National University of Computer and Emerging Sciences, Lahore Campus

Course:	Software Engineering	Course Code:	CS-3009
Program:	BS (Computer Science)	Semester:	Spring 2023
Duration:	30 Minutes	Total Marks:	10
Quiz Date:	21-March-23	Roll No.	
Section:	6C	Name:	

Question 1: (5 Marks)

Provide a functional decomposition of the below mentioned system.

Suppose a company wants to develop a mobile app for managing personal finances. The app should allow users to track their expenses, set budgets, and view reports and analytics.

Using the functional decomposition diagram, the development team can identify the different components required for the finance management app. For example, the expense tracking component will allow users to enter and categorize their expenses, set reminders for recurring expenses, and view their spending history.

The budgeting component will allow users to set budget limits for different categories, track their progress towards their budget goals, and receive notifications when they exceed their budget.

The report and analytics component will provide users with visualizations and summaries of their financial data, allowing them to track their financial health over time and identify areas for improvement.

Finally, the user account and authentication component will handle user registration, login, and authentication, as well as enabling users to manage their personal information and view their account settings.

Finance Management App

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+-- Expense Tracking Component

| |

| +-- Enter and Categorize Expenses

| +-- Set Reminders for Recurring Expenses

| +-- View Spending History

|

+-- Budgeting Component

| |

| +-- Set Budget Limits for Different Categories

| +-- Track Progress Towards Budget Goals

| +-- Receive Notifications when Exceeding Budget

|

+-- Report and Analytics Component

| |

| +-- Visualize Financial Data

| +-- Summarize Financial Health over Time

| +-- Identify Areas for Improvement

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+-- User Account and Authentication Component

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+-- User Registration and Login

+-- Authentication

+-- View Account Settings

+-- Manage Personal Information

Question 2: Describe the following Architectural Style? (5 Marks)

Architectural Style	Client and Server
Description	The client-server architecture refers to a system that hosts, delivers, and manages most of the resources and services that the client requests. In this model, all requests and services are delivered over a network, and it is also referred to as the networking computing model or client server network. Clients initiate communications by issuing a request, as a message or a remote-procedure call Servers respond by fulfilling the request and replying with a result. Normally, servers are passive components that simply react to clients' requests, but in some cases, a server may initiate actions on behalf of its clients.
When to use	The client-server architecture is most useful for applications that require a separation or abstraction of concerns between the client and the server; it is meant for systems with high interoperability. The client-server architectural style helps applications improve performance in scalability.
Advantages	• It's a centralized system that keeps all the data and its controls in one place • It brings a high level of scalability, organization, and efficiency • It allows the IT staff to change the Client and Server capacities separately • It's cost-efficient, especially in terms of maintenance • It allows data recovery • It allows load-balancing, which optimizes performance • It allows different platforms to share resources • The setup reduces the incidence of data replication
Disadvantages	• It's expensive to start up and initially implement • If a critical server goes down, the clients are dead in the water • The setup is prone to phishing and Man in the Middle (MITM) attacks