

# BİL 102 – Computer Programming

## HW 02

**Last Submission Date: March 03, 2015 – 11:00**

*For Submission and/or Questions about the HomeWork #2 see Ar. Gör. Betül Türkkol  
(Room 108-Computer Vision Lab)*

1. (45 Pts) Write a complete C program for “Guessing An Integer Number” game. Your program should be as follow
  - Generates a random number between 1 to 10 (name the variable as “**number**”)
  - Player has 2 chances to guess (name the variable as **guess**; each time only one guess should be entered)
  - Checking a **guess**
    - If it is smaller or greater than the number
      - Calculate the absolute of the difference between the guess and the number
        - If the difference is greater than or equal to 5 of the number
          - Program should warn the player as “You are too far from the number”
        - If the difference is greater than or equal to 3 of the number
          - Program should warn the player as “You are far from the number”
        - If the difference is smaller than or equal to 2 of the number
          - Program should warn the player as “You are close to the number”
    - If it is equal to the number print a congratulation for winning.

Your program should contain at least 3 functions

- RNG : To generate the random number
- CalculateTheDifference : To calculate the difference between guess and the number
- WarnThePlayer : To print a warning in order to guide the player.

**Hint:** 1. Use **rand()** function to generate a random number that is declared in “**stdlib.h**”.  
2. Each time when the player enter her/his guess update the **guess** variable.

2. (55 Pts) Write a complete C program that calculates letter grade of 5 students as follows:

- Your program should take student information from an input file called “**Students.txt**”. The input file contains 2 initials (for Name and Surname) and 3 integers (Midterm1 Midterm2 Final).
- Midterms has a weight of 30% and Final has a weight of 40%. You are supposed to write a function that calculates and returns the resulting grade as integer.
- Using if statement assign the corresponding letter grade and (using the information in the table below)
- Write a function takes the grade for a student as input; using **switch statement** calculates the contribution of the resulting grade to the GPA and prints it to the screen; Assume that each student takes 20 credits in the current term and the course has 3 credits(e.g. assume a student has a grade “A”, therefore, 4 credit; the contribution is  $4*3/20$ )
- Write the results with the initials to an output file called “**Grades.txt**”.

Point	Grade	Credit
85-100	A	4
70-84	B	3
65-69	C	2
40-64	D	1
39 and lower	F	0

The format of the input file ‘**Students.txt**’ will be as follows:

< Student Name 1> < Student Surname 1> < Midterm1 Point 1> < Midterm2 Point 1> < Final Point 1>  
< Student Name 2> < Student Surname 2> < Midterm1 Point 2> < Midterm2 Point 2> < Final Point 2>

The format of the output file ‘**Grades.txt**’ will be as follows:

< Student Name 1> < Student Surname 1> < Grade 1> < Contribution 1>  
< Student Name 2> < Student Surname 2> < Grade 2> < Contribution 2>

An example of inputs and outputs are shown below:

**Content of ‘Students.txt’:**

BT 30 40 50  
ES 90 80 90

**Content of ‘Grades.txt’:**

BT 41  
ES 87

General:

1. Obey honor code principles.
2. **Read your homework carefully** and follow the directives about the I/O format (data file names, file formats, etc.) and submission format **strictly**. Violating any of these directives will be penalized.
3. Obey coding convention.
4. Your submission should include the following files **and NOTHING MORE** (no data files, object files, etc):
  - HW02\_<student\_name>\_<studentSurname>\_<student number>\_part1.c
  - HW02\_<student\_name>\_<studentSurname>\_<student number>\_part2.c
5. Do not use non-English characters in any part of your homework (in body, **file name**, etc.).
6. Deliver the printout of your work **until the last submission date**.