LAB FILE

INTRODUCTION TO C FILE

BATCH

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BCA

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Program : Write a program for Hello World

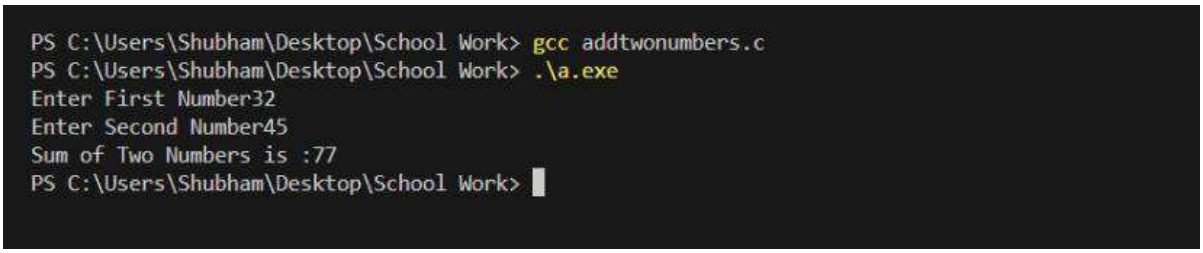
Program-

```c
#include<stdio.h>
int main()
{
printf("Hello World");
return 0;
}
```

Program : Write a program to Add Two Numbers

Program-

```c
#include<stdio.h>
int main()
    {int num1,num2,sum;
    printf("Enter First Number");
    scanf("%d",&num1);
    printf("Enter Second Number");
    scanf("%d",&num2);
sum=num1+num2;
printf("Sum of Two Numbers is :%d",sum);
return 0;
    }
```



Program: Write a program to find Area of Circle

Program-

```c
#include <stdio.h>


int main()
{
   float radius, area;
   float pi = 3.1416;
```

```c
    printf("Enter the radius of the circle: ");
    scanf("%f", &radius);
    area = pi * radius * radius;

    printf("The area of the circle is %f", area);

    return 0;
}
```

```
PS C:\Users\Shubham\Desktop\School Work> gcc AreaOfCircle.c
PS C:\Users\Shubham\Desktop\School Work> .\a.exe
Enter the radius of the circle: 32
The area of the circle is 3216.998291
PS C:\Users\Shubham\Desktop\School Work>
```

Program: Write a program to Divide Two Numbers

Program-

```c
#include<stdio.h>
int main()
{
        float n1,n2,div;
        printf("Enter Two Numbers\n");
        printf("Enter First Number : ");
        scanf("%f", &n1);
        printf("Enter Second Number : ");
        scanf("%f",&n2);
        div=n1/n2;
        printf("Division of %f & %f is = %f",n1,n2,div);
```

```c
    return 0;
}
```

```
PS C:\Users\Shubham\Desktop\School Work> gcc DivideTwoNumbers.c
PS C:\Users\Shubham\Desktop\School Work> .\a.exe
Enter Two Numbers
Enter First Number : 123
Enter Second Number : 12
Division of 123.000000 & 12.000000 is = 10.250000
PS C:\Users\Shubham\Desktop\School Work>
```

Program: Write a program to print ASCII VALUE

Program-

```c
#include <stdio.h>
int main() {
    char c;
    printf("Enter a character: ");
    scanf("%c", &c);
    printf("ASCII value of %c = %d", c, c);
    return 0;
}
```

```
PS C:\Users\Shubham\Desktop\School Work> gcc ascii.c
PS C:\Users\Shubham\Desktop\School Work> .\a.exe
Enter a character: K
ASCII value of K = 75
PS C:\Users\Shubham\Desktop\School Work>
```

Program: Write a program to Multiply Floating Point Numbers

Program-

```c
#include<stdio.h>
int main()
{

        float n1,n2,mul;
        printf("Enter Two Numbers\n");
        printf("Enter First Number : ");
        scanf("%f", &n1);
        printf("Enter Second Number : ");
        scanf("%f",&n2);
        mul=n1*n2;
        printf(" Multiplication of %f & %f is = %f",n1,n2,mul);
        return 0;


}
```

```
PS C:\Users\Shubham\Desktop\School Work> gcc multiplytwonumbers.c
PS C:\Users\Shubham\Desktop\School Work> .\a.exe
Enter Two Numbers
Enter First Number : 8
Enter Second Number : 5
Multiplication of 8.000000 & 5.000000 is = 40.000000
PS C:\Users\Shubham\Desktop\School Work>
```

Program: Write a program to SWAP two variables number using third variable

Program-

```c
#include<stdio.h>
int main()
{
    int a,b,c;
    printf("Enter the number to SWAP:\n");
    scanf("%d,%d",&a,&b);
    c=a;    //c=25
a=b;   //a=50
b=c;  //b=25
printf("Swap numbes for input a & b are a=%d and
b=%d\n",a,b);
return 0;
}
```

```
PS C:\Users\Shubham\Desktop\School Work> gcc waptwoswaptwonumbers.c
PS C:\Users\Shubham\Desktop\School Work> .\a.exe
Enter the number to SWAP:
72,84
Swap numbes for input a & b are a=84 and b=72
PS C:\Users\Shubham\Desktop\School Work>
```

Program: Write a program to SWAP two variables number without using third variable

Program-

```c
#include<stdio.h>
int main()
{
    int a,b;
    printf("Enter the number to SWAP:\n");
    scanf("%d,%d",&a,&b);
    a=a+b;
    b=a-b ;
    a=a-b;
printf("Swap numbes for input a & b are a=%d and
b=%d\n",a,b);
return 0;
}
```

```
PS C:\Users\Shubham\Desktop\School Work> gcc waptoswapnumberswithoutusingvariable.c
PS C:\Users\Shubham\Desktop\School Work> .\a.exe
Enter the number to SWAP:
32,64
Swap numbes for input a & b are a=64 and b=32
PS C:\Users\Shubham\Desktop\School Work>
```

Program: Write a program to SWAP three variables number without using third variable

Program-

```c
#include<stdio.h>
int main()
{
    int a,b,c;
    printf("Enter the number to SWAP:\n");
    scanf("%d,%d,%d",&a,&b,&c);
    a=a+b+c;
b=a-(b+c);
c=a-(b+c);
a=a-(b+c);
printf("Swap numbes for input a & b & c are a=%d , b=%d and
c=%d\n",a,b,c);
return 0;
}
```

```
PS C:\Users\Shubham\Desktop\School Work> gcc swap3number.c
PS C:\Users\Shubham\Desktop\School Work> .\a.exe
Enter the number to SWAP:
38,44,63
Swap numbes for input a & b & c are a=63 , b=38 and c=44
PS C:\Users\Shubham\Desktop\School Work>
```

Program: Write a program to find area of Rectangle

Program-

```c
#include<stdio.h>
float main()
{
    float l,b,area;


    printf("Enter length of rectangle: ");
    scanf("%f",&l);


    printf("Enter breadth of rectangle: ");
    scanf("%f",&b);


    area=(l*b);
    printf("Area of Rectangle : %f",area);
    return 0;
}
```

```
PS C:\Users\Shubham\Desktop\School Work> gcc AreaOfRectangle.c
PS C:\Users\Shubham\Desktop\School Work> .\a.exe
Enter length of rectangle: 32
Enter breadth of rectangle: 24
Area of Rectangle : 768.000000
PS C:\Users\Shubham\Desktop\School Work>
```

Program: Write a program to find area of square

Program-

```c
#include<stdio.h>
float main()
{
    float l,area;
   printf("Enter side of Square: ");
    scanf("%f",&l);
    area=(l*l);
     printf("Area of Square : %f",area);
    return 0;
 }
```

```
PS C:\Users\Shubham\Desktop\School Work> gcc AreaOfSquare.c
PS C:\Users\Shubham\Desktop\School Work> .\a.exe
Enter side of Square: 32
Area of Square : 1024.000000
PS C:\Users\Shubham\Desktop\School Work>
```

Program: Write a program to find area of Triangle

Program-

```c
#include <stdio.h>

float main()
{
    float base, height, area;

    printf("Enter the base of the triangle: ");
    scanf("%f", &base);
    printf("Enter the height of the triangle: ");
    scanf("%f", &height);

    area = (base * height) / 2;

    printf("The area of the triangle is: %f", area);
    return 0;
}
```

```
PS C:\Users\Shubham\Desktop\School Work> gcc AreaOfTriangle.c
PS C:\Users\Shubham\Desktop\School Work> .\a.exe
Enter the base of the triangle: 32
Enter the height of the triangle: 24
The area of the triangle is: 384.000000
PS C:\Users\Shubham\Desktop\School Work>
```

Program: Write a program to find area and volume of cube

Program-

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

int main()
{
    float side;
    float surfacearea, volume;

    printf("Enter value of side of cube:\n");
    scanf("%f", &side);
    surfacearea = 6 * side * side;
    volume = side * side * side;
    printf("Surface area of cube is: %f", surfacearea);
    printf("\n Volume of cube is : %f", volume);
    return 0;
}
```

```
PS C:\Users\Shubham\Desktop\School Work> gcc AreaAndVolumeOfCube.c
PS C:\Users\Shubham\Desktop\School Work> .\a.exe
Enter value of side of cube:
35
Surface area of cube is: 7350.000000
 Volume of cube is : 42875.000000
PS C:\Users\Shubham\Desktop\School Work>
```

Program: Write a program to find area and volume of cuboid

Program-

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

int main()
{
```

```
    float width, length, height;
    float surfacearea, volume;
 printf("Enter value of width, length & height of the
cuboid:\n");
    scanf("%f%f%f", &width, &length, &height);
    surfacearea = 2 *(width * length + length * height
+height * width);
    volume = width * length * height;
    printf("Surface area of cuboid is: %f", surfacearea);
    printf("\n Volume of cuboid is : %f", volume);
    return 0;
}
```

```
PS C:\Users\Shubham\Desktop\School Work> gcc AreaAndVolumeOfCuboid.c
PS C:\Users\Shubham\Desktop\School Work> .\a.exe
Enter value of width, length & height of the cuboid:
12
11
10
Surface area of cuboid is: 724.000000
 Volume of cuboid is : 1320.000000
PS C:\Users\Shubham\Desktop\School Work>
```

Program: Write a program to find Simple Interest

Program-

```
#include<stdio.h>
float main()
{
float P,R,T,SI;
printf("Enter the principal amount : ");
scanf("%f",&P);
printf("Enter the rate of interest : ");
scanf("%f",&R);
printf("Enter the time for which sum is deposited : ");
scanf("%f",&T);
```

```
SI=P*R*T/100;
printf("Simple interest : %f", SI);
return(0);
}
```

```
PS C:\Users\Shubham\Desktop\School Work> gcc ToFindSimpleInterest.c
PS C:\Users\Shubham\Desktop\School Work> .\a.exe
Enter the principal amount : 1000
Enter the rate of interest : 5
Enter the time for which sum is deposited : 2
Simple interest : 100.000000
PS C:\Users\Shubham\Desktop\School Work>
```

Program: Write a program to find Compound Interest

Program-

```
#include<stdio.h>
#include<math.h>
float main()
{
float P,R,T,CI;
printf("Enter the principal amount : ");
scanf("%f",&P);
printf("Enter the rate of interest : ");
scanf("%f",&R);
printf("Enter the time for which sum is deposited : ");
scanf("%f",&T);
CI=P*pow((1+(R/100)),T);
printf("Compound interest : %f", CI);
return(0);
}
```

```
PS C:\Users\Shubham\Desktop\School Work> gcc ToFindCompoundInterest.c
PS C:\Users\Shubham\Desktop\School Work> .\a.exe
Enter the principal amount : 10000
Enter the rate of interest : 5
Enter the time for which sum is deposited : 3
Compound interest : 11576.250000
PS C:\Users\Shubham\Desktop\School Work>
```

Program: Write a program to print your name, age, batch, student.id, course

Program-

```c
#include<stdio.h>
int main()
{
char name[20],course[10];
int age,batch,stdid;
printf("\nEnter your name:");
scanf("%s",&name);
printf("\nEnter your course:");
scanf("%s",&course);
printf("\nEnter your age:");
scanf("%d",&age);
printf("\nEnter your batch:");
scanf("%d",&batch);
printf("\nEnter your std.id:");
scanf("%d",&stdid);
printf("\n
Name:%s\nCourse:%s\nAge:%d\nBatch:%d\nStd.id:%d",name,course,
age,batch,stdid);
return 0;
}
```

```
PS C:\Users\Shubham\Desktop\School Work> gcc details.c
PS C:\Users\Shubham\Desktop\School Work> .\a.exe

Enter your name:Krishna

Enter your course:BCA

Enter your age:17

Enter your batch:2023

Enter your std.id:231601093

 Name:Krishna
Course:BCA
Age:17
Batch:2023
Std.id:231601093
PS C:\Users\Shubham\Desktop\School Work>
```

Program: Write a program to convert Fahrenheit into Celsius

Program-

```c
#include<stdio.h>
int main()
{
    float fah,c;
    printf("Enter Fahrenheit value:");
    scanf("%f",&fah);
    c=((fah)-32)*5/9;
    printf("Celsius value:%f",c);
    return 0;
}
```

```
PS C:\Users\Shubham\Desktop\School Work> gcc temperature.c
PS C:\Users\Shubham\Desktop\School Work> .\a.exe
Enter Farenheit value:58
Celcius value:0.000000
PS C:\Users\Shubham\Desktop\School Work> gcc temperature.c
PS C:\Users\Shubham\Desktop\School Work> .\a.exe
Enter Farenheit value:58
Celcius value:14.444445
PS C:\Users\Shubham\Desktop\School Work>
```

Program: Write a program to find the largest number using the Logical AND operator

Program-

```c
#include<stdio.h>
int main()
{
    int a, b, c;
    printf("\nName: Krishna Pant");
    printf("Enter three numbers:\na: ");
    scanf("%d", &a);
    printf("b: ");
    scanf("%d", &b);
    printf("c: ");
    scanf("%d", &c);
    if (a > b && a > c)
        printf("Biggest number is %d", a);
    if (b > a && b > c)
        printf("Biggest number is %d", b);
    if (c > a && c > b)
        printf("Biggest number is %d", c);
    return 0;
}
```

```
PS C:\Users\Shubham\Desktop\School Work>
PS C:\Users\Shubham\Desktop\School Work> gcc largest.c
PS C:\Users\Shubham\Desktop\School Work> .\a.exe
Enter three numbers:
a: 34
b: 44
c: 54
Biggest number is 54
PS C:\Users\Shubham\Desktop\School Work>
```

Program: Write a program to validate the username and password entered by the user is correct or not using the predefined username and password.

