

**Question 1**

Not yet answered

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25.00

Flag question

**Read the scenario and draw a sequence diagram. (25 Marks)**

"INOX.Cinemas" is a big theater chain where people can book movie tickets online. Initially, user access the Registration UI and select the option he/she needs. If it is new user option, then he/she has to provide user details. Then the system will generate username and password and save them in the system and display it to the user as well. For already registered customer option, user needs to login to their e-commerce site providing his/her username and password. If the login is valid, the system will display the success message and directs to the booking user interface.

For a valid login, the user has to select the movie theater that he/she prefers. Then the system will list down all the available movies with the details. The system allows people to book tickets for more than one movie show. For each movie show, he/she is directed to the bookingUI. Then he/she submits movie name with the number of tickets to the system. Then the system checks for vacant seats. If there are vacant seats, system issues the e-ticket to the customer and increases the seat count. For invalid login, system asks to re-enter details.

Hint: You may use suitable boundary, control, and entity classes in your answer.

This question covers both statement coverage and branch coverage in software testing.

Based on the given code come up with the answers to the below questions.

```
#include<stdio.h>
int main()
{
    char grade;
    printf("Enter the grade : ");
    scanf("%c", &grade);
    while( grade != 'X')
    {
        switch( grade )
        {
            case 'A' : printf("Excellent\n");
            break;
            case 'B' : printf("Good\n");
            break;
            case 'C' : printf("Satisfactory\n");
            break;
            case 'F' : printf("Needs Improvement\n");
            break;
            default : printf("Invalid grade\n");
        }
        printf("Enter the grade : ");
        scanf("%*c%c", &grade);
    }
}
```

**online University Management system "E-Uni". Model a physical diagram for the following description. (25 Marks)**

**Note: You MUST use appropriate operating systems in required places.**

To handle university operations much easier, "E-Uni" system can be accessed by both Mobile and Desktop users. The desktop user can access the "E-Uni" web application through a browser while a mobile user needs to setup the "E-UniMob" mobile app from the App-Store.

The main application of E-Uni runs in a web server, which deployed in Lenovo ThinkSystemSR590 Server. The E-Uni application contains three subcomponents: Student, Lecturer and Module. The Student component implements iStudent interface used by both Lecturer and Module components. The Student component facilitates to handle all the information and activities relates to students while Lecturer and Module components handle all the activities and information related to lectures and modules.

Uni\_UI Component contains all the user interfaces of this system. It is also deployed in the same web server. Uni\_UI component is responsible to create Uni interface, which used by the mobile and desktop devices to connect with the backend. Also, Uni\_UI component uses Student, Lecturer and Module components through iStudent, iLecturer and iModule interfaces, respectively.

The Admin application of the E-Uni system was deployed in a separate hardware server. Admin application consists of two sub applications, HR and Students\_Affairs. Admin application communicate with Uni\_UI component via iAdmin Interface implemented by Admin application. HR and Students\_Affairs sub applications connected with each other via iHR Interface implemented by HR sub application.

Mobile user and desktop user connected to the Lenovo ThinkSystemSR590 Server and Lenovo ThinkSystemSR590 Server connected to Hardware Server via LAN.

```
    scanf("%*c%c", &grade);  
}
```

1. Calculate the statement coverage as a percentage when grade is equal to 'X'. (02 marks)
2. What are the values need to enter for "grade" variable to obtain full statement coverage? (03 marks)
3. Draw the control flow diagram for the above code. (05 marks)
4. How many branches in the code? (01 marks)
5. Calculate the branch coverage as a percentage when grade is equal to "X". (03 marks)
6. Calculate the minimum number of test cases required for a full branch coverage (Show the branch coverage as a percentage for each test case). (06 marks)

# NetExam

Sri Lanka Institute of Information Technology

Examinations

Lockdown Browser

it19146270 Jayangika Cha

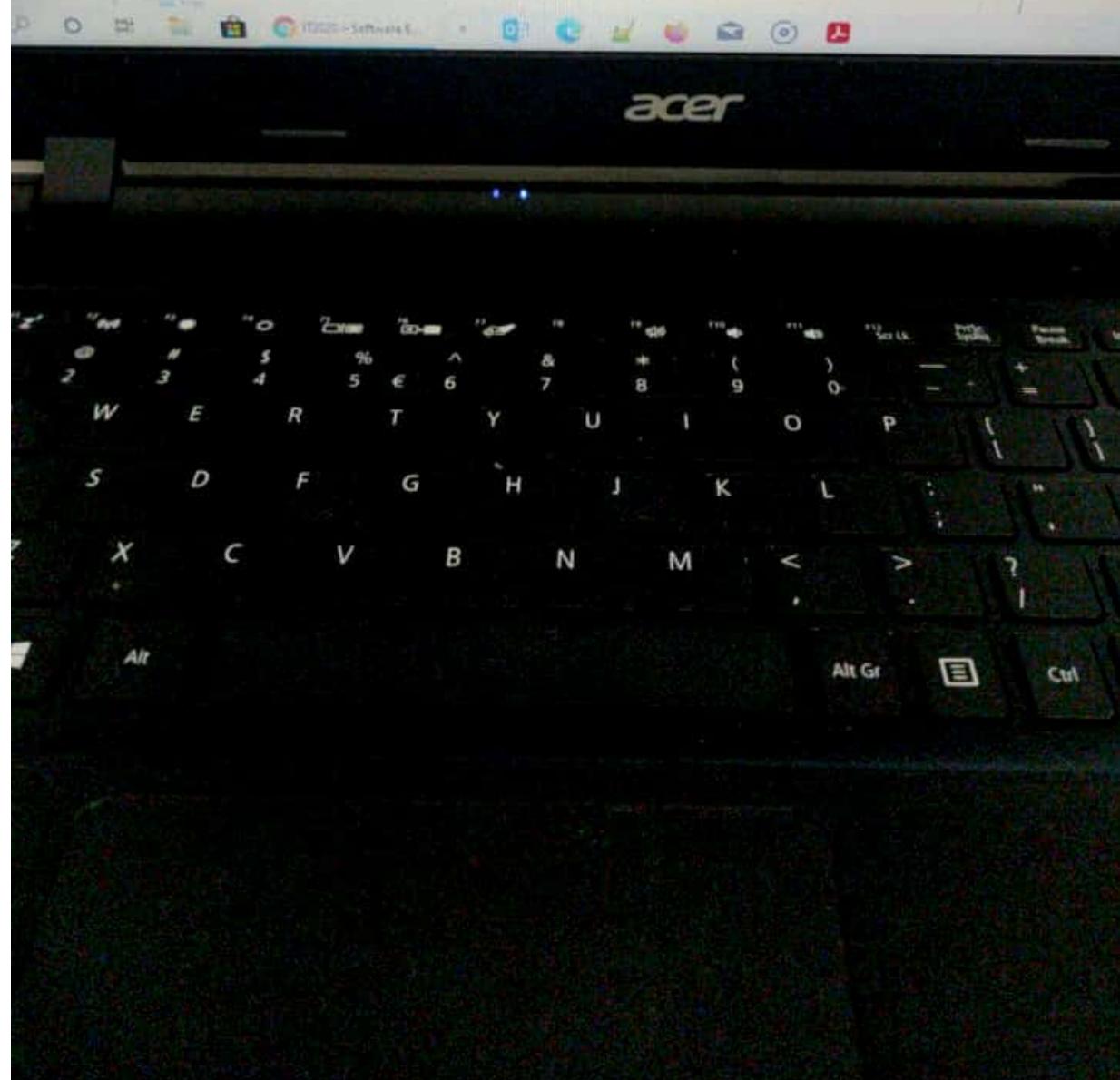
Read the scenario and draw a sequence diagram. (25 Marks)

"INOX Cinemas" is a big theater chain where people can book movie tickets online. Initially, user access the Registration UI and select the option he/she needs. If it is new user option, then he/she has to provide user details. Then the system will generate username and password and save them in the system and display it to the user as well. For already registered customer option, user needs to login to their e-commerce site providing his/her username and password. If the login is valid, the system will display the success message and directs to the booking user interface.

