NAME : YANA SRIVASTAVA

UID :- 20BCS2279

SECTION : 23

GROUP : "B"

EXPERIMENT NUMBER – Practical 1.1

TOPIC OF THE EXPERIMENT -

Write a program to input the following details of a under - graduate student

(i) Name (string)

(ii) Age (integer)

(iii) Contact number (long long integer)

(iv) Percentage in metric class (float/double)

Your program should generate output as follows :

**************STUDENT DETAILS**************

Enter name in capital letters : xyz pqr

Enter age : 18

Enter percentage in metric : 86.84

Thankyou. Your data has been saved in our system.

****

***

AIM OF THE EXPERIMENT –

Learn how to perform input output operations using C.

FLOW CHART / ALGORITHM -

1. Start the program.

2. Declaration of variable name in string with character length 20.

3. Declaration of variable age in integer datatype.

4. Declaration of variable contact_num in long long integer datatype.

5. Declaration of variable perc in float/double datatype.

6. Print "**************STUDENT DETAILS**************".

7. Print "Enter name in capital letters : ".

8. Input the name from the user.

9. Print "Enter age : ".

10. Input the age from the user.

11. Print "Enter contact number : ".

12. Input the contact number from the user.

13. Print "Enter percentage in metric : ".

14. *Input the percentage from the user.*

15. Print "Thank you. Your data has been saved in our system".

16. Print
"**
**"

17. End the program by returning an integer value.

PROGRAM CODE -

```
//creating a header file
#include <stdio.h>
//function which returns integer value
int main()
{
//name in string with length of 20
  char name[20];
//declaration of variables in integer datatype
   int age;
//declaration of variables in long long datatype
   long long contact_num;
//declaration of variables in float datatype
   float perc;
//print the message
```

```c
    printf("\nEnter name in capital letters: ");
    //accept the input of name of a student from the user
    scanf("%s", name);
    //print the message
    printf("\nEnter age: ");
    //accept the input of age of a student from the user
    scanf("%d", &age);
    //print the message
    printf("\nEnter contact number: ");
    //accept the input of contact number of a student from the user
    scanf("%lld", &contact_num);
    //print the message
    printf("\nEnter perc in 12th: ");
    //accept the input of percentage of a student from the user
    scanf("%f", &perc);
    //print the message
    printf("\nThank you.Your data has been saved in our system.");
    //returning an integer value
    return 0;
}
```

ERRORS ENCOUNTERED DURING PROGRAM'S EXECUTION - (Kindly jot down the compile time errors counted)

No errors.

PROGRAM'S EXPLAINATION (In Brief) : -

In this program we have to take the details of an under – graduate student like name , age , contact number , percentage in metric from the user and print it on the screen.

OUTPUT –

```
***********STUDENT DATABASE********
Enter the name in capital letters:YANA

Enter age:18

Enter contact number:1234567891

Enter perc in 12th:78

Thank you.Your data has been saved in our system.
```

EXPERIMENT NUMBER - Practical 1.2

TOPIC OF THE EXPERIMENT -

A cube having side of 6 cm is painted red on all the faces and then cut into smaller cubes of 1 cm each.Write a program to find the total number of small cubes so obtained.

AIM OF THE EXPERIMENT –

Learn how to perform input output operations using C.

FLOWCHART / ALGORITHM -

1. Start the program.
2. Declaration of variables of integer datatype.
3. Print "Side of big cube =".
4. Input the side of big cube from the user.
5. Calculate volume of large cube.
6. Print "Side of small cube =".
7. Input the side of small cube from the user.
8. Calculate volume of small cube.
9. Print "Number of cubes =".
10. Calculate number of cubes.
11. Print the value of number of cubes.
11. End the program by returning an integer value.

PROGRAM CODE -

```
//creating a header file
#include<stdio.h>
//function which returns integer value
int main()
{
//declaration of variables in integer datatype
int sideofbigcube,sideofsmallcube,numberofcubes,
volumeoflargecube,volumeofsmallcube;
//print the message
```

```c
printf("Side of big cube =");
//accept the side of big cube from the use
scanf("%d",&sideofbigcube);
//calculate volume of large cube by using the formula :
Volume of cube = side *side*side
volumeoflargecube =
sideofbigcube*sideofbigcube*sideofbigcube;
//print the message
printf("Side of small cube =");
//accept the side of small cube from the user
scanf("%d",&sideofsmallcube);
//calculate volume of small cube by using the formula :
Volume of cube = side*side*side
volumeofsmallcube =
sideofsmallcube*sideofsmallcube*sideofsmallcube;
//print the message
printf("Number of cubes =");
//calculate number of cubes by using the formula :
No.of cubes = volume of large cube / volume of small cube
numberofcubes = volumeoflargecube/volumeofsmallcube;
//print the value of numberofcubes
printf("%d",numberofcubes);
//returns an integer value
return 0;
}
```

