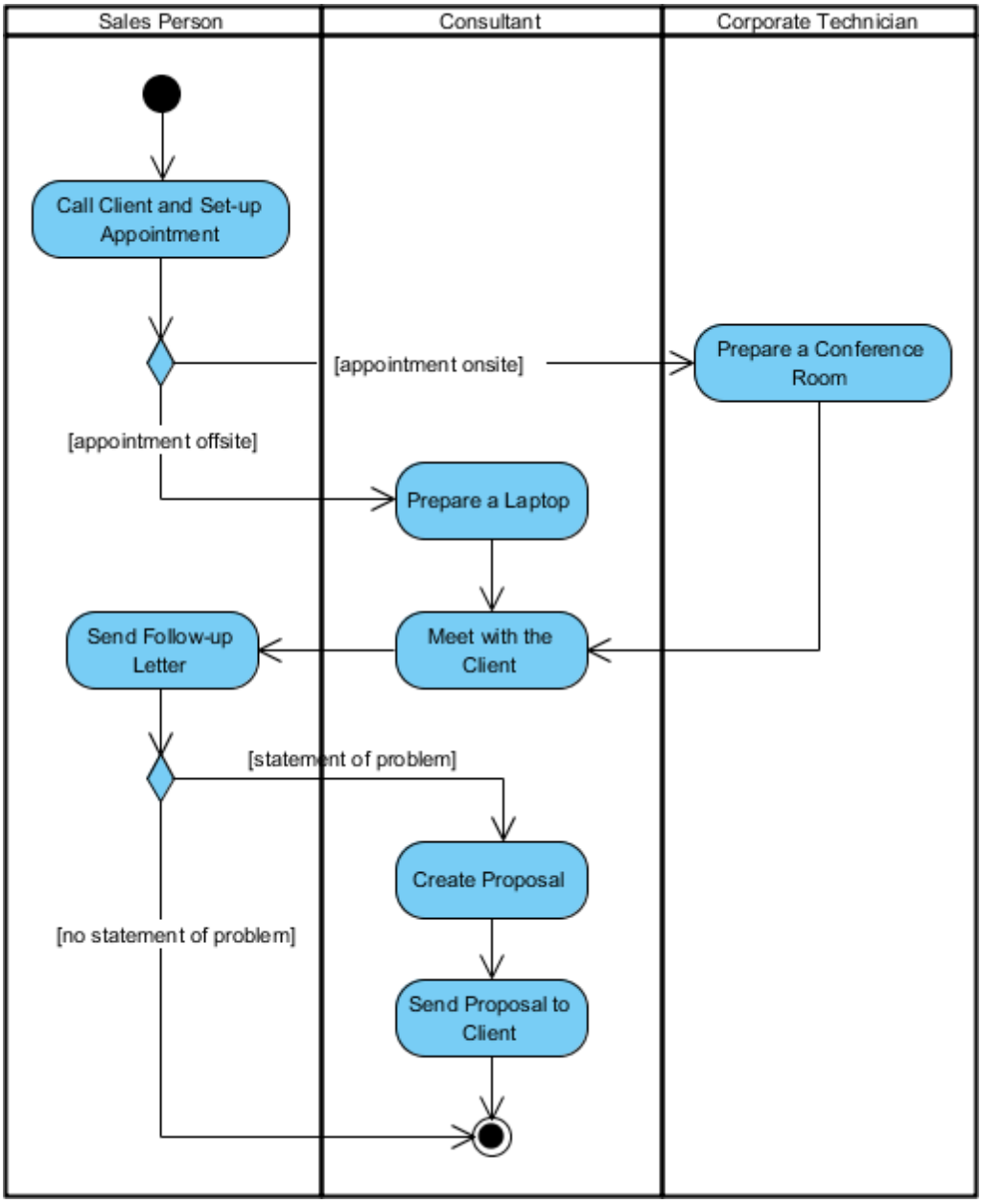
Question 7

Correct

Mark 1.00 out of 1.00

Flag question

Choose the correct statements below based on the Activity Diagram



Select one or more:

- There are 4 *swim-lanes*
- *Sales Person* prepares a Conference Room
- Choice of swim-lane may depend on *appointment* being *onsite* or *offsite* ✓
- *Consultant* creates proposals ✓

Your answer is correct.

