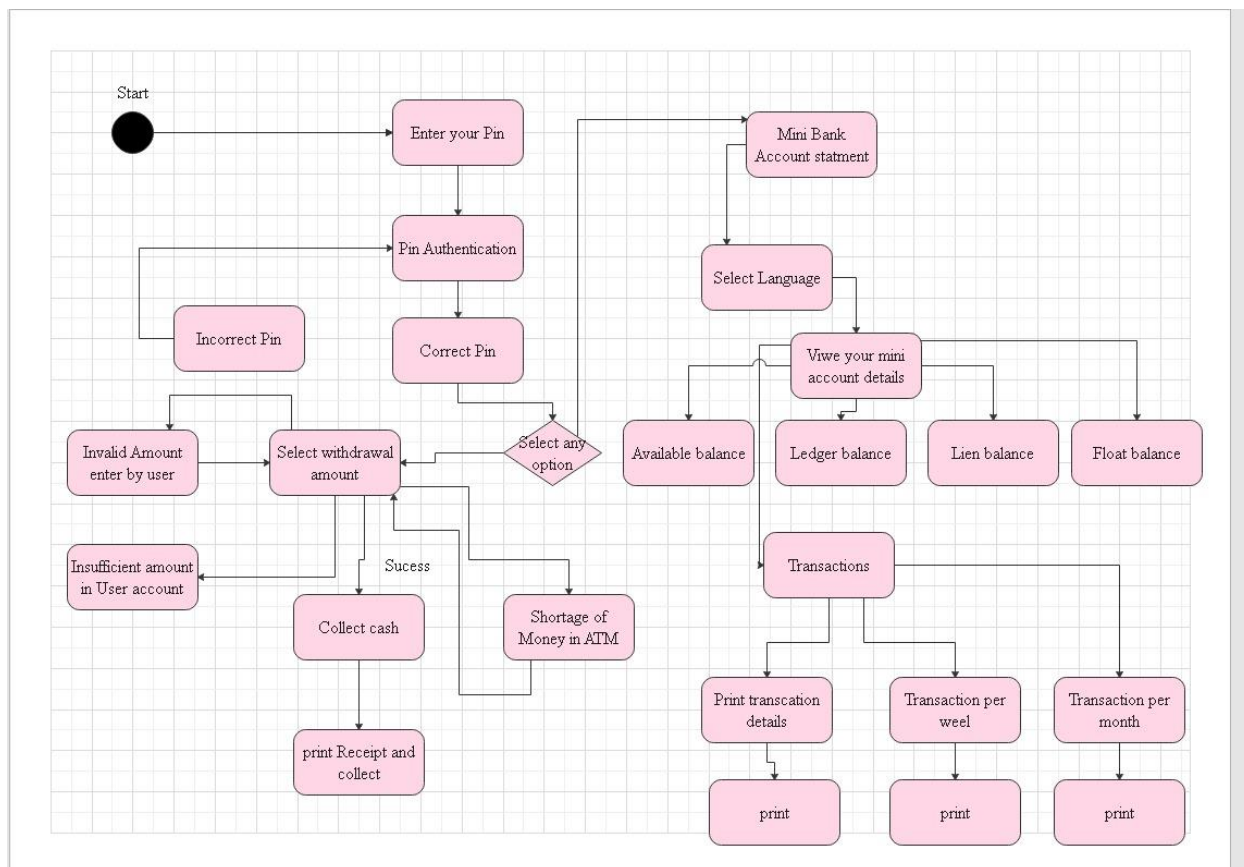ID :14269
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SEC302 - Object Oriented Software Engineering

FINAL EXAM

Question #1 (16 Marks)

An ATM machine can be used for Money Withdrawal and getting Mini Account statement. Make a State Machine Diagram for these two cases.

Question #2 (10 Marks)

You have to make a personalized software for a consultancy firm. Some components of the software are those for which you already have code. Some parts of the software are such that you can find ready-to-be-used code from internet. If you want to embed both types of code into your product, and complete the software by coding the remaining part, what can you expect during this whole process? Will it be easy or hard? What problems you might face and how will you overcome those problems?

Ans :

Obtaining codes from the internet is known as code reuse. Using ready-made codes reduces the development time, resources and fewer development team. However, code reuse might bring some licensing concerns, replicate bugs from the borrowed code, etc.

