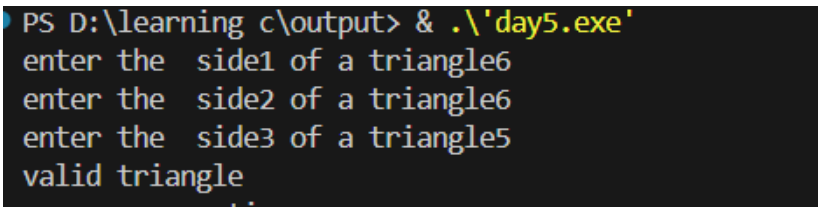
DAY 5

ASSIGNMENTS

1. //WAP to check for a valid triangle

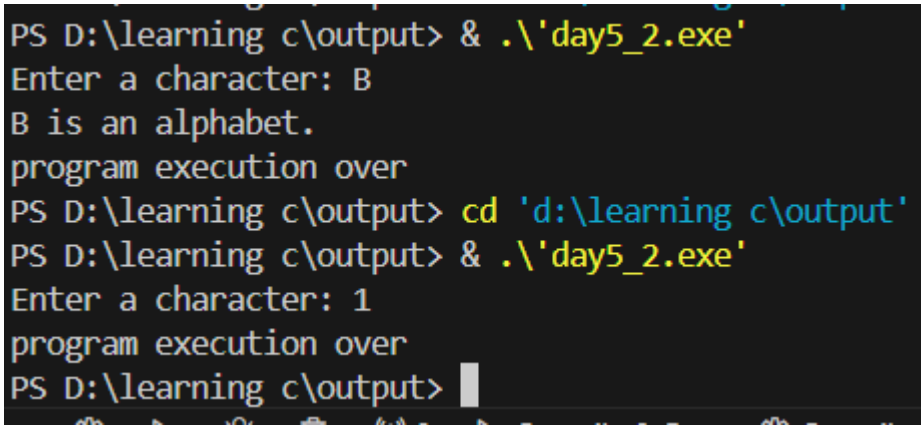
```
#include<stdio.h>
int main()
{
   int a,b,c;
   printf("enter the  side1 of a triangle");
   scanf("%d",&a);
   printf("enter the  side2 of a triangle");
   scanf("%d",&b);
   printf("enter the  side3 of a triangle");
   scanf("%d",&c);

   if((a+b>c)&&(b+c>a)&&(c+a>b))

      printf("valid triangle \n");

   printf("program execution over");

}
```



2. //WAP to check if a character is an alphabet

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

```
int main() {
    char ch;
    printf("Enter a character: ");
    scanf("%c", &ch);

    if ((ch >= 'A' && ch <= 'Z') || (ch >= 'a' && ch <= 'z'))
        printf("%c is an alphabet.\n", ch);
    printf("program execution over");



    return 0;
}
```



3. //WAP to check whether a year is leap year

```
#include<stdio.h>
int main()
{
    int year;
    printf("enter a year");
    scanf("%d",&year);
    if((year%4==0)&&(year%100!=0)|(year%400==0))
        printf("it is a leap year \n");
    printf("program execution over \n ");
```

}

```
enter a year2024
it is a leap year
program execution over

PS D:\learning c\output> cd 'd:\learning c\output'
PS D:\learning c\output> & .\'day5_3.exe'
enter a year2023
program execution over
```

