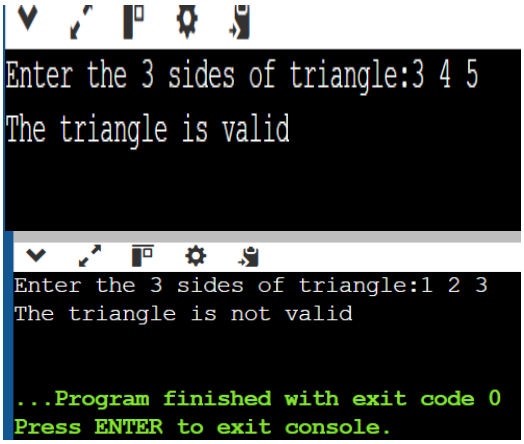
PHASE 1 DAY 5 ASSIGNMENTS

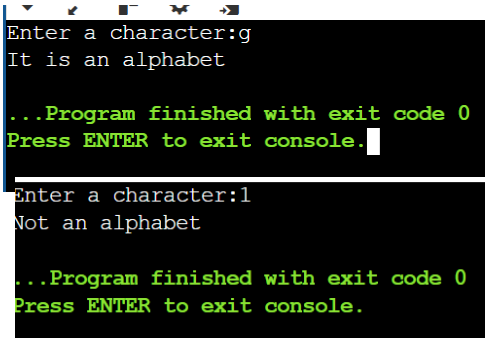
1.Write a program for a valid triangle

```
#include <stdio.h>

int main()
{
  int a,b,c;
  printf("Enter the 3 sides of triangle:");
  scanf("%d %d %d",&a,&b,&c);
  if((a+b>c) && (b+c>a) &&( a+c>b) )
{
  printf("The triangle is valid \n");
}
  else
    printf("The triangle is not valid \n");

    return 0;
}
```



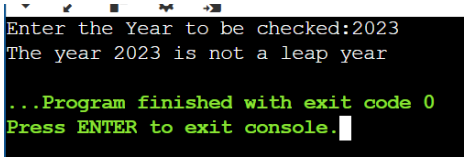
2.Write a program to check a character is an alphabet

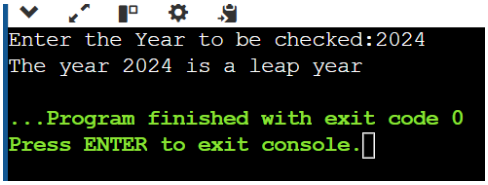
```
#include <stdio.h>

int main()
{
  printf("Enter a character:");
  char ch;
  scanf("%c",&ch);
  if((ch>='A'&& ch<='Z')||(ch>='a'&& ch<='z'))
  {
     printf("It is an alphabet");
  }
  else
  printf("Not an alphabet");

    return 0;
}
```



3.Write a program if a year is a leap year

```
#include <stdio.h>

int main()
{
  int year;
  printf("Enter the Year to be checked:");
  scanf("%d",&year);
```

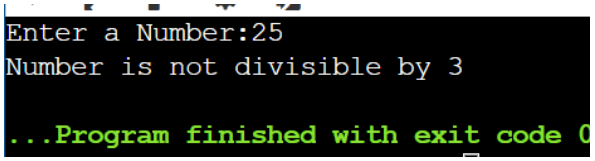


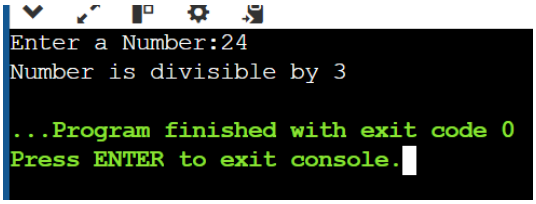


```
  if(0==year%4 || 0==year%400)
{
printf("The year %d is a leap year",year);
  }
else
    printf("The year %d is not a leap year",year);

    return 0;
}
```

4.Write a program if a number is divisible by 3

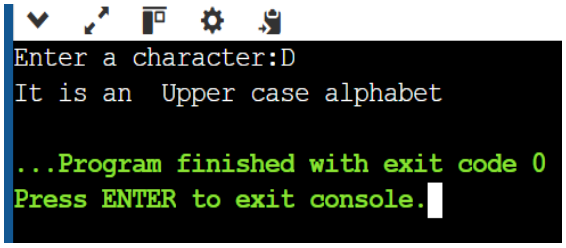
```
#include <stdio.h>

int main()
{
  printf("Enter a Number:");
  Int num;
  scanf("%d",&num);
  if(0==num%3)
      printf("Number is divisible by 3");
  else
  printf("Number is not divisible by 3");

    return 0;
}
```