ERRORS ENCOUNTERED DURING PROGRAM'S EXECUTION -

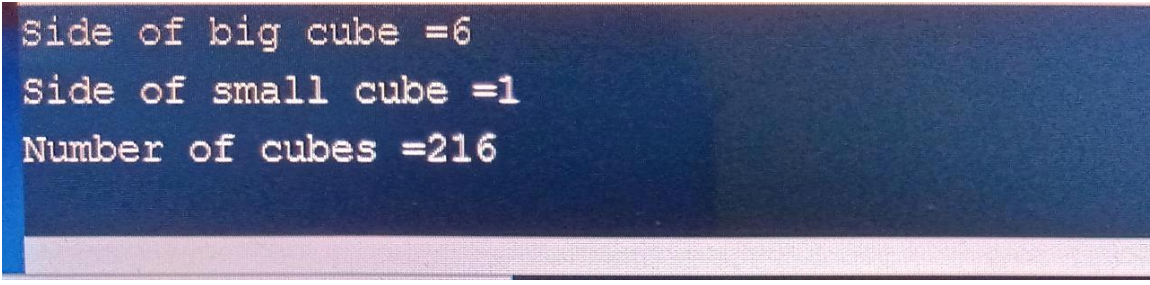(Kindly jot down the compile time errors counted)

No Errors.

PROGRAM'S EXPLAINATION (IN BRIEF) -

In this program we have to take the input of side of small and big cube from the user and then calculate the volume of both cubes by using the formula : volume of cube = side*side*side and number of cubes by using the formula :

No. of cubes = Volume of large cube / Volume of small cube

and print it on the screen.

OUTPUT-

```
Side of big cube =6
Side of small cube =1
Number of cubes =216
```

EXPERIMENT NUMBER - Practical 1.3

TOPIC OF THE EXPERIMENT –

A train can travel 50% faster than a car.Both start from point A at the same time and reach point B,75kms away from point A at

the same time. On the way,however,the train lost about 12.5 minutes while stopping at the stations.Write a C program to compute the speed of a car.

AIM OF THE EXPERIMENT –

Learn how to perform input output operations using C.

FLOWCHART / ALGORITHM -

1. Start the program.
2. Declaration of variables of integer datatype.
3. Print "Enter distance travelled in kms : ".
4. Accept input of distance from the user.
5. Declaration of variables in float datatype.
6. Print "Enter time in mins lost by the train while stopping at the stations : ".
7. Accept input of time from the user.
8. Print "Speed of Car : ".
9. Calculate speed of car.
10. Print the value of speed of car.
11. End the program by returning an integer value.

PROGRAM CODE -

```
//creating a header file
//function which returns an integer value
#include<stdio.h>
int main()
{
```

```c
//declaration of variable in integer datatype
int d;
//print the distance input by the user
printf("%d",&d);
//declaration of variables in float datatype
float t,speed_car;
//print the message
printf("Enter time in mins lost by the train while stopping at the stations :");
//accept the input of time from the user
scanf("%f",&t);
//print the message
printf("Speed of car :");
//calculate the speed of car by using the formula :
Speed = (60*distance) /(3*time)
speed_car =(float)(60*d)/(3*t);
//print the value of speed of car
printf("%f",speed_car);
//returns an integer value
return 0;
}
```

ERRORS ENCOUNTERED DURING PROGRAM'S EXECUTION - *(Kindly jot down the compile time errors encountered)*
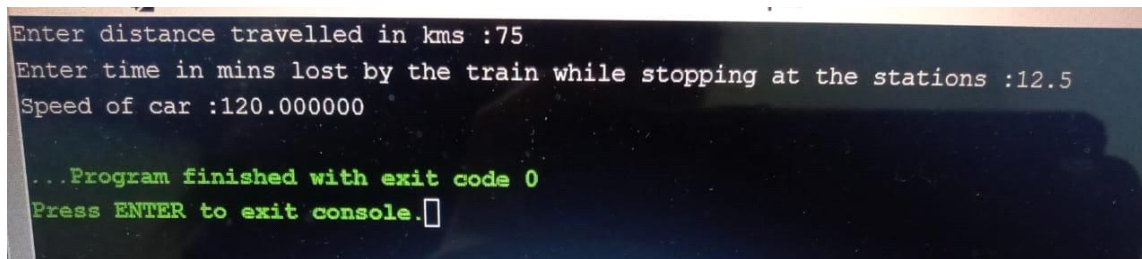
No Error.

PROGRAM'S EXPLAINATION *(In Brief) –*

In this program we have to take the input of distance and lost time from the user and calculate the speed of car by using the formula :

Speed of car = (60* distance) / (3* time) and print it on the screen.

OUTPUT -

```
Enter distance travelled in kms :75
Enter time in mins lost by the train while stopping at the stations :12.5
Speed of car :120.000000

...Program finished with exit code 0
Press ENTER to exit console.
```

EXPERIMENT NUMBER -   Practical 1.4

TOPIC OF EXPERIMENT –

 Sonu ranked m^{th} from the top and n^{th} from the bottom in a class.How many students are there in the class ?

AIM OF THE EXPERIMENT –

Learn how to perform input output operations using C.