Program-

```c
#include <stdio.h>
int main() {
    int pass;
    {
    printf("\nInput the password: ");
    scanf("%d",&pass);
    if (pass==8888)
    {
        printf("Correct password");
    }
    else
    {
       printf("Wrong password, try another");
    }
   }
    return 0;
}
```

```
PS C:\Users\Shubham\Desktop\School Work> gcc 16.c
PS C:\Users\Shubham\Desktop\School Work> .\a.exe

Input the password: 8888
Correct password
PS C:\Users\Shubham\Desktop\School Work>
```

Program: Write a program to input the positive number from the user to perform the Left shift operator.

Program:

```c
#include<stdio.h>
int main()
{
    int num;
    printf("\nName:Krishna Pant");
    printf("\nEnter a number:");
    scanf("%d",&num);
    int a=num<<3;
    printf("\nThree left shift:%d",a);
    return 0;
}
```

```
PS C:\Users\Shubham\Desktop\School Work> gcc 17.c
PS C:\Users\Shubham\Desktop\School Work> .\a.exe

Name:Krishna Pant
Enter a number:32

Three left shift:256
PS C:\Users\Shubham\Desktop\School Work>
```

Program: WAP to input the positive number from the user to perform the Right shift operator.

Program:

```c
#include<stdio.h>
int main()
{
    int num;
    printf("\nName:Krishna Pant");
    printf("\nEnter a number:");
    scanf("%d",&num);
    int a=num>>3;
    printf("\nThree right shift:%d",a);
    return 0;
}
```

```
PS C:\Users\Shubham\Desktop\School Work> gcc 18.c
PS C:\Users\Shubham\Desktop\School Work> .\a.exe

Name:Krishna Pant
Enter a number:34

Three right shift:4
PS C:\Users\Shubham\Desktop\School Work>
```

Program: Write a program to perform the pre increment on two integers and print both original value and updated value.

Program-

```c
#include<stdio.h>
int main(){
    int num1,num2;
    printf("\nName: Krishna Pant");
```

```
    printf("\nEnter the number1: ");
    scanf("%d",&num1);
    printf("\nEnter the number2: ");
    scanf("%d",&num2);
    printf("\nOriginal Num1: %d and Original Num2:
%d",num1,num2);
    ++num1, ++num2;
    printf("\nUpdated Num1: %d and Updated Num3:
%d",num1,num2);
    return 0;
}
```

```
PS C:\Users\Shubham\Desktop\School Work>
PS C:\Users\Shubham\Desktop\School Work> gcc 19.c
PS C:\Users\Shubham\Desktop\School Work> .\a.exe

Name: Krishna Pant
Enter the number1: 32

Enter the number2: 34

Original Num1: 32 and Original Num2: 34
Updated Num1: 33 and Updated Num3: 35
PS C:\Users\Shubham\Desktop\School Work>
```

Program: Write a program to perform the pre-decrement operator on two integers and print both original value and updated value.

Program-

```
#include<stdio.h>
int main(){
    int num1,num2;
    printf("\nName: Krishna Pant");
    printf("\nEnter the number1: ");
    scanf("%d", &num1);
    printf("\nEnter the number2: ");
    scanf("%d", &num2);
    printf("\nOriginal Num1: %d and Original Num2: %d",
num1,num2);
```

```
    --num1, --num2;
    printf("\nUpdated Num1: %d and Updated Num3: %d",
num1,num2);
    return 0;
}
```

```
PS C:\Users\Shubham\Desktop\School Work> gcc 20.c
PS C:\Users\Shubham\Desktop\School Work> .\a.exe

Name: Krishna Pant
Enter the number1: 34

Enter the number2: 35

Original Num1: 34 and Original Num2: 35
Updated Num1: 33 and Updated Num3: 34
PS C:\Users\Shubham\Desktop\School Work>
```

Program: Write a program to perform the post increment operator on two integers and print both original value and updated value.

Program-

```
#include<stdio.h>
int main(){
    int num1,num2;
    printf("\nName: Krishna Pant");
    printf("Enter the number1: ");
    scanf("%d",&num1);
    printf("Enter the number2: ");
    scanf("%d",&num2);
    printf("Original Num1: %d and Original Num2:
%d",num1,num2);
    num1++, num2++;
    printf("\nUpdated Num1: %d and Updated Num3:
%d",num1,num2);
    return 0;
}
```

```
PS C:\Users\Shubham\Desktop\School Work> gcc 23.c
PS C:\Users\Shubham\Desktop\School Work> .\a.exe

Name: Krishna PantEnter the number1: 39
Enter the number2: 37
Original Num1: 39 and Original Num2: 37
Updated Num1: 40 and Updated Num3: 38
PS C:\Users\Shubham\Desktop\School Work>
```

Program: Write a program to perform the post decrement operator on two integers and print both original value and updated value.

Program-

```c
#include<stdio.h>
int main(){
    int num1,num2;
    printf("\nName: Krishna Pant");
    printf("Enter the number1: ");
    scanf("%d",&num1);
    printf("Enter the number2: ");
    scanf("%d",&num2);
    printf("Original Num1: %d and Original Num2:
%d",num1,num2);
    num1--, num2--;
    printf("\nUpdated Num1: %d and Updated Num3:
%d",num1,num2);
    return 0;
}
```

```
PS C:\Users\Shubham\Desktop\School Work> gcc 24.c
PS C:\Users\Shubham\Desktop\School Work> .\a.exe

Name: Krishna PantEnter the number1: 49
Enter the number2: 56
Original Num1: 49 and Original Num2: 56
Updated Num1: 48 and Updated Num3: 55
PS C:\Users\Shubham\Desktop\School Work>
```

Program: Write a program for an integer number and to check whether it is divisible by 9 or 7 using OR logical operator.

Program-

```c
#include<stdio.h>
int main()
{int x;
     printf("\nEnter the value of x:");
     scanf("%d",&x);
   if ((x%7 || x%9)==0){
   printf("\n%d is divisible by 7 or 9",x);}
   else  {printf("\n%d is not divisible by 7 or 9",x);}
   return 0;
     }
```

```
PS C:\Users\Shubham\Desktop\School Work> gcc 25.c
PS C:\Users\Shubham\Desktop\School Work> .\a.exe

Enter the value of x:63

63 is divisible by 7 or 9
PS C:\Users\Shubham\Desktop\School Work>
```

Program: WAP to identify gender in single character and print full gender (Ex: if input is 'M' or 'm' – it should print "Male").

Program-

```c
#include<stdio.h>
int main()
{
    char gender;
    printf("\nName: Krishna Pant");
    printf("\nEnter your gender(M/F): ");
    scanf("%c",&gender);
    if(gender=='m' || gender=='M')
    {
        printf("Male");
    }
    else if(gender=='f' || gender=='F'){
        printf("Female");
    }
    else{
        printf("Invalid Gender!");
    }
    return 0;
}
```

```
PS C:\Users\Shubham\Desktop\School Work> gcc 26.c
PS C:\Users\Shubham\Desktop\School Work> .\a.exe

Name: Krishna Pant
Enter your gender(M/F): m
Male
PS C:\Users\Shubham\Desktop\School Work>
```

Program: Write a C program to print all natural numbers in reverse (from n to 1).

Program-

```c
#include<stdio.h>
int main()
{
    int i,n;
    printf("\n Krishna Pant");
printf("\nEnter any natural number from where reverse is to be done:");
scanf("%d",&n);
for ( i = n; i >0; i--)
{
   printf("%d ",i) ;
}
   return 0;  }
```

```
PS C:\Users\Shubham\Desktop\School Work> gcc 23e.c
PS C:\Users\Shubham\Desktop\School Work> ./a.exe

 Krishna Pant
Enter any natural number from where reverse is to be done:234
234 233 232 231 230 229 228 227 226 225 224 223 222 221 220 219 218 217 216 215 214 213 212 211 210 209 208 207 206 2
05 204 203 202 201 200 199 198 197 196 195 194 193 192 191 190 189 188 187 186 185 184 183 182 181 180 179 178 177 17
6 175 174 173 172 171 170 169 168 167 166 165 164 163 162 161 160 159 158 157 156 155 154 153 152 151 150 149 148 147
 146 145 144 143 142 141 140 139 138 137 136 135 134 133 132 131 130 129 128 127 126 125 124 123 122 121 120 119 118
117 116 115 114 113 112 111 110 109 108 107 106 105 104 103 102 101 100 99 98 97 96 95 94 93 92 91 90 89 88 87 86 85
84 83 82 81 80 79 78 77 76 75 74 73 72 71 70 69 68 67 66 65 64 63 62 61 60 59 58 57 56 55 54 53 52 51 50 49 48 47 46
45 44 43 42 41 40 39 38 37 36 35 34 33 32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5
 4 3 2 1
PS C:\Users\Shubham\Desktop\School Work>
```

Program: Write a C program to print all alphabets from a to z.

Program-

```c
#include<stdio.h>
int main()
{
    char al;
```

```c
    printf("\n  Krishna Pant");
    printf("\nAlphabets from a to z are:");
    for ( al='a'; al <='z'; al++)
    {
        printf("%c ",al);
    }
    return 0;
}
```

```
PS C:\Users\Shubham\Desktop\School Work> gcc 24e.c
PS C:\Users\Shubham\Desktop\School Work> ./a.exe

  Krishna Pant
Alphabets from a to z are:a b c d e f g h i j k l m n o p q r s t u v w x y z
PS C:\Users\Shubham\Desktop\School Work>
```

Program: Write a C program to print all natural numbers from 1 to n.

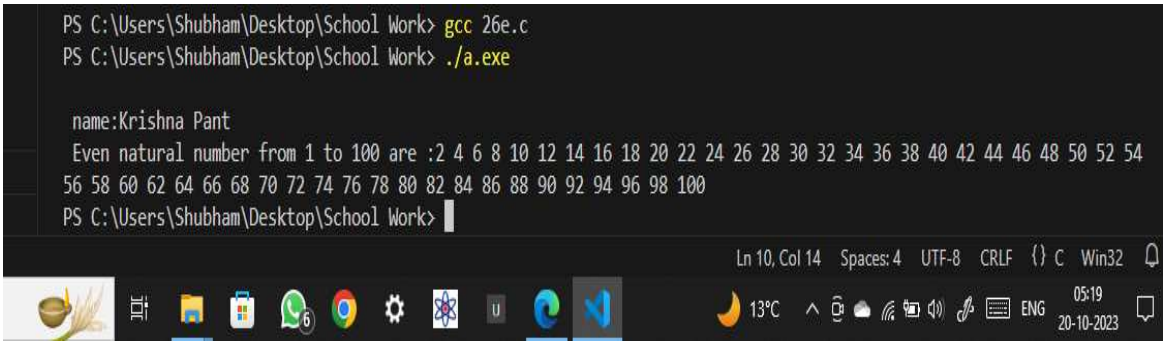
Program-

```c
#include<stdio.h>
int main()
{
    int i,n;
    printf("\n name:Krishna Pant");
    printf("\nEnter any natural number:");
    scanf("%d ",&n);
    for(i=1;i<=n;i++)
    {printf("%d",i);}
    return 0;
}
```

Program: program to print all even numbers between 1 to 100.

Program-

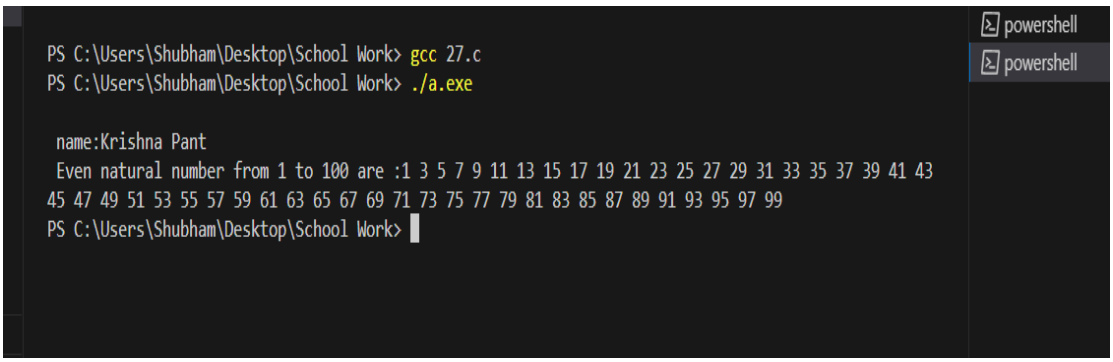
```
#include<stdio.h>
int main()
{
    int i,n;
    printf("\n name:Krishna Pant");
    printf("\n Even natural number from 1 to 100 are :");

    for(n=1;n<=50;n++)
    {i=2*n;
        printf("%d ",i);}
    return 0;
}
```



Program: Write a C program to print all odd number between 1 to 100.

