LABORATORY 1_12

while and do – while statements

Homework 1_12

Problem 1.Copy and execute the following program.

```
Input the following data : ore=1, min=6, sec=8.
: ore=9, min=6, sec=8.
```

Explain its "strange" behavior and find the remedy.

Run the program using the Step over command, insert in the Watch window the expressions 3600*ore, 60*min, sec.

```
#include <stdio.h>
void main(void)
{
    int ore,min,sec,t;
    printf("Introduceti timpul in ore, minute si secunde ");
    if (scanf("%d%d%d",&ore,&min,&sec)!=3)
        printf("Date incorecte");
    else
    {
        t=ore*3600+min*60+sec;
        printf("%d ore %d minute %d secunde = %d secunde", ore,min,sec,t);
    }
}
```

Problem 2. Calculate, for any value n, read from the console, the sum and product of the first n natural numbers:

```
a. using WHILE ;b. using DO WHILE.
```

Execute the program step by step using also the Watch window appropriately.

Problem 3. Calculate, for any value n, read from the console, the sum of its digits. The program asks for continuing its execution. When the users answers to the question "Do you which to continue?(Y/N)" with n or N the execution ends.

Problem 4. Knowing that the series associated to cos(x) is

 $\cos(x)=1 - x^{*}x/2! + x^{*}x^{*}x^{*}x/4! - x^{*}x^{*}x^{*}x^{*}x/6! + \dots$

calculate the approximate value of cos(x), for a given x, read from the console, the error being less than a specified value epsilon read from the console.

HINT: The error is less than epsilon when the absolute value of the term which will be added to the sum is less than epsilon. Compare the result with the value provided by the library function cos.

Problem 5. Knowing that the series which can approximate the number PI is:

calculate the approximate value of PI, the error being less than a specified value epsilon read from the console .

HINT: The error is less than epsilon when the absolute value of the term which will be added to the sum is less than epsilon. The recommended values for epsilon are: 1e-2, 1e-3, 1e-4. Compare the result with PI=3.14159265358979.

Problem 6. Write a program that, for a given integer n (≤ 10) read from the console, displays its transcription using the roman notation (find a solution which can be easily generalized for any n).