MAULANA AZAD NATIONAL INSTITUTE OF TECHNOLOGY, Bhopal

Mid Sem Examination — November 2024

Course – B.Tech. **Sem – I** **Section - A/B/C/D/E**
Subject Name- Problem Solving & Computer Programming **Subject Code CSE-104**
Time- 1 hour **Max Marks- 20**
Note- Answer all questions. If required, take necessary assumptions and mention the same

<table>
<tr><th>Q. No.</th><th>Question</th><th>Marks</th><th>CO</th></tr>
<tr><td>Q1</td><td>Suppose you are planning to develop an online complaint register system for MANIT hostel. Any hosteller student can register online complaint of different categories. To register a complaint, following details are entered. (a) Name (b) Room No (c) Complaint Type ('E' for Electrical related complaints, 'I' for Internet related complaints and 'O' for all other complaints. Everyday complaints count for each complaint type starts from 0 (like E_count=0, I_count=0, O_count=0).
After each complaint is received, total no of complaints count for each type of complaint (Total_E_count, Total_I_count, Total_O_count) is displayed on the screen.
Write an algorithm and draw a flowchart for the given online complaint register system.</td><td>5</td><td>CO3</td></tr>
<tr><td>Q2</td><td>A grocery delivery company charges for delivering the package as per the following tariff:
<table><tr><th>Weight of the Package (kg)</th><th>Rate per 2 km (Rs)</th></tr><tr><td>2 kg or less</td><td>10</td></tr><tr><td>More than 2 kg but less than 5 kg</td><td>15</td></tr><tr><td>5 kg or more but less than 10 kg</td><td>20</td></tr><tr><td>10 kg or more but less than or equal to 20 kg</td><td>30</td></tr></table>The company does not deliver packages weighing more than 20 kg and delivery distance more than 10 km.

Write a C program that takes the weight of the package and distance it is to be delivered as input and displays the charges as per the given tariff. If the package cannot be accepted for delivery, the program should print "Package cannot be accepted"</td><td>5</td><td>CO4</td></tr>
<tr><td>Q3</td><td>Anika loves to do shopping whenever she has accumulated enough money. Every time she goes a shopping mall and spends on purchasing different things like clothes, accessories shoes, etc. You have to compute the expenditure of Anika whenever she visits the mall and calculate how much money is left after she has done the shopping.
Write a C program for performing the given task.
On the first line of input, the amount that Anika initially has is passed to the program. On the next line, a sequence of positive integer numbers separated by a space and terminated by -1 is passed to the program. Each number in the sequence corresponds to a product that Anika wishes to purchase. The number -1 indicates that Anika has completed her shopping. Each number other than -1 should be interpreted in the following manner:
• If the number is greater than 0 less than 100, the cost of the product represented by the number is: "number * 500 + 50" and Anika gets a discount of 40% on this cost which means her money is reduced by 40% of the product cost.</td><td>5</td><td>CO5</td></tr>
</table>

	• If the number is greater than or equals to 100, the cost of the product is half the total money that Anika has, which means after purchasing this product the money that Anika has will be reduced by half. • If the number is 0, Anika withdraws money from ATM and adds Rs. 2000 to her available money. • If the cost of the product is greater than the money available with Anika, then she cannot purchase that product. Anika's money can never be less than 0. After the shopping is over, the program should **print the number products purchased and the money** left with Anika. **Sample Input:** 5000 2 50 0 150 -1 **Sample Output:** 2 3185 Explanation: 1. Initial money: Rs. 5000. 2. **Product 2**: Cost = 2 * 500 + 50 = 1050. After 40% discount, cost = 1050 - 40% = 630. Anika buys the product, remaining money = 5000 - 630 = 4370. Products bought = 1. 3. **Product 50**: Cost = 50 * 500 + 50 = 25550. After 40% discount, cost = 25550 - 40% = 15330. Anika buys the product, remaining money = 4370 - 15330 = -10960 (but cannot buy this as she doesn't have enough money). 4. **Product 0**: Anika withdraws Rs. 2000. Remaining money = 4370 + 2000 = 6370. Products bought = 1. 5. **Product 150**: Anika's money is halved. Remaining money = 6370 / 2 = 3185. Products bought = 2.		
Q4	Write a C program using nested loops to print the following pattern where the user will provide a number "n" as an input. Sample Input: 4 Output Pattern: 4 4 4 4 4 4 4 4 3 3 3 3 3 4 4 3 2 2 2 3 4 4 3 2 1 2 3 4 4 3 2 2 2 3 4 4 3 3 3 3 3 4 4 4 4 4 4 4 4 **Sample Input:** 2 **Output Pattern** 2 2 2 2 1 2 2 2 2	5	CO5