Program-

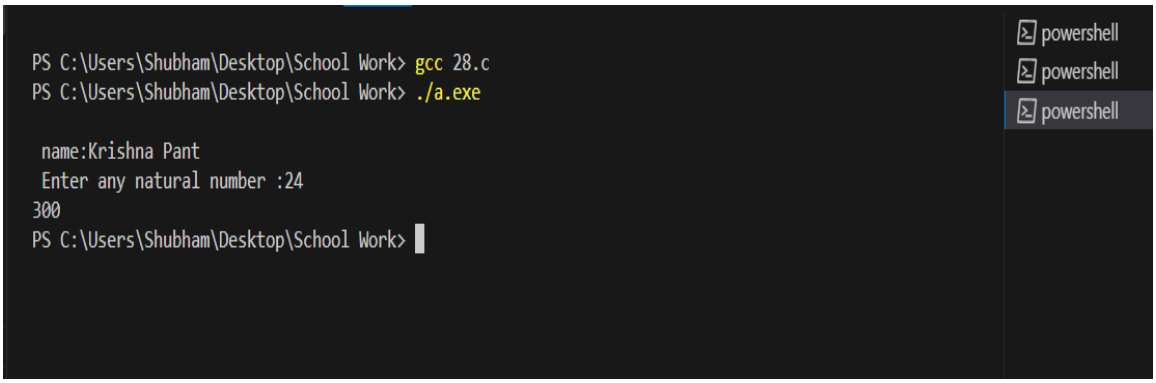
```c
#include<stdio.h>
int main()
{
    int i,n;
    printf("\n name:Krishna Pant");
    printf("\n Even natural number from 1 to 100 are :");

    for(n=1;n<=50;n++)
    {i=2*n-1;
        printf("%d ",i);}
    return 0;
}
```



Program: Write a C program to find sum of all natural numbers between 1 to n.

Program-

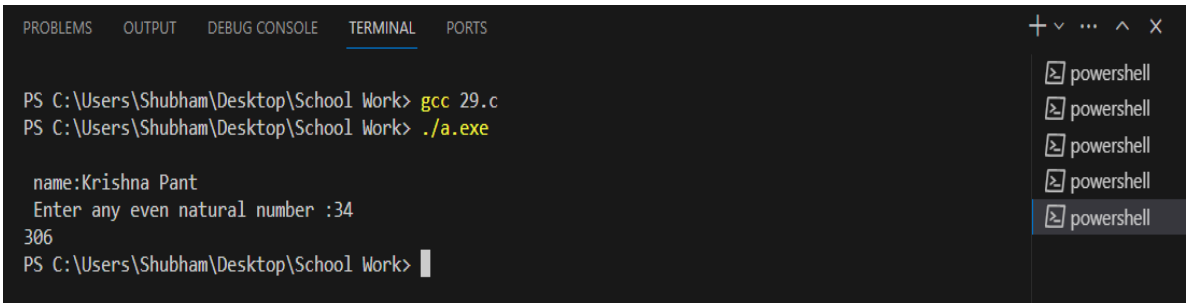
```c
#include<stdio.h>
int main()
{
    int i=0,n,j;
    printf("\n name:Krishna Pant");
    printf("\n Enter any natural number :");
  scanf("%d",&n);
    for(j=1;j<=n;j++)
    {i=i+j;}
        printf("%d",i);
    return 0;
}
```



Program: Write a C program to find sum of all even numbers between 1 to n.

Program-

```c
#include<stdio.h>
int main()
{
    int i=0,n,j;
    printf("\n name:Krishna Pant");
    printf("\n Enter any even natural number :");
  scanf("%d",&n);
    for(j=1;2*j<=n;j++)
    {i=i+2*j;}
        printf("%d",i);
    return 0;
}
```

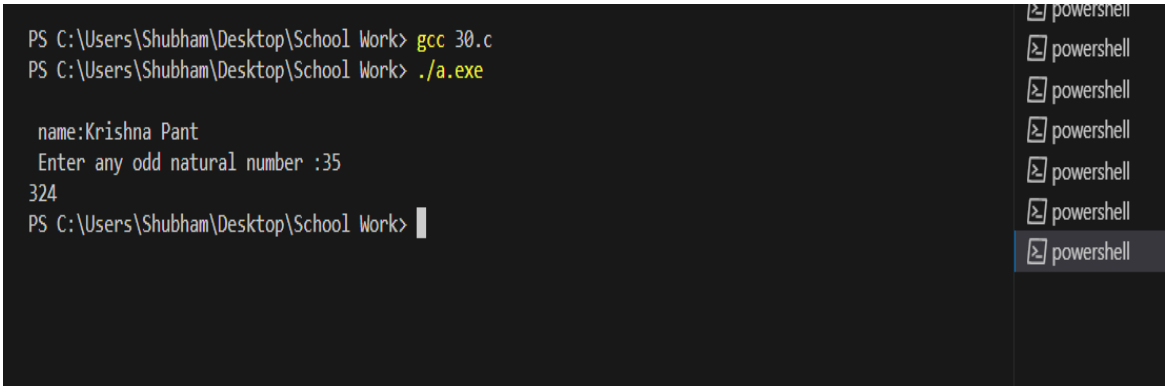


Program: Write a C program to find sum of all odd numbers between 1 to n.

Program-

```c
#include<stdio.h>
int main()
{
    int i=0,n,j;
    printf("\n name:Krishna Pant");
    printf("\n Enter any odd natural number :");
  scanf("%d",&n);
```

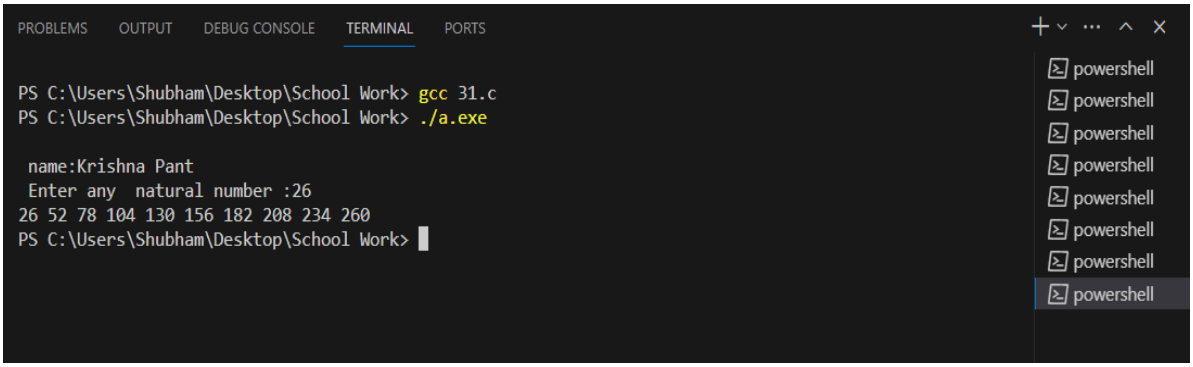
```
    for(j=1;2*j-1<=n;j++)
    {i=i+2*j-1;}
        printf("%d",i);
    return 0;
}
```



Program: 31. Write a C program to print multiplication table of any number.

Program-

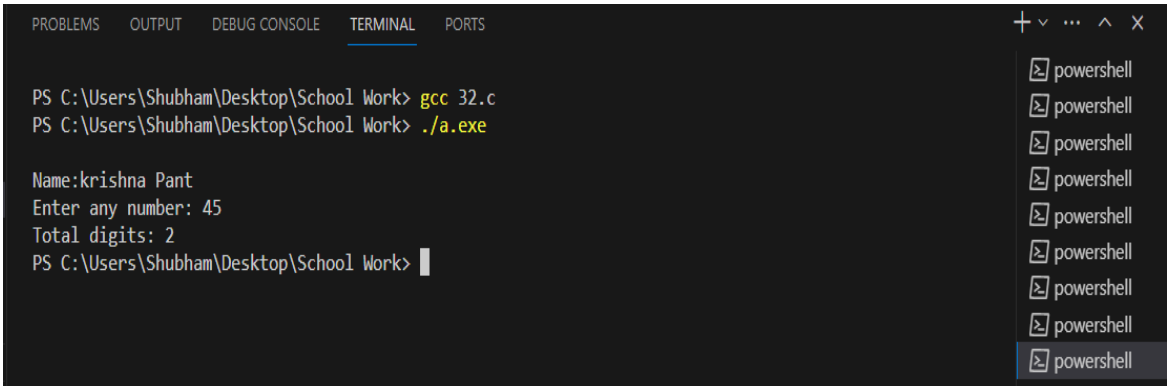
```
#include<stdio.h>
int main()
{
    int i,n,j;
    printf("\n name:Krishna Pant");
    printf("\n Enter any  natural number :");
  scanf("%d",&n);
    for(j=1;j <=10;j++)
   {i=n*j;
       printf("%d ",i);}
     return 0;
}
```



Program: 32. Write a C program to count number of digits in a number

Program-

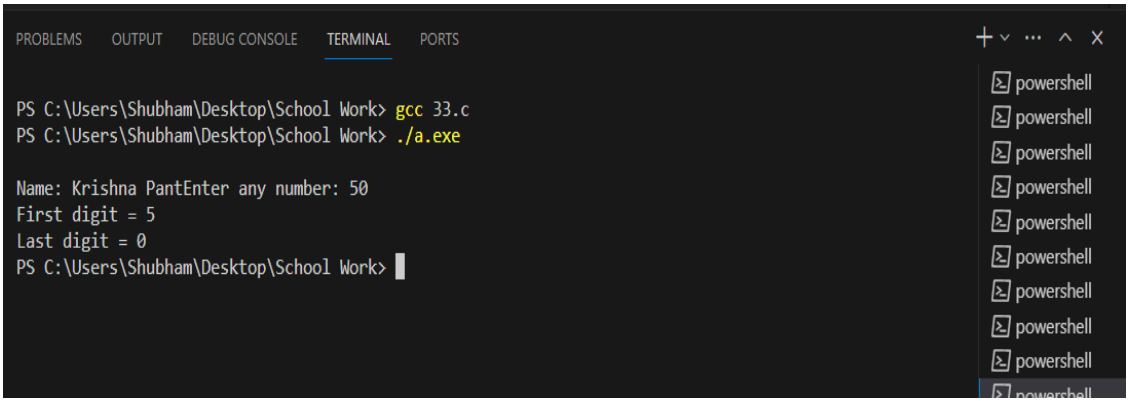
```c
#include <stdio.h>
int main()
{
    long long num;
    int count = 0;
    printf("\nName:krishna Pant");

    printf("\nEnter any number: ");
    scanf("%lld", &num);
    do
    {

        count++;
      num /= 10;
    } while(num != 0);
    return 0;
}
```



Program: 33. Write a C program to find first and last digit of a number

Program-

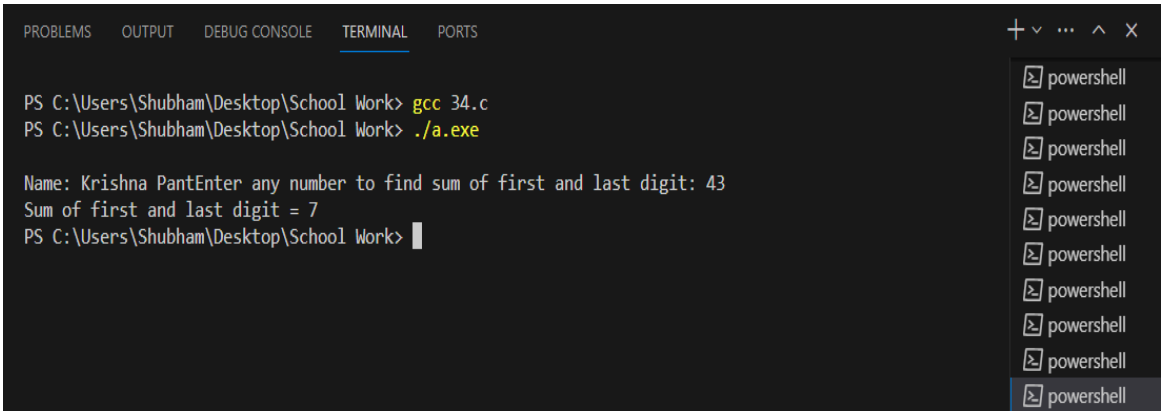
```c
#include <stdio.h>
#include <math.h>
int main()
{
    int n, firstDigit, lastDigit, digits;
    printf("\nName: Krishna Pant");
    printf("Enter any number: ");
    scanf("%d", &n);
 lastDigit = n % 10;
digits = (int)log10(n);
    firstDigit = (int)(n / pow(10, digits));
printf("First digit = %d\n", firstDigit);
    printf("Last digit = %d\n", lastDigit);
return 0;
}
```



Program: 34. Write a C program to find sum of first and last digit of a number

Program-

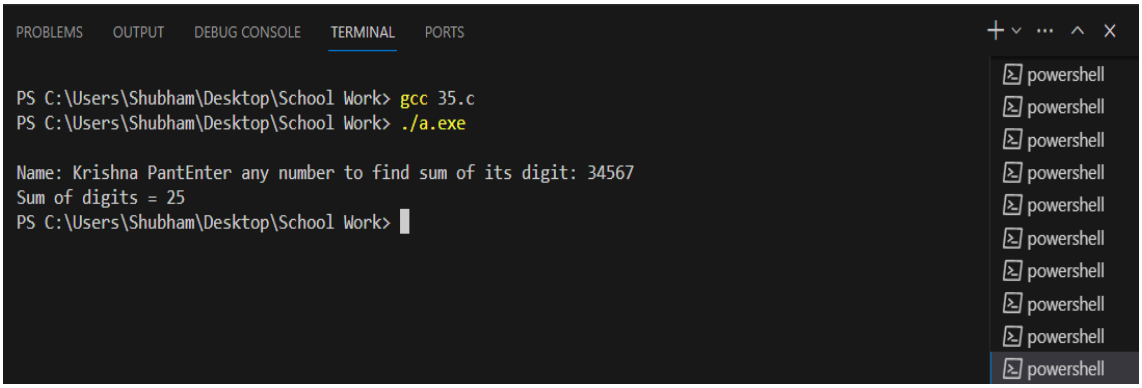
```c
#include <stdio.h>
int main()
{
    int num, sum=0, firstDigit, lastDigit;
printf("\nName: Krishna Pant");
    printf("Enter any number to find sum of first and last
digit: ");
    scanf("%d", &num);
    lastDigit = num % 10;
 firstDigit = num;
while(num >= 10)
    {
        num = num / 10;
        }    firstDigit = num;
sum = firstDigit + lastDigit;
        printf("Sum of first and last digit = %d", sum);
return 0;
}
```



Program: 35. Write a C program to swap first and last digits of a number.

