

# PF LAB 3 ASSIGNMENT

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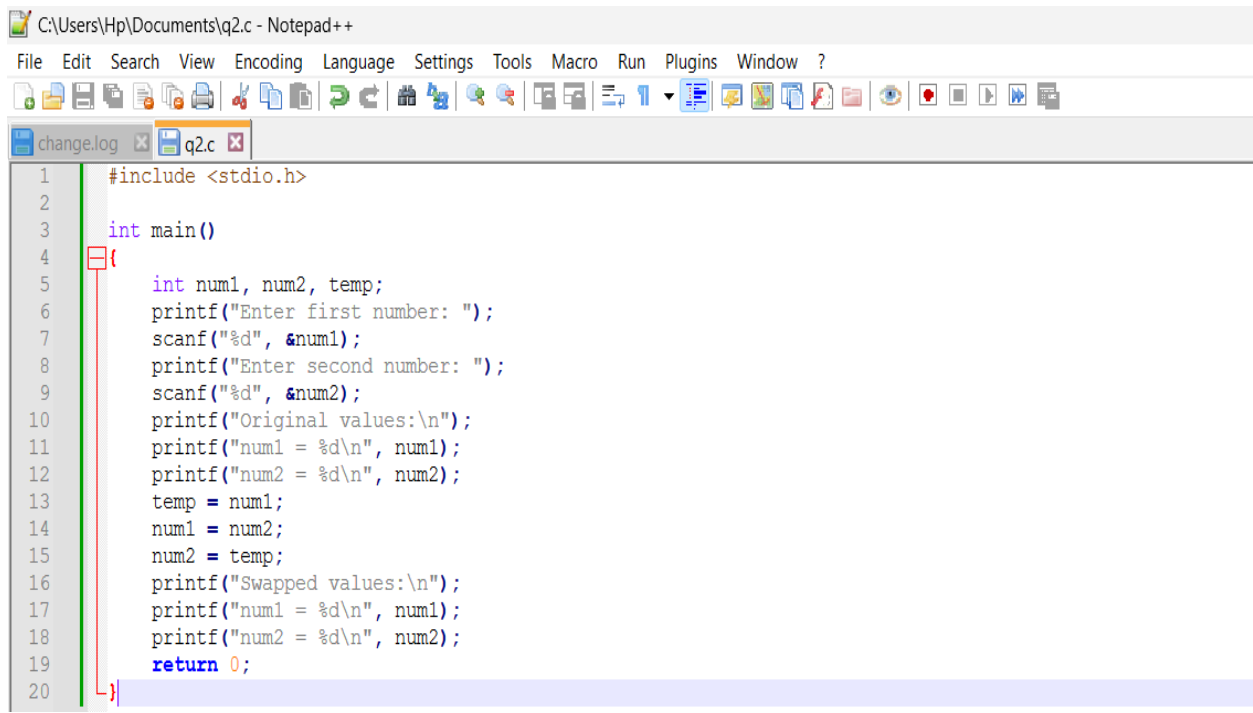
"PF LAB ASSIGNMENT"  
# 03

Date: \_\_\_\_\_

Question 1. Explain the output of this C program. Why the wrong value is being displayed in the output?