For a valid login, the user has to select the movie theater that he/she prefers. Then the system will list down all the available movies with the details. The system allows people to book tickets for more than one movie show. For each movie show, he/she is directed to the bookingUI. Then he/she submits movie name with the number of tickets to the system. Then the system checks for vacant seats. If there are vacant seats, system issues the e-ticket to the customer and increases the seat count. For invalid login, system asks to re-enter details.

Hint: You may use suitable boundary, control, and entity classes in your answer.

Maximum size for new files - 20MB, maximum attachments - 3



## Which Statement/s is/are true about Decorator Design Pattern?

Select one or more:

- I. Pattern allows a user to add new functionality to an existing object without altering its structure.
- II. You cannot use multiple decorators to wrap an object.
- III. Since decorators have same type as object, we can pass around decorated object instead of original object.
- IV. Comes under structural pattern as this pattern acts as a wrapper to existing class.
- V. None of the mentioned.

Which of the statement/s is/are **correct** regarding centralized version control and distributed version control:

Select one or more:

- i. In distributed version control, a 'master' repository is created on a server that maintains the code produced by the development team
- ii. None of the mentioned
- iii. In centralized version control, instead of checking out the files that they need, a developer creates a clone of the project repository that is downloaded and installed on their computer
- iv. All of the mentioned
- v. In distributed version control, developers check out components or directories of components from the project repository into their private workspace and work on these copies in their private workspace

Which of the following/s is/are **correct** about Structural design patterns?

Select one or more:

- i. Decorator and Façade patterns listed under this category.
- ii. These design patterns are specifically concerned with communication between objects.
- iii. None of the mentioned are correct.
- iv. These design patterns are concerned with class and object composition.
- v. These design patterns provide a way to create objects while hiding the creation logic, rather than instantiating objects directly using new operator.

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Full Answer  
Marked correct  
1.00  
1st question

"Kandilama" is a famous hotel which attracts more customers due to food variation. So, if it has several restaurants inside it. For example, Thai-Press, Kaludiya-Pokuna, Gan-Thera and so on. You as client want to access to different restaurants, you do not know what different menus they have. You just have access to hotel keeper who knows his hotel well. Whichever menu you want, you tell the hotel keeper and he take it out of from the respective restaurants and hands it over to you.

When considering "Hotel Keeper", which Software Design Pattern can be implemented?

Select one:

- i. Observer pattern
- ii. None of the mentioned
- iii. Facade pattern
- iv. Flyweight pattern
- v. Decorator pattern

12

**Question 28**

Not yet answered

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"Subway" is an American privately held restaurant franchise which sells submarine sandwiches, salads and beverages. When they introduce Submarine to the world, they introduce different Submarines with different ingredients as black olives, green olives, tomatoes, iceberg, lettuce, onion, different cabbages and different sauces. Price also varying according to the submarine and its ingredients.

As an analyst, which software design pattern is recommended for the problem when implements a system for Subway?

Select one:

- i. Observer pattern
- ii. Singleton pattern
- iii. Decorator pattern
- iv. Flyweight pattern
- v. Facade pattern

"Elsevier" is a UK based media unit which is famous for political news in 2020. They are the leading distributor of valid European news to south Asia domain. Therefore, several south Asian media units are registered with "Elsevier" to know the recent news. They are listed below for the reference. As an Analyst, you have assigned to generate a report containing details for upcoming centralized system.

Ex : Sri Lanka: Derana News, Sunday Times / India: India Times

Which software design pattern would be recommended for the design of the system?

Select one:

- i. None of the mentioned
- ii. Singleton Design Pattern
- iii. Observer Design Pattern
- iv. Decorator Design Pattern
- v. Façade Design Pattern

Next page

```
private MobileShop samsung;
private MobileShop blackberry;

public ShopKeeper(){
    iphone= new Iphone();
    samsung=new Samsung();
    blackberry=new Blackberry();
}

public void iphoneSale(){
    iphone.modelNo();
    iphone.price();
}

public void samsungSale(){
    samsung.modelNo();
    samsung.price();
}

public void blackberrySale(){
    blackberry.modelNo();
    blackberry.price();
}
```



# NetExam

Sri Lanka Institute of Information Technology

State true or false for the following statement.

"Façade pattern promotes weak coupling between subsystems and clients"

Select one:

- True
- False

Select the correct matches.

Incident is

Choose...

Primary goal of the Incident Management process is

Choose...

Unplanned interruption to an IT service or reduction in the quality of an IT service.

Restore normal service operation as quickly as possible.

Competitor, Platform changes, Technical quality of the system and Marketing requirements.

Factors influencing system release planning

Choose...

Next page

Which of the following/s is/are **correct** about Structural design patterns?

Select one or more:

- i. Decorator and Façade patterns listed under this category.
- ii. These design patterns are specifically concerned with communication between objects.
- iii. None of the mentioned are correct.
- iv. These design patterns are concerned with class and object composition.
- v. These design patterns provide a way to create objects while hiding the creation logic, rather than instantiating objects directly using new operator.

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## Incident mg.

Primary goal of the Incident Management process is:

Factors influencing system release planning

Choose...

Choose...

Choose...

Unplanned interruption to an IT service or reduction in the quality of an IT service

Restore normal service operation as quickly as possible

Competition, Platform changes, Technical quality of the system and Marketing requirements

Next page



**Question 20**

Not yet answered

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1.00

Flag question

Which of the statement/s is/are **correct** regarding centralized version control and distributed version control;

Select one or more:

- i. None of the mentioned
- ii. In centralized version control, instead of checking out the files that they need, a developer creates a clone of the project repository that is downloaded and installed on their computer
- iii. In distributed version control, a 'master' repository is created on a server that maintains the code produced by the development team
- iv. In distributed version control, developers check out components or directories of components from the project repository into their private workspace and work on these copies in their private workspace
- v. All of the mentioned