Software development is a field where one can choose to reuse codes from other developers. These codes might be readily available on the internet. However, the open code might not be able to accomplish all your needs, and hence you will need to code some parts to suit your needs. Code-reuse reduces the development time since the developer will not need to start developing a software system from scratch. Integrating Ready-made code and code from the internet is also a hectic job because one will have to convert it to his own logic and need which is a hard task.

- **The benefits and problem or challenges might face:**
    The following are the benefits of using ready-made code from the internet.

    ➢ The development time will be shortened
    ➢ The process of development will require fewer people.
    ➢ The software will be developed at lower costs.

    However, code reuse might come with various challenges. The following are the challenges that you might encounter in the process.

    ➢ The bugs from the borrowed code might be replicated
    ➢ There might be some licensing concerns due to reusing other peoples' codes.

➢ It might take some time for the developers to familiarize themselves with the code obtained from the internet.

- **how can we overcome these problems ?**

   The best way to overcome the problems of the problems that might be encountered in the whole process is to use both code reuse and manual coding hand in hand. Code obtained from other sources needs to be manually checked for error rectification

Question #3 (24 Marks)

1. What is the difference between a Task and a Work Product? Explain in your own words and give an example of each.

- **WORK PRODUCT**

   A work product may begin as an analysis made during the development of a project, creating a type of proposal for the project that a company cannot deliver until the project has received approval. Companies use work products to provide information to current stakeholders and potential investors

- **Examples**
   1. Project plan
   2. Requirement specification
   3. Traceability record
   4. Software design.

- **TASK**

   Task is some duty which is assign to a specific person for specific time. In task you will not get any clue .you will have to solve your problems by yourself. . A task can be broken down into assignments which should also have a defined start and end date or a deadline for completion. One or more assignments on a task puts the task under execution. Completion of all assignments on a specific task normally renders the task completed. Tasks can be linked together to create dependencies

- **Examples**
   1. identify the business processes to be addressed.
   2. Identify session participants.
   3. Schedule the session.
   4. Create the agenda/session plan.
   5. Distribute the session plan.
   6. Confirm participants.

2. You are working on coding of a software in which a lot of calculations are involved. The calculations are quite easy to be done, but you do expect some inconsistency in the calculations because of some inner problem with the software. Would you rather go for Fault Avoidance technique or Fault Detection technique in the Testing Phase? Explain your answer.
   Ans :

- **Fault avoidance technique**
  Fault avoidance techniques try to detect faults statically, that is, without relying on the execution of any of the system models, in particular the code model. Fault avoidance tries to prevent the insertion of faults into the system before it is released. Fault avoidance includes development methodologies, configuration management, and verification.

- **Fault detection technique**
  Fault detection techniques, such as debugging and testing, are uncontrolled and controlled experiments, respectively, used during the development process to identify erroneous states and find the underlying faults before releasing the system. Fault detection techniques assist in finding faults in systems, but do not try to recover from the failures caused by them. In general, fault detection techniques are applied during development, but in some cases they are also used after the release of the system.

  Firstly I will look at the software engineering model ,which type of model I am using .let suppose if I am using waterfall model and I am facing issue in calculations just because of missing some calculations or you can say some values and there comes some inner problem in software in testing phase.so I will prefer fault detection technique because if I choose fault avoidance technique then my whole software will be collapse.
  Let suppose if choose agile model , here its all up to my choice .If I choose detection or avoidance technique .because in this only problems comes in that specific phase.

3. There are different types of testing. State which techniques are performed by the developer and which of them are performed by the client.
   Ans :
   The following are the common types of software testing

- **Functional Testing types include:**

1. Unit Testing
2. Integration Testing
3. System Testing
4. Sanity Testing

5. Smoke Testing
6. Interface Testing
7. Regression Testing
8. Beta/Acceptance Testing

- **Non-functional Testing types include:**

1. Performance Testing
2. Load Testing
3. Stress Testing
4. Volume Testing
5. Security Testing
6. Compatibility Testing
7. Install Testing
8. Recovery Testing
9. Reliability Testing
10. Usability Testing
11. Compliance Testing
12. Localization Testing

- **Techniques performed by developer**

Composite Testing is mostly performed by developers after the completion of unit testing. Component Testing involves testing of multiple functionalities as a single code and its objective is to identify if any defect exists after connecting those multiple functionalities with each other.

- **Techniques performed by client**

Beta Testing is a formal type of Software Testing which is carried out by the customer .Usually, this testing is typically done by end-users or others. It is the final testing done before releasing an application for commercial purpose. Usually, the Beta version of the software or product released is limited to a certain number of users in a specific area.