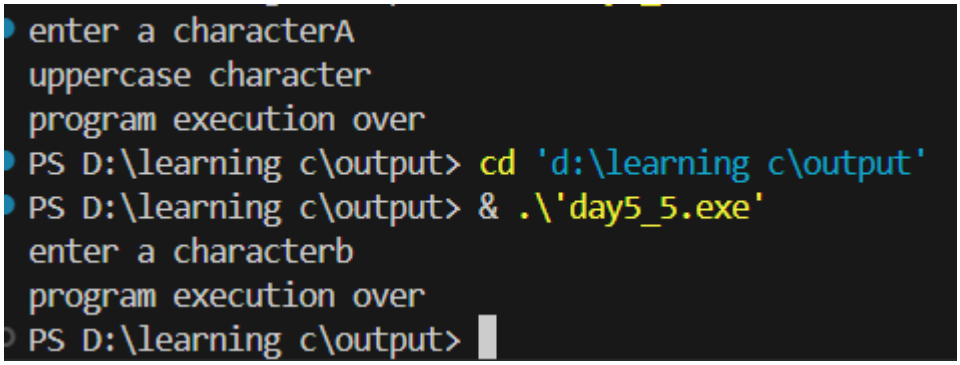
4. //WAP to check if a number is divisible by 3

```
#include<stdio.h>
int main()
{
   int num;
   printf("enter a number");
   scanf("%d",&num);

   if (num % 3 == 0)
      printf("%d is divisible by 3.\n", num);
   printf("program execution over");


   return 0;
}
```

```
PS D:\learning c\output> & .\'day5_4.exe'
enter a number9
9 is divisible by 3.
program execution over
PS D:\learning c\output> cd 'd:\learning c\output'
PS D:\learning c\output> & .\'day5_4.exe'
enter a number8
program execution over
PS D:\learning c\output>
```

5. //WAP to check for uppercase characters

```
#include<stdio.h>
int main()
{
   char value;
   printf("enter a character");
   scanf("%c",&value);
   if(value>='A'&& value<='Z')
      printf("uppercase character \n");
   printf("program execution over");
}
```



6. //WAP to check for a special character

```
#include <stdio.h>

int main() {
   char ch;
   printf("Enter a character: ");
   scanf("%c", &ch);

   if (!((ch >= 'A' && ch <= 'Z') || (ch >= 'a' && ch <= 'z') || (ch >= '0' && ch <= '9') || ch == ' ' || ch == '\t' || ch == '\n')) {
      printf("%c is a special character.\n", ch);
   } else {
```

```
    printf("%c is not a special character.\n", ch);
  }

  return 0;
}
```

```
PS D:\learning c\output> & .\'day5_6.exe'
Enter a character: *
* is a special character.
PS D:\learning c\output> cd 'd:\learning c\output'
PS D:\learning c\output> & .\'day5_6.exe'
Enter a character: 1
1 is not a special character.
PS D:\learning c\output>
```

7.
```
#include<stdio.h>
int main()
{
  int score=95;
  int big=90;
  if(score>big)
    printf("score is greater \n");
  if(score>big)
  {
    score++;
    printf("score is greater \n");
  }


}
```

```
PS D:\learning c\output> cd 'd:\learning c\output'
PS D:\learning c\output> & .\'program25.exe'
score is greater
score is greater
```

8. //to check whether the number is positive.the program will ask for user input

```
#include<stdio.h>
int main()
{
   int num;
   printf("enter a number");
   scanf("%d",&num);
   if(num>0)

      printf("positive number %d \n",num);
   printf("program executed");



}
```

```
PS D:\learning c\output> & .\'program26.exe'
enter a number7
positive number 7
program executed
PS D:\learning c\output> cd 'd:\learning c\output'
PS D:\learning c\output> & .\'program26.exe'
enter a number-7
program executed
```

9. /*write a program to check whether the number is even

the program will ask for user input*/

```
#include<stdio.h>
int main()
{
   int num;
   printf("enter a number");
   scanf("%d",&num);
   //if(num%2==0)
```

```
    if(0==num%2)
        printf("even number");
    printf("execution over");
}
```

```
enter a number72
even number
execution over
PS D:\learning c\output> cd 'd:\learning c\output'
PS D:\learning c\output> & .\'program27.exe'
enter a number31
execution over
PS D:\learning c\output>
```