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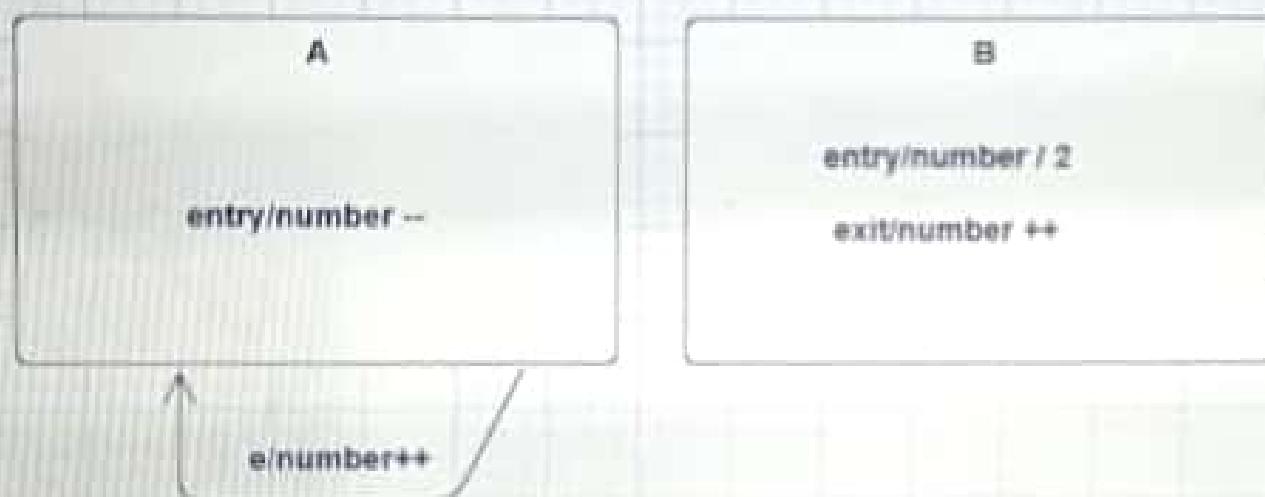
**Question 18**

Not yet answered

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1.00

Flag question

Which of the following statement/s is/are true according to the given partial state diagram?



Select one or more:

- i. The two images are equivalent.
- ii. In state A the entry-activity is executed every time the self-transition e occurs.
- iii. The two images are not equivalent.
- iv. In state B the entry-activity is executed only once.
- v. Internal transitions behave like normal transitions except that they do not cause a change of state.

**Question 13**

Not yet answered

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1.00 Flag question**≡ Quiz**

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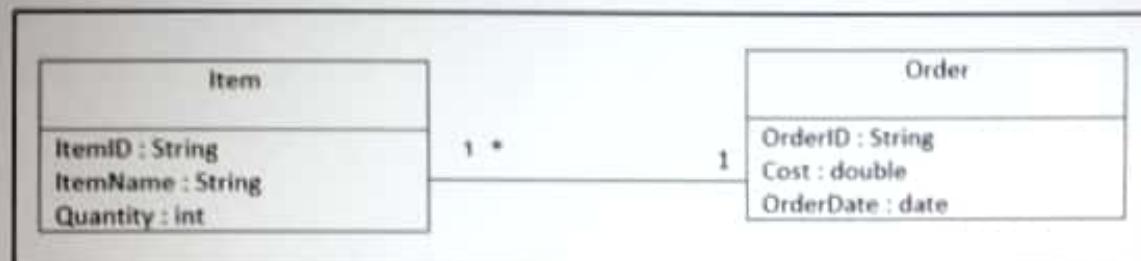
COMMENT

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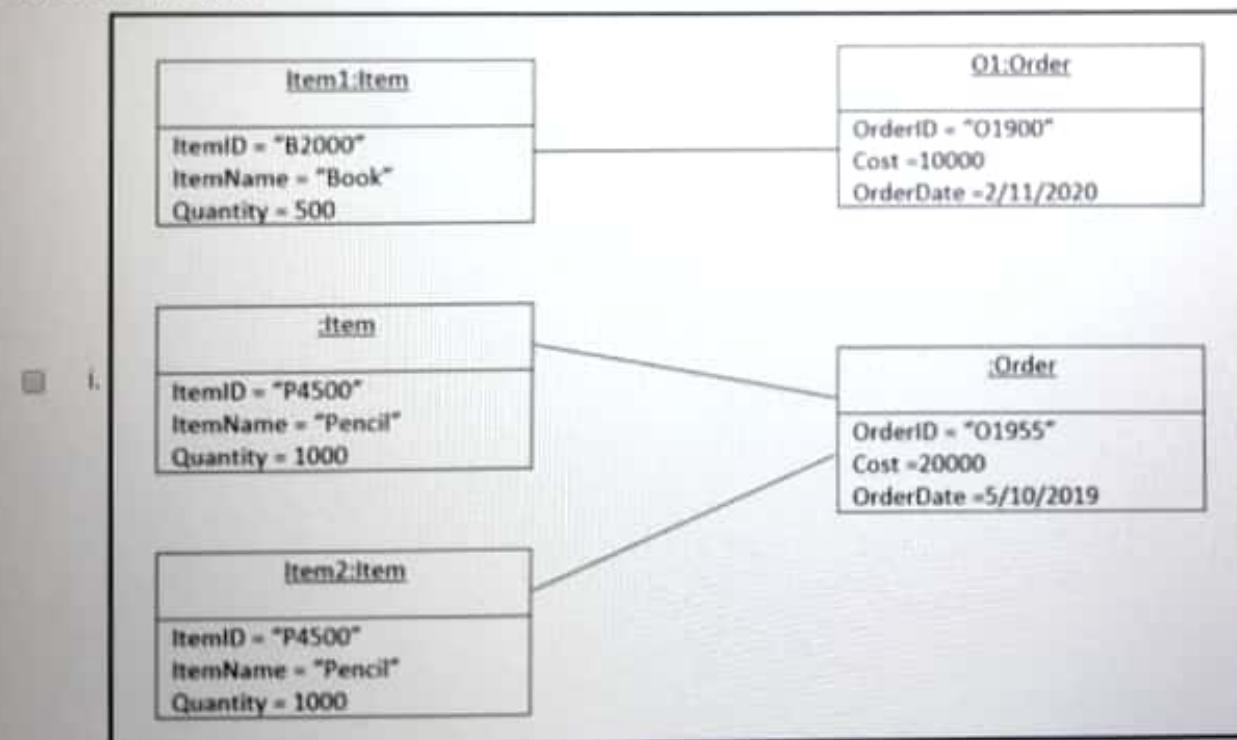
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Select the correct object diagram/s for the given class diagram.



Select one or more:



Sri Lanka Cricket Association is going to build a mobile app which can notify the viewers about the match information such as current score, run rate etc. Two display elements called CurrentScore and AverageScore are targeted for this application. CricketData has all the data (runs, bowls etc.) and whenever data changes the display elements are notified with new data and they display the latest data accordingly.

As an experienced Software Engineer, which Software Design pattern would be recommended for this implementation?

Select one:

- i. Decorator pattern
- ii. None of the mentioned
- iii. Flyweight pattern
- iv. Observer pattern
- v. Facade pattern

```
public class SongsComposer {  
    private Song classical;  
    private Song jazz;  
    private Song rock;  
    public SongsComposer() {  
        classical = new Classical();  
        jazz = new Jazz();  
        rock = new Rock();  
    }  
    public void ComposeClassical() {  
        classical.Create();  
    }  
    public void ComposeJazz() {  
        jazz.Create();  
    }  
    public void ComposeRock() {  
        rock.Create();  
    }  
}
```

Select one:

- i. This implementation suits for Flyweight design pattern which is categorized under structural.
- ii. None of the mentioned.
- iii. This implementation suits for observer design pattern which is categorized under behavioral.
- iv. This implementation suits for facade design pattern which is categorized under structural.
- v. This implementation suits for Flyweight design pattern which is categorized under behavioral.

