

Software Engineering

Software tools – Classwork assignment

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Differences between service based and product based companies

Product based companies:

Product-based companies make and sell their own software applications or products. For example, Apple sells iPhones, Google offers software like Chrome. These companies create actual items or software that you can use or hold.

Product-based companies focus on making and selling actual things, like iPhones from Apple. They create physical goods or software products, which you can buy and use in your daily life.

Examples: Google, Apple, Microsoft

Service based companies:

Service-backed software companies provide services rather than physical products. They offer solutions, support, and expertise. An example is Salesforce, a company offering cloud-based customer relationship management (CRM) services. Another is Oracle, providing enterprise software solutions. These companies don't just sell software; they assist in implementation, customization, and ongoing support.

Service-based companies ensure their software meets specific client needs and offer continuous assistance. They may include subscription models or consulting services. Unlike product-based companies, their value lies not just in the software but in the ongoing support and expertise they provide to enhance user experience and address evolving business requirements.

Examples: TCS, Wipro, Cognizant

List out testing tools and their purpose

1. Selenium:
It is used for automatic web application testing , it allows testers to test their program scripts in different web browsers.
2. Junit:
It is widely used testing frame work for java. It helps testers to write and run unit tests to ensure quality of their code.
3. Test NG:
Similar to Junit but offers additional features such as parallel execution, test configuration and grouping of test cases.
4. Appium:
It is open source tool for testing mobile apps on Android and IOS. It uses web driver protocol for testing

What are the companies works on Syber Security

1. Symantec
2. McAfee
3. Crowd Strike
4. Fire Eye
5. Cisco
6. IBM Security
7. Cyber Arc
8. Qualys
9. Rapid7
10. Darktrace

Stand alone and Dynamic Applications

Stand alone Applications:

Standalone applications are also known as desktop or native applications, these are designed to run on a specific operating system and are typically installed on user's device

They don't require a constant internet connection to function and can operate independently on user's device.

Ex: Word, Photoshop, Excel

Dynamic Applications:

Dynamic applications are often related to web applications or mobile apps that are highly interactive and responsive

They require internet connection to function since they often relay on real time data from servers.

They can adapt to users input and provide dynamic content based on users actions.

Ex: Social media apps like Facebook Instagram, online shopping apps like amazon Flipkart, email, and many more.

What is a client and a server and their examples

Client:

A client is a device or software application that initiates communication with a server to request services or resources. Clients are typically end-user devices, such as computers, smartphones, or tablets, that interact with servers to access data, files, or services. Examples of client devices include web browsers (like Chrome, Firefox, or Safari), email clients

(such as Outlook or Thunderbird), and mobile apps (like Instagram or Twitter).

Server:

A server is a device or software application that provides services or resources to clients. Servers are powerful computers or specialized hardware designed to handle requests from multiple clients simultaneously. Examples of server types include web servers (e.g., Apache or Nginx) that host websites, email servers (such as Microsoft Exchange or Gmail servers) that handle email communication, and file servers that store and share files

What are different versions of Android?

