NAME:

SUNDAY WINNER CHIGOZIRIM

MATRIC:

18/ENG05/057

COURSE:

STRUCTURED PROGRAMMING

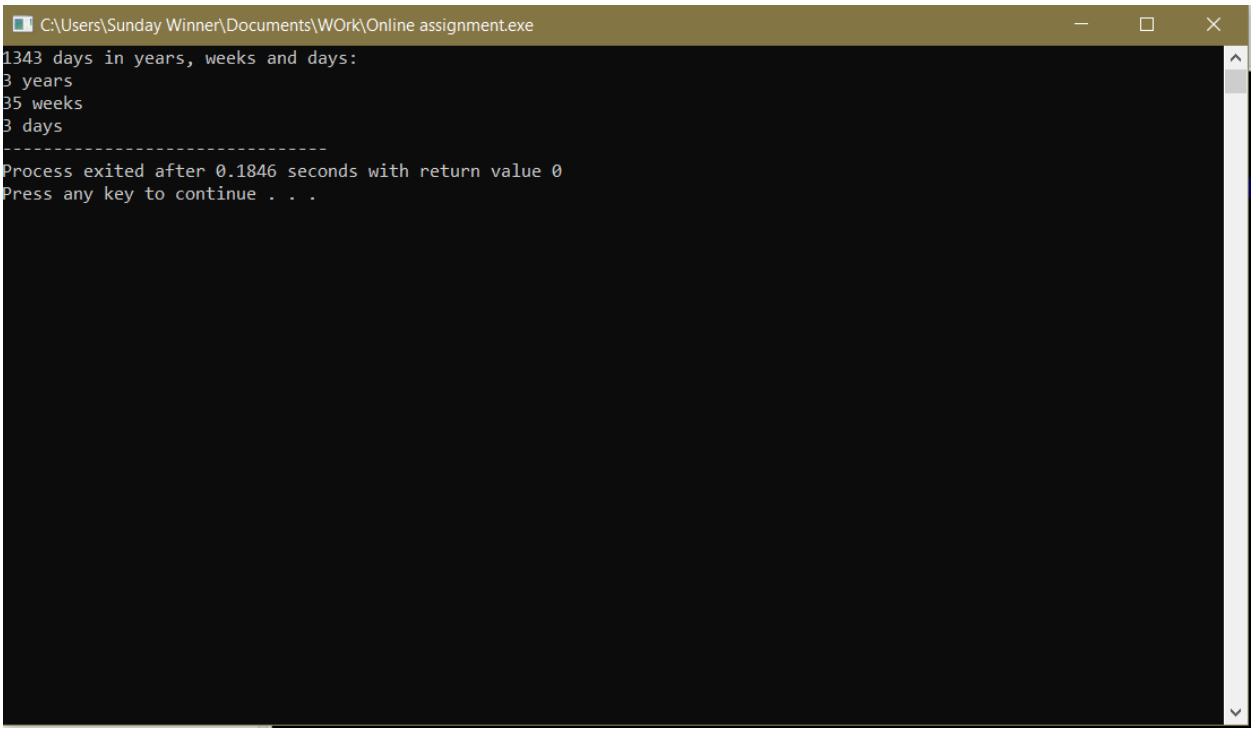
DEPT:

MECHATRONICS ENGINEERING

SOLUTION:

1. **Write a C program to convert 1343 days into years, weeks and days (Note: Ignore leap year).**

```c
#include <stdio.h>
int main()
{
    int a = 1343;
    int b;
    int c;
    int d;
    int e;

    printf ("1343 days in years, weeks and days: \n");
    b = 1343/365;
    printf ("%d years\n", b);
    c = 1343%365;
    d = c/7;
    printf ("%d weeks\n", d);
    e = c%7;
    printf ("%d days", e);
}
```