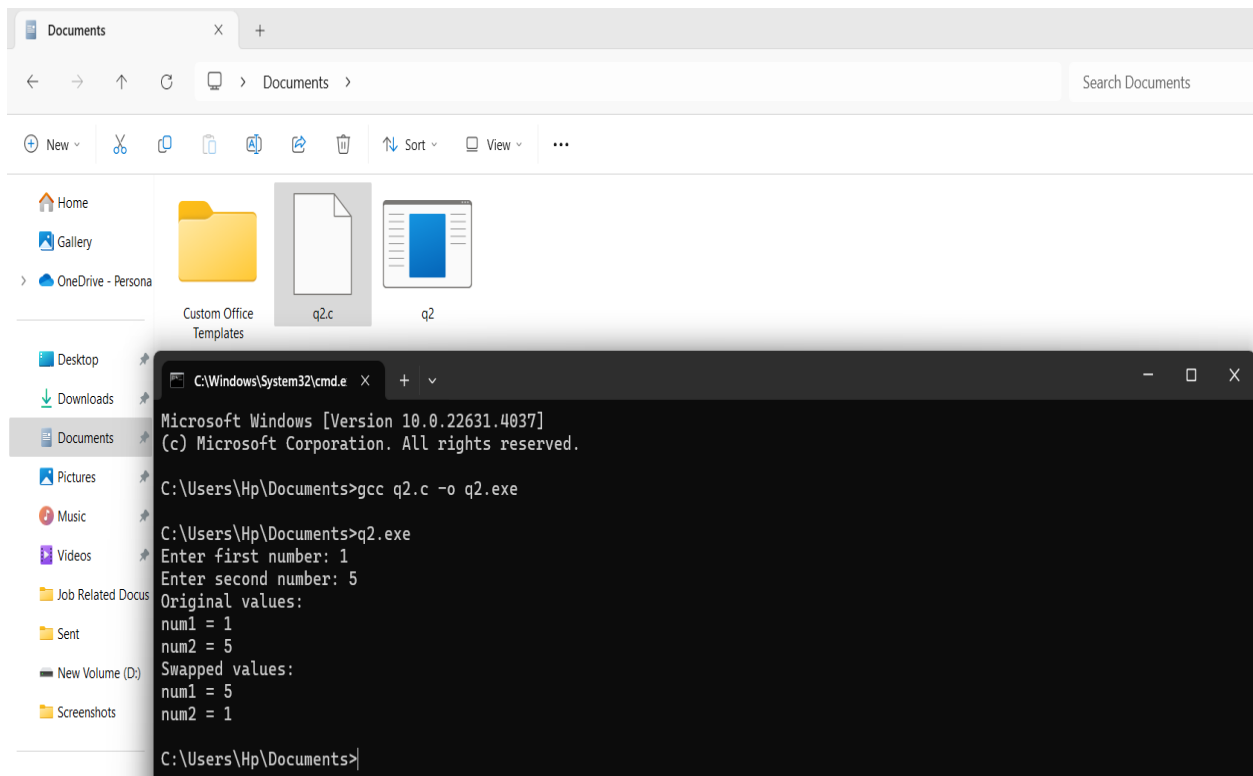
Answer; The wrong value is being displayed in the output because the value "3000000000" exceeds the maximum limit of an integer (data type) in C language which is 2147483647. When you assign a value beyond this limit to an integer variable, it causes an integer overflow. In this case, the value "3000000000" is being wrapped around to the negative side of the integer range, resulting in the incorrect output of -1294967296.

## Q2)



The screenshot shows the Notepad++ text editor with a file named q2.c open. The code is a C program that swaps two numbers using a temporary variable. The code is as follows:

```
1 #include <stdio.h>
2
3 int main()
4 {
5     int num1, num2, temp;
6     printf("Enter first number: ");
7     scanf("%d", &num1);
8     printf("Enter second number: ");
9     scanf("%d", &num2);
10    printf("Original values:\n");
11    printf("num1 = %d\n", num1);
12    printf("num2 = %d\n", num2);
13    temp = num1;
14    num1 = num2;
15    num2 = temp;
16    printf("Swapped values:\n");
17    printf("num1 = %d\n", num1);
18    printf("num2 = %d\n", num2);
19    return 0;
20 }
```



The screenshot shows a Windows File Explorer window displaying the contents of the 'Documents' folder. The files 'q2.c' and 'q2' are visible. Below the File Explorer, a Command Prompt window is open, showing the compilation and execution of the program.

Command Prompt Output:

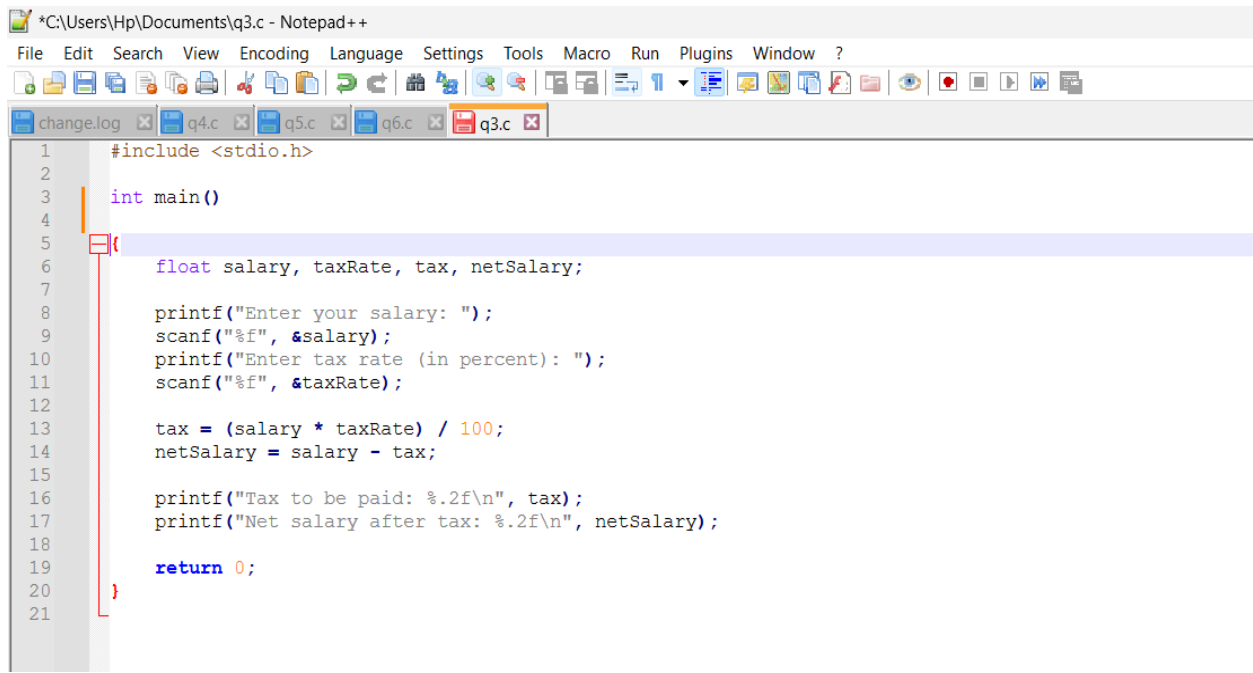
```
C:\Windows\System32\cmd.e
Microsoft Windows [Version 10.0.22631.4037]
(c) Microsoft Corporation. All rights reserved.

C:\Users\Hp\Documents>gcc q2.c -o q2.exe

C:\Users\Hp\Documents>q2.exe
Enter first number: 1
Enter second number: 5
Original values:
num1 = 1
num2 = 5
Swapped values:
num1 = 5
num2 = 1

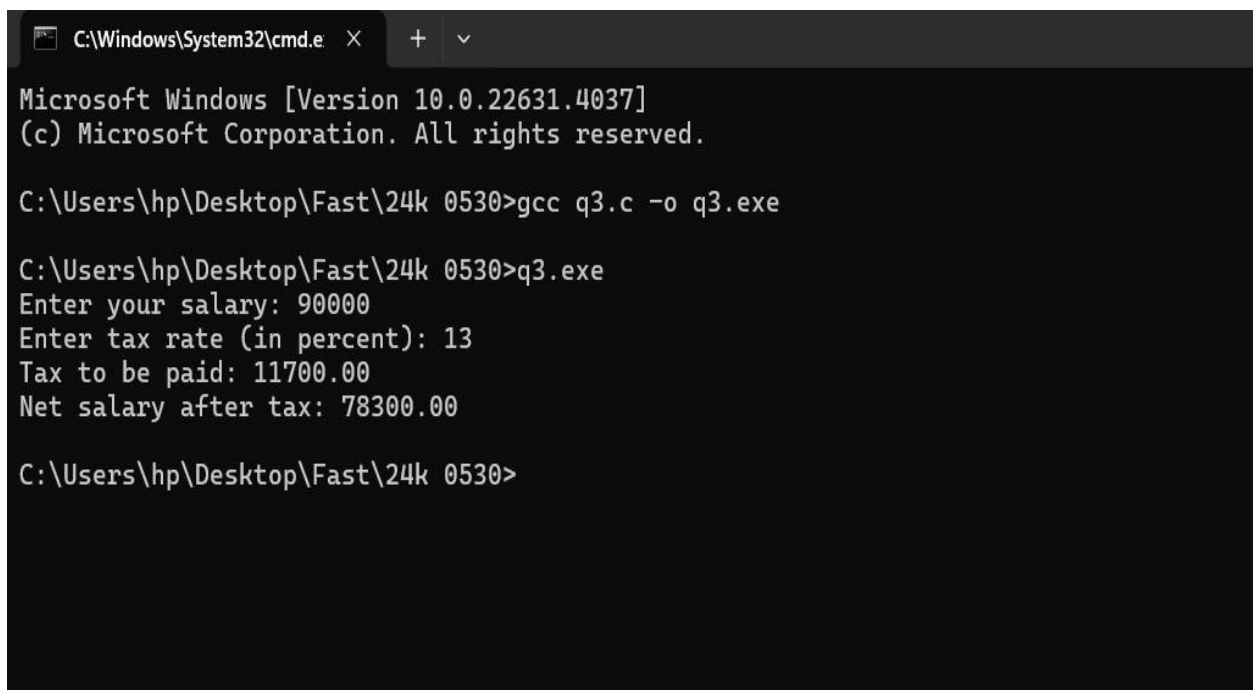
C:\Users\Hp\Documents>
```