5.Write a program for uppercase characters

```
#include <stdio.h>

int main()
{
  printf("Enter a character:");
  char ch;
  scanf("%c",&ch);
  if(ch>='A'&& ch<='Z')
      printf("It is an  Upper case alphabet");
  else
  printf("Not an Upper case alphabet");

    return 0;
}
```



6.Write a program for special characters

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

```
int main()
{
  printf("Enter a character:");
  char ch;
  scanf("%c",&ch);
  if(ch>='!'&& ch<='@')
  {
     printf("It is a special character");
  }
  else
  printf("Not a special character");

    return 0;

}
```

Assignment with respect to while loop

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

```
/*Fibonacci series upto given number

inputs:number

operators:+

control statements:While

no. of variables:4

Data types:int

Scope of variables : local*/


 #include <stdio.h>

int main()

{

    int n, first = 0, second = 1, next;


    printf("Enter the number of terms: ");
```

```
    scanf("%d", &n);

    printf("Fibonacci series: ");

    for (int i = 1; i <= n; i++)
    {
        printf("%d ", first);
        next = first + second;
        first = second;
        second = next;
    }
    return 0;
}
```

8. WAP to print factorial of a number.

```
/*Factorial of a number
inputs:number
operators:*,>=,*=
control statements:while
no. of variables:2
Data types:int
Scope of variables : local*/

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

```
    int num,factorial=1;
    printf("Enter a number:");
    scanf("%d",&num);
    while(num >= 1)
    {
        factorial *=num;
        Num –;
}
  printf("Factorial is %d",factorial);
}
```

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

```
/*Prime number
inputs:number
operators:%
control statements:for
no. of variables:3
Data types:int
Scope of variables : local
*/
#include <stdio.h>
int main()
{
    int num,i,flag=0;
        printf("Enter number=");
```

```
    scanf("%d",&num);
        for(i=2;i<num;i++)
    {
        if(num % i == 0)
        {
            flag=1;
        }
    }
    if(flag)
    {
        printf("Number is not prime");
    }
    else
    {
    printf("number is prime");
    }
    return 0;
}
```

10. WAP to print lower case alphabets.

```
/*print lower case alphabets
inputs:none
operators:<=,>=,&&
control statements:while
no. of variables:1
Data types:char
Scope of variables : local*/
```

```
#include <stdio.h>

int main()

{

    char ch;

    ch='a';

    while((ch>='a') && (ch<='z'))

    {

        printf("%c ",ch);

        ch++;

    }

    return 0;

}
```

CLASSWORKS

1. Program to calculate Grades of students

```
//determine grade based on condition
 //inputs:Marks
//operators: >=,<
//control statements: if..else
// no. of variables:1
//Data types:int
//Scope of variables : local

#include <stdio.h>

int main()
{
    int marks;
    printf("Enter marks obtained:");
    scanf("%d",&marks);
    while(marks>0)
    {

    if(marks>=90)
    {
```

```
        printf("GRADE A");
    }
    else if(marks>=80 && marks<90 )
    {
       printf("GRADE B");
    }
    else if(marks>=70 && marks<80 )
    {
       printf("GRADE C");
    }
    else if(marks>=60 && marks<70 )
    {
       printf("GRADE D");
    }
    else
    printf("GRADE F");
    }
    printf("Mark cannot be a -ve number");
}
```

2.WAP to calculate the electricity bill based on the formula mentioned below

Calculations
To calculate your electricity bill, follow these steps:

Watts = (amps) x (volts)

Kilowatt-hours = (watts) x (usage) / 1000.

Cost = (kilowatt-hours) x (electricity rate)

1. Subtract the current meter reading from the previous month's reading to find the energy consumption.

2. Multiply the units consumed by the per-unit charges based on the applicable slabs (e.g., Rs. 4.22 for 1-100 units,
Rs. 5.02 for 101-200 units).

3. Add the fixed charge and energy duty (e.g., Rs. 40 fixed charge and Rs. 0.15 per unit) to the energy charges.

4. The sum of the energy charges, fixed charge, and energy duty gives you the total bill amount.

Example: If you consumed 250 units with the applicable slabs mentioned above, the energy charges would be Rs. 1218.
Adding the fixed charge and energy duty, the total bill amount would be Rs. 1296.