10. //number is even or odd

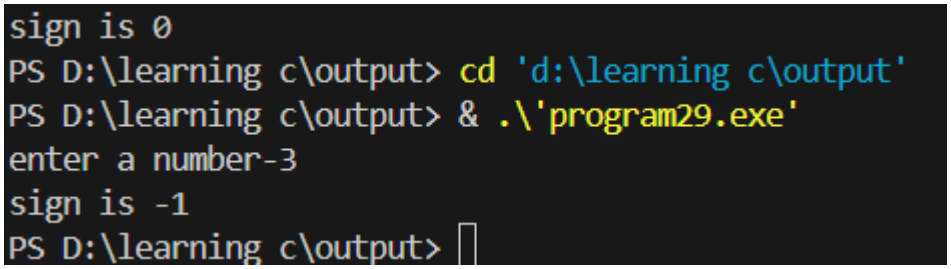
```
#include<stdio.h>
int main()
{
    int num;
    printf("enter a number");
    scanf("%d",&num);
    if(0==num%2)
        printf("even number \n");
    else
        printf("odd number");
return 0;



}
```

```
PS D:\learning c\output> & .\'program28.exe'
enter a number56
even number
PS D:\learning c\output> cd 'd:\learning c\output'
PS D:\learning c\output> & .\'program28.exe'
enter a number31
odd number
PS D:\learning c\output>
```

11. //negative or positive

```
#include<stdio.h>
int main()
{
   int number,sign;
   printf("enter a number");
   scanf("%d",&number);
   if(number<0)
      sign=-1;
   else if(0==number)
      sign=0;
   else
      sign=1;
   printf("sign is %d",sign);
   return 0;
}
```

```
PS D:\learning c\output> & .\'program29.exe'
enter a number9
sign is 1
PS D:\learning c\output> cd 'd:\learning c\output'
PS D:\learning c\output> & .\'program29.exe'
enter a number0
sign is 0
```



12. //check for voting eligibility

//inputs:age

//comparison:>=

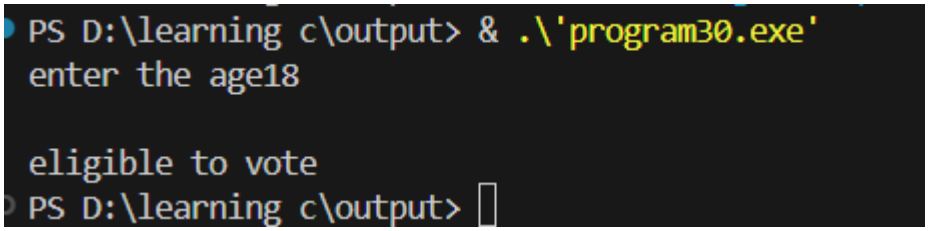
//control statements if else

//how many variables:1

//datatype of the variable:int

//perfereed scope of variable:local

```
#include<stdio.h>
int main()
{
   int age;
   printf("enter the age");
   scanf("%d",&age);
   printf("\n");
   if(age>=18)
   {
      printf("eligible to vote \n");
   }
   else
   {
      printf("not eligible not vote \n");
   }
   return 0;
}
```



13. //program to determine largest of 3 numbers

// inputs:num1,num2,num3

//comparison:>

//control statements:nested if-else

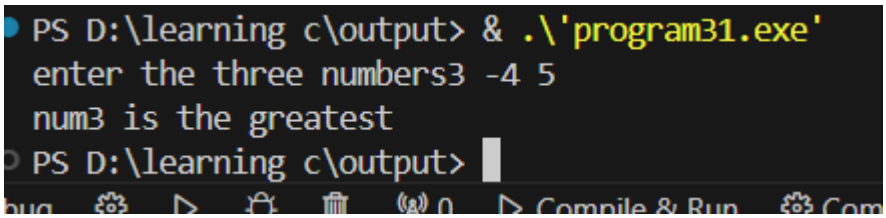
//how many variables:3

//datatype of the variable:int

//preferred scope of variable:local

```
#include<stdio.h>
int main()
{
   int num1,num2,num3;
   printf("enter the three numbers");
   scanf("%d%d%d",&num1,&num2,&num3);
   if(num1>num2)
   {
      if(num1>num3)
      {
         printf("num1 is the greaatest");
      }
      else{
           printf("num3 is the greatest");
      }
   }
   else{
      if(num2>num3)
      {
```

```
        printf("num2 is greatest");
    }
    else
    {
        printf("num3 is greatest");
    }
  }
}
```



14. /* WAP to determine the grade of a student:

GRADE A=MARKS>=90

GRADE B=MARKS>=80 and Marks<90

GRADE C=MARKS>=70 and MARKS<80

GRADE D=MARKS>=60 and MARKS<70

GRADE F=MARKS<60

*/

```
//inputs:marks
//comparison:>=,<
//control statement :elseif
//how many variables:1
//datatype :int
//perferred scope:local
#include<stdio.h>
int main()
{
   int marks;
   printf("enter the marks");
   scanf("%d",&marks);
```

```
if(marks<0)
{
   printf("enter a positive mark");

}
else
{


if(marks>=90)
{
   printf("Grade A \n");
}
else if(marks>=80 && marks<90)
{
   printf("Grade B \n");

}
else if(marks>=70 && marks<80)
{
   printf("grade C \n");
}
else if(marks>=60 && marks<70)
{
   printf("grade D \n");
}
else
{
   printf("grade F");

}
```

```
    }
}
```

```
enter the marks85
Grade B
PS D:\learning c\output> cd 'd:\learning c\output'
PS D:\learning c\output> & .\'program32.exe'
enter the marks-8
enter a positive mark
PS D:\learning c\output>
```

15.
```
#include <stdio.h>

int main() {
    float amps, volts, watts, kilowatt_hours, usage, rate = 0, cost, prev_month, this_month;

    printf("Enter the amplitude: ");
    scanf("%f", &amps);
    printf("Enter the voltage: ");
    scanf("%f", &volts);
    printf("Enter the previous month's reading: ");
    scanf("%f", &prev_month);
    printf("Enter the current month's reading: ");
    scanf("%f", &this_month);

    usage = this_month - prev_month;
    if (usage < 0) {
        printf("Current reading cannot be less than previous reading.\n");
        return 1;
    }

    watts = amps * volts;
    kilowatt_hours = watts * usage / 1000;
```

```
    if (kilowatt_hours >= 1 && kilowatt_hours <= 100) {
        rate = 4.22;
    } else if (kilowatt_hours >= 101 && kilowatt_hours <= 200) {
        rate = 5.02;
    } else if (kilowatt_hours > 200) {
        rate = 5.82;
    } else {
        printf("The readings are invalid!\n");
        return 1;
    }

    cost = kilowatt_hours * rate + 40 + (kilowatt_hours * 0.15);

    printf("Total cost: Rs. %.2f\n", cost);

    return 0;
}
```

```
PS D:\learning c\output> & .\'program33.exe'
Enter the amplitude: 10
Enter the voltage: 10
Enter the previous month's reading: 45
Enter the current month's reading: 55
Total cost: Rs. 44.37
PS D:\learning c\output>
```

16. //inputs:hrs

//comparison:<=

//control statement :elseif

//how many variables:6

//datatype :float

//perferred scope:local

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

```
{
   float hrs,grosspay,taxes,netpay;
   float basic_pay_rate=12.00;
   float overtime=18.00;
   printf("enter the number of hrs worked in a week");
   scanf("%f",&hrs);
   if(hrs<0)
   {
      printf("enter a valid hr");
   }
   else{



   if(hrs>40)
   {
      float overtime_hrs=hrs-40;
      grosspay=(40*basic_pay_rate)+(overtime_hrs*overtime);
      printf("gross pay is %f \n",grosspay);
   }
   else
   {
      grosspay=hrs*basic_pay_rate;
      printf("gross pay is %f \n",grosspay);
   }
   if(grosspay<=300)
   {
      taxes=grosspay*0.15;
      printf("taxes is %f \n",taxes);
   }
   else if(grosspay<=450)
   {
```

```
        taxes=(grosspay*0.15) + ((grosspay-300)*0.20);
        printf("taxes is %f \n",taxes);

    }
    else
    {
        taxes=(grosspay*0.15) + ((grosspay-300)*0.20)+((grosspay-450)*0.25);
        printf("taxes is %f \n",taxes);

    }
    netpay=grosspay-taxes;
    printf("net pay is %f \n",netpay);
    }

}
```

```
PS D:\learning c\output> & .\ program34.exe
enter the number of hrs worked in a week44
gross pay is 552.000000
taxes is 158.699997
net pay is 393.299988
PS D:\learning c\output>
```