FLOWCHART / ALGORITHM -

1. Start the program.

2. Declaration of variable post1 in character.

3. Declaration of variable post2 in character.

4. Declaration of variable m,n,result in integer datatype.

5. Print "Enter the position of Sonu from the top:".

6. Input the post of Sonu from the top from the user.

7. Convert the post of Sonu from the top into uppercase.

8. Print "Enter the position of Sonu from the bottom:".

9. Input the post of Sonu from the bottom from the user.

10. Convert the post of Sonu from the bottom into uppercase.

11. Calculate the result using formula : m+n-1.

12. Print "How many students are there in the class :" and the value of result.

13. End the program by returning an integer value.

PROGRAM CODE -

```c
  //creating a header file
#include<stdio.h>
//function which returns an integer value
  int main()
  {
```

```c
    // declaration of post1 and post2 in character datatype
    char post1;
    char post2;
    //declaration of integer type variables
    int m,n,result;
    //print the message
printf("Enter the postion of Sonu from top: ");
    //accept post of Sonu from the top from the user
    scanf("%c",&post1);
//convert into uppercase
    m=toupper(post1)-64;
    // print the message
    printf("Enter the postion of Sonu from bottom: ");
    //accept the post of Sonu from bottom from the user
      scanf(" %c",&post2);
    //convert into uppercase
      n=toupper(post2)-64;
    //calculate the result
      result=m+n-1;
    //print the total number of students
    printf("How many students are there in the class : %d",result);
    //returns an integer value
    return 0;
    }
```

ERRORS ENCOUNTERED DURING PROGRAM'S EXECUTION - (Kindly jot down the compile time errors encountered)

No Error.

PROGRAM'S EXPLAINATION (In Brief) –

In this program we have to find the total number of students in the class by using the formula :

m+n-1 where m is the position of Sonu from the top and n is the position of Sonu from the bottom.Convert the m,n in uppercase and print the message.

OUTPUT -

```
Enter the postion of Sonu from top: m
Enter the postion of Sonu from bottom: n
How many students are there in the class : 26
```

EXPERIMENT NUMBER - Practical 1.5

TOPIC OF THE EXPERIMENT -

A can do a piece of work in 8 days. B can do the same work in 14 days. Write a program to calculate and print the number of days to be taken to complete the work if A and B work together.

AIM OF THE EXPERIMENT –

Learn how to perform input output operations using C.

FLOWCHART / ALGORITHM -

1. Start the program.

2. Declaration of variables a,b,total_work in integer datatype.

3. Print "Enter time taken (number of days) by 1st person to complete the task ".

4. Input the number of days taken by 1st person from the user.

5. Print "Enter time taken (number of days) by 2nd person to complete the task ".

6. Input the number of days taken by 2nd person from the user.

7. Calculate total number of days by using the formula - a*b / (a+b).

8. Print "Number of days to be taken to complete the work is " and the value of total number of days.

9. End the program by returning an integer value.

PROGRAM CODE -

```
//creating a header file
#include<stdio.h>
//function which returns integer value
int main()
{
//declaration of variables in integer datatype
int a,b,total_work;
```

```c
//print the message
printf("Enter time taken (number of days) by 1st person to complete the task ");
//accept the number of days from the user
scanf("%d",&a);
//print the message
printf("Enter time taken (number of days) by 2nd person to complete the task ");
//accept the number of days from the user
  scanf("%d",&b);
//calculate total no. of days by using the formula :
```

Total days = (no.of days taken by 1st*no.of days taken by 2nd) /(no.of days taken by 1st+ no.of days taken by 2nd)

```c
total_work = a*b/(a+b);
// print the message and value of total workdays
  printf("\nNumber of days to be taken to complete the work is %d\n",total_work);
//returns an integer value
return 0;
}
```

ERRORS ENCOUNTERED DURING PROGRAM'S EXECUTION - (Kindly jot down the compile time errors encountered)
No Errors.

PROGRAM'S EXPLAINATION *(In Brief)* -
In this program we have to take the input of no. of days taken by 1st and 2nd person from the user and calculate the total no.

of days taken by both to complete the work using the formula : Total no. of days = (No.of days taken by 1st *No. of days taken by 2nd) / (No. of days taken by 1st + No. of days taken by 2nd)and print it on the screen.

OUTPUT -

```
Enter time taken (number of days) by 2nd person to complete the task 5

Number of days to be taken to complete the work is 3
```

LEARNING OUTCOMES

- Identify situations where computational methods would be useful.

- Approach the programming tasks using techniques learnt and write pseudo-code.

- Choose the right data representation formats based on the requirements of the problem.

- Use the comparisons and limitations of the various programming constructs and choose the right one for the task.

EVALUATION COLUMN (To be filled by concerned faculty only)

Sr. No.	Parameters	Maximum Marks	Marks Obtained
1.	Student's performance while executing the program in Computer Lab	12	

2.	Completion of worksheet with learning outcomes and program's output along with cleanliness and discipline.	10	
3.	Clarification of theoretical concepts	8	
4.	Total Marks	30	
5.	Teacher's Signature (with date)		