Program-

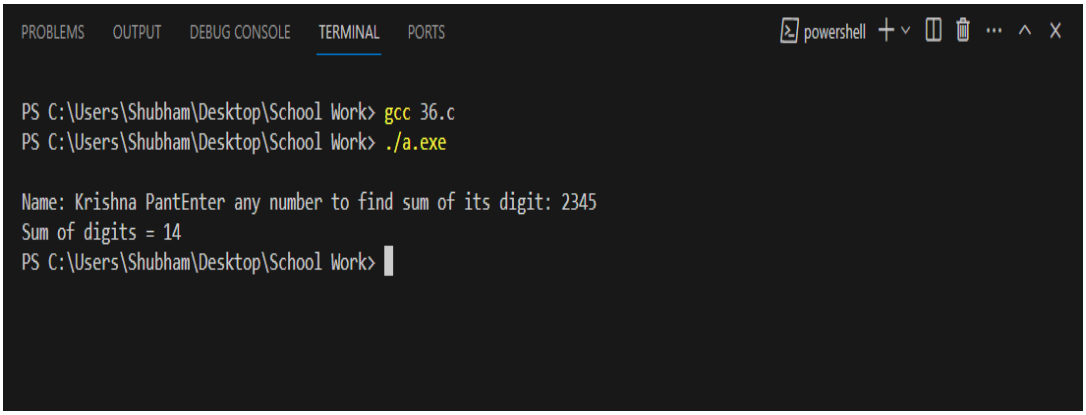
```c
#include <stdio.h>
int main()
{
    int num, sum=0;
 printf("\nName: Krishna Pant");
    printf("Enter any number to find sum of its digit: ");
    scanf("%d", &num);
while(num!=0)
    {
        sum += num % 10;
num = num / 10;
    }
 printf("Sum of digits = %d", sum);
    return 0;
}
```



Program: 36. Write a C program to calculate sum of digits of a number

Program-

```c
#include <stdio.h>
int main()
{
    int num, sum=0;
 printf("\nName: Krishna Pant");
    printf("Enter any number to find sum of its digit: ");
    scanf("%d", &num);
while(num!=0)
    {   sum += num % 10;
num = num / 10;
    }
    printf("Sum of digits = %d", sum);
    return 0;
}
```



Program: 37. Write a C program to calculate product of digits of a number.

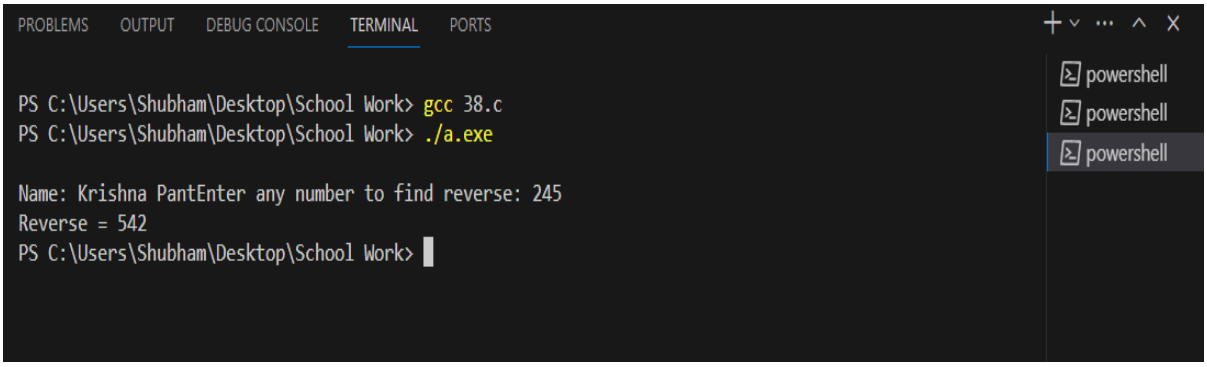
Program-

```c
#include <stdio.h>
int main()
{
    int num;
    long long product=1ll;
     printf("\nName: Krishna Pant");
    printf("Enter any number to calculate product of digit:
");
    scanf("%d", &num);
    product = (num == 0 ? 0 : 1ll);
    while(num != 0)
    {
        product = product * (num % 10);
       num = num / 10;
    }
    printf("Product of digits = %lld", product);
    return 0;
}
```

Program:38. Write a C program to enter a number and print its reverse.

Program-

```c
#include <stdio.h>
int main()
{
    int num, reverse = 0;
    printf("\nName: Krishna Pant");
    printf("Enter any number to find reverse: ");
    scanf("%d", &num);
while(num != 0)
    {
        reverse = (reverse * 10) + (num % 10);
                num /= 10;
    }
   printf("Reverse = %d", reverse);
    return 0;
}
```



Program: 39. Write a C program to check whether a number is palindrome or not.

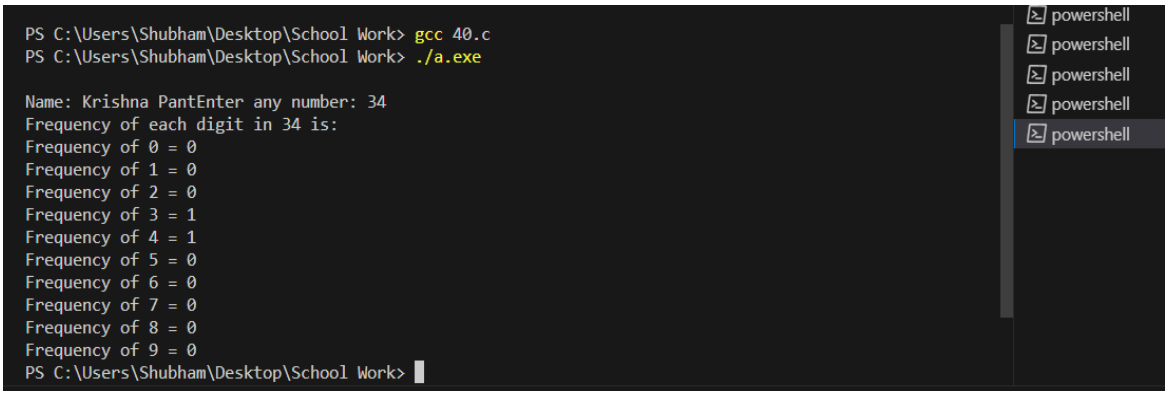
Program-

```c
#include <stdio.h>
int main()
{
    int n, num, rev = 0;
    printf("\nName: Krishna Pant");
    printf("Enter any number to check palindrome: ");
    scanf("%d", &n);
 num = n;
while(n != 0)
    {
        rev = (rev * 10) + (n % 10);
        n  /= 10;
    }
   if(rev == num)
    {
        printf("%d is palindrome.", num);
    }
    else
    {
        printf("%d is not palindrome.", num);
    }
   return 0;
}
```

Program: 40. Write a C program to find frequency of each digit in a given integer.

Program-

```c
#include <stdio.h>
#define BASE 10
int main()
{
    long long num, n;
    int i, lastDigit;
    int freq[BASE];
 printf("\nName: Krishna Pant");
    printf("Enter any number: ");
    scanf("%lld", &num);
 for(i=0; i<BASE; i++)
    {
        freq[i] = 0;
    }
    n = num;
    while(n != 0)
    {
        lastDigit = n % 10;
        n /= 10;
        freq[lastDigit]++;
    }
    printf("Frequency of each digit in %lld is: \n", num);
    for(i=0; i<BASE; i++)
    {
        printf("Frequency of %d = %d\n", i, freq[i]);
    }
    return 0;
}
```



Program: 41. Write a C program to enter a number and print it in words

Program-

```c
#include <stdio.h>
int main()
{
    int n, num = 0;
 printf("Enter any number to print in words: ");
    scanf("%d", &n);
while(n != 0)
    {
        num = (num * 10) + (n % 10);
        n /= 10;
    }
while(num != 0)
    {
        switch(num % 10)
        {
            case 0:
                printf("Zero ");
                break;
            case 1:
                printf("One ");
                break;
            case 2:
                printf("Two ");
                break;
            case 3:
                printf("Three ");
                break;
            case 4:
                printf("Four ");
                break;
            case 5:
                printf("Five ");
                break;
            case 6:
                printf("Six ");
                break;
            case 7:
```

```
                printf("Seven ");
                break;
            case 8:
                printf("Eight ");
                break;
            case 9:
                printf("Nine ");
                break;
        }
                num = num / 10;
    }
    return 0;
}
```

Program: 42. Write a C program to print all ASCII character with their values.

Program-

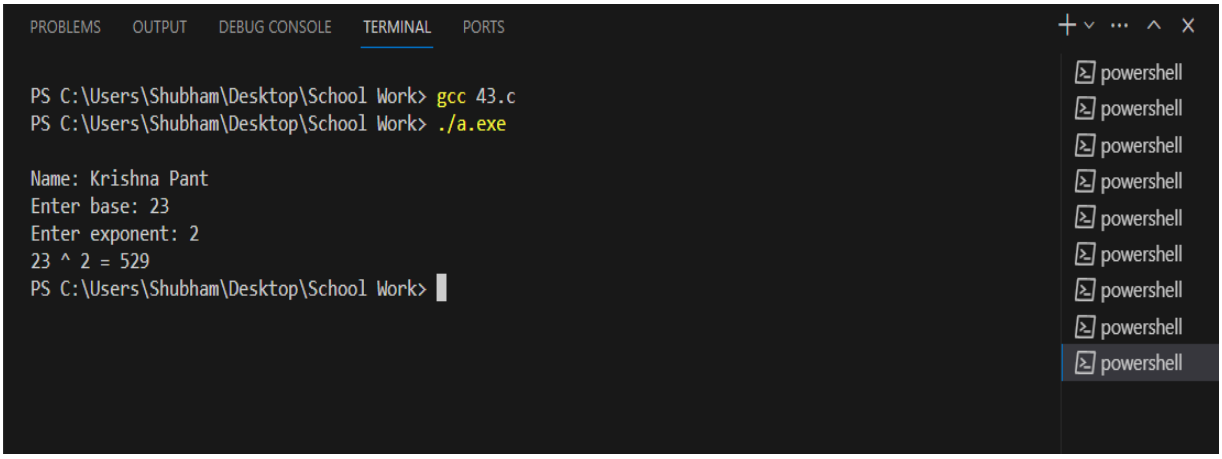
```
#include <stdio.h>
int main()
{
    int i;
```

```
    for(i=0; i<=255; i++)
    {
        printf("ASCII value of character %c = %d\n", i, i);
    }
 return 0;
}
```

Program: 43. Write a C program to find power of a number using for loop.

Program-

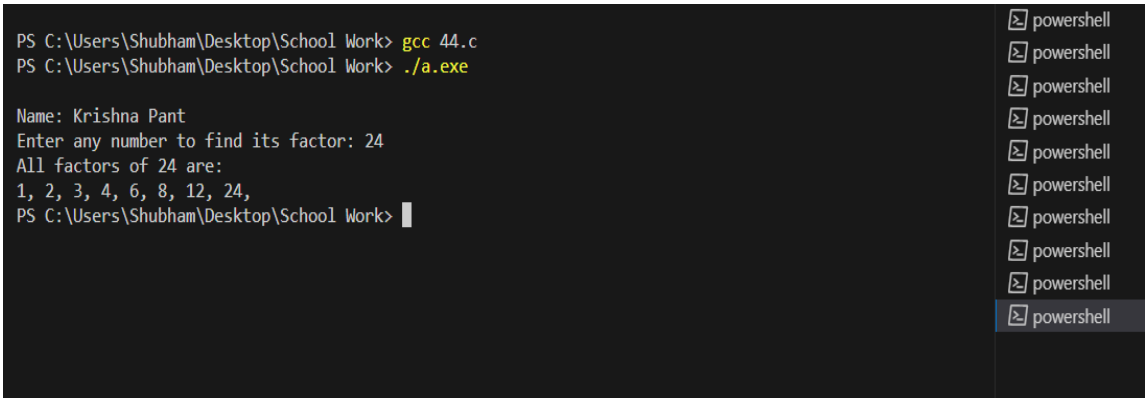
```
#include <stdio.h>
int main()
{
    int base, exponent;
    long long power = 1;
    int i;
 printf("Enter base: ");
    scanf("%d", &base);
    printf("Enter exponent: ");
    scanf("%d", &exponent);
    for(i=1; i<=exponent; i++)
    {
        power = power * base;
    }
    printf("%d ^ %d = %lld", base, exponent, power);
    return 0;
}
```



Program: 44. Write a C program to find all factors of a number.

Program-

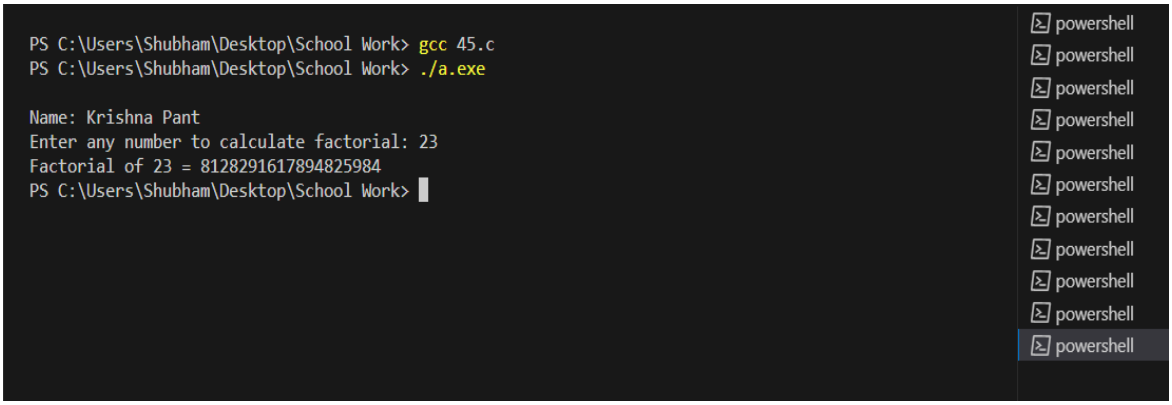
```c
#include <stdio.h>
int main()
{
    int i, num;
    printf("Enter any number to find its factor: ");
    scanf("%d", &num);
    printf("All factors of %d are: \n", num);
   for(i=1; i<=num; i++)
    {
            if(num % i == 0)
        {
            printf("%d, ",i);
        }
    }
  return 0;
}
```



Program: 45. Write a C program to calculate factorial of a number.

