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Assignment week 3

## Assignment

Deadline: **1 week**

CELSIUS TO FAHRENHEIT

$$T_F = \left(\frac{9}{5}T_C\right) + 32$$

FAHRENHEIT TO CELSIUS

$$T_C = \frac{5}{9}\left(T_F - 32\right)$$

### Temperature conversion program

Ex1- Write a C program to display a menu for temperature conversion.

**Menu:**

**1- Converting temperature in Celsius to Farenheit**

**2- Converting temperature in Farenheit to Celsius**


- When a user input number 1, ask for a temperature in Celsius then write a formula in order to convert it into Farenheit. Display the result on screen.
- When a user input number 2, ask for a temperature in Celsius then write a formula in order to convert it into Farenheit. Display the result on screen.

Code:

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

    int number;
    printf("input number 1/2:");
    scanf("%i", &number);

    if(number==1){

        float tem_c;
        printf("Enter temperature in celcius:");
        scanf("%f", &tem_c);

        float tem_f=(9*tem_c/5)+32;

        printf("temperature in farenheit:%f", tem_f);

    }
    else{

        float temf;
        printf("Enter temperature in farenheit:");
        scanf("%f", &temf);

        float temc=(temf-32)*5/9.0;

        printf("temperature in celcius is:%f", temc);

    }
```

Result (1):

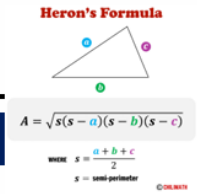
```
input number 1/2:1
Enter temperature in celcius:35
temperature in farenheit:95.000000
PS C:\Users\Vipha\OneDrive\Documents\I2 2024-2025\S
DP1_Cour> ^C
```

Result (2):

```
input number 1/2:2
Enter temperature in farenheit:95
temperature in celcius is:35.000000
PS C:\Users\Vipha\OneDrive\Documents\I2 2024-2025\S
DP1_Cour>
```

## Assignment

**Deadline: 1 week**




### Program to compute area of shape

Ex2- Write a C program to display a menu for computing area as follows:

**Menu:**

**1- Computer area of a triangle when knowing the side a, b and c.**

**2- Find area of a circle when knowing the radius.**

**3- Calculate the surface of a rectangle with a given width and height.**

- When a user inputs number 1, ask users for a, b and c. Then compute the survey of a training using Heron formula. Display the result on screen.
- When a user inputs number 2, ask a user to input the radius. Find the area of the circle and display.
- When a user inputs number 3, ask a user to input width and height. Calculate and display the surface of this rectangle.

Code:

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

    int number;
    printf("input number 1/2/3:");
    scanf("%i", &number);

```

```c
    if(number==1){

        float a,b,c;
        printf("Enter a:"); scanf("%f", &a);
        printf("Enter b:"); scanf("%f", &b);
        printf("Enter c:"); scanf("%f", &c);

        float side=(a+b+c)/2.0;
        float area=sqrt(side*(side-a)*(side-b)*(side-c))*1.0;

        printf("Area of triangle is %f", area);

    }
    else if(number==2){

        float r;
        printf("Input radius:"); scanf("%f", &r);

        float circle=pow(r,2)*3.14;

        printf("Area of circle is %f", circle);

    }
    else{

        float wide, height;
        printf("Input value of wide:"); scanf("%f", &wide);
        printf("Input value of height:"); scanf("%f", &height);

        float surface=wide*height*1.0;
        printf("surface of rectangle is %f", surface);

    }
}
```

Result (1):

```
input number 1/2/3:1
Enter a:6
Enter b:4
Enter c:9
Area of triangle is 9.562296
PS C:\Users\Vipha\OneDrive\Documents\I2 2024-2025\S
DP1_Cour>
```

Result (2):

```
input number 1/2/3:2
Input radius:5
Area of circle is 78.500000
PS C:\Users\Vipha\OneDrive\Documents\I2 2024-2025\S
DP1_Cour>
```

Result (3):

```
input number 1/2/3:3
Input value of wide:5
Input value of height:9
surface of rectangle is 45.000000
PS C:\Users\Vipha\OneDrive\Documents\I2 2024-2025\S
DP1_Cour>
```

## Assignment

Deadline: **1 week**

A C program to find maximum numbers between 8 input numbers

**Ex3**: Ask a user for 8 input numbers. Display the maximum number among them.

```
Input: 8 10 6 99 34 65 11 29

Output:
 The max number is: 99
```

Code:

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

    int a,b,c,d,e,f,g,h;
    printf("Input first value:"); scanf("%i", &a);
    printf("Input second value:"); scanf("%i", &b);
    printf("Input third value:"); scanf("%i", &c);
    printf("Input fourth value:"); scanf("%i", &d);
    printf("Input fifth value:"); scanf("%i", &e);
    printf("Input sixth value:"); scanf("%i", &f);
    printf("Input seventh value:"); scanf("%i", &g);
    printf("Input eighth value:"); scanf("%i", &h);

    if(a>(b,c,d,e,f,g,h)){

        printf("Maximium number is %i", a);
    }
```

```
    else if(b>(a,c,d,e,f,g,h)){

        printf("Maximium number is %i", b);
    }
    else if(c>(b,a,d,e,f,g,h)){

        printf("Maximium number is %i", c);
    }
    else if(d>(b,c,a,e,f,g,h)){
        printf("Maximium number is %i", d);
    }
    else if(e>(b,c,d,a,f,g,h)){
        printf("Maximium number is %i", e);
    }
    else if(f>(b,c,d,e,a,g,h)){
        printf("Maximium number is %i", f);
    }
    else if(g>(b,c,d,e,f,a,h)){
        printf("Maximium number is %i", g);
    }
    else if(h>(b,c,d,e,f,g,a)){
        printf("Maximium number is %i", h);
    }


}
```

Result:

```
Input first value:8
Input second value:10
Input third value:6
Input fourth value:99
Input fifth value:34
Input sixth value:65
Input seventh value:11
Input eighth value:29
Maximium number is 99
PS C:\Users\Vipha\OneDrive\Documents\I2 2024-2025\SDP1_Cour>
```

## Exercises

4. Write a C program to find the minimum number between 7 numbers entered by a user.

Code:

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

    int a,b,c,d,e,f,g;
    printf("Input first value:"); scanf("%i", &a);
    printf("Input second value:"); scanf("%i", &b);
    printf("Input third value:"); scanf("%i", &c);
    printf("Input fourth value:"); scanf("%i", &d);
    printf("Input fifth value:"); scanf("%i", &e);
    printf("Input sixth value:"); scanf("%i", &f);
    printf("Input seventh value:"); scanf("%i", &g);

    if(a<(b,c,d,e,f,g)){
        printf("Minimium number is %i", a);
    }
    else if(b<(a,c,d,e,f,g)){
        printf("Minimium number is %i", b);
    }
    else if(c<(b,a,d,e,f,g)){
        printf("Minimium number is %i", c);
    }
    else if(d<(b,c,a,e,f,g)){
        printf("Minimium number is %i", d);
    }
    else if(e<(b,c,d,a,f,g)){
        printf("Minimium number is %i", e);
    }
    else if(f<(b,c,d,e,a,g)){
        printf("Minimium number is %i", f);
    }
    else if(g<(b,c,d,e,f,a)){
        printf("Minimium number is %i", g);
    }

}
```

Result:

```
Input first value:1
Input second value:2
Input third value:3
Input fourth value:4
Input fifth value:5
Input sixth value:6
Input seventh value:7
Minimium number is 1
PS C:\Users\Vipha\OneDrive\Documents\I2 2024-2025\SDP1_Cour>
```

5. Write a C program to solve the quadratic equation $ax^2+bx+c=0$. Ask a user to inputs the coefficient a, b and c then display the roots.

Code:

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

    printf("solving Equadratic equation\n");
    float a,b,c;
    printf("Input coefficient a:"); scanf("%f", &a);
    printf("Input coefficient b:"); scanf("%f", &b);
    printf("Input coefficient c:"); scanf("%f", &c);

    float delta=pow(b,2)-4*a*c;
    if(delta==0){
        float X1=-b/2.0*a;
        float X2=-b/2.0*a;
        printf("The roots of the equation are X1=%.2f and X2=%.2f", X1, X2);
    }
    else if(delta>0){
        float X1=(-b-sqrt(delta))/2.0*a;
        float X2=(-b+sqrt(delta))/2.0*a;
        printf("The roots of the equation are X1=%.2f and X2=%.2f", X1, X2);
    }
    else{
        printf("The roots of the equation aren't the real number.");
    }
}
```

Result:

```
solving Equadratic equation
Input coefficient a:1
Input coefficient b:2
Input coefficient c:1
The roots of the equation are X1=-1.00 and X2=-1.00
PS C:\Users\Vipha\OneDrive\Documents\I2 2024-2025\SDP1_Cour>
```

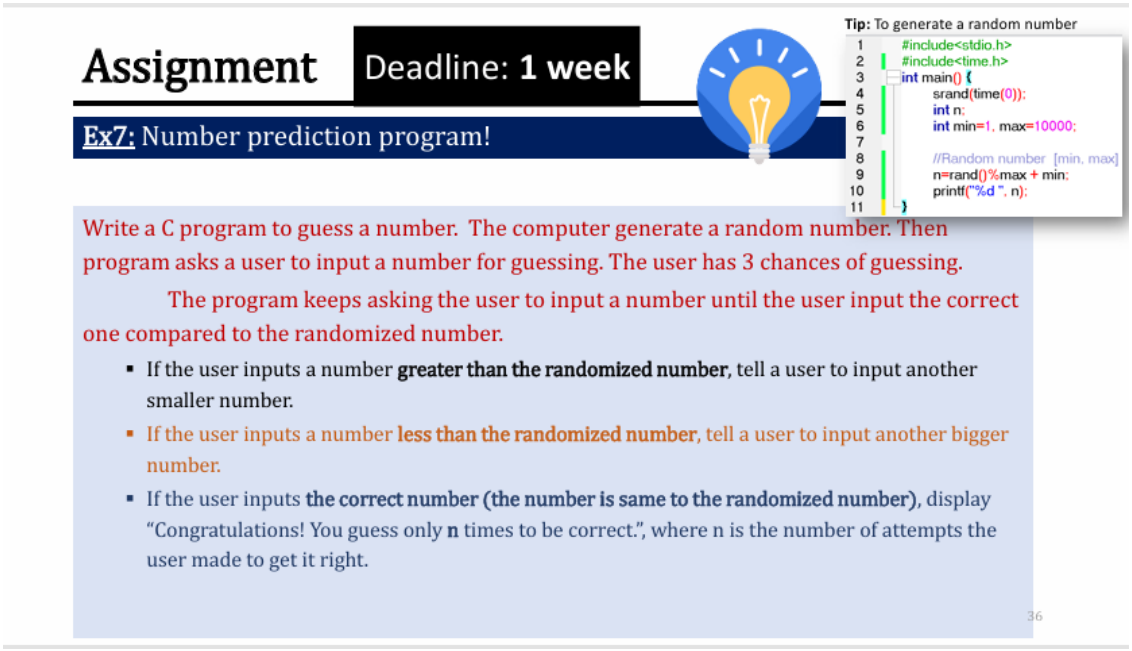
6. Write a C program to ask a user for year, month, and day (3 integer variables). Then tell if it is a valid date.

Code:

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

    int day, mon, year;
    printf("Enter day:"); scanf("%i", &day);
    printf("Enter month:"); scanf("%i", &mon);
    printf("Enter year:"); scanf("%i", &year);

    if(year>=1 && year<=2024){
        if(mon==1 || mon==3 || mon==5 || mon==7 || mon==8 || mon==10 || mon==12){
            if(day>=1 && day<=31){
                printf("The date is valid, BRAVO!!");
            }
            else{
                printf("The date is invalid");
            }
        }
        else if(mon==4 || mon==6 || mon==9 || mon==11){
            if(day>=1 && day<=30){
                printf("The date is valid, BRAVO!!");
            }
            else{
                printf("The date is invalid");
            }
        }
        else if(mon==2){
            if(year%4==0){
                if(day>=1 && day<=29){
                    printf("The date is valid, BRAVO!!");
                }
                else{
                    printf("The date is invalid");
                }
            }
            else{
                if(day>=1 && day<=28){
                    printf("The date is valid, BRAVO!!");
                }
                else{
                    printf("The date is invalid");
                }
            }
        }

    }
    else{
        printf("Invalid date");
    }
}
```

Result:

```
Enter day:01
Enter month:01
Enter year:2024
The date is valid, BRAVO!!
PS C:\Users\Vipha\OneDrive\Documents\I2 2024-2025
\SDP1_Cour>
```



## Assignment

Deadline: **1 week**

**Ex7:** Number prediction program!

**Tip:** To generate a random number

```c
#include<stdio.h>
#include<time.h>
int main() {
    srand(time(0));
    int n;
    int min=1, max=10000;

    //Random number  [min, max]
    n=rand()%max + min;
    printf("%d ", n);
}
```

Write a C program to guess a number. The computer generate a random number. Then program asks a user to input a number for guessing. The user has 3 chances of guessing.

The program keeps asking the user to input a number until the user input the correct one compared to the randomized number.

- If the user inputs a number **greater than the randomized number**, tell a user to input another smaller number.
- If the user inputs a number **less than the randomized number**, tell a user to input another bigger number.
- If the user inputs **the correct number (the number is same to the randomized number)**, display "Congratulations! You guess only **n** times to be correct.", where n is the number of attempts the user made to get it right.

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Code:

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

    srand(time(0));
    int n;
    int min=1, max=100;

    n=rand()%max+min;
    //part1
    int number;
    int time=0;
```

```
    do{
        printf("Enter your guessing number:"); scanf("%i", &number);
        time=time+1;
        if(number>n){
            printf("your predicted number is too big.\n");
        }
        else if(number<n){
            printf("your predicted number is too small.\n");
        }else{
            printf("you got it.\n");
            printf("you're guessing %i", time);
        }
    }while(number !=n);

}
```

Result:

```
Enter your guessing number:50
your predicted number is too big.
Enter your guessing number:40
your predicted number is too big.
Enter your guessing number:30
your predicted number is too big.
Enter your guessing number:20
your predicted number is too small.
Enter your guessing number:25
your predicted number is too big.
Enter your guessing number:22
you got it.
you're guessing 6
PS C:\Users\Vipha\OneDrive\Documents\I2 2024-2025\SDP1_TP3>
```