Which of the following/s is/are **correct** about **Creational** design patterns?

Select one or more:

- i. These design patterns concern class and object composition. Concept of inheritance is used to compose interfaces and define ways to compose objects to obtain new functionalities.
- ii. These design patterns provide a way to create objects while hiding the creation logic, rather than instantiating objects directly using new operator.
- iii. It attaches new behaviours to objects by placing these objects inside special wrapper objects that contain the behaviours.
- iv. Abstract Factory and Singleton are categorized under creational patterns.
- v. These design patterns are specifically concerned with communication between objects.

**Question 20**

Not yet answered

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Flag question

Assume that you are assigned a task to implement a software that converts audio file formats from .wav to .mp3. We assume that the file type conversion class is already available as a third-party code library implemented using a different technology than our technology. This legacy library gives an interface that cannot be modified. Your task is to identify the suitable design pattern to implement this scenario.

What is the most suitable design pattern for this scenario?

Select one:

- i. Singleton pattern
- ii. Decorator pattern
- iii. Observer pattern
- iv. Facade pattern
- v. Adapter pattern

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Which statement/s is/are **incorrect** about advantages of **Observer** design pattern?

Select one or more:

- i. It Allows you to send data to many other objects in a very efficient manner.
- ii. All of the mentioned are correct.
- iii. It would not allow you to add and remove observers at anytime due to High coupling.
- iv. No modification needs to be done to the subject to add new observers.
- v. Supports the principle to strive for loosely coupled designs between objects that can be add and remove anytime.

A leather shoe manufacturing company has a default typical shoe type they manufacture with a fixed price for it. But if a customer requests they can change the styles of the shoe by having additional straps or different soles or custom made designs. The company is even thinking of adding more features in future.

What would be the most suitable design pattern to model these requirements efficiently?

Select one:

- i. Adapter pattern
- ii. Flyweight pattern
- iii. Decorator pattern
- iv. Facade pattern
- v. Observer pattern

Which steps are in the incident management:

Select one or more:

- i. Incident logging
- ii. Incident removal
- iii. Incident identification
- iv. Investigation and diagnosis
- v. None of the mentioned



Question 8

Not yet answered

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Flag question

Select the most appropriate pattern for each given scenario.

"Reduce coupling among sub classes"

"Creates objects without prohibitive cost, on demand and keep shared objects on a pool that can be shared in multiple contexts"

Choose...  
Choose...  
Adapter  
Observer  
Decorator  
Flyweight  
Facade

Next page

**Question 15**

Not yet answered

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Flag question

Which is **NOT** a key feature of version control

Select one:

- i. Change history recording
- ii. None of the mentioned
- iii. Support for independent development
- iv. Storage management
- v. System Building

In java, when we use the interface JDBC to connect to a DBMS, we as users only create a connection using the "java.sql.Connection" interface. We are not worried how the implementation of "java.sql.Connection" is. The implementation is left to the vendor or driver. In this case JDBC is similar to ..... design pattern.

Select one:

- a. Facade
- b. Decorator
- c. Flyweight
- d. Observer
- e. Adapter

Which of the following statement/s about state machine diagrams is/are true?

Select one or more:

- i. The initial state has exactly one outgoing and any number of incoming transitions.
- ii. A state may be divided into regions containing sub-states that exist and execute concurrently.
- iii. Internal behaviour compartment contains behaviours that they do not cause a change of state.
- iv. Do-activities within states cannot be aborted by any event.
- v. when(date=31.12.2007) is a so-called time event

Select the correct matches.

Incident is

Choose...

Choose...

Restore normal service operation as quickly as possible

Competition, Platform changes, Technical quality of the system and Marketing requirements

Unplanned interruption to an IT service or reduction in the quality of an IT service.

Primary goal of the  
Incident Management  
process is

Choose...

Factors influencing  
system release planning

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COMMENTS AND

31

Finish attempt

Time left: 1:04:29

# NetExam

Sri Lanka Institute of Information Technology

IT19146270 Jay

You want to model the following situation: A home delivery service has the two states wait and deliver. At the beginning, wait is active. As soon as a customer has ordered a product, a transition to deliver takes place. During the transition, the order is processed. deliver stays active until the product has been delivered to the customer, then a transition to wait happens. How do you have to specify the transition from wait to deliver?

Select one:

- 1. [order received]/order is processed
- 2. /process order
- 3. [order received]/process order
- 4. order received/process order
- 5. order received [process order]

Answer page

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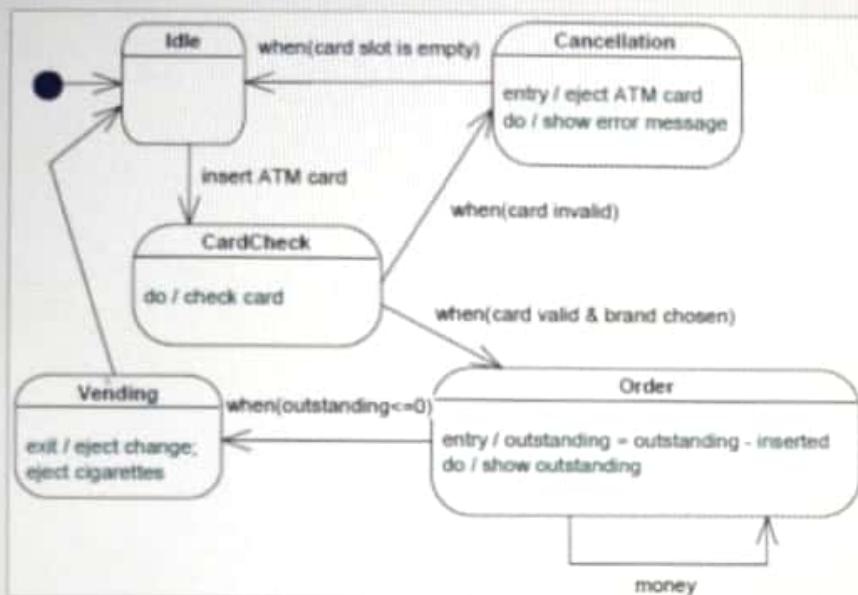
**Question 1**

Not yet answered

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Flag question

You are given the following state chart diagram and three statements. Select the **Correct statement/s** about the given state chart diagram.

