Programming Fundamentals Lab
Lab Assignment 03

Course Code: CL1002

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QUESTION#1 Write the datatypes of the following values:

- "Introduction to IDE and basic programing constructs"

  string

- $3x10^8$

  float

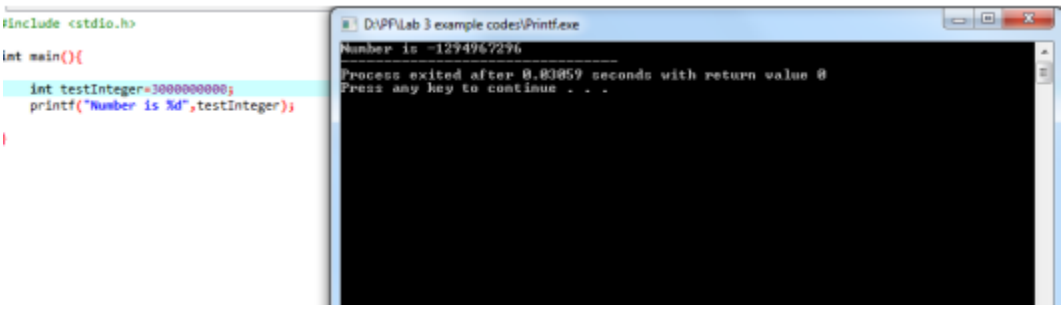
- 300000000

  integer

- 7.0000000000005

  Double

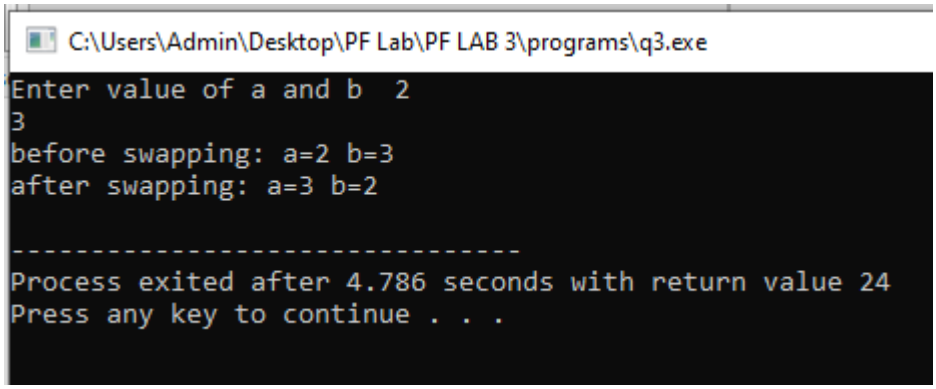
QUESTION#2 Explain the output of this C program. Why the wrong value is being displayed in the output?



The value stored in the variable **'test integer'** exceeds the limit of storage of '**int**' data type

QUESTION#3 Write a C program that takes two integer values as input from the user. Then swap the values taken from the user and display the output of the variables.

```c
#include<stdio.h>

main(){
    int a,b;
    printf("Enter value of a and b\t");
    scanf("%d %d",&a,&b);
    printf("before swapping: a=%d b=%d\n",a,b);
    printf("after swapping: a=%d b=%d\n",b,a);

}
```



QUESTION#4 A customer asks the IT firm to develop a program in C language, which can take tax rate and salary from the user on runtime and then calculate the tax, the user has to pay and the salary he/she will have after paying the tax. This information is then provided to the user.

```c
#include<stdio.h>

main(){
    float salary, tax, tax_rate;
    printf("Enter salary: Rs. ");
    scanf("%f", &salary);
    printf("Enter tax rate:\t");
    scanf("%f", &tax_rate);

    tax = salary * (tax_rate/100);
    printf("\nTax is: %0.2f\n",tax);

    printf("\nSalary before tax: Rs. %0.2f\n",salary);
    salary = salary - tax;

    printf("\nSalary after tax is: Rs. %0.2f", salary);


}
```

```
C:\Users\Admin\Desktop\PF Lab\PF LAB 3\programs\q4.exe
Enter salary: Rs. 300000
Enter tax rate: 20

Tax is: 60000.00

Salary before tax: Rs. 300000.00

Salary after tax is: Rs. 240000.00
--------------------------------
Process exited after 22.3 seconds with return value
Press any key to continue . . .
```