### Q3)



```
*C:\Users\Hp\Documents\q3.c - Notepad++
File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?

change.log x q4.c x q5.c x q6.c x q3.c x
1  #include <stdio.h>
2
3  int main()
4
5  {
6      float salary, taxRate, tax, netSalary;
7
8      printf("Enter your salary: ");
9      scanf("%f", &salary);
10     printf("Enter tax rate (in percent): ");
11     scanf("%f", &taxRate);
12
13     tax = (salary * taxRate) / 100;
14     netSalary = salary - tax;
15
16     printf("Tax to be paid: %.2f\n", tax);
17     printf("Net salary after tax: %.2f\n", netSalary);
18
19     return 0;
20 }
21
```



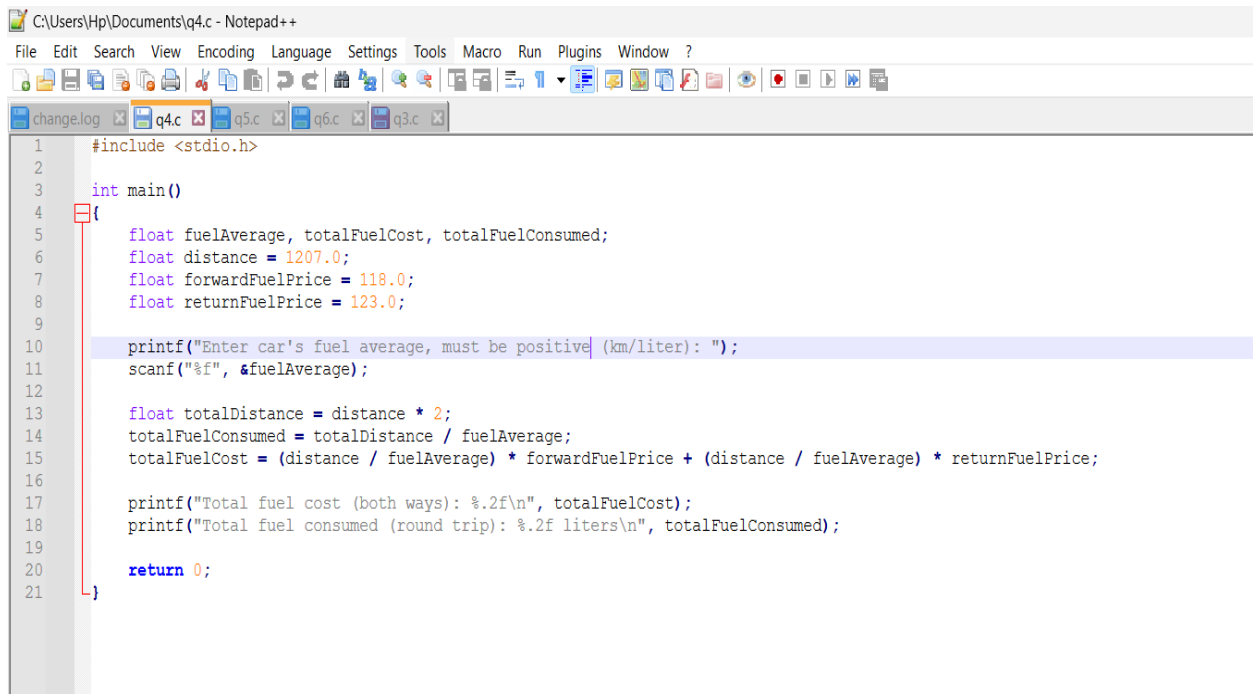
```
C:\Windows\System32\cmd.e x + v
Microsoft Windows [Version 10.0.22631.4037]
(c) Microsoft Corporation. All rights reserved.

C:\Users\hp\Desktop\Fast\24k 0530>gcc q3.c -o q3.exe

C:\Users\hp\Desktop\Fast\24k 0530>q3.exe
Enter your salary: 90000
Enter tax rate (in percent): 13
Tax to be paid: 11700.00
Net salary after tax: 78300.00

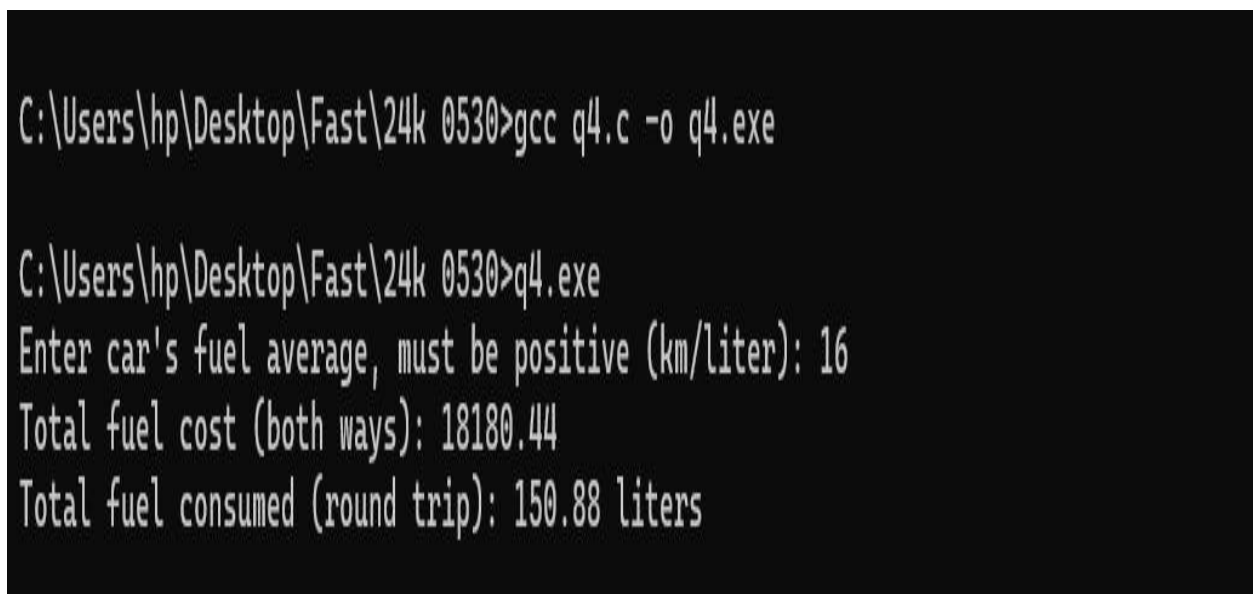
C:\Users\hp\Desktop\Fast\24k 0530>
```

#### **Q4)**



The screenshot shows a Notepad++ window with the file 'q4.c' open. The code is a C program that calculates fuel costs and consumption for a round trip. It includes a header file, defines a main function, and uses variables for fuel average, distance, fuel prices, total cost, and total fuel consumed. The program prompts the user for fuel average and then displays the total fuel cost and total fuel consumed.

```
1 #include <stdio.h>
2
3 int main()
4 {
5     float fuelAverage, totalFuelCost, totalFuelConsumed;
6     float distance = 1207.0;
7     float forwardFuelPrice = 118.0;
8     float returnFuelPrice = 123.0;
9
10    printf("Enter car's fuel average, must be positive (km/liter): ");
11    scanf("%f", &fuelAverage);
12
13    float totalDistance = distance * 2;
14    totalFuelConsumed = totalDistance / fuelAverage;
15    totalFuelCost = (distance / fuelAverage) * forwardFuelPrice + (distance / fuelAverage) * returnFuelPrice;
16
17    printf("Total fuel cost (both ways): %.2f\n", totalFuelCost);
18    printf("Total fuel consumed (round trip): %.2f liters\n", totalFuelConsumed);
19
20    return 0;
21 }
```