2. **Write a C program to calculate the distance between the two points. Note: x1, y1, x2, y2 are all double values.**
   Formula:

$$\sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

```c
#include <stdio.h>
#include <math.h>
#include <stdlib.h>
int main()
{
    double x1, x2;
    double y1, y2;
    double distance;
    double a;

    printf("Input x1: ");
    scanf("%f", &x1);

    printf("Input x1: ");
    scanf("%f", &x2);

    printf("Input x1: ");
    scanf("%f", &y1);

    printf("Input x1: ");
    scanf("%f", &y2);

    a = ((x2 - x1),2 + (y2 - y1),2);
    distance = sqrt (a);

    printf("Distance between the given points is: %f", distance);
}
```

```
C:\Users\Sunday Winner\Documents\WOrk\ONline assingment 2.exe
Input x1: 2
Input x1: 3
Input x1: 4
Input x1: 5
Distance between the given points is: 1.414214
--------------------------------
Process exited after 4.82 seconds with return value 0
Press any key to continue . . .
```

3. **Write a C program that reads three floating values and check if it is possible to make a triangle with them. Also, calculate the perimeter of the triangle if the said values are valid.**

```c
#include <stdio.h>
#include <stdlib.h>
#include <math.h>
int main()
{
    float a,b,c;
    float perimeter;

    printf("Input the three values: \n");
    scanf("%f%f%f", &a, &b, &c);


    if ((a+b > c) && (a+c > b) && (b+c > a))
    {
        printf("A triangle can be formed");
    }

    else
    {
        ("A triangle cannot be formed");
    }
    perimeter = a+b+c;
    printf("The perimeter is: %f", perimeter);
}
```

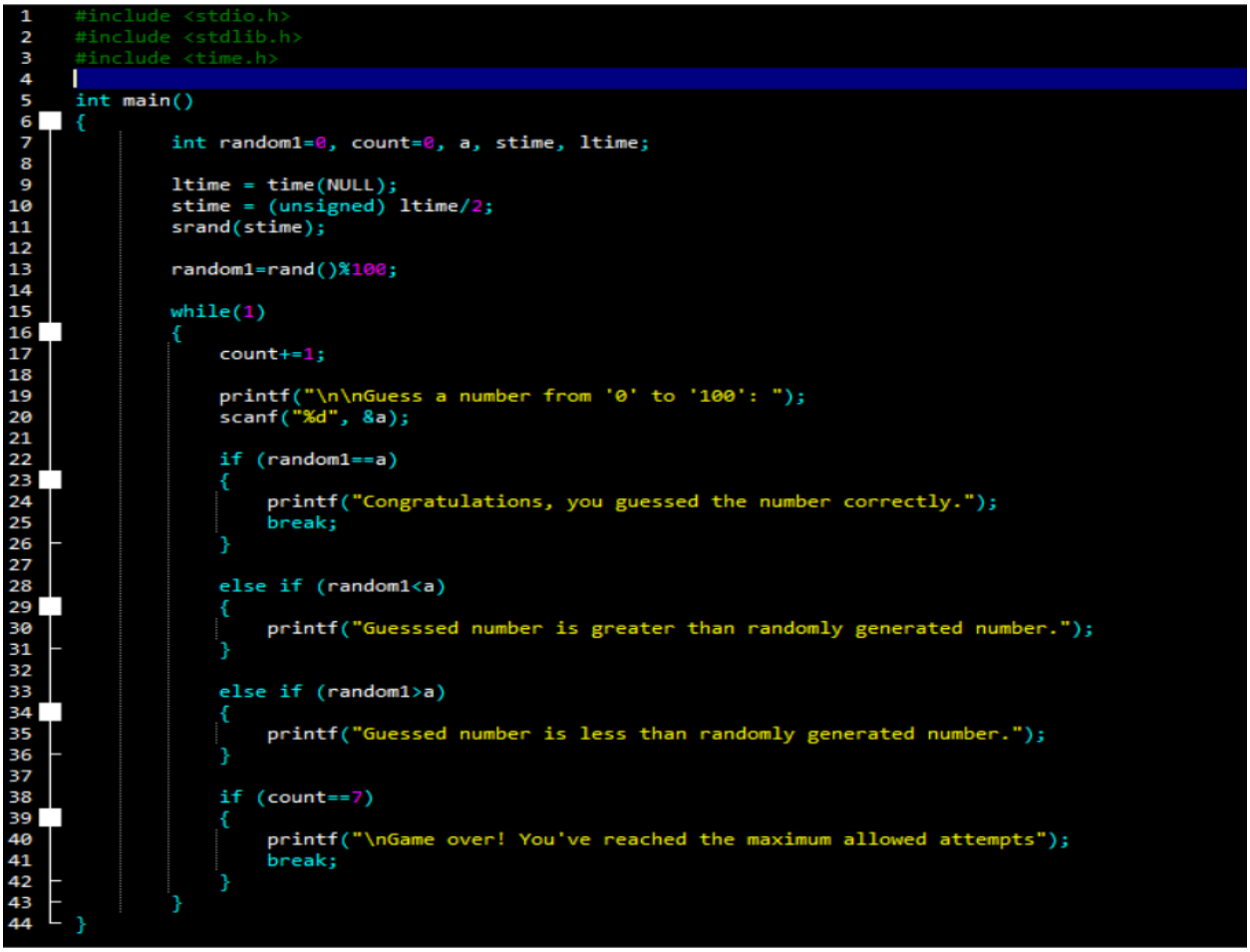
```
C:\Users\Sunday Winner\Documents\WOrk\Online assignment3.exe
Input the three values:
7
3
5
A triangle can be formed
The perimeter is: 15.000000
--------------------------------
Process exited after 2.972 seconds with return value 0
Press any key to continue . . .
```