The correct answer is: Choice of swim-lane may depend on *appointment* being *onsite* or *offsite*, *Consultant* creates proposals

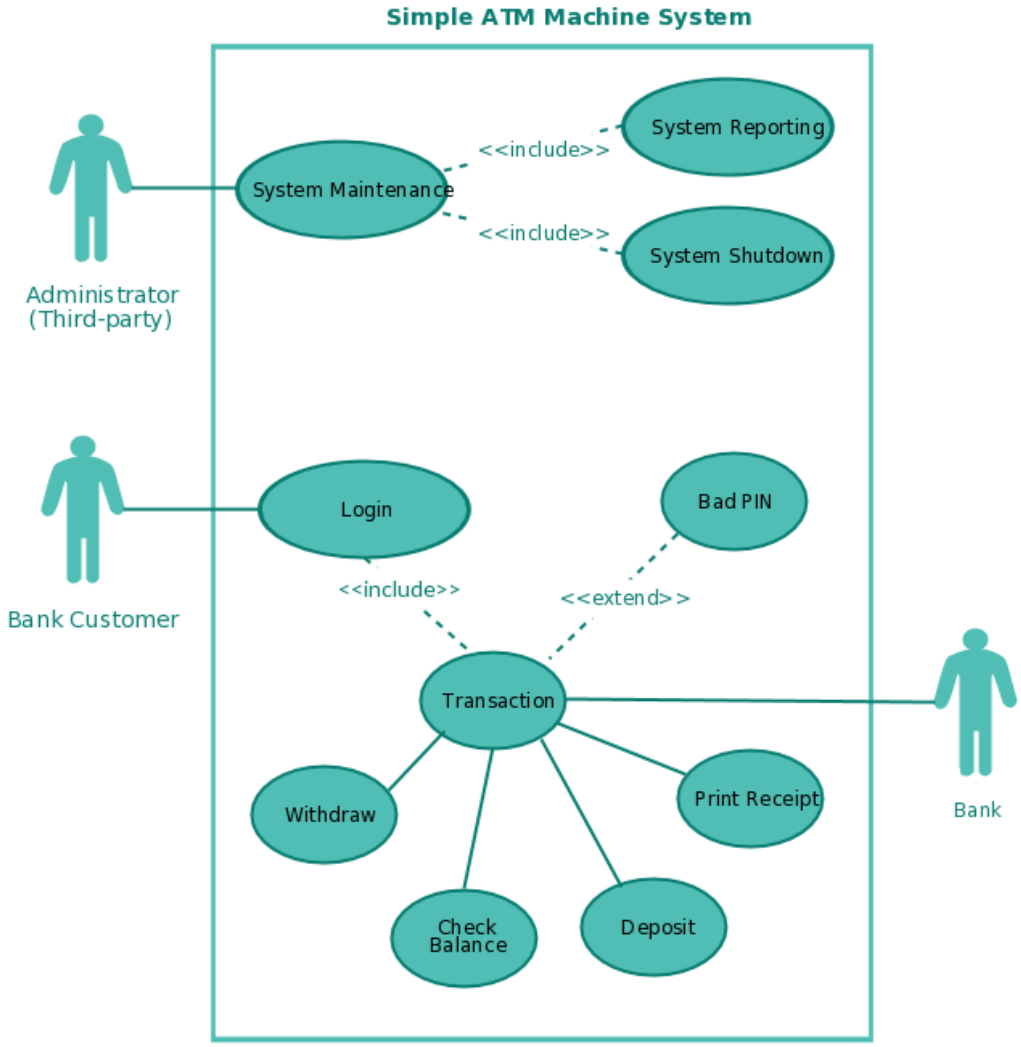
Choose the correct statements below based on the Use Case Diagram.

