United International University

Department of Computer Science and Engineering,
CSE 1110: Introduction to Computer Systems
Final Exam   Total Marks: 25   Duration: 55 mins   Summmer'24

Written Examination (30 min)	
1. Draw a flowchart for a program that takes an integer input and prints whether it is positive or negative.	2
2.	3

```
#include <stdio.h>

int main() {
    int x;
    float y;
    printf("Enter an integer: ");
    scanf("%d", x);
    printf("Enter a float: ");
    scanf("%d", y);
    return 0;
}
```

Is there any error in the following code? If yes, what is the error? Correct the code and make sure the user input is also printed.

3.	5+5

```
#include <stdio.h>

int main() {
    float amount, discount, finalAmount;
    printf("Enter the purchase amount: $");
    scanf("%f", &amount);

    if (amount > 500) {
        discount = amount * 0.20;
    } else if (amount > 200) {
        discount = amount * 0.15;
    } else if (amount > 100) {
        discount = amount * 0.10;
    } else if (amount > 50) {
```

```
      discount = amount * 0.05;
    } else {
      discount = 0;
    }

    finalAmount = amount - discount;

    printf("Original amount: $%.2f\n", amount);
    printf("Discount applied: $%.2f\n", discount);
    printf("Final amount to be paid: $%.2f\n", finalAmount);

    return 0;
}
```

What will be the discount and final amount to be paid if the user enters a purchase amount of $195?

4.

```
#include <stdio.h>

int main() {
    float playgroundLength, playgroundWidth, fenceCostPerMeter = 15.0;
    float perimeter, totalCost;

    printf("Enter the length of the playground: ");
    scanf("%f", &playgroundLength);
    printf("Enter the width of the playground: ");
    scanf("%f", &playgroundWidth);

    return 0;
}
```

Complete the code to calculate:
        a.   The perimeter of the playground
        b.   The total cost of fencing.
        c.   Print both the perimeter and the total cost.

10

Internet Data Package Cost Calculator

You are tasked with developing a program for an internet service provider. The company offers different types of data packages, each with a different charge per GB. The packages and their respective charges are as follows:

- **Basic Package**: 50 Taka per GB
- **Standard Package**: 100 Taka per GB
- **Premium Package**: 150 Taka per GB

Write a C program that:

1. Ask the user to choose a package by entering 1 for Basic, 2 for Standard, or 3 for Premium.
2. Ask the user to input the number of GBs they want to use.
3. Calculates the total cost based on the selected package and data usage.
4. Prints the total cost and the selected package type.

You need to complete the program using **if-else** statements.

Input 1	Output 1
Select the data package: 1. Basic Package 2. Standard Package 3. Premium Package Enter your choice: 3 Enter the number of GBs you want to use: 50	You selected the Premium Package. The total charge for your package is: 7500.00

Input 2	Output 2
Select the data package: 1. Basic Package 2. Standard Package 3. Premium Package Enter your choice: 4	Invalid package type selected.

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Written Examination (30 min)	
1. Write pseudocode/ flowchart for a program that calculates the square of a given number.	2

2.
 	
``c
#include <stdio.h>
 	
int main() {
    int x;
    double y;
    printf("Enter an integer: ");
    scanf("%d", x);
    printf("Enter a double: ");
    scanf("%f", y);
    return 0;
}
``
 	
Is there any error in the following code? If yes, what is the error? Correct the code and make sure the user input is also printed.
	3

3.
 	
``c
#include <stdio.h>
 	
int main() {
    float amount, discount, finalAmount;
    printf("Enter the purchase amount: $");
    scanf("%f", &amount);
 	
    if (amount > 500) {
        discount = amount * 0.20;
    } else if (amount > 200) {
        discount = amount * 0.15;
    } else if (amount > 100) {
        discount = amount * 0.10;
    } else if (amount > 50) {
        discount = amount * 0.05;
``
	5+5

```
   } else {
      discount = 0;
   }

   finalAmount = amount - discount;

   printf("Original amount: $%.2f\n", amount);
   printf("Discount applied: $%.2f\n", discount);
   printf("Final amount to be paid: $%.2f\n", finalAmount);

   return 0;
}
```

What will be the discount and final amount to be paid if the user enters a purchase amount of $295?

4.

```
#include <stdio.h>

int main() {
   float gardenLength, gardenWidth, roadWidth = 2.0;
   float totalArea, gardenArea, roadArea;

   printf("Enter the length of the garden: ");
   scanf("%f", &gardenLength);
   printf("Enter the width of the garden: ");
   scanf("%f", &gardenWidth);

   gardenArea = gardenLength * gardenWidth;

   return 0;
}
```

Complete the code to calculate:
        a.   The total area (garden + road) by adding the road width on all sides.
        b.   The area of the road.

Transportation   Service   Charge   Calculator

10

You are tasked with developing a program for a local transportation company. The company offers different types of transportation services, each with a different charge per kilometer. The services and their respective charges are as follows:

- **Car**: 500 Taka per kilometer
- **Bus**: 300 Taka per kilometer
- **Bike**: 100 Taka per kilometer

Write a C program that:

1. Asks the user to choose a service by entering 1 for Car, 2 for Bus, or 3 for Bike.
2. Then, asks the user to input the number of kilometres they want to travel.
3. Calculates the total charge based on the selected service and distance.
4. Prints the total charge and service type.

You need to complete the program (uses of switch-case will be appreciated).

Input 1	Output 1
Select the service: 1. Car 2. Bus 3. Bike Enter your choice: 2 Enter the distance: 2.5	You selected Bus. The total charge for your trip is: 750.00

Input 2	Output 2
Select the service: 1. Car 2. Bus 3. Bike Enter your choice: 5 Enter the distance: 5	Invalid service type selected.