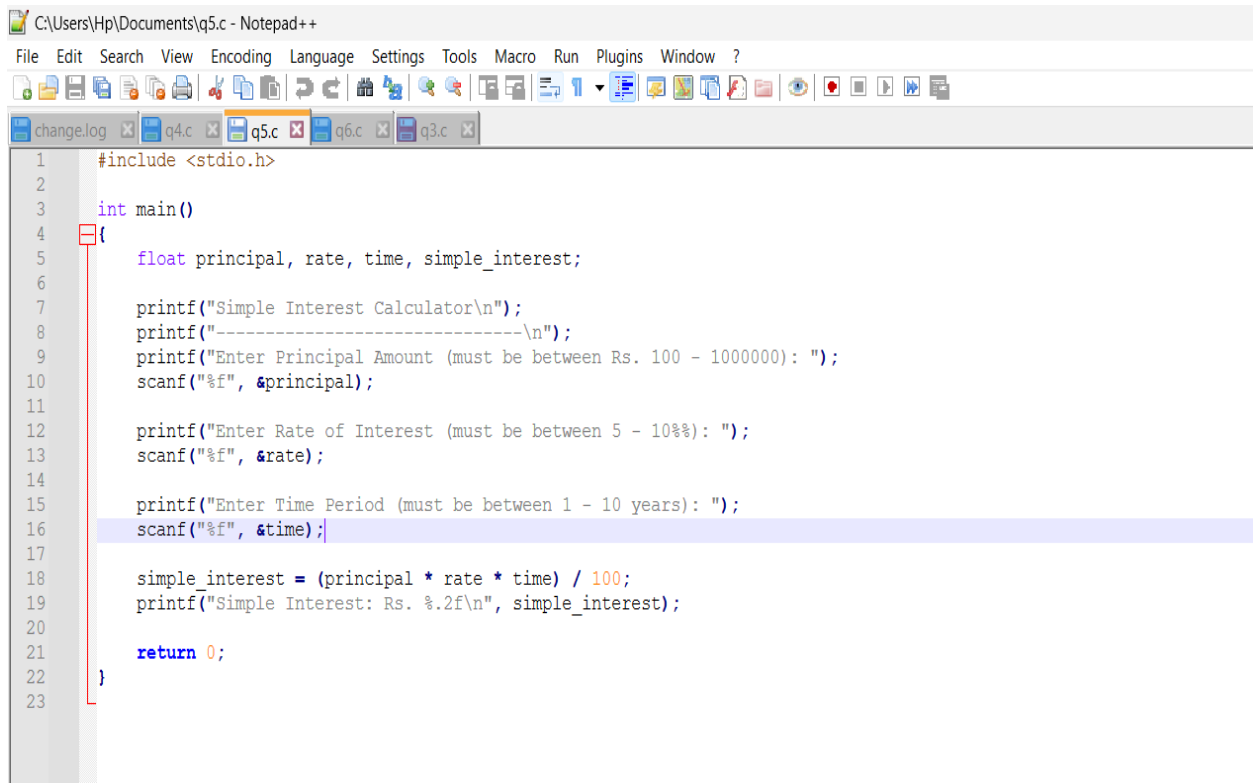
The screenshot shows a terminal window with the following output:

```
C:\Users\hp\Desktop\Fast\24k 0530>gcc q4.c -o q4.exe

C:\Users\hp\Desktop\Fast\24k 0530>q4.exe
Enter car's fuel average, must be positive (km/liter): 16
Total fuel cost (both ways): 18180.44
Total fuel consumed (round trip): 150.88 liters
```

**NOTE:** Since validation through conditional statements is not taught in C language, the user is asked to input fuel avg which must be positive through a display message on the window to validate only positive values for car's fuel average.

