

National University of Computer and Emerging Sciences, Lahore Campus



Course:
Program:
Duration:
Quiz Date:
Section:

Software Engineering
BS (Computer Science)
40 Minutes
20-March-24
6C

Course Code:
Semester:
Total Marks:
Roll No.
Name:

CS-3009
Spring 2024
25

Question 1:

(10 Marks)

While evaluating the design alternatives, some estimated costs and benefits have been calculated and given in the following table. Determine the extent to which this design will benefit the organization after 5 years?

Hint: Identify each item as cost or benefit. Calculate total costs, benefits and return on investment (ROI) after 5 years. Also calculate payback period (using 1 year data only).

Item	Amount (\$)	Cost or Benefit?
Connectivity	6000 per year	Cost
Salaries/Wages	500000	Cost
Increased earnings due to web presence	40000	Benefit
Equipment/installation	200000	Cost
Equipment maintenance	4000 per year	Cost
Increased efficiency due to new IS	800 per year	Benefit
Utilities (s.a. electricity, water)	100000	Cost
Other savings	300 per year	Benefit

Solution:

Total Cost: $6000 \times 5 + 500,000 + 200,000 + 4000 \times 5 + 100,000 = 850,000$

Benefits: $40,000 + 800 \times 5 + 300 \times 5 = 45,500$

Payback Period = Cost/Benefits = $810,000/41,100 = 19.7$ of a year (approx. 237 months)

ROI = Benefits/Cost = $45,500/850,000 = 0.05$

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

- |

- +-- User Account and Authentication Component

- |

- +-- User Registration and Login

- +-- Authentication

- +-- View Account Settings

- +-- Manage Personal Information