Program-

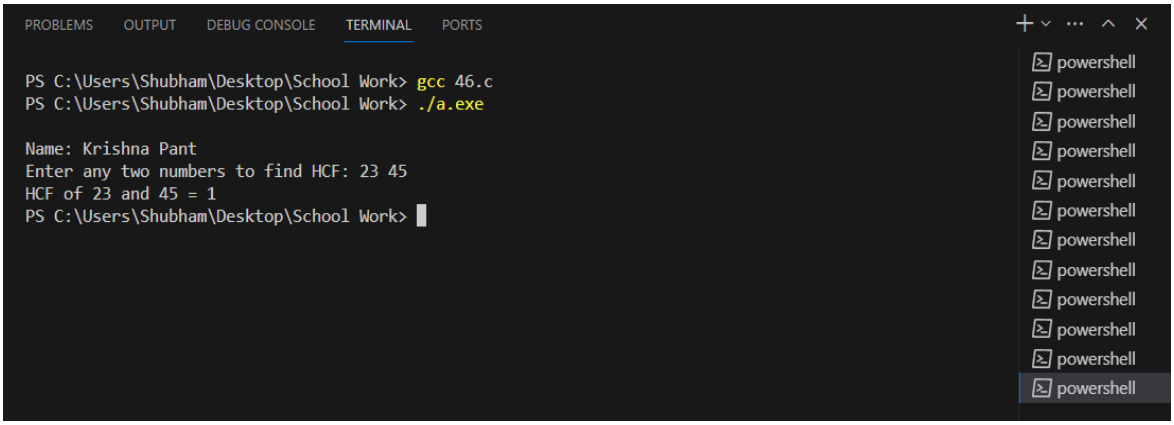
```c
#include <stdio.h>
int main()
{
    int i, num;
    unsigned long long fact=1LL;
    printf("Enter any number to calculate factorial: ");
    scanf("%d", &num);
    for(i=1; i<=num; i++)
    {
        fact = fact * i;
    }
    printf("Factorial of %d = %llu", num, fact);
    return 0;
}
```



Program: 46. Write a C program to find HCF (GCD) of two numbers.

Program-

```c
#include <stdio.h>
int main()
{
    int i, num1, num2, min, hcf=1;
    printf("Enter any two numbers to find HCF: ");
    scanf("%d%d", &num1, &num2);
    min = (num1<num2) ? num1 : num2;
for(i=1; i<=min; i++)
    {
            if(num1%i==0 && num2%i==0)
        {
            hcf = i;
        }
    }
    printf("HCF of %d and %d = %d\n", num1, num2, hcf);
return 0;
}
```



Program: 47. Write a C program to find LCM of two numbers.

Program-

```c
#include <stdio.h>
int main()
{
    int i, num1, num2, max, lcm=1;
    printf("Enter any two numbers to find LCM: ");
    scanf("%d%d", &num1, &num2);
    max = (num1 > num2) ? num1 : num2;
    i = max;
    while(1)
    {
        if(i%num1==0 && i%num2==0)
        {
                    lcm = i;
            break;
        }
        i += max;
    }
    printf("LCM of %d and %d = %d", num1, num2, lcm);
   return 0;
}
```

Program: 49. Write a C program to print all Prime numbers between 1 to n

Program-

```c
#include <stdio.h>
int main()
{
    int i, j, end, isPrime;
    printf("Find prime numbers between 1 to : ");
    scanf("%d", &end);
    printf("All prime numbers between 1 to %d are:\n", end);
    for(i=2; i<=end; i++)
    {
        isPrime = 1;
        for(j=2; j<=i/2; j++)
        {
                        if(i%j==0)
            {
                isPrime = 0;
                break;
            }
        }
        if(isPrime==1)
        {
            printf("%d, ", i);
        }
    }
 return 0;
}
```

Program: 50. Write a C program to find sum of all prime numbers between 1 to n.

Program-

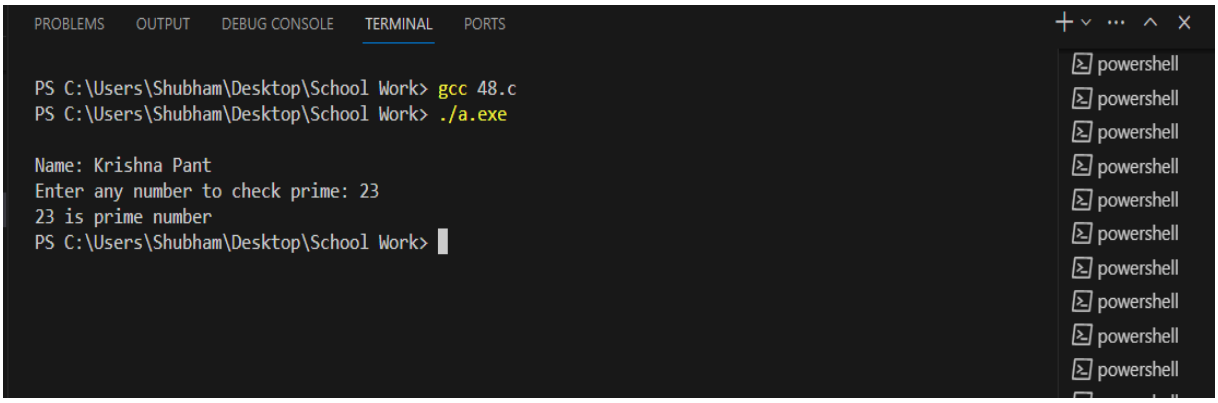
```c
#include <stdio.h>
int main()
{
    int i, j, end, isPrime, sum=0;
    printf("Find sum of all prime between 1 to : ");
    scanf("%d", &end);
    for(i=2; i<=end; i++)
    {
        isPrime = 1;
        for(j=2; j<=i/2 ;j++)
        {
            if(i%j==0)
            {
                isPrime = 0;
                break;
            }
        }
            if(isPrime==1)
        {
            sum += i;
        }
    }
    printf("Sum of all prime numbers between 1 to %d = %d",
end, sum);
   return 0;
}
```

Program: 48. Write a C program to check whether a number is Prime number or not.

Program-

```c
#include <stdio.h>
int main()
{
    int i, num, isPrime;
    isPrime = 1;
```

```c
    printf("Enter any number to check prime: ");
    scanf("%d", &num);
    for(i=2; i<=num/2; i++)
    {
        if(num%i==0)
        {
            isPrime = 0;
            break;
        }
    }
    if(isPrime == 1 && num > 1)
    {
        printf("%d is prime number", num);
    }
    else
    {
        printf("%d is composite number", num);
    }
return 0;
}
```



Program: 51. Write a C program to find all prime factors of a number

Program-

```c
#include <stdio.h>
int main()
{
    int i, j, num, isPrime;
```

```c
    printf("Enter any number to print Prime factors: ");
    scanf("%d", &num);
    printf("All Prime Factors of %d are: \n", num);
     for(i=2; i<=num; i++)
    {
              if(num%i==0)
        {
                  isPrime = 1;
            for(j=2; j<=i/2; j++)
            {
                if(i%j==0)
                {
                    isPrime = 0;
                    break;
                }
            }
if(isPrime==1)
            {
                printf("%d, ", i);
            }
        }
    }
 return 0;
}
```

```
PS C:\Users\Shubham\Desktop\School Work> gcc 51.c
PS C:\Users\Shubham\Desktop\School Work> ./a.exe

Name: Krishna Pant
Enter any number to print Prime factors: 24
All Prime Factors of 24 are:
2, 3,
PS C:\Users\Shubham\Desktop\School Work>
```

Program: 52. Write a C program to check whether a number is Armstrong number or not.

Program-

```c
#include <stdio.h>
#include <math.h>
int main()
{
    int originalNum, num, lastDigit, digits, sum;

    printf("Enter any number to check Armstrong number: ");
    scanf("%d", &num);
sum = 0;

    originalNum = num;

    digits = (int) log10(num) + 1;

    while(num > 0)
    {

        lastDigit = num % 10;

        sum = sum + round(pow(lastDigit, digits));

        num = num / 10;
    }

    if(originalNum == sum)
    {
        printf("%d is ARMSTRONG NUMBER", originalNum);
    }
    else
    {
        printf("%d is NOT ARMSTRONG NUMBER", originalNum);
    }
    return 0;
}
```

Program: 53. Write a C program to print all Armstrong numbers between 1 to n

Program-

```c
#include <stdio.h>
#include <math.h>
int main()
{    int num, lastDigit, digits, sum, i, end;
    printf("Enter upper limit: ");
    scanf("%d", &end);
    printf("Armstrong number between 1 to %d are: \n", end);
    for(i=1; i<=end; i++)
    {         sum = 0;
        num = i;
        digits = (int) log10(num) + 1;
        while(num > 0)
        {
            lastDigit = num % 10;
            sum = sum + ceil(pow(lastDigit, digits));
   num = num / 10;
        }
        if(i == sum)
        {
            printf("%d, ", i);
        }
    }
    return 0;
}
```

Program: 54. Write a C program to check whether a number is Perfect number or not.

Program-

```c
#include <stdio.h>
int main()
{
    int i, num, sum = 0;
    printf("Enter any number to check perfect number: ");
```

```
    scanf("%d", &num);
    for(i = 1; i <= num / 2; i++)
    {

        if(num%i == 0)
        {
            sum += i;
        }
    }
    if(sum == num && num > 0)
    {
        printf("%d is PERFECT NUMBER", num);
    }
    else
    {
        printf("%d is NOT PERFECT NUMBER", num);
    }
    return 0;
}
```

Program: 55. Write a C program to print all Perfect numbers between 1 to n

Program-

```
#include <stdio.h>
int main()
{
    int i, j, end, sum;
    printf("Enter upper limit: ");
    scanf("%d", &end);
printf("All Perfect numbers between 1 to %d:\n", end);
        for(i=1; i<=end; i++)
    {
        sum = 0;
       for(j=1; j<i; j++)
        {
            if(i % j == 0)
            {
                sum += j;
```

```
            }
        }
         if(sum == i)
        {
            printf("%d, ", i);
        }
    }
   return 0;
}
```

powershell

Program: 56. Write a C program to check whether a number is Strong number or not

Program-

```
#include <stdio.h>
int main()
{
    int i, originalNum, num, lastDigit, sum;
    long fact;
    printf("Enter any number to check Strong number: ");
    scanf("%d", &num);
    originalNum = num;
    sum = 0;
    while(num > 0)
    {
        lastDigit = num % 10;
        fact = 1;
        for(i=1; i<=lastDigit; i++)
        {
            fact = fact * i;
        }
        sum = sum + fact;
        num = num / 10;
    }
    if(sum == originalNum)
    {
        printf("%d is STRONG NUMBER", originalNum);
    }
```

```
    else
    {
        printf("%d is NOT STRONG NUMBER", originalNum);
    }
   return 0;
}
```

Program: 57. Write a C program to print all Strong numbers between 1 to n.
Program-

```
#include <stdio.h>
int main()
{
    int i, j, cur, lastDigit, end;
    long long fact, sum;
    printf("Enter upper limit: ");
    scanf("%d", &end);
    printf("All Strong numbers between 1 to %d are:\n", end);
    for(i=1; i<=end; i++)
    {
        cur = i;
        sum = 0;
        while(cur > 0)
        {
            fact = 1ll;
            lastDigit = cur % 10;
            for( j=1; j<=lastDigit; j++)
            {
                fact = fact * j;
            }
            sum += fact;
   cur /= 10;
        }
                if(sum == i)
        {
            printf("%d, ", i);
        }
    }
  return 0;
}
```

Program: 58. Write a C program to print Fibonacci series up to n terms.
Program-

```c
#include <stdio.h>
int main()
{
    int a, b, c, i, terms;
    printf("Enter number of terms: ");
    scanf("%d", &terms);
    a = 0;
    b = 1;
    c = 0;
    printf("Fibonacci terms: \n");
    for(i=1; i<=terms; i++)
    {
        printf("%d, ", c);
        a = b;
        b = c;
        c = a + b;
    }
   return 0;
}
```

Program: 59. Write a C program to find one's complement of a binary number.
Program-

```c
#include <stdio.h>
#define SIZE 8
int main()
{
    char binary[SIZE + 1], onesComp[SIZE + 1];
    int i, error=0;
    printf("Enter %d bit binary value: ", SIZE);
    gets(binary);
    for(i=0; i<SIZE; i++)
    {
        if(binary[i] == '1')
        {
            onesComp[i] = '0';
        }
```

```
        else if(binary[i] == '0')
        {
            onesComp[i] = '1';
        }
        else
        {
            printf("Invalid Input");
            error = 1;
            break;
        }
    }
    onesComp[SIZE] = '\0';
    if(error == 0)
    {
        printf("Original binary = %s\n", binary);
        printf("Ones complement = %s", onesComp);
    }
 return 0;
}
```

Program: 60. Write a C program to find two's complement of a binary number.