4. Write a C program to read age of 20 people and count total Baby age, School age and Adult age.
   Hint:
   a) Still a baby- age 0 to 4
   b) Attending school - age 5 to 17
   c) Adult life-age 18 & over
   [Using while loop]

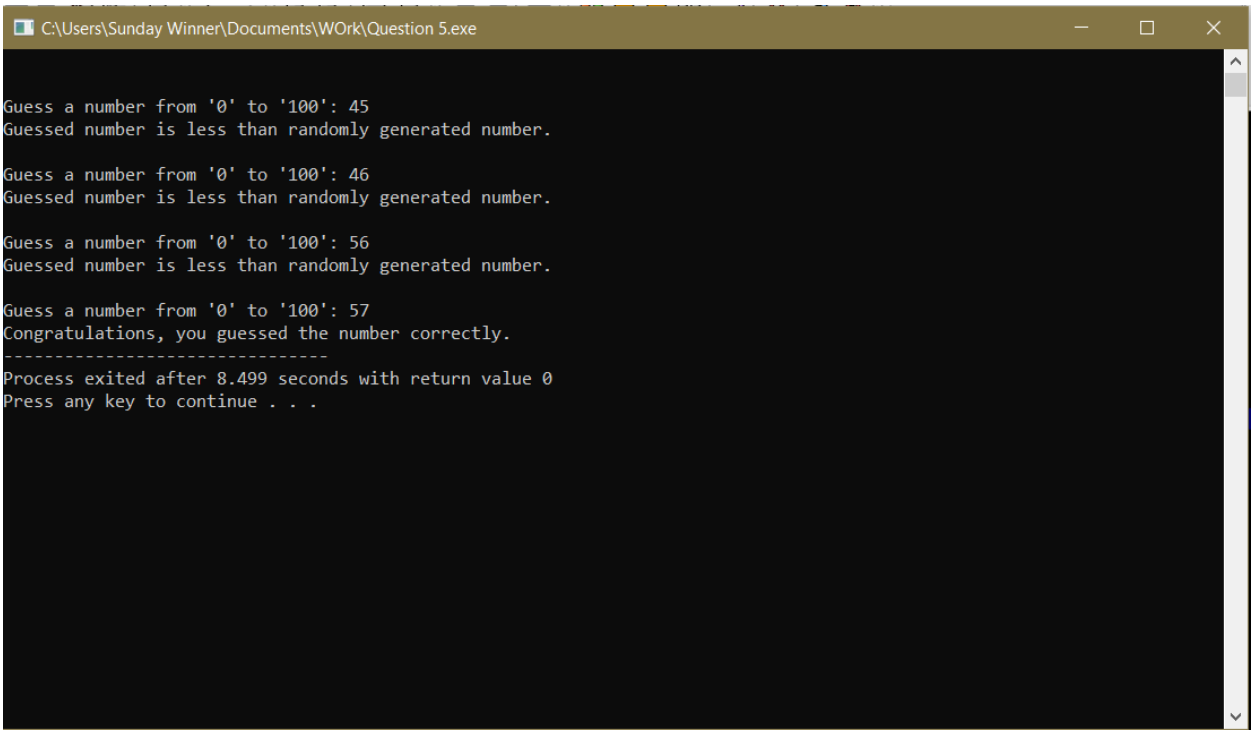
```c
#include <stdio.h>
int main()
{
    int age;
    int cnt1=0, cnt2=0, cnt3=0;
    int count = 0;

    while(count<20)
    {
        printf("Enter age of person [%d]: ", count+1);
        scanf("%d", &age);

        if(age>=0 && age <=5)
        {
            cnt1++;
        }

        else if(age>=6 && age<=17)
        {
            cnt2++;
        }

        else
        {
            cnt3++;
        }

        count++;
    }

    printf("Baby age: %d\n", cnt1);
    printf("School age: %d\n", cnt2);
    printf("Adult age: %d\n", cnt3);
}
```

```
C:\Users\Sunday Winner\Documents\WOrk\Testing testing.exe
Enter age of person [1]: 23
Enter age of person [2]: 24
Enter age of person [3]: 25
Enter age of person [4]: 35
Enter age of person [5]: 36
Enter age of person [6]: 46
Enter age of person [7]: 47
Enter age of person [8]: 3
Enter age of person [9]: 2
Enter age of person [10]: 1
Enter age of person [11]: 5
Enter age of person [12]: 67
Enter age of person [13]: 17
Enter age of person [14]: 67
Enter age of person [15]: 69
Enter age of person [16]: 24
Enter age of person [17]: 13
Enter age of person [18]: 12
Enter age of person [19]: 11
Enter age of person [20]: 10
Baby age: 4
School age: 5
Adult age: 11

--------------------------------
Process exited after 29.17 seconds with return value 0
Press any key to continue . . .
```

5. **Write a C-program to read a random number and then ask user to guess it (from 0 to 100).**
   Hint:
   User guess correct number, which is to be generated randomly. The program will give 7 attempts to the user. On each attempt, program will inform the user that entered number is less than or greater than the random generated number.



```c
#include <stdio.h>
#include <stdlib.h>
#include <time.h>

int main()
{
        int random1=0, count=0, a, stime, ltime;

        ltime = time(NULL);
        stime = (unsigned) ltime/2;
        srand(stime);

        random1=rand()%100;

        while(1)
        {
            count+=1;

            printf("\n\nGuess a number from '0' to '100': ");
            scanf("%d", &a);

            if (random1==a)
            {
                printf("Congratulations, you guessed the number correctly.");
                break;
            }

            else if (random1<a)
            {
                printf("Guesssed number is greater than randomly generated number.");
            }

            else if (random1>a)
            {
                printf("Guessed number is less than randomly generated number.");
            }

            if (count==7)
            {
                printf("\nGame over! You've reached the maximum allowed attempts");
                break;
            }
        }
}
```


C:\Users\Sunday Winner\Documents\WOrk\Question 5.exe
Guess a number from '0' to '100': 45
Guessed number is less than randomly generated number.
Guess a number from '0' to '100': 46
Guessed number is less than randomly generated number.
Guess a number from '0' to '100': 56
Guessed number is less than randomly generated number.
Guess a number from '0' to '100': 57
Congratulations, you guessed the number correctly.

Process exited after 8.499 seconds with return value 0
Press any key to continue . . .