Day 5 Assigments

1. WAP to check for a valid traingle.

```c
#include<stdio.h>
int main()
{
    int a,b,c;
    printf("enter three sides: ");
    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;
}
```

input

```
enter three sides: 30 60 40
The triangle is valid
```

```
enter three sides: 20 10 40
The triangle is not valid


...Program finished with exit code 0
```

2. WAP to check if a character is an Alphabet.

```c
#include<stdio.h>
int main()
{
    char ch;
    printf("enter the character: ");
    scanf("%c", &ch);
    if(((ch>='A')&&(ch<='Z'))||((ch>='a')&&(ch<='z')))
    {
        printf("The character is an alphabet\n");
    }
    else
    {
        printf("The character is not an alphabet\n");
    }
    return 0;
}
```

input

```
enter the character: h
The character is an alphabet


...Program finished with exit code 0
```

3. WAP to check if a Year is a leap Year.

```c
#include <stdio.h>

int main()
{
    int year;
    printf("enter the year: ");
    scanf("%d",&year);
    if(year%4 ==0)
    {
        printf("%d is a leap year",year);
    }
    else
    {
        printf("%d is not a leap year",year);
    }

    return 0;
}
```

input

```
enter the year: 2016
2016 is a leap year
```

```
enter the year: 2018
2018 is not a leap year

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

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

```c
#include <stdio.h>

int main()
{
    int num;
    printf("enter the number: ");
    scanf("%d",&num);
    if(num%3 ==0)
    {
        printf("%d is divisible by 3",num);
    }
    else
    {
        printf("%d is not divisible by 3",num);
    }

    return 0;
}
```

input

```
enter the number: 36
36 is divisible by 3
```

```
enter the number: 23
23 is not divisible by 3

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

5. WAP to check for Uppercase Characters.

```c
#include <stdio.h>

int main()
{
    char ch;
    printf("Enter a character: ");
    scanf("%c", &ch);
    if (ch >= 'A' && ch <= 'Z')
    {
        printf("'%c' is an uppercase letter.\n", ch);
    }
    else
    {
        printf(" '%c' is not an uppercase letter.\n", ch);
    }

    return 0;
}

```

```
Enter a character: f
 'f' is not an uppercase letter.
```

```
Enter a character: D
'D' is an uppercase letter.


...Program finished with exit code 0
```

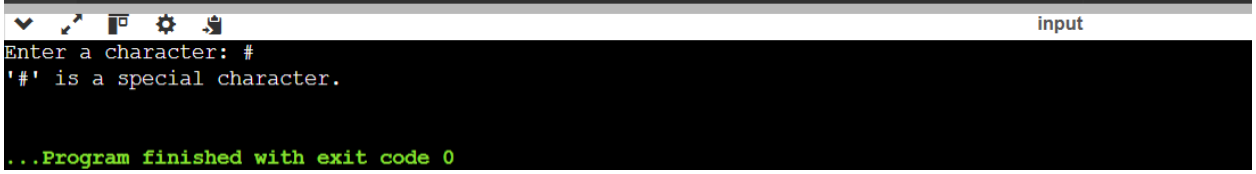
6. WAP to check for Special character.

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

    return 0;
}

```



7. WAP to determine largest of 3 numbers

```c
#include <stdio.h>

int main()
{
    int a,b,c;
    printf("Enter three numbers: ");
    scanf("%d %d %d", &a, &b, &c);
    if (a >= b && a >= c)
    {
        printf("The largest number is %d\n",a);
    }
    else if (b >= a && b >= c)
    {
        printf("The largest number is %d\n",b);
    }
    else
    {
        printf("The largest number is %d\n",c);
    }

    return 0;
}
```

```
Enter three numbers: 18 12 23
The largest number is 23


...Program finished with exit code 0
```

8. 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.

```c
#include <stdio.h>
int main()
{
    int previousReading, currentReading, unitsConsumed;
    float fixedCharge = 40.0, energyDuty = 0.15, energyCharges, totalBill;
    float rate1 = 4.22;
    float rate2 = 5.02;
    float rate3 = 6.00;
    printf("Enter the previous month's meter reading: ");
    scanf("%d", &previousReading);
    printf("Enter the current month's meter reading: ");
    scanf("%d", &currentReading);
    unitsConsumed = currentReading - previousReading;
    if (unitsConsumed <= 100)
    {
        energyCharges = unitsConsumed * rate1;
    }
    else if (unitsConsumed <= 200)
    {
        energyCharges = (100 * rate1) + ((unitsConsumed - 100) * rate2);
    }
    else
    {
        energyCharges = (100 * rate1) + (100 * rate2) + ((unitsConsumed - 200) * rate3);
    }
    float energyDutyCharge = unitsConsumed * energyDuty;
    totalBill = energyCharges + fixedCharge + energyDutyCharge;
    printf("Electricity Bill\n");
    printf("Units Consumed: %d\n", unitsConsumed);
    printf("Energy Charges: Rs. %.2f\n", energyCharges);
    printf("Fixed Charge: Rs. %.2f\n", fixedCharge);
    printf("Energy Duty: Rs. %.2f\n", energyDutyCharge);
    printf("Total Bill Amount: Rs. %.2f\n", totalBill);
    return 0;
}
```