Program-

```
#include <stdio.h>
#define SIZE 8
int main()
{
    char binary[SIZE + 1], onesComp[SIZE + 1], twosComp[SIZE
+ 1];
    int i, carry=1;
    printf("Enter %d bit binary value: ", SIZE);
    gets(binary);
    for(i=0; i<SIZE; i++)
    {
        if(binary[i] == '1')
        {
            onesComp[i] = '0';
        }
        else if(binary[i] == '0')
        {
            onesComp[i] = '1';
        }
    }
    onesComp[SIZE] = '\0';
```

```
    for(i=SIZE-1; i>=0; i--)
    {
        if(onesComp[i] == '1' && carry == 1)
        {
            twosComp[i] = '0';
        }
        else if(onesComp[i] == '0' && carry == 1)
        {
            twosComp[i] = '1';
            carry = 0;
        }
        else
        {
            twosComp[i] = onesComp[i];
        }
    }
    twosComp[SIZE] = '\0';
    printf("Original binary = %s\n", binary);
    printf("Ones complement = %s\n", onesComp);
    printf("Twos complement = %s\n", twosComp);
   return 0;
}
```

Program: 61. Write a C program to convert Binary to Octal number system.

Program-

```
#include <stdio.h>
int main()
{
    int octalConstant[] = {0, 1, 10, 11, 100, 101, 110, 111};
    long long binary, octal, tempBinary;
    int digit, place, i;
    octal = 0;
    place= 1;
    printf("Enter any binary number: ");
    scanf("%lld", &binary);
    tempBinary = binary;
    while(tempBinary != 0)
    {
        digit = tempBinary % 1000;
        for(i=0; i<8; i++)
        {
            if(octalConstant[i] == digit)
            {
```

```
                octal = (i * place) + octal;
                break;
            }
        }
        tempBinary /= 1000;
        place *= 10;
    }
    printf("Original binary number = %lld\n", binary);
    printf("Octal number = %lld", octal);
   return 0;
}
```

Program: 62. Write a C program to convert Binary to Decimal number system.

Program-

```
#include <stdio.h>
#include <math.h>
#define BASE 2
int main()
{
    long long binary, decimal=0, tempBinary;
    int N=0;
    printf("Enter any binary number: ");
    scanf("%lld", &binary);
    tempBinary = binary;
    while(tempBinary!=0)
    {
        if(tempBinary % 10 == 1)
        {
            decimal += pow(BASE, N);
        }
        N++;
        tempBinary /= 10;
    }
    printf("Binary number = %lld\n", binary);
    printf("Decimal number= %lld", decimal);
    return 0;
}
```

Program: 63. Write a C program to convert Binary to Hexadecimal number system.

Program-

```
#include <stdio.h>
#include <string.h>
int main()
{printf("\nName: Krishna Pant\n");
    int hexConstant[] = {0, 1, 10, 11, 100, 101, 110, 111,
1000,
                         1001, 1010, 1011, 1100, 1101, 1110,
1111};
    long long binary, tempBinary;
    char hex[20];
    int index, i, digit;
    printf("Enter binary number: ");
    scanf("%lld", &binary);
    tempBinary = binary;
    index = 0;
    while(tempBinary!=0)
    {
        digit = tempBinary % 10000;
        for(i=0; i<16; i++)
        {
            if(hexConstant[i] == digit)
            {
                if(i<10)
                {
                    hex[index] = (char)(i + 48);
                }
                else
                {
                    hex[index] = (char)((i-10) + 65);
                }
                index++;
                break;
            }
        }
        tempBinary /= 10000;
    }
    hex[index] = '\0';
    strrev(hex);
    printf("Binary number = %lld\n", binary);
    printf("Hexadecimal number = %s", hex);
    return 0;
}
```

Program: 64. Write a C program to convert Octal to Binary number system.

Program-

```c
#include <stdio.h>
int main()
{printf("\nName: Krishna Pant\n");
    int OCTALVALUES[] = {0, 1, 10, 11, 100, 101, 110, 111};
    long long octal, tempOctal, binary, place;
    int rem;
    printf("Enter any Octal number: ");
    scanf("%lld", &octal);
    tempOctal = octal;
    binary = 0;
    place  = 1;
    while(tempOctal > 0)
    {
        rem = tempOctal % 10;
        binary = (OCTALVALUES[rem] * place) + binary;
        tempOctal /= 10;
        place *= 1000;
    }
    printf("Octal number = %lld\n", octal);
    printf("Binary number = %lld", binary);
    return 0;
}
```

Program: 65. Write a C program to convert Octal to Decimal number system

Program-

```c
#include <stdio.h>
#include <math.h>
int main()
{printf("\nName: Krishna Pant\n");
    long long octal, tempOctal, decimal;
    int rem, place;
    printf("Enter any octal number: ");
    scanf("%lld", &octal);
    tempOctal = octal;
    decimal = 0;
    place = 0;
    while(tempOctal > 0)
    {
        rem = tempOctal % 10;
        decimal += pow(8, place) * rem;
```

```
        tempOctal /= 10;
        place++;
    }
    printf("Octal number = %lld\n", octal);
    printf("Decimal number = %lld", decimal);
  return 0;
}
```

Program: 66. Write a C program to convert Octal to Hexadecimal number system.

Program-

```
#include <stdio.h>
#include<string.h>
int main()
{printf("\nName: Krishna Pant\n");
    int OCTALVALUES[] = {0, 1, 10, 11, 100, 101, 110, 111};
    long long octal, tempOctal, binary, place;
    char hex[65] = "";
    int rem;
    place = 1;
    binary = 0;
    printf("Enter any octal number: ");
    scanf("%lld", &octal);
    tempOctal = octal;
    while(tempOctal > 0)
    {
        rem = tempOctal % 10;
        binary = (OCTALVALUES[rem] * place) + binary;
        tempOctal /= 10;
        place *= 1000;
    }
    while(binary > 0)
    {
        rem = binary % 10000;
        switch(rem)
        {
            case 0:
                strcat(hex, "0");
                break;
            case 1:
                strcat(hex, "1");
                break;
            case 10:
                strcat(hex, "2");
                break;
```

```
            case 11:
                strcat(hex, "3");
                break;
            case 100:
                strcat(hex, "4");
                break;
            case 101:
                strcat(hex, "5");
                break;
            case 110:
                strcat(hex, "6");
                break;
            case 111:
                strcat(hex, "7");
                break;
            case 1000:
                strcat(hex, "8");
                break;
            case 1001:
                strcat(hex, "9");
                break;
            case 1010:
                strcat(hex, "A");
                break;
            case 1011:
                strcat(hex, "B");
                break;
            case 1100:
                strcat(hex, "C");
                break;
            case 1101:
                strcat(hex, "D");
                break;
            case 1110:
                strcat(hex, "E");
                break;
            case 1111:
                strcat(hex, "F");
            break;
        }
        binary /= 10000;
    }
    strrev(hex);
    printf("Octal number: %lld\n", octal);
    printf("Hexadecimal number: %s", hex);
    return 0;
}
```

Program: 67. Write a C program to convert Decimal to Binary number system.

Program-

```c
#include <stdio.h>
int main()
{printf("\nName: Krishna Pant\n");
    long long decimal, tempDecimal, binary;
    int rem, place = 1;
    binary = 0;
    printf("Enter any decimal number: ");
    scanf("%lld", &decimal);
    tempDecimal = decimal;
    while(tempDecimal > 0)
    {
        rem = tempDecimal % 2;
        binary = (rem * place) + binary;
        tempDecimal /= 2;
        place *= 10;
    }
    printf("Decimal number = %lld\n", decimal);
    printf("Binary number = %lld", binary);
    return 0;
}
```

Program: 68. Write a C program to convert Decimal to Octal number system

Program-

```c
#include <stdio.h>
int main()
{printf("\nName: Krishna Pant\n");
    long long decimal, tempDecimal, octal;
    int i, rem, place = 1;
    octal = 0;
    printf("Enter any decimal number: ");
    scanf("%lld", &decimal);
    tempDecimal = decimal;
    while(tempDecimal > 0)
    {
        rem = tempDecimal % 8;
```

```
        octal = (rem * place) + octal;
        tempDecimal /= 8;
        place *= 10;
    }
    printf("\nDecimal number = %lld\n", decimal);
    printf("Octal number = %lld", octal);
    return 0;
}
```

Program: 69. Write a C program to convert Decimal to Hexadecimal number system.

Program-

```
#include <stdio.h>
#include <string.h>
int main()
{printf("\nName: Krishna Pant\n");
    char HEXVALUE[] = {'0', '1', '2', '3', '4', '5', '6',
'7', '8', '9', 'A', 'B', 'C', 'D', 'E', 'F'};
    long long decimal, tempDecimal;
    char hex[65];
    int index, rem;
    printf("Enter any decimal number: ");
    scanf("%lld", &decimal);
    tempDecimal = decimal;
    index = 0;
    while(tempDecimal !=0)
    {
        rem = tempDecimal % 16;
        hex[index] = HEXVALUE[rem];
        tempDecimal /= 16;
        index++;
    }
    hex[index] = '\0';
    strrev(hex);
    printf("\nDecimal number = %lld\n", decimal);
    printf("Hexadecimal number = %s", hex);
    return 0;
}
```

Program: 70. Write a C program to convert Hexadecimal to Binary number system

Program-

```
#include <stdio.h>
#include <string.h>
int main()
{printf("\nName: Krishna Pant\n");
    char hex[17], bin[65] = "";
    int i = 0;
    printf("Enter any hexadecimal number: ");
    gets(hex);
    for(i=0; hex[i]!='\0'; i++)
    {
        switch(hex[i])
        {
            case '0':
                strcat(bin, "0000");
                break;
            case '1':
                strcat(bin, "0001");
                break;
            case '2':
                strcat(bin, "0010");
                break;
            case '3':
                strcat(bin, "0011");
                break;
            case '4':
                strcat(bin, "0100");
                break;
            case '5':
                strcat(bin, "0101");
                break;
            case '6':
                strcat(bin, "0110");
                break;
            case '7':
                strcat(bin, "0111");
                break;
            case '8':
                strcat(bin, "1000");
                break;
            case '9':
                strcat(bin, "1001");
                break;
            case 'a':
            case 'A':
```

```
                strcat(bin, "1010");
                break;
            case 'b':
            case 'B':
                strcat(bin, "1011");
                break;
            case 'c':
            case 'C':
                strcat(bin, "1100");
                break;
            case 'd':
            case 'D':
                strcat(bin, "1101");
                break;
            case 'e':
            case 'E':
                strcat(bin, "1110");
                break;
            case 'f':
            case 'F':
                strcat(bin, "1111");
                break;
            default:
                printf("Invalid hexadecimal input.");
        }
    }
    printf("Hexademial number = %s\n", hex);
    printf("Binary number = %s", bin);
    return 0;
}
```

powershell

Program: 71. Write a C program to convert Hexadecimal to Octal number system

Program-

```
#include <stdio.h>
int main()
{printf("\nName: Krishna Pant\n");
    char hex[17];
    long long octal, bin, place;
    int i = 0, rem, val;
    printf("Enter any hexadecimal number: ");
    gets(hex);
```

```
octal = 0ll;
bin = 0ll;
place = 0ll;
for(i=0; hex[i]!='\0'; i++)
{
    bin = bin * place;
    switch(hex[i])
    {
        case '0':
            bin += 0;
            break;
        case '1':
            bin += 1;
            break;
        case '2':
            bin += 10;
            break;
        case '3':
            bin += 11;
            break;
        case '4':
            bin += 100;
            break;
        case '5':
            bin += 101;
            break;
        case '6':
            bin += 110;
            break;
        case '7':
            bin += 111;
            break;
        case '8':
            bin += 1000;
            break;
        case '9':
            bin += 1001;
            break;
        case 'a':
        case 'A':
            bin += 1010;
            break;
        case 'b':
        case 'B':
            bin += 1011;
            break;
        case 'c':
        case 'C':
            bin += 1100;
            break;
```

```
            case 'd':
            case 'D':
                bin += 1101;
                break;
            case 'e':
            case 'E':
                bin += 1110;
                break;
            case 'f':
            case 'F':
                bin += 1111;
                break;
            default:
                printf("Invalid hexadecimal input.");
        }
        place = 10000;
    }
    place = 1;
    while(bin > 0)
    {
        rem = bin % 1000;
        switch(rem)
        {
            case 0:
                val = 0;
                break;
            case 1:
                val = 1;
                break;
            case 10:
                val = 2;
                break;
            case 11:
                val = 3;
                break;
            case 100:
                val = 4;
                break;
            case 101:
                val = 5;
                break;
            case 110:
                val = 6;
                break;
            case 111:
                val = 7;
                break;
        }
        octal = (val * place) + octal;
        bin /= 1000;
```

```
        place *= 10;
    }
    printf("Hexadecimal number = %s\n", hex);
    printf("Octal number = %lld", octal);
    return 0;
}
```

Program: 72. Write a C program to convert Hexadecimal to Decimal number system

Program-

```
#include <stdio.h>
#include <math.h>
#include <string.h>
int main()
{printf("\nName: Krishna Pant\n");
    char hex[17];
    long long decimal, place;
    int i = 0, val, len;
    decimal = 0;
    place = 1;
    printf("Enter any hexadecimal number: ");
    gets(hex);
    len = strlen(hex);
    len--;
    for(i=0; hex[i]!='\0'; i++)
    {
        if(hex[i]>='0' && hex[i]<='9')
        {
            val = hex[i] - 48;
        }
        else if(hex[i]>='a' && hex[i]<='f')
        {
            val = hex[i] - 97 + 10;
        }
        else if(hex[i]>='A' && hex[i]<='F')
        {
            val = hex[i] - 65 + 10;
        }
        decimal += val * pow(16, len);
        len--;
    }
    printf("Hexadecimal number = %s\n", hex);
    printf("Decimal number = %lld", decimal);
    return 0;
}
```

Pattern Exercise
1. Star pattern programs - Write a C program to print the given star patterns.