Android 1.0 – 2008

Android 2.0 – Eclair – 2009

Android 3.0 – Honeycomb – 2011

Android 4.0 – Ice cream Sandwich – 2011

Android 5.0 – Lollipop – 2014

Android 6.0 – Marshmallow – 2015

Android 7.0 – Nougat – 2016

Android 8.0 – Oreo – 2017

Android 9 – Pie – 2018

Android 10 – 2019

Android 11 – 2020

Android 12 – 2021

UML diagrams, use case Diagrams of ATM

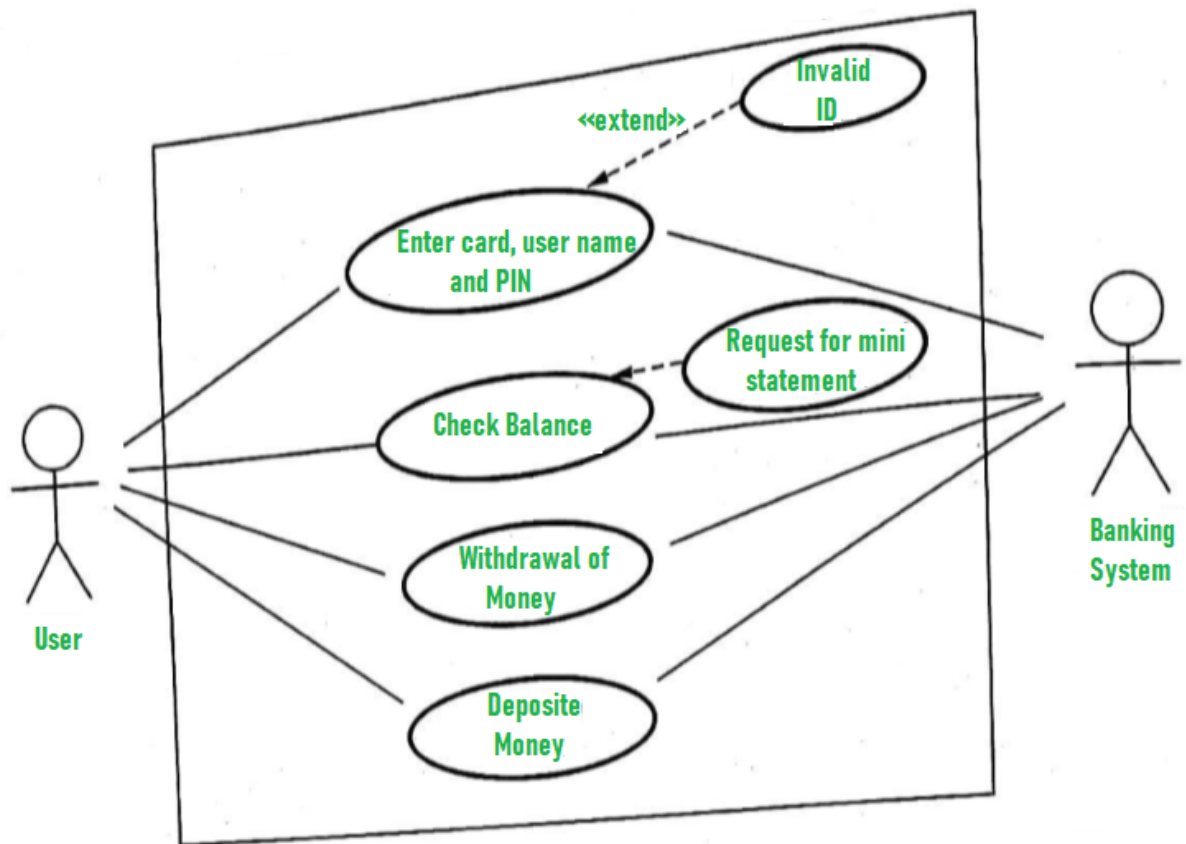
UML Diagrams:

UML – Unified Modelling Diagrams are visual representation used in Software engineering and systems design to model, document and communicate various aspects of a system. are several types of UML diagram's :

1. Class Diagram:
Shows the structure of the system by depicting classes, their attributes, methods and relationships.
2. Use case Diagram:
Describes the inter connection between system and its external actors (users and other systems) to show system functionality.
3. Sequence Diagram:
Illustrates the interactions between objects over time, displaying the order in which messages are exchanged
4. Activity Diagram:
Focuses on work flow, showing the activities and their flow within a system or process.
5. State Diagram:
Represents various states a system or object can be in and transactions between them
6. Component Diagram:
Depicts the physical components of the system and their relationships.
7. Deployment Diagram:
Shows how the software components are deployed on hardware nodes in a network.
9. Package Diagram:

10. Organizes and displays the high level structure of a system by grouping related elements into packages.
11. Collaboration Diagram:
Emphasizes the structural organization of objects and message exchanged between them.
12. Object Diagram:
Provides a snapshot of objects and their relationships at a specific point in time

Use case diagram of atm machine:



Use Case Diagram for Bank ATM System

Different types of Automated Estimation Tools

1. Software development estimation tools:
 - JIRA
 - Trello
 - Private Tracker
2. Project management estimation tools:
 - Microsoft Project
 - Smart sheet
 - Asana
3. Parametric estimation tools:
 - COCOMO
 - SEER - SEM
4. Function point analysis tools:
 - QSM SLIM
 - ISBSG Data Protocol
5. Expert judgment tools:
 - Wideband Delphi
 - PERT – Program Evaluation and Review Tools
6. Machine learning based estimation tools:
 - Toggle plan
 - Hive
7. Agile estimation tools:
 - Scrum poker
 - Fibonacci sequence estimator

What are the other tools for Scheduling the Task set?

