

## Lab 1 – 111 Review

### Objectives

In this lab, each student is to write a program that allows a user to play a game called 'Dabo.' The student should exhibit an understanding of:

- **Manipulation of arrays**
- **Formatted output**
- **Processing Input**
- **Conditionals and loops**
- **Use of the `rand( )` function**

### Overview

The student is to create a 'Dabo' board on the screen as shown below:

D	A	B	O
63	17	4	16
1	35	11	2
7	88	Free	6
20	10	36	75

The board should consist of a four-by-four square with '**Free**' in the third row and third column. The other squares should be randomly and uniquely filled with numbers from **1** to **99** (inclusive) using the **`rand( )`** function.

## Operation

The program should first display this board with the random numbers in each square.

It should then prompt the user to enter a letter ('D', 'A', 'B', or 'O') and then a number ('1' through '99'). If the number the user enters is present under the given letter, then the program should display an 'X' in that chosen cell as it redraws the board.

The program should keep track of which squares have been marked and notify the user if a 'Dabo' has been produced. A 'Dabo' is produced anytime all four squares in any row or any column has been marked with an 'X'. (The 'Free' square is already considered to be marked from the beginning.) A 'Dabo' is also produced anytime all four squares in one of the two diagonals has been marked. If a 'Dabo' has been reached, the program should also (along with the 'Dabo' message) print out the number of inputs it took to 'Dabo.'

After the user receives a 'Dabo,' they should be prompted whether or not they wish to play again.

Any time the user inputs an invalid input, they should be notified with a message describing valid inputs.

The program should also allow the user to input a 'q' at any prompt allowing them to quit at that time.

## Submission

This lab is due by midnight **Monday, January 21<sup>st</sup>**. Submit your C-code (as an attached file named **prog1.c**) to [assign@assign.ece.clemson.edu](mailto:assign@assign.ece.clemson.edu) using Clemson's webmail program (**not gmail**). Use as the subject header

**ECE222-1,#1 user=userid**

where **userid** is your Clemson user ID.

***Work must be completed by each individual student. If it is determined that any part of your work has been copied, all parties involved will receive zero credit, and a letter grade may be deducted at the end of the semester.***