Program: a. Pyramid star pattern
Program-

```c
#include <stdio.h>
int main()
{printf("\nName: Krishna Pant\n");
    int i, j, rows;
    printf("Enter number of rows : ");
    scanf("%d", &rows);
    for(i=1; i<=rows; i++)
    {
        for(j=i; j<rows; j++)
        {
            printf(" ");
        }
        for(j=1; j<=(2*i-1); j++)
        {
            printf("*");
        }
        printf("\n");
    }
    return 0;
}
```

Program: b. Hollow pyramid star pattern
Program-

```c
#include <stdio.h>
int main()
```

```
{printf("\nName: Krishna Pant\n");
    int i, j, rows;
    printf("Enter number of rows : ");
    scanf("%d", &rows);
    for(i=1; i<=rows; i++)
    {
        for(j=i; j<rows; j++)
        {
            printf(" ");
        }
        for(j=1; j<=(2*i-1); j++)
        {
            if(i==rows || j==1 || j==(2*i-1))
            {
                printf("*");
            }
            else
            {
                printf(" ");
            }
        }
        printf("\n");
    }
    return 0;
}
```

Program: c. Inverted pyramid star pattern
Program-

```
#include <stdio.h>
int main()
{printf("\nName: Krishna Pant\n");
    int i, j, rows;
    printf("Enter number of rows : ");
    scanf("%d", &rows);
    for(i=1; i<=rows; i++)
    {
        for(j=1; j<i; j++)
        {
            printf(" ");
```

```
        }
        for(j=1; j<=(rows*2 -(2*i-1)); j++)
        {
            printf("*");
        }
        printf("\n");
    }
    return 0;
}
```

Program: d. Hollow inverted pyramid star pattern
Program-

```
#include <stdio.h>
int main()
{printf("\nName: Krishna Pant\n");
    int i, j, rows;
    printf("Enter number of rows: ");
    scanf("%d", &rows);
    for(i=1; i<=rows; i++)
    {
        for(j=1; j<i; j++)
        {
            printf(" ");
        }
        for(j=1; j<=(rows*2 - (2*i-1)); j++)
        {
            if(i==1 || j==1 || j==(rows*2 - (2*i - 1)))
            {
                printf("*");
            }
            else
            {
                printf(" ");
            }
        }
        printf("\n");
    }
    return 0;
}
```

Program: e. Half diamond star pattern
Program-

```
#include<stdio.h>
int main()
{printf("\nName: Krishna Pant\n");
    int i, j, N, columns;
    printf("Enter number of columns:");
    scanf("%d",&N);
    columns=1;
    for(i=1;i<N*2;i++)
    {
        for(j=1; j<=columns; j++)
        {
            printf("*");
        }
        if(i < N)
        {

            columns++;
        }
        else
        {
       columns--;
        }
        printf("\n");
    }
    return 0;
}
```

Program: f. Mirror half diamond star pattern
Program-

```
#include <stdio.h>
int main()
{printf("\nName: Krishna Pant\n");
    int i, j, N;
    int star, spaces;
    printf("Enter number of columns : ");
    scanf("%d", &N);
    spaces = N-1;
```

```
    star = 1;
    for(i=1; i<N*2; i++)
    {
        for(j=1; j<=spaces; j++)
            printf(" ");
        for(j=1; j<=star; j++)
            printf("*");
        printf("\n");
        if(i < N)
        {
            star++;
            spaces--;
        }
        else
        {
            star--;
            spaces++;
        }
    }
    return 0;
}
```

2. Number pattern programs - Write a C program to print the given number patterns

Program: a. Square number patterns
Program-

```
#include <stdio.h>
int main()
{printf("\nName: Krishna Pant\n");
    int rows, cols, i, j;
    printf("Enter number of rows: ");
    scanf("%d", &rows);
    printf("Enter number of columns: ");
    scanf("%d", &cols);
    for(i=1; i<=rows; i++)
    {
        for(j=1; j<=cols; j++)
        {
            printf("1");
        }
        printf("\n");
    }
    return 0;
```

```
}
```

Program: b. Number pattern 1
Program-

```
#include <stdio.h>
int main()
{printf("\nName: Krishna Pant\n");
    int rows, cols, i, j;
    printf("Enter number of rows: ");
    scanf("%d", &rows);
    printf("Enter number of columns: ");
    scanf("%d", &cols);
    for(i=1; i<=rows; i++)
    {
        for(j=1; j<=cols; j++)
        {
            if(i%2 == 1)
            {
                printf("1");
            }
            else
            {
                printf("0");
            }
        }
        printf("\n");
    }
    return 0;
}
```

Program: c. Number pattern 2
Program-

```
#include <stdio.h>
int main()
```

```
{printf("\nName: Krishna Pant\n");
    int rows, cols, i, j;
    printf("Enter number of rows: ");
    scanf("%d", &rows);
    printf("Enter number of columns: ");
    scanf("%d", &cols);
    for(i=1; i<=rows; i++)
    {
        for(j=1; j<=cols; j++)
        {
            if(j%2 == 1)
            {
                printf("0");
            }
            else
            {
                printf("1");
            }
        }
        printf("\n");
    }
    return 0;
}
```

Program: d. Number pattern 3
Program-

```
#include <stdio.h>
int main()
{printf("\nName: Krishna Pant\n");
    int rows, cols, i, j;
    printf("Enter number of rows: ");
    scanf("%d", &rows);
    printf("Enter number of columns: ");
    scanf("%d", &cols);
    for(i=1; i<=rows; i++)
    {
        for(j=1; j<=cols; j++)
        {
```

```
            if(i==1 || i==rows || j==1 || j==cols)
            {
                printf("1");
            }
            else
            {
                printf("0");
            }
        }
        printf("\n");
    }
    return 0;
}
```

Program: e. Number pattern 4
Program-

```
#include <stdio.h>
int main()
{printf("\nName: Krishna Pant\n");
    int rows, cols, i, j;
    int centerRow, centerCol;
    printf("Enter number of rows: ");
    scanf("%d", &rows);
    printf("Enter number of columns: ");
    scanf("%d", &cols);
    centerRow = (rows + 1) / 2;
    centerCol = (cols + 1) / 2;
    for(i=1; i<=rows; i++)
    {
        for(j=1; j<=cols; j++)
        {
            if(centerCol == j && centerRow == i)
            {
                printf("0");
            }
            else if(cols%2 == 0 && centerCol+1 == j)
            {
                if(centerRow == i || (rows%2 == 0 &&
centerRow+1 == i))
                    printf("0");
                else
```

```
                printf("1");
            }
            else if(rows%2 == 0 && centerRow+1 == i)
            {
                if(centerCol == j || (cols%2 == 0 &&
centerCol+1 == j))
                    printf("0");
                else
                    printf("1");
            }
            else
            {
                printf("1");
            }
        }
        printf("\n");
    }
    return 0;
}
```

Program: f. Number pattern 5
Program-

```
#include <stdio.h>
int main()
{printf("\nName: Krishna Pant\n");
    int rows, cols, i, j, k;
    printf("Enter number of rows: ");
    scanf("%d", &rows);
    printf("Enter number of columns: ");
    scanf("%d", &cols);
    k = 1;
    for(i=1; i<=rows; i++)
    {
        for(j=1; j<=cols; j++)
        {
            if(k == 1)
            {
                printf("1");
            }
```

```
            else
            {
                printf("0");
            }
            k *= -1;
        }
        if(cols % 2 == 0)
        {
            k *= -1;
        }
        printf("\n");
    }
    return 0;
}
```

If Else Exercises

Program: 1. Write a C program to find maximum between two numbers
Program-

```
#include <stdio.h>
int main()
{printf("\nName: Krishna Pant\n");
    int num1, num2;
    printf("Enter two numbers: ");
    scanf("%d%d", &num1, &num2);
    if(num1 > num2)
    {
        printf("%d is maximum", num1);
```

```
    }
    if(num2 > num1)
    {
        printf("%d is maximum", num2);
    }
    if(num1 == num2)
    {
        printf("Both are equal");
    }
    return 0;
}
```

powershell

Program: 2. Write a C program to find maximum between three numbers.

Program-

```
#include <stdio.h>
int main()
{printf("\nName: Krishna Pant\n");
    int num1, num2, num3, max;
    printf("Enter three numbers: ");
    scanf("%d%d%d", &num1, &num2, &num3);
    if(num1 > num2)
    {
        if(num1 > num3)
        {

            max = num1;
        }
        else
        {

            max = num3;
        }
    }
    else
    {
        if(num2 > num3)
        {

            max = num2;
        }
        else
        {

            max = num3;
        }
    }
```

```
    printf("Maximum among all three numbers = %d", max);
    return 0;
}
```

Program: 3. Write a C program to check whether a number is negative, positive or zero.

Program-

```
#include <stdio.h>
int main()
{printf("\nName: Krishna Pant\n");
    int num;
    printf("Enter any number: ");
    scanf("%d", &num);
    if(num > 0)
    {
        printf("Number is POSITIVE");
    }
    if(num < 0)
    {
        printf("Number is NEGATIVE");
    }
    if(num == 0)
    {
        printf("Number is ZERO");
    }
    return 0;
}
```

Program: 4. Write a C program to check whether a number is divisible by 5 and 11 or not

Program-

```
#include <stdio.h>
int main()
{printf("\nName: Krishna Pant\n");
```

```
    int num;
    printf("Enter any number: ");
    scanf("%d", &num);
    if((num % 5 == 0) && (num % 11 == 0))
    {
        printf("Number is divisible by 5 and 11");
    }
    else
    {
        printf("Number is not divisible by 5 and 11");
    }
    return 0;
}
```

powershell

Program: 5. Write a C program to check whether a number is even or odd.

Program-

```
#include <stdio.h>
int main()
{printf("\nName: Krishna Pant\n");
    int num;
    printf("Enter any number to check even or odd: ");
    scanf("%d", &num);
    if(num % 2 == 0)
    {

        printf("Number is Even.");
    }
    else
    {

        printf("Number is Odd.");
    }
    return 0;
}
```

powershell

Program: 6. Write a C program to check whether a year is leap year or not.

Program-

```c
#include <stdio.h>
int main()
{printf("\nName: Krishna Pant\n");
    int year;
    printf("Enter year : ");
    scanf("%d", &year);
    if(((year % 4 == 0) && (year % 100 !=0)) || (year %
400==0))
    {
        printf("LEAP YEAR");
    }
    else
    {
        printf("COMMON YEAR");
    }
    return 0;
}
```

Program: 7. Write a C program to check whether a character is alphabet or not.

Program-

```c
#include <stdio.h>
int main()
{
    printf("\nName: Krishna Pant\n");
    char ch;
    printf("Enter any character: ");
    scanf("%c", &ch);
    if((ch >= 'a' && ch <= 'z') || (ch >= 'A' && ch <= 'Z'))
    {
        printf("Character is an ALPHABET.");
    }
    else
    {
        printf("Character is NOT ALPHABET.");
    }
    return 0;
}
```

Program: 8. Write a C program to input any alphabet and check whether it is vowel or consonant.

Program-

```c
#include <stdio.h>
int main()
{printf("\nName: Krishna Pant\n");
    char ch;
    printf("Enter any character: ");
    scanf("%c", &ch);
    if(ch=='a' || ch=='e' || ch=='i' || ch=='o' || ch=='u' ||
       ch=='A' || ch=='E' || ch=='I' || ch=='O' || ch=='U')
    {
        printf("'%c' is Vowel.", ch);
    }
    else if((ch >= 'a' && ch <= 'z') || (ch >= 'A' && ch <=
'Z'))
    {
        printf("'%c' is Consonant.", ch);
    }
    else
    {
        printf("'%c' is not an alphabet.", ch);
    }
    return 0;
}
```

Program: 9. Write a C program to input any character and check whether it is alphabet, digit or special character

Program-

```c
#include <stdio.h>
int main()
{printf("\nName: Krishna Pant\n");
    char ch;
    printf("Enter any character: ");
    scanf("%c", &ch);
    if((ch >= 'a' && ch <= 'z') || (ch >= 'A' && ch <= 'Z'))
    {
        printf("'%c' is alphabet.", ch);
```

```
    }
    else if(ch >= '0' && ch <= '9')
    {
        printf("'%c' is digit.", ch);
    }
    else
    {
        printf("'%c' is special character.", ch);
    }
    return 0;
}
```

Program: 11. Write a C program to input week number and print week day

Program-

```
#include <stdio.h>
int main()
{printf("\nName: Krishna Pant\n");
    int week;
    printf("Enter week number (1-7): ");
    scanf("%d", &week);
    if(week == 1)
    {
        printf("Monday");
    }
    else if(week == 2)
    {
        printf("Tuesday");
    }
    else if(week == 3)
    {
```

```
        printf("Wednesday");
    }
    else if(week == 4)
    {
        printf("Thursday");
    }
    else if(week == 5)
    {
        printf("Friday");
    }
    else if(week == 6)
    {
        printf("Saturday");
    }
    else if(week == 7)
    {
        printf("Sunday");
    }
    else
    {
        printf("Invalid Input! Please enter week number
between 1-7.");
    }
    return 0;
}
```

Program: 13. Write a C program to count total number of notes in given amount.

Program-

```
#include <stdio.h>
int main()
{printf("\nName: Krishna Pant\n");
    int amount;
    int note500, note100, note50, note20, note10, note5,
note2, note1;
    note500 = note100 = note50 = note20 = note10 = note5 =
note2 = note1 = 0;
    printf("Enter amount: ");
    scanf("%d", &amount);
    if(amount >= 500)
    {
        note500 = amount/500;
        amount -= note500 * 500;
    }
    if(amount >= 100)
```

```
    {
        note100 = amount/100;
        amount -= note100 * 100;
    }
    if(amount >= 50)
    {
        note50 = amount/50;
        amount -= note50 * 50;
    }
    if(amount >= 20)
    {
        note20 = amount/20;
        amount -= note20 * 20;
    }
    if(amount >= 10)
    {
        note10 = amount/10;
        amount -= note10 * 10;
    }
    if(amount >= 5)
    {
        note5 = amount/5;
        amount -= note5 * 5;
    }
    if(amount >= 2)
    {
        note2 = amount /2;
        amount -= note2 * 2;
    }
    if(amount >= 1)
    {
        note1 = amount;
    }
    printf("Total number of notes = \n");
    printf("500 = %d\n", note500);
    printf("100 = %d\n", note100);
    printf("50 = %d\n", note50);
    printf("20 = %d\n", note20);
    printf("10 = %d\n", note10);
    printf("5 = %d\n", note5);
    printf("2 = %d\n", note2);
    printf("1 = %d\n", note1);
    return 0;
}
```

Program: 16. Write a C program to input angles of a triangle and check whether triangle is valid or not.