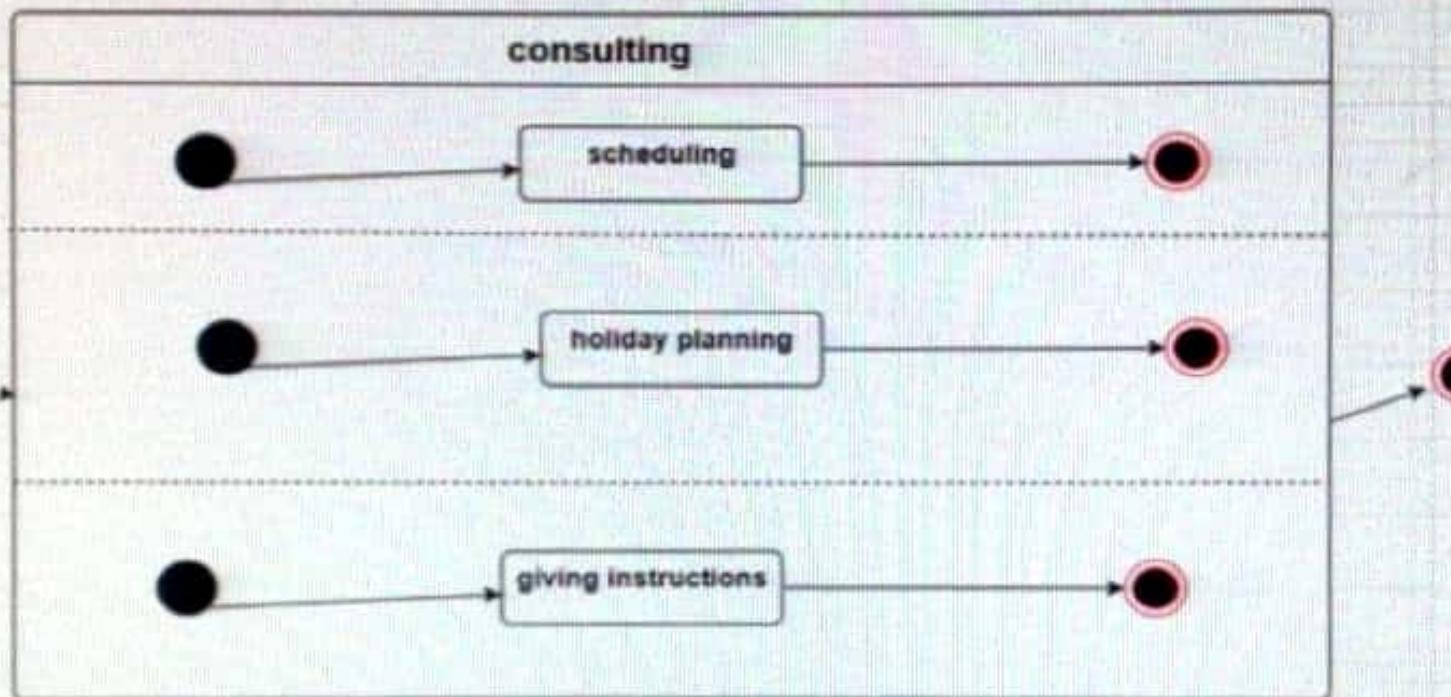


- A. Insert ATM card is an activity.
- B. Check card is an activity
- C. When (outstanding<=0) is an event

Select one or more:

- i. Only A and B
- ii. Only B and C
- iii. C only
- iv. B correct

Select the correct statement/s about the given partial state chart diagram.



Select one or more:

- i. State can contain sub states.
- ii. Consulting is an orthogonal composite state with three parallel states.
- iii. Consulting is an orthogonal composite state with three sequential states.
- iv. Consulting is a simple composite state with three parallel states.
- v. Consulting is completed when it has scheduled, holiday planned and given the instructions.

Not yet answered

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Flag question

Which design pattern is shown in the below given code fragment?

```
public class Example {  
  
    //static instance of class globally accessible  
    public static Example Ex_instance;  
  
    private Example () {  
        // private constructor implementation goes here.  
    }  
  
    public static Example getInstance(){  
  
        if (Ex_instance == null)  
        {  
            Ex_instance = new Example();  
        }  
        return Ex_instance;  
    }  
}
```

Select one:

- i. Observer pattern
- ii. Singleton pattern
- iii. Facade pattern

**Question 2**

Not yet answered  
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Flag question

A leather shoe manufacturing company has a default typical shoe type they manufacture with a fixed price for it. But if a customer requests they can change the styles of the shoe by having additional straps or different soles or custom made designs. The company is even thinking of adding more features in future.

What would be the most suitable design pattern to model these requirements efficiently?

Select one:

- i. Adapter pattern
- ii. Decorator pattern
- iii. Observer pattern
- iv. Facade pattern
- v. Flyweight pattern



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[Finish attempt...](#)

Time left 1:00:44

1	2	3	4
9	10	11	12
17	18	19	20
25	26	27	28
29	30	31	32

COMMENTS AND CONCERN

31

```
private Shape square;  
public ShapeMaker(){  
    circle = new Circle();  
    rectangle = new Rectangle();  
    square = new Square(); }  
public void drawCircle(){  
    circle.draw(); }  
public void drawRectangle(){  
    rectangle.draw(); }  
public void drawSquare(){  
    square.draw(); }  
}
```

---

ct one:

- i. Flyweight pattern
  - ii. Facade pattern
  - iii. Observer pattern
  - iv. None of the mentioned.
  - v. Singleton pattern
-

```
circle.draw();  }

public void drawRectangle(){
    rectangle.draw();  }

public void drawSquare(){
    square.draw();  }

}
```

Select one:

- i. Flyweight pattern
- ii. None of the mentioned.
- iii. Facade pattern
- iv. Singleton pattern
- v. Observer pattern



Question 3

Not yet answered

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Flag question

Assume that you are assigned a task to implement a software that converts audio file formats from .wav to .mp3. We assume that the file type conversion class is already available as a third-party code library implemented using a different technology than our technology. This legacy library gives an interface that cannot be modified. Your task is to identify the suitable design pattern to implement this scenario.

What is the most suitable design pattern for this scenario?

Select one:

- i. Decorator pattern
- ii. Facade pattern
- iii. Singleton pattern
- iv. Adapter pattern
- v. Observer pattern

≡ Quiz

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COMMENTS AND ANSWERS

31

Finish attempt ...