Question 8

Correct

Mark 1.00 out of 1.00

Flag question



Select one or more:

- [ ] *Bank Customer* can generate *PIN*
- [x] There are two *human actors* in the system ✓
- [x] *Bank* manages every *Transaction* ✓
- [ ] *Bank Customer* may not login for doing a *Transaction*

Your answer is correct.

The correct answer is: There are two *human actors* in the system, *Bank* manages every *Transaction*

Question 9

Partially correct

Mark 1.25 out of 1.50

Flag question

Consider the following *Quadratic Equation Solver* (QES) function **Solve** that takes **3 double** parameters a, b, and c for solving equations of the form $ax^2 + bx + c = 0$. The solutions are passed back through output parameters **r1** and **r2**. The function returns a value designating the equivalence class of the root/s.

The **Solve** *function code is used in other questions too. So if you are getting this for the first time, you may study it well. Of course, the same will be provided in the other questions too where it is used.*

```
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1, double& r2)
01: {
02:     unsigned int retVal = 0;
03:     if (0 == a) {
04:         if (0 == b) {
05:             if (0 == c) {
06:                 retVal = 5;
07:             } else {
08:                 retVal = 0;
09:             }
10:         } else {
11:             retVal = 1;
12:             r1 = -c/b;
13:         }
14:     } else {
15:         double disc = b*b - 4*a*c;
16:         if (0 == disc) {
17:             retVal = 2;
18:             r1 = r2 = -b/(2*a);
19:         } else {
20:             if (disc > 0) {
21:                 retVal = 3;
22:                 r1 = (-b + sqrt(disc))/(2*a);
23:                 r2 = (-b - sqrt(disc))/(2*a);
24:             } else {
25:                 retVal = 4;
26:                 r1 = -b/(2*a); r2 = sqrt(-disc))/(2*a);
27:             }
28:         }
29:     }
30:
31:     return retVal;
32: }
```

For checking the branch coverage of Solve, a set of 6 test cases are designed below. Match the test cases with the branches it covers in the above code.

	Coefficients		
	a	**b**	**c**
(a)	6	17	12
(b)	0	3	-9
(c)	0	0	3
(d)	1	10	25
(e)	1	-5	6
(f)	0	0	0

Branches Covered	
(1)	2-3, 3-4, 4-5, 5-6, 6-31
(2)	2-3, 3-4, 4-5, 5-8, 8-31
(3)	2-3, 3-4, 4-11, 11-12,12-31
(4)	2-3, 3-15,15-16,16-17,17-18,18-31
(5)	2-3, 3-15,15-16,16-20, 20-21, 21-22, 22-23, 23-31
(6)	2-3, 3-15,15-16,16-20, 20-25, 25-26, 26-31

(f) 2-3, 3-4, 4-5, 5-6, 6-31 ✓

(c) 2-3, 3-4, 4-5, 5-8, 8-31 ✓

(e) 2-3, 3-15, 15-16, 16-20, 20-21, 21-22, 22-23, 23-31 ✓

(d) 2-3, 3-15, 15-16, 16-17, 17-18, 18-31 ✓

(a) 2-3, 3-15, 15-16, 16-20, 20-25, 25-26, 26-31 ✓

(b) 2-3, 3-4, 4-11, 11-12, 12-31 ✓

Your answer is partially correct.

You have correctly selected 6.
The correct answer is: (f) – 2-3, 3-4, 4-5, 5-6, 6-31, (c) – 2-3, 3-4, 4-5, 5-8, 8-31, (e) – 2-3, 3-15, 15-16, 16-20, 20-21, 21-22, 22-23, 23-31, (d) – 2-3, 3-15, 15-16, 16-17, 17-18, 18-31, (a) – 2-3, 3-15, 15-16, 16-20, 20-25, 25-26, 26-31, (b) – 2-3, 3-4, 4-11, 11-12, 12-31

Comment:

Question 10

Correct

Mark 1.50 out of 1.50

Flag question

Match the development activity with the appropriate SDLC Models.

