BİL 102 – Computer Programming
HW 06
Last Submission Date: May. 11, 2012 – 23:50

1. Write a recursive function, which evaluates the following mathematical function for some non-negative n and k.

$$f(n, k) = \begin{cases} f(n-1, k-1) + f(n-1, k), & if\ n, k > 0 \\ 1, & if\ n \geq 0, k = 0 \\ 0, & if\ n = 0, k > 0 \end{cases}$$

2. 5th question in programming projects at the end of chapter 10 in the text book.

3. 9th question in programming projects at the end of chapter 10 in the text book.

4. Consider the problem of 'Towers of Hanoi' described in chapter 10.6 and the implementation of the problem given in figure 10.24 in your text book. Read and understand chapter 10.6 and then write the appearance of the function stacks (show each function call and write the values of all local variables in each call) starting from the function call "tower('A', 'B', 'C', 4)".
    Also name the disks as d1, d2, d3 and d4 from the smallest to the largest and determine which disk is at which peg after each function return. Note that, disks are moved only after the command at 14th or 17th line manually. Generate a pdf document for this part.

5. (BONUS - 50 Pts) Write an **iterative** function which evaluates the mathematical function given in question 1. Determine if any of the two realizations is considerably faster than the other. Write a brief comparison report.

General:

1. Obey honor code principles.
2. Obey coding convention.
3. Your submission should include the following file:

    HW06_<student number>_part1.c

    HW06_<student number>_part2.c

    HW06_<student number>_part3.c

    HW06_<student number>_part4.pdf

    HW06_<student number>_part5.c

    HW06_<student number>_part5.pdf

4. Deliver the printout of your code until 3 days later then the last submission date.