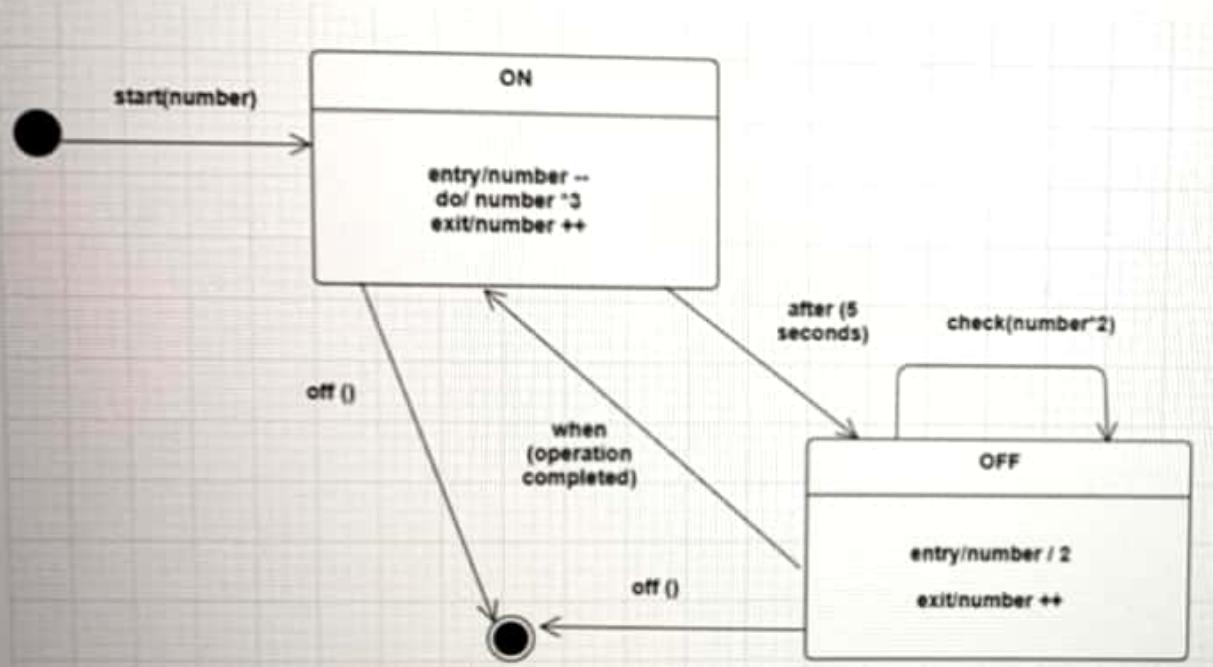
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Next page



You are given the following state machine diagram. What is the value of the number variable after the occurrence of the following event chain in order?

- start(6)
- after(5 seconds)
- off()



Select one:

- i. number is 6
- ii. number is 4
- iii. number is 15
- iv. number is 5

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Assume that you are assigned a task to implement a software that converts audio file formats from .wav to .mp3. We assume that the file type conversion class is already available as a third-party code library implemented using a different technology than our technology. This legacy library gives an interface that cannot be modified. Your task is to identify the suitable design pattern to implement this scenario.

What is the most suitable design pattern for this scenario?

Select one:

- i. Singleton pattern
- ii. Decorator pattern
- iii. Observer pattern
- iv. Facade pattern
- v. Adapter pattern



Next page

```
public class ShapeMaker
{
    private Shape circle;
    private Shape rectangle;
    private Shape square;

    public ShapeMaker() {
        circle = new Circle();
        rectangle = new Rectangle();
        square = new Square();    }

    public void drawCircle(){
        circle.draw();    }

    public void drawRectangle(){
        rectangle.draw();    }

    public void drawSquare(){
        square.draw();    }
}
```

"Kandalama" is a famous hotel which attracts more customers due to food variation. So, it has several restaurants inside it. For example, Thai-Press, Kaludiya-Pokuna, Gan-Thera and so on. You, as client want to access to different menus of different restaurants. You do not know what different menus they have. You just have access to hotel keeper who knows his hotel well. Whichever menu you want, you tell the hotel keeper and he take it out of from the respective restaurants and hands it over to you.

When considering "Hotel Keeper", which Software Design Pattern can be implemented?

Select one:

- i. Facade pattern
- ii. Observer pattern
- iii. None of the mentioned
- iv. Flyweight pattern
- v. Decorator pattern

Which steps are in the incident management:

Select one or more:

- i. Investigation and diagnosis
- ii. Incident Identification
- iii. Incident logging
- iv. None of the mentioned
- v. Incident removal

Which statement/s is/are **true** about **Observer** design pattern?

Select one or more:

- i. It defines one to one dependency between the objects.
- ii. All of the mentioned statements are correct.
- iii. Observer design pattern is categorized under behavioural category and it concerned with communication between objects and object creation of the program.
- iv. We have an object that changes its state quite often and if We want to provide multiple views of the current states, Observer can be used.
- v. In Observer one object changes the state and other objects will notify and update automatically.



Which of the following statement/s about state machine diagrams are true?

Select one or more:

- i. do-activities within states cannot be aborted by any event.
- ii. Internal behaviours trigger transitions.
- iii. The do-activity starts inside the state and continues until either the activity is completed or the state is exited.
- iv. Events trigger transitions.
- v. An event triggering a transition that leaves the current state aborts the do-activity.

Which statement/s is/are **true** about **Observer** design pattern?

Select one or more:

- i. In Observer one object changes the state and other objects will notify and update automatically.
- ii. All of the mentioned statements are correct.
- iii. It defines one to one dependency between the objects.
- iv. We have an object that changes its state quite often and if We want to provide multiple views of the current states, Observer can be used.
- v. Observer design pattern is categorized under behavioural category and it concerned with communication between objects and object creation of the program.



Which of the following statement/s about state machine diagrams is/are true?

Select one or more:

- i. when(date=31.12.2007) is a self-called time event.
- ii. Internal behaviour compartment contains behaviours that they do not cause a change of state.
- iii. Do-activities within states cannot be aborted by any event.
- iv. A state may be divided into regions containing sub-states that exist and execute concurrently.
- v. The initial state has exactly one outgoing and any number of incoming transitions.

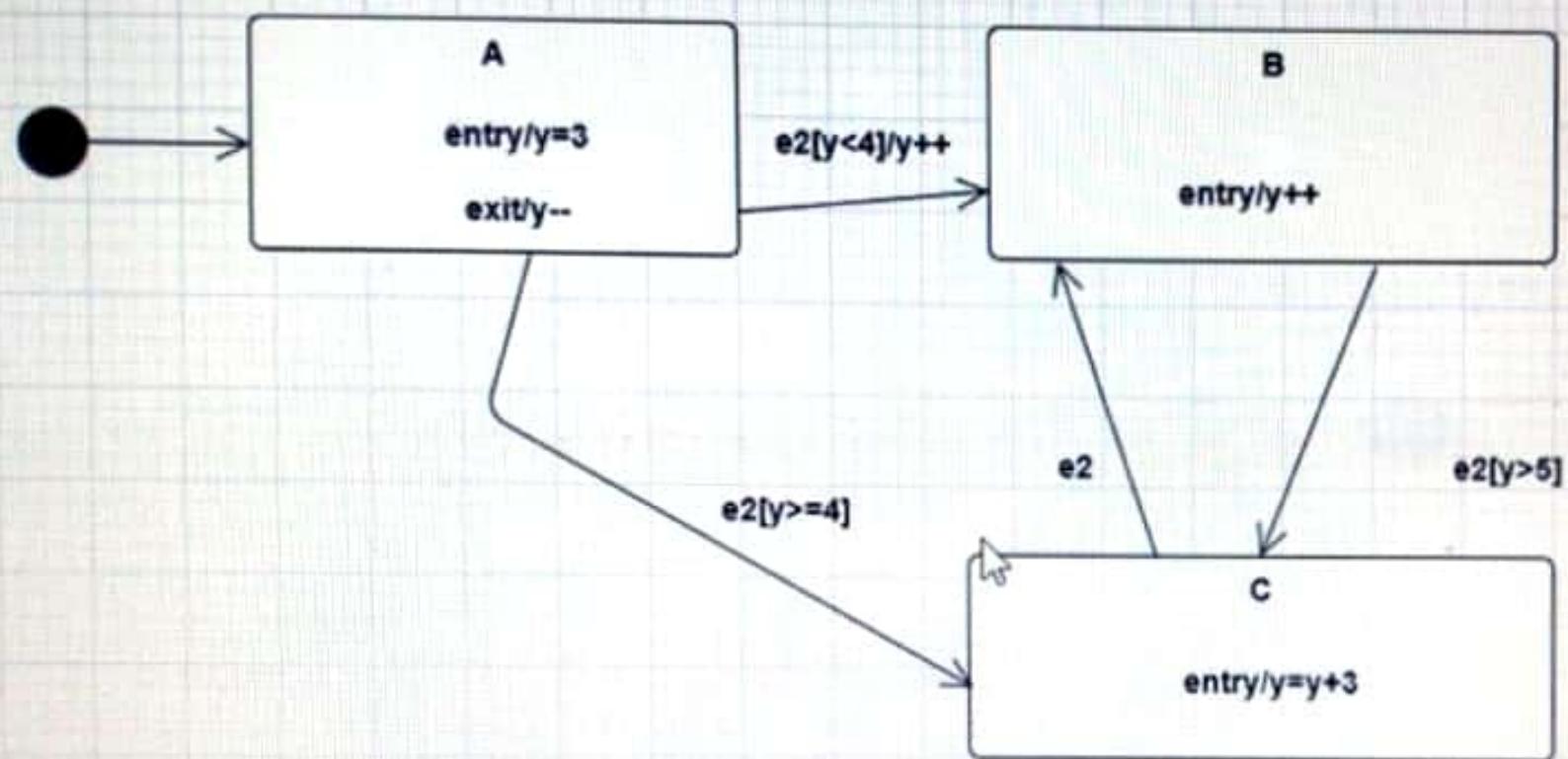
Which of the following statement/s about state machine diagrams are true?

