

## Day 5

### 1. WAP to check for a valid triangle.

```
#include <stdio.h>

int main()
{
    int ab, bc, ca;
    printf("Enter the three sides of triangle: ");
    scanf("%d %d %d", &ab, &bc, &ca);

    if( ab+bc <= ca && bc+ca <= ab && ca+ab <= bc)
        printf("The triangle is invalid\n");
    else
        printf("The triangle is valid\n");
    return 0;
}
```

### 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("The entered character is an alphabet\n");
    else
        printf("The entered character is not an alphabet\n");

    return 0;
}
```

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

```
#include <stdio.h>

int main()
{
    int year;
    printf("Enter an year: ");
    scanf("%d", &year);

    if ((year % 4 == 0 && year % 100 != 0) || (year % 400 == 0))
        printf("%d is a leap year\n", year);
    else
```

```

    printf("%d is not a leap year\n", year);
    return 0;
}

```

#### 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)
        printf("%d is not divisible by 3", num);
    else
        printf("%d is divisible by 3", num);
    return 0;
}

```

#### 5. WAP to check for Uppercase Characters.

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

```

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

    if(ch>= 'A' && ch<= 'Z')
        printf("%c is in upper case\n",ch);
    else
        printf("%c is in lower case\n",ch);
}

```

#### 6. WAP to check for 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') )
        printf("%c is not a special character\n",ch);
    else
        printf("%c is a special character\n",ch);
    return 0;
}

```

7. Write a program to determine the largest of 3 numbers.

```
/*
Inputs:num1, num2, num3
Comparison: >=
Control statements: if...else
How many variables: 3
Datatype of the variable: int
Preffered Scope of the variable: local
*/
#include <stdio.h>

int main()
{
    int num1, num2, num3;

    printf("Enter three numbers: ");
    scanf("%d %d %d", &num1, &num2, &num3);

    if (num1 >= num2 && num1 >= num3)
    {
        printf("The largest number is: %d\n", num1);
    }
    else if (num2 >= num1 && num2 >= num3)
    {
        printf("The largest number is: %d\n", num2);
    }
    else
    {
        printf("The largest number is: %d\n", num3);
    }

    return 0;
}
```

8.WAP to determine the grade of a student based on following

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 statements: if...else
How many variables: 1
Datatype of the variable: int
Preffered Scope of the variable: local
```

```

*/

#include <stdio.h>

int main()
{
    int marks;
    printf("Enter the marks: ");
    scanf("%d", &marks);

    if(marks < 0)
    {
        printf("Negative marking not allowed\n");
    }
    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\n");
    }
}

```

9. 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. 8.15 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:marks
Comparison: >=
Control statements: if...else
How many variables: 1
Datatype of the variable: int
Preffered Scope of the variable: local
*/

#include <stdio.h>

int main()
{
    int previous_reading, current_reading, units_consumed;
    float charges, total_bill, fixedCharge=40.0, energy_duty=8.15;
    printf("Enter the previous_reading: ");
    scanf("%d", &previous_reading);
    printf("Enter the current_reading: ");
    scanf("%d", &current_reading);

    units_consumed = previous_reading - current_reading;

    if (units_consumed <= 100)
    {
        charges = units_consumed * 4.22;
    }
    else if (units_consumed <= 200)
    {
        charges = (100 * 4.22) + ((units_consumed - 100) * 5.02);
    }
    else
    {
        charges = (100 * 4.22) + (100 * 5.02);
    }

    total_bill =charges + fixedCharge + (energy_duty*units_consumed);
    printf("The total bill amount is %.2f\n", total_bill);
}
```

10. 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 if/else statements

```
#include <stdio.h>
int main()
{
    float hr, gross_pay, taxes, net_pay;
    int regular_hr=40;
    float pay_rate=12.0;
    float overtime_rate = 6.0;

    printf("Enter the number of hours worked in a week: ");
    scanf("%f", &hr);

    if(hr <= regular_hr)
    {
        gross_pay=hr*pay_rate;
    }
    else
    {
        gross_pay = hr * pay_rate + (hr - regular_hr) * overtime_rate;
    }

    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) + (150 * 0.20) + ((gross_pay - 450) * 0.25);
    }

    net_pay = gross_pay - taxes;

    printf("Gross Pay: $%.2f\n", gross_pay);
    printf("Taxes: $%.2f\n", taxes);
    printf("Net Pay: $%.2f\n", net_pay);
}
```

### 11. WAP using switch case for calculator

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

```
#include <stdio.h>

int main()
{
    int num1, num2;
    char op;
    printf("Enter the numbers: ");
    scanf("%d %d",&num1, &num2 );
    getchar();
    printf("Enter the operator: ");
    scanf("%c", &op);
    switch(op)
    {
        case '+':
        {
            printf("%d %c %d = %d", num1, op, num2, num1+num2);
        }
        break;
        case '-':
        {
            printf("%d %c %d = %d", num1, op, num2, num1-num2);
        }
        break;
        case '*':
        {
            printf("%d %c %d = %d", num1, op, num2, num1*num2);
        }
        break;
```

```

case '/':
{
printf("%d %c %d = %d", num1, op, num2, num1/num2);
}
break;
case '%':
{
printf("%d %c %d = %d", num1, op, num2, num1%num2);
}
break;
default:
printf("Invalid opearator\n");
}

}

```

12. WAP to print all the even number up to the given number.

```

#include <stdio.h>

int main()
{
    int limit;
    printf("Enter a limit: ");
    scanf("%d", &limit);
    for(int i=2; i<=limit; i++)
    {
        if(i%2 == 0)
        {
            printf("%d ", i);
        }
    }
}

```

13. WAP to reverse a number

```

#include <stdio.h>

```



```

int main()
{
    int num;
    printf("Enter a number: ");
    scanf("%d", &num);
    int rem=0,rev=0;

    while( num != 0)
    {
        rem=num%10;
        rev=rev*10+rem;
        num=num/10;
    }
    printf("The reverse is %d", rev);
}

```

13. WAP to calculate the number of digits in a number.

```

#include <stdio.h>

int main()
{
    int num, count=0;
    printf("Enter a number: ");
    scanf("%d", &num);

    while( num != 0)
    {
        count++;
        num=num/10;
    }
    printf("The no of digits is %d", count);
}

```

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

```
#include <stdio.h>

int main()
{
    int num, first=0, second=1, next=0;
    printf("Enter a number: ");
    scanf("%d", &num);

    while(next <= num)
    {
        printf("%d ", next);
        first=second;
        second=next;
        next=first+second;
    }
    return 0;
}
```

15.. WAP to print factorial of a number.

```
#include <stdio.h>

int main()
{
    int num, fact=1;
    printf("Enter a number: ");
    scanf("%d", &num);
    while(num != 0)
    {
        fact*=num;
        num--;
    }
    printf("%d", fact);
    return 0;
}
```

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

```
#include <stdio.h>

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

17. WAP to print lower case alphabets.

```
#include <stdio.h>

int main()
{
    int i=0;
    char str[50];
    printf("Enter a string: ");
    scanf("%s",str);
    printf("The lower case characters are: ");
    while(str[i])
    {
        if(str[i] >= 'a' && str[i] <= 'z')
            printf("%c ", str[i]);
        i++;
    }
}
```

```
}  
return 0;  
}
```