# BİL 102 – Computer Programming
# HW 02
## Last Submission Date: Mar. 16, 2012 – 13:00

1. (40 pts) Consider the first question in your homework 1. Solve the same problem, but this time evaluate f(z, n) in a user defined function and call the function in a loop. Again, your program should evaluate f(z, n) for some user supplied z and n=1, 2, .. 10.

$$f(z,n) = \sqrt{z\frac{1-(n+1)z^n+nz^{n+1}}{(1-z)^2}+e^{-zn}}$$

This time, code replication is not allowed (no copy-pastes).

$f(z,n)$ is defined over $z \in R^+ - \{1\}$. Therefore, your program should check if the user supplied z value satisfies this condition. It should display a warning message and terminate if the condition is not satisfied.

2. (60 pts)Consider the English alphabet. Write a program to classify some given letters according to the following table. If a character which is not included in English alphabet is entered by the user, your program should produce an appropriate warning message.

| Main Group Number | Sub-Group Number | Letters |
|---|---|---|
| 0 | 0 | a, b, c, A, B, C |
| | 1 | d, e, D, E |
| | 2 | f, g, F, G |
| 1 | 0 | h, i, H, I |
| | 1 | j, k, J, K |
| | 2 | l, m, L, M |
| 2 | 0 | n, o, N, O |
| | 1 | P, q, r, P, Q, R |
| | 2 | s, t, S, T |
| 3 | 0 | u, v, w, U, V, W |
| | 1 | x, y, X, Y |
| | 2 | z, Z |

Your program will determine and output the main group number and the subgroup number of user supplied characters. You will use 3 different methods for character classification:

1. By using if clauses.
2. By using switch clauses.

3. By using user defined functions. Find only main group number in this method. Define following functions and use them for classification:
    a. int isGroup0(char c): if c is in group0, returns 1, otherwise returns 0.
    b. int isGroup1(char c): if c is in group1, returns 1, otherwise returns 0.
    c. int isGroup2(char c): if c is in group2, returns 1, otherwise returns 0.
    d. int isGroup3(char c): if c is in group3, returns 1, otherwise returns 0.

Write a separate function for each method of classification. At the beginning of the execution, the user will be asked which method to be used for the classification. Then, your program will classify 5 user supplied letters and terminate. In each classification, it should inform the user of the number of classification it is currently making. If the user enters '0' for any classification, the program will terminate irrespective of which classification it is making.

Your implementation should include at least 8 user defined functions (a function to read in the choice of the user, three functions for three methods of classification, isGroup0, isGroup1, isGroup2 and isGroup3).

2 sample dialogs between your program and the user are given below:

Ex1:

Which implementation method do you prefer (1: if clauses, 2: switch clauses, 3:user-defined functions): 7<enter>

Illegal choice!

Which implementation method do you prefer (1: if clauses, 2: switch clauses, 3:user-defined functions): 2<enter>

Enter the character (0 to terminate)(1/5): m<enter>

m is in group 1.2

Enter the character (0 to terminate)(2/5): T<enter>

T is in group 2.2

Enter the character (0 to terminate)(3/5): t<enter>

t is in group 2.2

Enter the character (0 to terminate)(4/5): 9<enter>

9 is not in English alphabet

Enter the character (0 to terminate)(5/5): p<enter>

p is in group 2.1

Program is terminated due to completion of the maximum number of classifications.

<terminate>

Ex2:

Which implementation method do you prefer (1: if clauses, 2: switch clauses, 3: user-defined functions): 3<enter>

Enter the character (0 to terminate)(1/5): m<enter>

m is in group 1

Enter the character (0 to terminate)(2/5): T<enter>

T is in group 2

Enter the character (0 to terminate)(3/5): 0<enter>

Program is terminated by the user.

<terminate>

General:

1. In this homework you are not allowed to use three days extension. Solutions will be announced just after the submission deadline.
2. Obey honor code principles.
3. Obey coding convention.
4. Your submission should include the following files:

   HW02_<student number>_part1.c

   HW02_<student number>_part2.c

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