QUESTION#5 A car traveled for some hours. The time car traveled is taken at run time of the program, and it must not be negative and must be between one to five hours. The car had not traveled same distance in each hour. The distance that the car covered must not be negative. Write a C Program that computes the Average Speed of the Car in miles per hour. Hint: the restrictions can be displayed in the form of message on the window.

```c
#include<stdio.h>

main(){
    float time,d1,d2,d3,d4,d5; float avg_speed;
    printf("Enter time the car travelled (shouldnt be negative and must be between  1 to 5 hours): ");
    scanf("%d",&time);
    printf("\nenter the distance(not negative and diffrent distance)\n\n");
    printf("enter first distance: ");
    scanf("%d",&d1);
    printf("enter second distance(if any else write 0): ");
    scanf("%d",&d2);
    printf("enter third distance(if any else write 0): ");
    scanf("%d",&d3);
    printf("enter fourth distance(if any else write 0): ");
    scanf("%d",&d4);
    printf("enter fifth distance(if any else write 0): ");
    scanf("%d",&d5);
    avg_speed = ((d1+d2+d3+d4+d5)/time);
    printf("\naverage speed: %0.2fkm/h",avg_speed);
}
```

```
Enter time the car travelled (shouldnt be negative and must be between  1 to 5 hours): 5

enter the distance(not negative and diffrent distance)

enter first distance: 9
enter second distance(if any else write 0): 6
enter third distance(if any else write 0): 8
enter fourth distance(if any else write 0): 1
enter fifth distance(if any else write 0): 3

average speed: 5.40km/h
--------------------------------
Process exited after 8.733 seconds with return value 0
Press any key to continue . . .
```

QUESTION#6 Write a C Program to format an integer number, the integer number occupies a minimum number of 9 spaces on the screen.

```c
#include<stdio.h>

main(){
    int x;
    printf("enter number ");
    scanf("%d",&x);
    printf("\n%9d",x);
}
```

```
C:\Users\Admin\Desktop\PF Lab\PF LAB 3\programs\q6.exe
enter number 122121212

122121212
--------------------------------
Process exited after 4.841 seconds with return value 0
Press any key to continue . . .
```

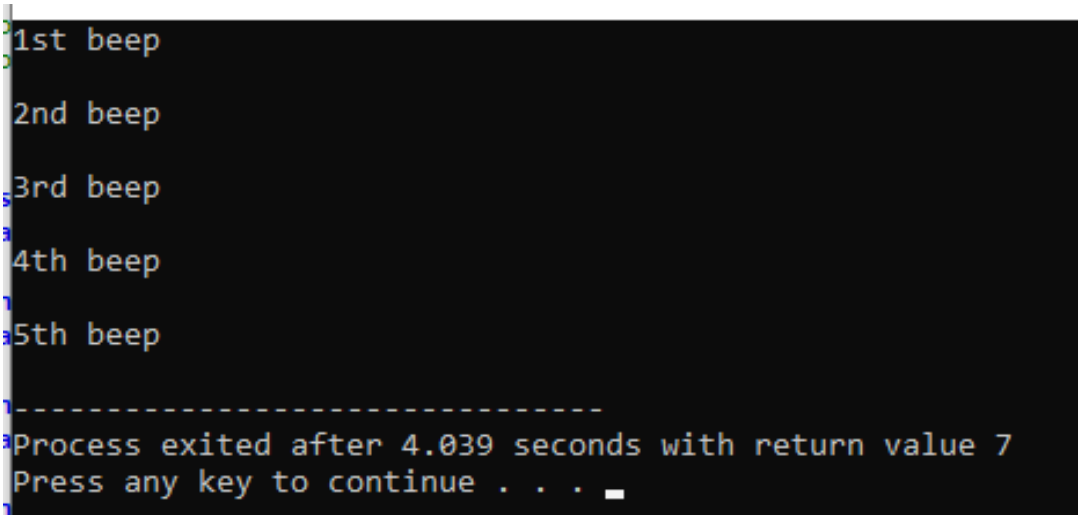
QUESTION#7 Construct a C program with the flowchart below. The input value of the Principle must be between Rs. 100 To Rs. 1,000,000. The Rate of interest must be between 5% to 10% and Time Period must be between 1 to 10 years. Hint: these restrictions can be displayed in the form of message on the window.

```c
#include<stdio.h>

main(){
    int p,r,t; float I;
    printf("enter principal amount: ");
    scanf("%d",&p);
    printf("enter rate: ");
    scanf("%d",&r);
    printf("enter time: ");
    scanf("%d",&t);

    I=(p*r*t)/100;
    printf("\nSimple interest is: %0.2f ", I);

}
```

```
enter principal amount: 1000
enter rate: 10
enter time: 4

Simple interest is: 400.00
--------------------------------
Process exited after 18.07 seconds with return value 0
Press any key to continue . . .
```

QUESTION#8 Write a C Program to play beep five times.

```c
#include<stdio.h>
#include<windows.h>

main (){

     printf("1st beep\n");
     printf("\a");
     sleep(1);
     printf("\n2nd beep\n");
     printf("\a");
     sleep(1);
     printf("\n3rd beep\n");
     printf("\a");
     sleep(1);
     printf("\n4th beep\n");
     printf("\a");
     sleep(1);
     printf("\n5th beep\n");
     printf("\a");
}
```



QUESTION#9 Write a C program to print the following shapes using escape sequences. Moreover, you are required to compile and execute these program using CMD.

```c
#include<stdio.h>

main(){
    printf("*\n*  *\n*  *  *\n*  *  *  *");

    printf("\n\n*\n*\t*\n*\t*\t*\n*\t*\t\n*\n");

}
```

```
*
*  *
*  *  *
*  *  *  *

*
*        *
*        *        *
*        *
*

--------------------------------
Process exited after 0.05915 seconds with return value 0
Press any key to continue . . .
```