## Q5)



```
1  #include <stdio.h>
2
3  int main()
4  {
5      float principal, rate, time, simple_interest;
6
7      printf("Simple Interest Calculator\n");
8      printf("-----\n");
9      printf("Enter Principal Amount (must be between Rs. 100 - 1000000): ");
10     scanf("%f", &principal);
11
12     printf("Enter Rate of Interest (must be between 5 - 10%): ");
13     scanf("%f", &rate);
14
15     printf("Enter Time Period (must be between 1 - 10 years): ");
16     scanf("%f", &time);
17
18     simple_interest = (principal * rate * time) / 100;
19     printf("Simple Interest: Rs. %.2f\n", simple_interest);
20
21     return 0;
22 }
23
```

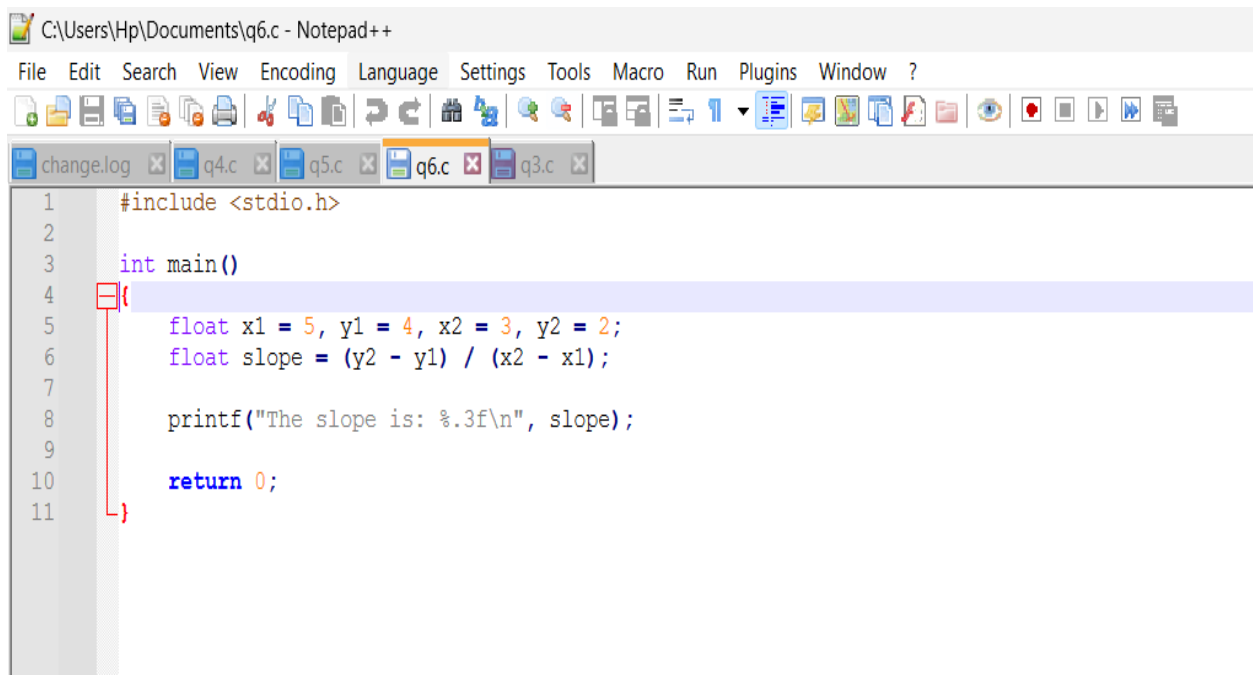
```
C:\Users\hp\Desktop\Fast\24k 0530>gcc q5.c -o q5.exe

C:\Users\hp\Desktop\Fast\24k 0530>q5.exe
Simple Interest Calculator
-----
Enter Principal Amount (must be between Rs. 100 - 1000000): 80000
Enter Rate of Interest (must be between 5 - 10%): 8
Enter Time Period (must be between 1 - 10 years): 6
Simple Interest: Rs. 38400.00

C:\Users\hp\Desktop\Fast\24k 0530>
```

**NOTE:** The acceptable ranges are validated by a display message on screen since conditional statements are not yet taught on C language.

## Q6)



The screenshot shows the Notepad++ application window with the file 'q6.c' open. The code is as follows:

```
1  #include <stdio.h>
2
3  int main()
4  {
5      float x1 = 5, y1 = 4, x2 = 3, y2 = 2;
6      float slope = (y2 - y1) / (x2 - x1);
7
8      printf("The slope is: %.3f\n", slope);
9
10     return 0;
11 }
```

```
C:\Users\hp\Desktop\Fast\24k 0530>gcc q6.c -o q6.exe
```

```
C:\Users\hp\Desktop\Fast\24k 0530>q6.exe
```

```
The slope is: 1.000
```

```
C:\Users\hp\Desktop\Fast\24k 0530>|
```