Select one or more:

- i.  
do-activities within states cannot be aborted by any event.
- ii.  
Internal behaviours trigger transitions.
- iii.  
The do-activity starts inside the state and continues until either the activity is completed or the state is exited.
- iv.  
Events trigger transitions.
- v.  
An event triggering a transition that leaves the current state aborts the do-activity.

Next page

You are given the following state machine diagram. Assume that the active state is A. What is the **value of y variable** after the occurrence of the event chain e2, e2?



Select one:

- i. y is 3
- ii. y is 5
- iii. y is 0
- iv. y is 2
- v. y is 4

"There is a single class that provides simplified methods required by clients and delegates calls to those methods" – this description is true for

Select one:

- i. Façade pattern
- ii. Singleton pattern
- iii. Adapter pattern
- iv. Builder pattern
- v. Prototype pattern



"Elsevier" is a UK based media unit which is famous for political news in 2020. They are the leading distributor of valid European news to south Asia domain. Therefore, several south Asian media units are registered with "Elsevier" to know the recent news. They are listed below for the reference. As an Analyst, you have been assigned to generate a report containing details for upcoming centralized system.

Ex : Sri Lanka: Derana News, Sunday Times / India: India Times

Which software design pattern would be recommended for the design of the system?

Select one:

- i. Decorator Design Pattern
- ii. Singleton Design Pattern
- iii. None of the mentioned
- iv. Façade Design Pattern
- v. Observer Design Pattern

# NetExam

Sri Lanka Institute of Information Technology

You want to model the following situation: A home delivery service has the two states wait and deliver. At the beginning, wait is active. As soon as a customer has ordered a product, a transition to deliver takes place. During the transition, the order is processed. deliver stays active until the product has been delivered to the customer, then a transition to wait happens. How do you have to specify the transition from wait to deliver?

Select one:

- i. order received |process order|
- ii. order received/process order|
- iii. /process order|
- iv. [order received]/order is processed|
- v. [order received]/process order|

Next page

In Java, when we use the interface JDBC to connect to a DBMS, we as users only create a connection using the "java.sql.Connection" interface. We are not worried how the implementation of "java.sql.Connection" is. The implementation is left to the vendor of driver. In this case JDBC is similar to ..... design pattern.

Select one:

- i. Decorator
- ii. Adapter
- iii. Facade
- iv. Observer
- v. Flyweight

Next page

Which is **NOT** a key feature of version control

Select one:

- i. Support for independent development
- ii. None of the mentioned
- iii. Change history recording
- iv. System Building
- v. Storage management

In Java, when we use the interface JDBC to connect to a DBMS, we as users only create a connection using the "java.sql.Connection" interface. We are not worried how the implementation of "java.sql.Connection" is. The implementation is left to the vendor of driver. In this case JDBC is similar to ..... design pattern.

Select one:

- i. Observer
- ii. Facade
- iii. Adapter
- iv. Flyweight
- v. Decorator



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question

"Elsevier" is a UK based media unit which is famous for political news in 2020. They are the leading distributor of valid European Asian media units are registered with "Elsevier" to know the recent news. They are listed below for the reference. As an Analyst, for upcoming centralized system.

Ex : Sri Lanka: Derana News, Sunday Times / India: India Times

Which software design pattern would be recommended for the design of the system?

Select one:

- i. Façade Design Pattern
- ii. Singleton Design Pattern
- iii. None of the mentioned
- iv. Decorator Design Pattern
- v. Observer Design Pattern

In a chess game always white moves first. After that black can move and then white again. This can happen until black or white win the games, black or white draw the game or black or white lost the game. Identify the states of the chess game according to the given description.

Select one or more:

- i. White move, Black move, Start move, End move
- ii. Move, Win, Lost, Draw
- iii. White move, Black move, Win, Lost
- iv. White move, Black move, Win, Lost, Draw
- v. White move, Black move, White win, Black win, Draw



Next page

Item1:Item

ItemID = "P4500"  
ItemName = "Pencil"  
Quantity = 1000

O1:Order

OrderID = "O1900"  
Cost = 10000  
OrderDate = 2/11/2020

Item1:Item

ItemID = "B2000"  
ItemName = "Book"  
Quantity = 500

O2:Order

OrderID = "O4500"  
Cost = 12000  
OrderDate = 7/9/2018

Item2:Item

ItemID = "P4500"  
ItemName = "Pencil"  
Quantity = 1000

O3:Order

OrderID = "O1955"  
Cost = 20000  
OrderDate = 5/10/2019

Item1:Item

O1:Order

Which steps are in the incident management:

Select one or more:

- i. Investigation and diagnosis
- ii. Incident logging
- iii. Incident removal
- iv. Incident Identification
- v. None of the mentioned



## Software Testing\_(20 Marks)

This question covers both statement coverage and branch coverage in software testing.