```
Enter the previous month's meter reading: 24
Enter the current month's meter reading: 28

Electricity Bill
Units Consumed: 4
Energy Charges: Rs. 16.88
Fixed Charge: Rs. 40.00
Energy Duty: Rs. 0.60
Total Bill Amount: Rs. 57.48


...Program finished with exit code 0
```

9. 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/hrs

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 if/else statements

```c
#include <stdio.h>
int main()
{
    float hoursWorked, basicPayRate = 12.0, grossPay, netPay, taxes;
    float overtimeRate = 1.5 * basicPayRate;
    printf("Enter the number of hours worked in a week: ");
    scanf("%f", &hoursWorked);
    if (hoursWorked <= 40)
    {
        grossPay = hoursWorked * basicPayRate;
    }
    else
    {
        grossPay = (40 * basicPayRate) + ((hoursWorked - 40) * overtimeRate);
    }
    if (grossPay <= 300)
    {
        taxes = 0.15 * grossPay;
    }
    else if (grossPay <= 450)
    {
        taxes = (0.15 * 300) + (0.20 * (grossPay - 300));
    }
    else
    {
        taxes = (0.15 * 300) + (0.20 * 150) + (0.25 * (grossPay - 450));
    }
    netPay = grossPay - taxes;
    printf("Weekly Pay Summary\n");
    printf("Hours Worked: %.2f\n", hoursWorked);
    printf("Gross Pay: $%.2f\n", grossPay);
    printf("Taxes: $%.2f\n", taxes);
    printf("Net Pay: $%.2f\n", netPay);
    return 0;
}
```

```
Enter the number of hours worked in a week: 28

Weekly Pay Summary
Hours Worked: 28.00
Gross Pay: $336.00
Taxes: $52.20
Net Pay: $283.80


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

10. WAP using switch case for calculator

when you press + = Addition of two numbers
when you press - = Substarction of two numbers
when you press * = Multiplication of two numbers
when you press / = Division of two numbers
when you press % = Modulo operation should happen

```c
#include <stdio.h>
int main()
{
    int a,b,res;
    char ch;
    printf("enter first value: ");
    scanf("%d",&a);
    printf("enter second value: ");
    scanf("%d",&b);
    printf("enter operations: +,-,*,/,%%: ");
    scanf(" %c",&ch);
    switch(ch)
    {
        case '+': res=a+b;
        break;
        case '-': res=a-b;
        break;
        case '*': res=a*b;
        break;
        case '/': res=a/b;
        break;
        case '%': res=a%b;
        break;
        default: printf("enter valid input");
    }
    printf("\n %d",res);
    return 0;
}
```

```
enter first value: 5
enter second value: 7
enter operations: +,-,*,/,%: *

 35
```

Assignment with respect to while loop

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

```c
#include <stdio.h>

int main()
{
    int n, a = 0, b = 1, c;
    printf("Enter the limit: ");
    scanf("%d", &n);
    printf("Fibonacci Series up to %d: ", n);
    while (a <= n)
    {
        printf("%d ", a);
        c = a + b;
        a = b;
        b = c;
    }

    return 0;
}

```

```
Enter the limit: 20
Fibonacci Series up to 20: 0 1 1 2 3 5 8 13

...Program finished with exit code 0
```

12. WAP to print factorial of a number.

```c
#include <stdio.h>

int main()
{
    int num, f = 1, i = 1;
    printf("Enter a number: ");
    scanf("%d", &num);
    while (i <= num)
    {
        f=f*i;
        i++;
    }
    printf("Factorial of %d is %d\n", num, f);
    return 0;
}

```

```
Enter a number: 6
Factorial of 6 is 720


...Program finished with exit code 0
```

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

```c
int main()
{
    int num, i = 2, flag = 1;
    printf("Enter a number: ");
    scanf("%d", &num);
    if (num <= 1)
    {
        printf("%d is not a prime number.\n", num);
    }
    while (i <= num / 2)
    {
        if (num % i == 0)
        {
            flag = 0;
            break;
        }
        i++;
    }
    if (flag==1)
        printf("%d is a prime number.\n", num);
    else
        printf("%d is not a prime number.\n", num);

    return 0;
}
```

```
Enter a number: 13
13 is a prime number.


...Program finished with exit code 0
```

14. WAP to print lower case alphabets.

```c
#include <stdio.h>

int main()
{
    char ch = 'a';
    printf("Lowercase alphabets: ");
    while (ch <= 'z')
    {
        printf("%c ", ch);
        ch++;
    }

    return 0;
}
```

input

```
Lowercase alphabets: 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

...Program finished with exit code 0
```