Development Activity

(a) I work with my friend as *driver / observer*

(b) I design test cases and then code to make them pass

(c) I do stand-up meeting with my team every morning

(d) I build prototype and keep refining it in quick cycles

(e) I use the most classical model for development

(f) I repeat *planning, risk analysis, engineering,* and *evaluation*

SDLC Models

(1) TDD
(2) RAD
(3) SCRUM
(4) Spiral
(5) Waterfall
(6) XP

I build prototype and keep refining it in quick cycles	RAD ✓
I do stand-up meeting with my team every morning	SCRUM ✓
I repeat *planning, risk analysis, engineering,* and *evaluation*	Spiral ✓
I use the most classical model for development	Waterfall ✓
I design test cases and then code to make them pass	TDD ✓
I work with my friend as *driver / observer*	XP ✓

Your answer is correct.

The correct answer is: I build prototype and keep refining it in quick cycles – RAD, I do stand-up meeting with my team every morning – SCRUM, I repeat *planning, risk analysis, engineering,* and *evaluation* – Spiral, I use the most classical model for development – Waterfall, I design test cases and then code to make them pass – TDD, I work with my friend as *driver / observer* – XP

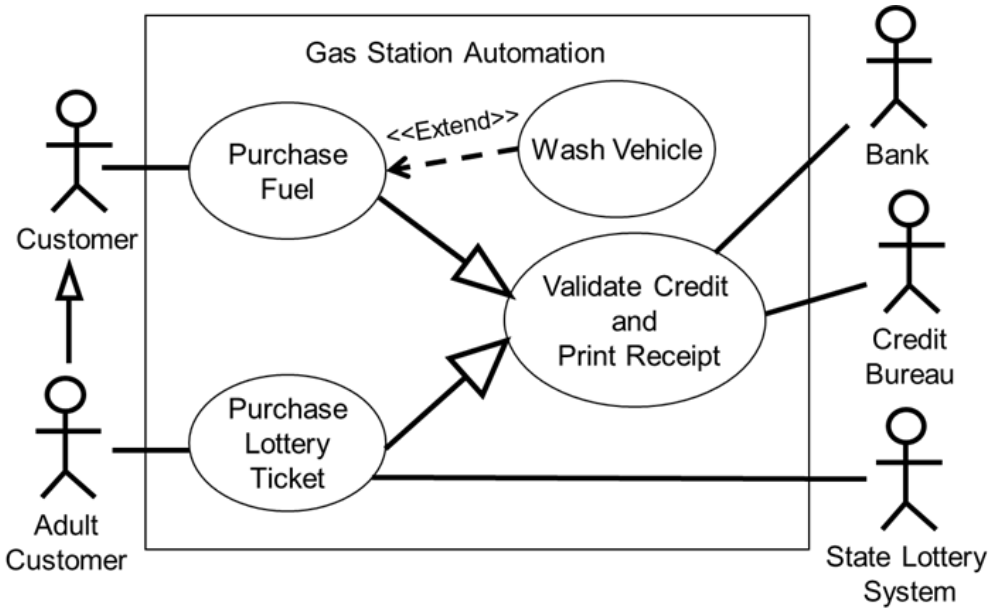
Question 11

Not answered

Marked out of 1.00

Flag question

Choose the correct statements below based on the Use Case Diagram.



Select one or more:

- *Credit Bureau* manages *Purchase Fuel*
- *Wash Vehicle* is optional during *Purchase Fuel*
- Use-case *Validate Credit* and *Print Receipt* is specialization of *Purchase Lottery Ticket* use case
- *Adult Customer* ISA *Customer*

Your answer is incorrect.

The correct answer is: *Wash Vehicle* is optional during *Purchase Fuel*, *Adult Customer* ISA *Customer*

Finish review

QUIZ NAVIGATION

1 2 3 4 5 6 7 8 9 10 11

Show one page at a time

Finish review