```
//inputs:current meter reading and meter reading of last month
//operators: >=,<
//control statements: if..else
// no. of variables:7
//Data types:float,int
//Scope of variables : local

#include <stdio.h>

int main()
{
    Float amps,volts,usage,rate,watts,kwh;
    int units,current_units,previous_month;
    int fixed_charge=40;
    float total_bill,energy_charge,energy_duty;

    printf("Enter the no. of units consumed the previous month");
    scanf("%d",&previous_month);
    printf("Enter the no. of units consumed current month");
    scanf("%d",&current_units);

    printf(“amps=");
    scanf("%f",&amps);
    printf("volts=");
    scanf("%f",&volts);
    printf("Usage hours=");
    scanf("%f",&usage);
    printf("rate=");
    scanf("%f",&rate);

   watts = amps * volts;
    kwh = (watts * usage_hours) / 1000;
    units=previous_month - current_units;

    if(units <=100)
```

```
   {
      energy_charge=units*4.22;
   }
   else if(units >= 101 && units<=200)
   {
       energy_charge =(100*4.22) +((units - 100)*5.02);
   }
   else
   {
       energy_charge =(100*4.22)+(100*5.02)*((units-200)*6.00);
   }

       energy_duty=units*0.15;

       total_bill=energy_charge+fixed_charge+energy_duty;

 printf("Units consumed from meter: %d units\n", units);
 printf("Energy charges: Rs. %.2f\n", energy_charge);
 printf("Fixed charge: Rs. %.2f\n", fixed_charge);
 printf("Energy duty: Rs. %.2f\n", energy_duty);
printf("Total Bill= %f",total_bill);


}
```

3.Requirements

•In this challenge, you are to create a C program that calculates your weekly pay.

• The program should ask the user to enter the number of hours worked in a week via the keyboard

• The program should display as output the gross pay, the taxes, and the net pay

• The following assumptions should be made:

• Basic pay rate = $12.00/hr

• Overtime (in excess of 40 hours) = time and a half

• Tax rate:

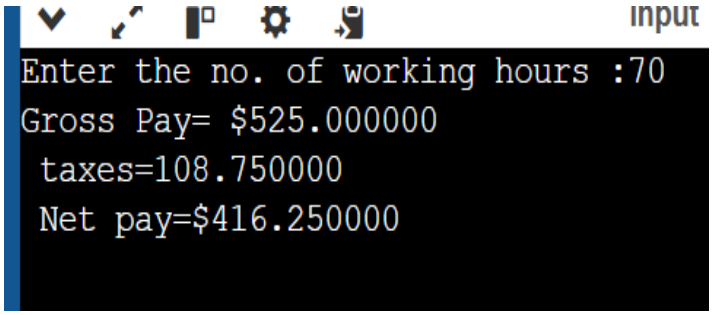
15% of the first $300

•20% of the next $150

•25% of the rest

• You will need to utilize

```
//inputs:no of working hrs
//operators: >=,<
//control statements: if..else
// no. of variables:5
//Data types:float,int
//Scope of variables : local

#include <stdio.h>

int main()
{
   float hours;
   int basic_pay;
   float gross_pay,net_pay,taxes;

   printf("Enter the no. of working hours :");
   scanf("%f",&hours);


   if(hours<=40)
   gross_pay=hours*12.00;
   else
   gross_pay=(40*12.00)+((hours-40)*1.5);

    if(gross_pay<=300)
    taxes=gross_pay*0.15;
    else if (gross_pay<=450)
    taxes=(300*0.15)+((gross_pay-300)*0.20);
    else
```




```
taxes=((300*0.15)+((gross_pay-300)*0.20)+(gross_pay-450)*0.25);

   net_pay=gross_pay-taxes;

   printf("Gross Pay= $%f\n taxes=%f\n Net pay=$%f\n",gross_pay,taxes,net_pay);
}
```

4.Switch case to create calculator

```
//calculator
//inputs:2 operand and operator
//operators: +,-,*,/,%
//control statements: switch
// no. of variables:3
//Data types:int
//Scope of variables : local

#include <stdio.h>
```

```
int main()
{
   int num1,num2;
   char opr;
   printf("Enter the 2 numbers: ");
   scanf("%d %d",&num1,&num2);
   printf("Enter the operation to be performed:");
   scanf(" %c",&opr);

   switch(opr)
   {
      case '+':
      printf("Addition of two numbers= %d",num1+num2);
      break;
      case '-':
      printf("difference of two numbers =%d",num1-num2);
      break;
      case '*':
      printf("product of two numbers =%d",num1*num2);
      break;
      case '/':
      printf("Division =%d",num1/num2);
      break;
      case '%':
      printf("modulus of two numbers %d",num1%num2);
      break;
      default:
      printf("invalid operator");
   }

   return 0;
}
```

5. Print Number of digits

```
//Print no. of digits
//inputs:number
//operators:%,/
//control statements:while
// no. of variables:3
//Data types:int
//Scope of variables : local

#include <stdio.h>
```

```c
int main()
{
    int num;
    printf("Enter a number: ");
    scanf("%d", &num);

    int digits, count = 0;

    while (num != 0)
    {
        digits = num % 10;
        num /= 10;
        count++;
    }

    printf("Number of digits: %d\n", count);

    return 0;
}
```