Based on the given code come up with the answers to the below questions.

```
#include<stdio.h>
int main()
{
    char grade;
    printf( "Enter the grade : " );
    scanf( "%c" , &grade );
    while( grade != 'X' )
    {
        switch( grade )
        {
            case 'A' : printf( "Excellent!\n" );
            break;
            case 'B' : printf( "Good!\n" );
            break;
            case 'C' : printf( "Satisfactory\n" );
            break;
            case 'F' : printf( "Needs Improvement!\n" );
            break;
            default : printf( "Invalid grade!\n" );
        }
    }
}
```

```
    default : printf( "Invalid grade!\n" );
}
printf( "Enter the grade : " );
scanf( "%*c%c" , &grade );
}
```

1. Calculate the statement coverage as a percentage when grade is equal to 'X'. (2 marks)
2. What are the values need to enter for "grade" variable to obtain full statement coverage? (03 marks)
3. Draw the control flow diagram for the above code. (05 marks)
4. How many branches in the code? (01 marks)
5. Calculate the branch coverage as a percentage when grade is equal to "X". (03 marks)
6. Calculate the minimum number of test cases required for a full branch coverage (Show the branch coverage as a percentage for each test case). (06 marks)

Maximum size for new files: 30M

This question covers both statement coverage and decision testing.

**Based on the given code come up with the answers to the below questions.**

```
#include<stdio.h>
int main()
{
    char grade;
    printf( "Enter the grade : " );
    scanf( "%c" , &grade );
    while( grade != 'X' )
    {
        switch( grade )
        {
            case 'A' : printf( "Excellent!\n" );
                break;
            case 'B' : printf( "Good!\n" );
                break;
            case 'C' : printf( "Satisfactory\n" );
                break;
            case 'F' : printf( "Needs Improvement!\n" );
                break;
            default : printf( "Invalid grade!\n" );
        }
    }
}
```



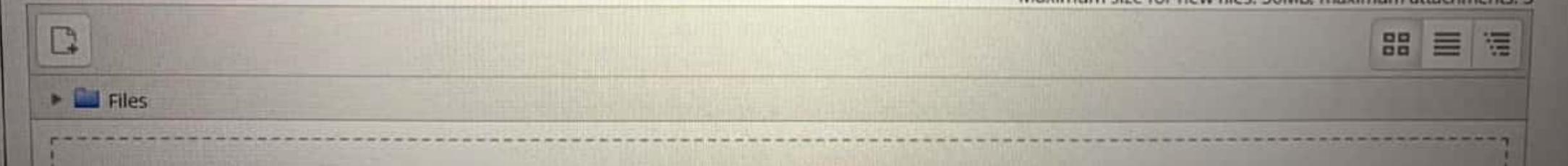
## Read the scenario and draw a **sequence diagram**. (25 Marks)

"INOX Cinemas" is a big theater chain where people can book movie tickets online. Initially, user access the Registration UI and select the option he/she needs. If it is new user option, then he/she has to provide user details. Then the system will generate username and password and save them in the system and display it to the user as well. For already registered customer option, user needs to login to their e-commerce site providing his/her username and password. If the login is valid, the system will display the success message and directs to the booking user interface.

For a valid login, the user has to select the movie theater that he/she prefers. Then the system will list down all the available movies with the details. The system allows people to book tickets for more than one movie show. For each movie show, he/she is directed to the bookingUI. Then he/she submits movie name with the number of tickets to the system. Then the system checks for vacant seats. If there are vacant seats, system issues the e-ticket to the customer and increases the seat count. For invalid logging, system asks to re-enter details.

Hint: You may use suitable boundary, control, and entity classes in your answer.

Maximum size for new files: 30MB, maximum attachments: 3



Given below is a detailed description of a web-based application developed for an online University Management system "E-Uni". Model a physical diagram for the following description. (25 Marks)

Note: You **MUST** use appropriate operating systems in required places.

To handle university operations much easier, "E-Uni" system can be accessed by both Mobile and Desktop users. The desktop user can access the "E-Uni" web application through a browser while a mobile user needs to setup the "E-UniMob" mobile app from the App-Store.

The main application of E-Uni runs in a web server, which deployed in Lenovo ThinkSystemSR590 Server. The E-Uni application contains three subcomponents: Student, Lecturer and Module. The Student component implements iStudent interface used by both Lecturer and Module components. The Student component facilitates to handle all the information and activities relates to students while Lecturer and Module components handle all the activities and information related to lectures and modules.

Uni\_UI Component contains all the user interfaces of this system. It is also deployed in the same web server. Uni\_UI component is responsible to create iUni interface, which used by the mobile and desktop devices to connect with the backend. Also, Uni\_UI component uses Student, Lecturer and Module components through iStudent, iLecturer and iModule interfaces, respectively.

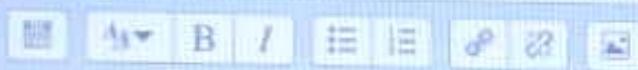
The Admin application of the E-Uni system was deployed in a separate hardware server. Admin application consists of two sub applications, HR and Students\_Affairs. Admin application communicate with Uni\_UI component via iAdmin interface implemented by Admin application. HR and Students\_Affairs sub applications connected with each other via iHR interface implemented by HR sub application.

Mobile user and desktop user connected to the Lenovo ThinkSystemCR590 Server and Lenovo ThinkSystemSR590 Server connected to Hardware Server via LAN.



Marks)

(3)



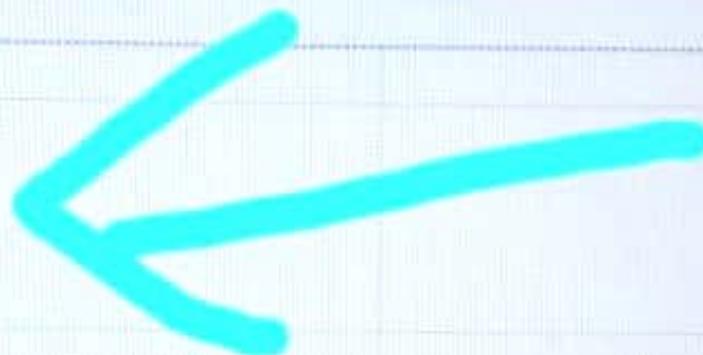
a.

- 1.
  - 2.
  - 3.
  - 4.
  - 5.
  - 6.
- 6 subnets with 30 addresses

- 1.
  - 2.
- 2 subnets, with 14 addresses

- 1.
  - 2.
  - 3.
- 3 subnets with 6 addresses in 2.  
each.

- 1.
  - 2.
- 2 subnets with 2 addresses in  
each.



b.

c.

29	30	31	32	33	34	35
36	37	38	39	40		

STRUCTURED QUESTIONS

41	42	43
----	----	----

FEEDBACK

44
----

Finish attempt...

Time left 0:28:09

- a) An organization has obtained the IPAddress block 200.30.40.0/24 and there is a requirement to create 11 subnets as follows:  
2 subnets with 50 addresses in each.  
2 subnets, with 25 addresses in each.  
3 subnets with 10 addresses in each  
4 subnets with 2 addresses in each.

Write down all the subnetwork addresses with the subnet masks using Variable Length Subnet Masking.

(10 Marks)

- b) Write the three types of IPv6 addresses. (3 Marks)
- c) What is the EUI-64 interface ID of the IPv6 address corresponding to the MAC address 6CA5:BFFE:024C. (2 Marks)
- d) Write down the complete IPv6 addresses of the following compressed IPv6 addresses.  
i. 52:8d30:0:2345::190  
ii. Fe80::1 (2 Marks)
- e) Write down the three methods of IPv4 and IPv6 coexistence (3 Marks)

a.

2 subnets with 50 addresses

2 subnets, with 25 addresses

3 subnets with 10 addresses