17.
```
#include<stdio.h>
int main()
{
    int num;
    printf("enter numbers between 1 to 4");
    scanf("%d",&num);
    switch(num)
    {
        case 1:
            printf("1");
            break;
```

```
        case 2:
            printf("2");
            break;
        case 3:
            printf("3");
            break;
        case 4:
            printf("4");
            break;
        default:
            printf("wrong entry");

    }
}
```

```
PS D:\learning c\output> & .\'program35.exe'
enter numbers between 1 to 43
3
PS D:\learning c\output>
```

18. //WAP using switch case for calculator

```
#include <stdio.h>

int main() {
    int a, b;
    char op;
    printf("Enter the numbers: ");
    scanf("%d%d", &a, &b);
    printf("Enter the operation: ");
    scanf(" %c", &op);

    switch (op) {
        case '+':
            printf("Result: %d\n", a + b);
```

```
            break;
        case '-':
            printf("Result: %d\n", a - b);
            break;
        case '*':
            printf("Result: %d\n", a * b);
            break;
        case '/':
            if (b != 0) {
                printf("Result: %d\n", a / b);
            } else {
                printf("Error! Division by zero.\n");
            }
            break;
        case '%':
            if (b != 0) {
                printf("Result: %d\n", a % b);
            } else {
                printf("Error! Division by zero.\n");
            }
            break;
        default:
            printf("Error! Enter a valid operation.\n");
            break;
    }

    return 0;
}
```

```
Enter the numbers: 4 3
Enter the operation: ?
Error! Enter a valid operation.
PS D:\learning c\output> cd 'd:\learning c\outpu
PS D:\learning c\output> & .\'program36.exe'
Enter the numbers: 4 3
Enter the operation: *
Result: 12
PS D:\learning c\output>
```

19. //WAP to print numbers 1 to 10 suing while loop

```
#include<stdio.h>

int main()

{

   int num=1;

   while(num<=10)

   {

      printf("%d \n",num++);

      //num=num+1;

   }

}
```

```
1
2
3
4
5
6
7
8
9
10
```

20. //WAP to calculate sum of natural numbers

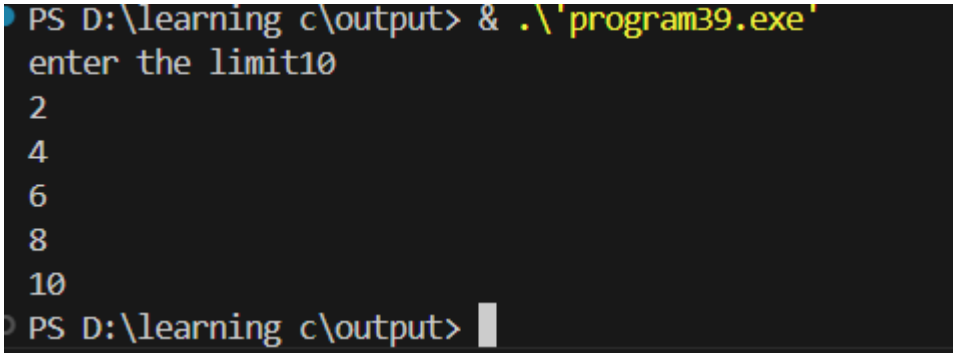
```
#include<stdio.h>

int main()

{
```

```
    int num,sum=0,i=1;
    printf("enter the natural number limit ");
    scanf("%d",&num);
    printf("\n");
    while(i<=num)
    {
       sum+=i;
       i++;

    }
    printf("sum is %d",sum);

}
```

```
PS D:\learning c\output> & .\'program38.exe'
enter the natural number limit 10

sum is 55
PS D:\learning c\output>
```

21. //WAP to print even numbers upto a given number

```
#include<stdio.h>
int main()
{
    int num,i=2;
    printf("enter the limit");
    scanf("%d",&num);
    while(i<=num)
    {
      printf("%d \n",i);
      i+=2;
    }
```



22. //WAP to reverse a number

//let num=234

//234%10=4

//234/10=23

```
#include <stdio.h>

int main() {
   int num,reverse=0;
   printf("enter a number");
   scanf("%d",&num);
   while(num!=0)
   {
     int digit=num%10;
     reverse=reverse*10+digit;
     num=num/10;

   }
   printf("reserved num is %d",reverse);
}
```

```
PS D:\learning c\output> & .\'program40.exe'
enter a number234
reversed num is 432
PS D:\learning c\output>
```