Program-

```c
#include <stdio.h>
int main() {
    int pass;
    {
    printf("\nInput the password: ");
    scanf("%d",&pass);
    if (pass==8888)
    {
        printf("Correct password");
    }
    else
    {
       printf("Wrong password, try another");
    }
   }
    return 0;
}
```

Program: 17. Write a C program to input all sides of a triangle and check whether triangle is valid or not.

Program-

```c
#include <stdio.h>
int main()
{printf("\nName: Krishna Pant\n");
    int side1, side2, side3;
    printf("Enter three sides of triangle: \n");
    scanf("%d%d%d", &side1, &side2, &side3);
    if((side1 + side2) > side3)
    {
    if((side2 + side3) > side1)
        {
   if((side1 + side3) > side2)
            {

                printf("Triangle is valid.");
            }
    else
            {
                printf("Triangle is not valid.");
            }
        }
```

```
    else
        {
            printf("Triangle is not valid.");
        }
    }
    else
    {
        printf("Triangle is not valid.");
    }
    return 0;
}
```

Program: 18. Write a C program to check whether the triangle is equilateral, isosceles or scalene triangle.

Program-

```
#include <stdio.h>
int main()
{printf("\nName: Krishna Pant\n");
    int side1, side2, side3;
    printf("Enter three sides of triangle: ");
    scanf("%d%d%d", &side1, &side2, &side3);
    if(side1==side2 && side2==side3)
    {
        printf("Equilateral triangle.");
    }
    else if(side1==side2 || side1==side3 || side2==side3)
    {
        printf("Isosceles triangle.");
    }
    else
    {
        printf("Scalene triangle.");
    }
    return 0;
}
```

Program: 19. Write a C program to find all roots of a quadratic equation.
Program-

```
#include<stdio.h>
#include<math.h>
int main()
    {printf("\nName: Krishna Pant\n");
        float a,b,c,x1,x2;
        printf("Enter coefficient of x^2:");
        scanf("%f",&a);
        printf("Enter coefficient of x:");
        scanf("%f",&b);
         printf("Enter coefficient c:");
        scanf("%f",&c);
        printf("Your Quadratic equation:\n");
        printf("%fx^2+%fx+%f=0\n",a,b,c);
        x1=(-b+(sqrt((b*b)-4*a*c)))/(2*a);
         x2=(-b-(sqrt((b*b)-4*a*c)))/(2*a);
       if (b*b-4*a*c>0){printf("\nRoots are real");
        printf("\nroots of quadratic equation
are:%f,%f\n",x1,x2);
       }
       else if(b*b-4*a*c==0){printf("\nRoots are equal");
        printf("\nroots of quadratic equation
are:%f,%f\n",x1,x2);
       }
       else {printf("\nRoots are imaginary");}

         return 0;
    }
```

Program: 20. Write a C program to calculate profit or loss.
Program-

```
#include <stdio.h>
int main()
```

```
{printf("\nName: Krishna Pant\n");
    int cp,sp, amt;
    printf("Enter cost price: ");
    scanf("%d", &cp);
    printf("Enter selling price: ");
    scanf("%d", &sp);
    if(sp > cp)
    {
        amt = sp - cp;
        printf("Profit = %d", amt);
    }
    else if(cp > sp)
    {
        amt = cp - sp;
        printf("Loss = %d", amt);
    }
    else
    {
        printf("No Profit No Loss.");
    }
    return 0;
}
```

Program: 21. Write a C program to input marks of five subjects Physics, Chemistry, Biology, Mathematics and Computer. Calculate percentage and grade according to following: Percentage >= 90% : Grade A Percentage >= 80% : Grade B Percentage >= 70% : Grade C Percentage >= 60% : Grade D Percentage >= 40% : Grade E Percentage < 40% : Grade F

Program-

```
#include <stdio.h>
int main()
{printf("\nName: Krishna Pant\n");
    int phy, chem, bio, math, comp;
    float per;
    printf("Enter five subjects marks: ");
    scanf("%d%d%d%d%d", &phy, &chem, &bio, &math, &comp);
    per = (phy + chem + bio + math + comp) / 5.0;
    printf("Percentage = %.2f\n", per);
    if(per >= 90)
    {
        printf("Grade A");
    }
```

```
    else if(per >= 80)
    {
        printf("Grade B");
    }
    else if(per >= 70)
    {
        printf("Grade C");
    }
    else if(per >= 60)
    {
        printf("Grade D");
    }
    else if(per >= 40)
    {
        printf("Grade E");
    }
    else
    {
        printf("Grade F");
    }
    return 0;
}
```

powershell

Program: 22. Write a C program to input basic salary of an employee and calculate its Gross salary according to following: Basic Salary <= 10000 : HRA = 20%, DA = 80% Basic Salary <= 20000 : HRA = 25%, DA = 90% Basic Salary > 20000 : HRA = 30%, DA = 95%

Program-

```
#include <stdio.h>
int main()
{printf("\nName: Krishna Pant\n");
    float basic, gross, da, hra;
    printf("Enter basic salary of an employee: ");
    scanf("%f", &basic);
    if(basic <= 10000)
    {
        da  = basic * 0.8;
        hra = basic * 0.2;
    }
    else if(basic <= 20000)
    {
        da  = basic * 0.9;
        hra = basic * 0.25;
```

```
    }
    else
    {
        da  = basic * 0.95;
        hra = basic * 0.3;
    }
    gross = basic + hra + da;
    printf("GROSS SALARY OF EMPLOYEE = %.2f", gross);
    return 0;
}
```

powershell

Program: Write a program in C to read n number of values in an array and display them in reverse order.

Program-

```
#include <stdio.h>
int main()
{  printf("\nName: Krishna Pant\n");
    int arr[] = {1, 2, 3, 4, 5};
    int length = sizeof(arr)/sizeof(arr[0]);
    printf("Original array: \n");
    for (int i = 0; i < length; i++) {
        printf("%d ", arr[i]);
    }
    printf("\n");
    printf("Array in reverse order: \n");
    for (int i = length-1; i >= 0; i--) {
        printf("%d ", arr[i]);
    }
    return 0;
}
```

Program: Write a program in C to find the sum of all elements of the array.

Program-

```c
#include <stdio.h>
int main()
{ printf("\nName: Krishna Pant\n");
    int arr[] = {1, 2, 3, 4, 5};
    int sum = 0;
    int length = sizeof(arr)/sizeof(arr[0]);
    for (int i = 0; i < length; i++) {
       sum = sum + arr[i];
    }
    printf("Sum of all the elements of an array: %d", sum);
    return 0;
}
```

Program: Write a program in C to copy the elements of one array into another array.

Program-

```c
#include <stdio.h>
int main()
{  printf("\nName: Krishna Pant\n");
    int arr1[] = {1, 2, 3, 4, 5};
    int length = sizeof(arr1)/sizeof(arr1[0]);
    int arr2[length];
    for (int i = 0; i < length; i++) {
        arr2[i] = arr1[i];
    }
    printf("Elements of original array: \n");
    for (int i = 0; i < length; i++) {
        printf("%d ", arr1[i]);
    }
    printf("\n");
    printf("Elements of new array: \n");
    for (int i = 0; i < length; i++) {
        printf("%d ", arr2[i]);
    }
    return 0;
}
```

Program: Write a program in C to count the total number of duplicate elements in an array.

Program-

```c
#include <stdio.h>
int main()
{ printf("\nName: Krishna Pant\n");
    int arr[] = {1, 2, 3, 4, 2, 7, 8, 8, 3};
    int length = sizeof(arr)/sizeof(arr[0]);
    printf("Duplicate elements in given array: \n");
    for(int i = 0; i < length; i++) {
        for(int j = i + 1; j < length; j++) {
            if(arr[i] == arr[j])
                printf("%d\n", arr[j]);
        }
    }
    return 0;
}
```

Program: Write a program in C to find the maximum and minimum elements in an array.

Program-

```c
#include <stdio.h>
 #include <conio.h>
int main()
{printf("\nName: Krishna Pant\n");
    int a[1000],i,n,min,max;
    printf("Enter size of the array : ");
    scanf("%d",&n);
    printf("Enter elements in array : ");
    for(i=0; i<n; i++)
    {
        scanf("%d",&a[i]);
    }
    min=max=a[0];
    for(i=1; i<n; i++)
    {
         if(min>a[i])
          min=a[i];
           if(max<a[i])
            max=a[i];
```

```
    }
     printf("minimum of array is : %d",min);
          printf("\nmaximum of array is : %d",max);
    return 0;
}
```

Program: Write a C program to sort the elements of an array in descending order

Program-

```
#include <stdio.h>
 int main()
{ printf("\nName: Krishna Pant\n");
    int arr[] = {5, 2, 8, 7, 1};
    int temp = 0;
    int length = sizeof(arr)/sizeof(arr[0]);
    printf("Elements of original array: \n");
    for (int i = 0; i < length; i++) {
        printf("%d ", arr[i]);
    }
    for (int i = 0; i < length; i++) {
        for (int j = i+1; j < length; j++) {
           if(arr[i] < arr[j]) {
               temp = arr[i];
               arr[i] = arr[j];
               arr[j] = temp;
           }
        }
    }
    printf("\n");
    printf("Elements of array sorted in descending order:
\n");
    for (int i = 0; i < length; i++) {
        printf("%d ", arr[i]);
    }
    return 0;
}
```

Program: Write a program in C to separate odd and even integers into separate arrays.

Program-

```
#include <stdio.h>
void main()
 {printf("\nName: Krishna Pant\n");
    int arr1[10], arr2[10], arr3[10];
    int i,j=0,k=0,n;
       printf("\n\nSeparate odd and even integers in separate
arrays:\n");
       printf("Input the number of elements to be stored in
the array :");
       scanf("%d",&n);
       printf("Input %d elements in the array :\n",n);
       for(i=0;i<n;i++)
            {
          printf("element - %d : ",i);
          scanf("%d",&arr1[i]);
        }
    for(i=0;i<n;i++)
    {
    if (arr1[i]%2 == 0)
    {
       arr2[j] = arr1[i];
       j++;
    }
    else
    {
       arr3[k] = arr1[i];
       k++;
    }
    }
    printf("\nThe Even elements are : \n");
    for(i=0;i<j;i++)
    {
    printf("%d ",arr2[i]);
    }
    printf("\nThe Odd elements are :\n");
    for(i=0;i<k;i++)
    {
    printf("%d ", arr3[i]);
    }
    printf("\n\n");
 }
```

Program: Write a program in C to merge two arrays of the same size sorted in descending/ascending order.

Program-

```
#include <stdio.h>
void main()
{printf("\nName: Krishna Pant\n");
    int arr1[100], arr2[100], arr3[200];
    int s1, s2, s3;
    int i, j, k;
       printf("\n\nMerge two arrays of same size sorted in
decending order.\n");
       printf("Input the number of elements to be stored in
the first array :");
       scanf("%d",&s1);
       printf("Input %d elements in the array :\n",s1);
       for(i=0;i<s1;i++)
            {
          printf("element - %d : ",i);
          scanf("%d",&arr1[i]);
        }
       printf("Input the number of elements to be stored in
the second array :");
       scanf("%d",&s2);

       printf("Input %d elements in the array :\n",s2);
       for(i=0;i<s2;i++)
            {
          printf("element - %d : ",i);
          scanf("%d",&arr2[i]);
        }
    s3 = s1 + s2;
    for(i=0;i<s1; i++)
        {
            arr3[i] = arr1[i];
        }
     for(j=0;j<s2; j++)
        {
            arr3[i] = arr2[j];
            i++;
        }
   for(i=0;i<s3; i++)
        {
           for(k=0;k<s3-1;k++)
             {
                if(arr3[k]<=arr3[k+1])
                 {
                   j=arr3[k+1];
                   arr3[k+1]=arr3[k];
```

```
                    arr3[k]=j;
                }
            }
        }
     printf("\nThe merged array in decending order is :\n");
    for(i=0; i<s3; i++)
    {
        printf("%d   ", arr3[i]);
    }
    printf("\n\n");
}
```

Program: Write a program in C to merge two arrays of the same size sorted in descending order.

Program-

```
#include <stdio.h>
int main() {
    printf("\nName: Krishna Pant\n");
  int s1, s2, s3;
  printf("\n Enter the size of 1st array  ");
  scanf("%d", & s1);
  printf("\n Enter the size of 2nd array ");
  scanf("%d", & s2);
  s3 = s1 + s2;
  printf("\n Enter the elements of 1st array\n");
  int arr1[s1], arr2[s2], arr3[s3];
  for (int i = 0; i < s1; i++) {
    scanf("%d", & arr1[i]);
    arr3[i] = arr1[i];
  }
  int k = s1;
  printf("\nEnter the elements of 2nd array \n");
  for (int i = 0; i < s2; i++)
  {
    scanf("%d", & arr2[i]);
    arr3[k] = arr3[i];
    k++;
  }
  printf("\nThe merged array before sorting : \n\t");
  for (int i = 0; i < s3; i++)
```

```
    printf("%d ", arr3[i]);
  printf("\n The merged array after sorting\n\t");
  for (int i = 0; i < s3; i++)
  {
    int tem;
    for (int j = i + 1; j < s3; j++) {
      if (arr3[i] > arr3[j]) {
        tem = arr3[i];
        arr3[i] = arr3[j];
        arr3[j] = tem;
      }
    }
  }
  for (int i = 0; i < s3; i++)
  {
    printf(" %d ", arr3[i]);
  }
}ew4e
```

```
PS C:\Users\Shubham\Desktop\School Work>
```