1. Task list
2. Word breakdown Stricture:
 - Graphical representation of every step needed to deliver the project

3. Gantt chart:

Horizontal bar chart that tracks activities overtime and allows to communicate the project time line visually.

4. Mathematical methods:

Critical path method: This adds up time for all activities to arrive at the earliest project completion date

Program evaluation and review technique: It gets you to estimate the shortest time, longest time and time to complete each task

5. Duration compression method:

Used to shorten a scheduler

6. Resource leveling:

This technique make adjustments to tasks, schedule or resource allocation to flatten resource requirements

Tools to track the progress of the software

1. Jira:

A popular project tracking and issue tracking tool

2. Trello:

A visual representation tool that uses boards, lists and cards

3. Asana:

A task and project management tool that helps the team to organize works

4. Gitlab:

Provides integrated source code management and continuous integration

5. Pivotal Tracker

6. Gantt chart

Different types of File Systems

Types of file systems Disk file systems.

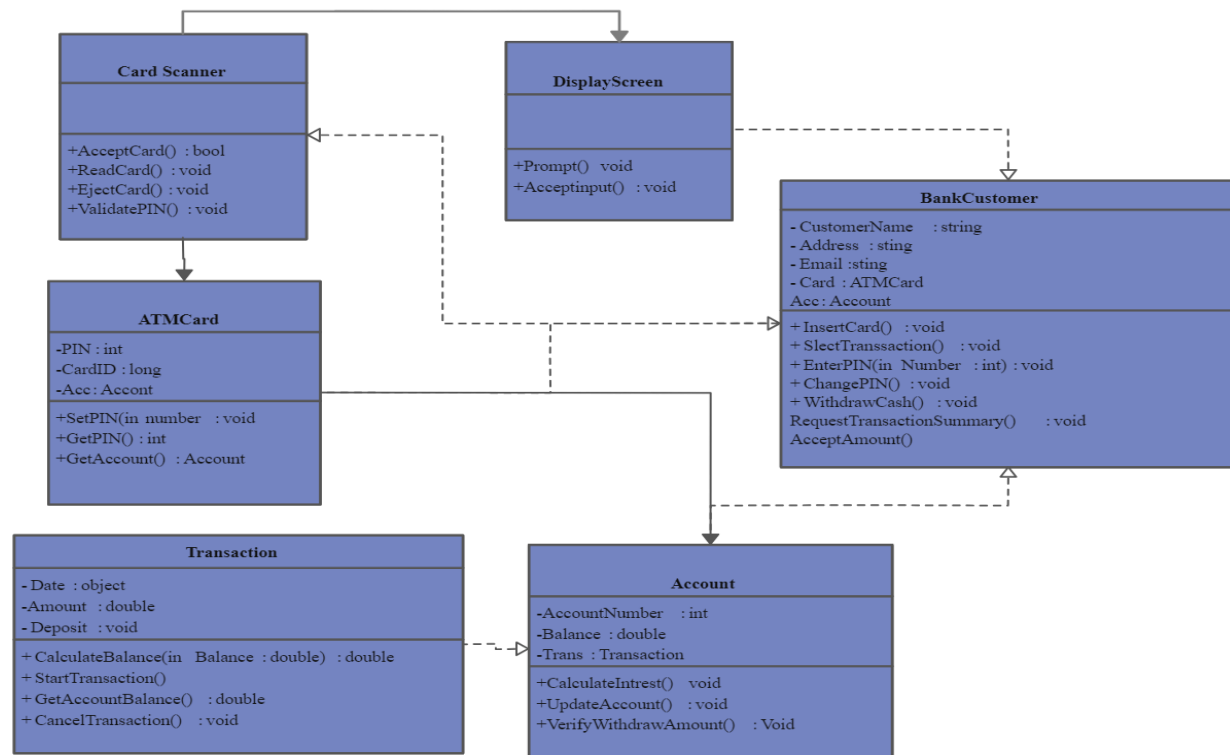
Flash file systems. Tape file systems. Database file systems.

Transactional file systems. Network file systems. Shared disk file systems. Special file systems.

Tools for developing websites with Templates

- Wordpress
- Bootstrap
- Wix
- Sublime text
- Procreate
- Zoomla
- Canva

Class diagram of ATM



Write ADL's

- C4 model
- ArchiMate
- TOGAF – The Open Group Archi Framework
- System modelling language

Automated tools for testing interface

- Selenium
- Cypress
- Postman
- Katalon
- Lambda test
- Squish