23. //WAP to count the number of digits in a number using while loop

```
#include<stdio.h>
int main()
{
   int num,count=0;
   printf("enter a number");
   scanf("%d",&num);
   while(num!=0)
   {
      num=num/10;
      count+=1;
   }
   printf("no.of digits %d",count);

}
```

```
PS D:\learning c\output> & .\'program41.exe'
enter a number23456
no.of digits 5
PS D:\learning c\output>
```

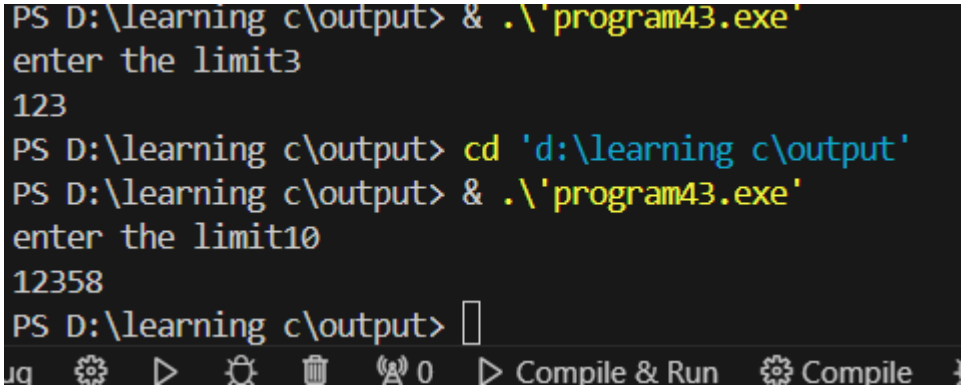
24.//infinite loop

```
 #include<stdio.h>
int main()
{
   int i=4;
   while(1)//here the condition is true(non zero) ,therefore no exit
   {
     printf("%d \n",i);
```

```
    }
}
```

25. WAP to print Fibonacci Series up to a Given Number.

```
// WAP to print Fibonacci Series up to a Given Number.
#include<stdio.h>
int main()
{
    int num,a=0,b=1,c;
    printf("enter the limit");
    scanf("%d",&num);
    if(1==num)
    {
        printf("%d",a);
    }
    if(2==num)
    {
        printf("%d",b);
    }
    c=a+b;
    while(c<=num)
    {
        printf("%d",c);
        a=b;
        b=c;
        c=a+b;

    }
}
```



26. WAP to print factorial of a number.

```
//WAP to print factorial of a number.
#include<stdio.h>
int main()
{
   int num,fact=1;
   int i=1;
   printf("enter the number");
   scanf("%d",&num);
   if(num<=0)
   {
      printf("enter valid number");
   }
   else if(1==num)
   {
      printf("factorial :1");
   }
   else
   {
      while(i<=num)
   {
```

```
    fact=fact*i;
    i+=1;
  }
  printf("factorial :%d",fact);
  }

}
```

```
enter the number4
factorial :24
PS D:\learning c\output>
```

27. WAP to check whether the number is Prime or not.

```
#include <stdio.h>

int main() {
  int num, i = 2;
  printf("Enter a number: ");
  scanf("%d", &num);

  if (num <= 1) {
    printf("%d is not a prime number.\n", num);
  } else {
    while (i <= num / 2) {
      if (num % i == 0) {
        printf("%d is not a prime number.\n", num);
        return 0;
      }
      i++;
    }
```

```
        printf("%d is a prime number.\n", num);
    }

    return 0;
}
```

```
PS D:\learning c\output> & .\'program45.exe'
Enter a number: 24
24 is not a prime number.
PS D:\learning c\output> cd 'd:\learning c\output'
PS D:\learning c\output> & .\'program45.exe'
Enter a number: 2
2 is a prime number.
PS D:\learning c\output>
```

28. WAP to print lower case alphabets.

```
//WAP to print lower case alphabets.
#include<stdio.h>
int main()
{
    char c='a';
    while(c<='z')
    {
        printf("%c \n",c);
        c++;
    }
}
```

```
PS D:\learning c\output> & .\'program46.exe'
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 D:\learning c\output>