

UNIVERSITY *of* MARYLAND
UNIVERSITY COLLEGE - *Asian Division*

Project 3: Guessing Game Program

Objective:

In this lab you will create a C++ programming language program that utilizes input, output, selection and loop structures, random number generator functions, and at least one user defined function with parameters.

The program is due the fifth week of classes at the beginning of the second class. No late project reports will be accepted.

Program Requirements:

Write a guessing game program. The program will begin by generating a random integer number between zero and nine. The player will try to guess this number and the computer will display "Too High", "Too Low", or "You Win" as appropriate. The program will allow the user four attempts at guessing the number before displaying "You Lose, the number was x." After determining if the player is a winner or loser they will then be prompted to play again. *Yes* will cause a loop back to the appropriate place in the program and a *No* will terminate the program.

The program must accept only numerical entries between 0 and 9. Should an incorrect character be entered the program will backspace (\b) and beep (\a). Use the `_getche()` function to implement character input. This function is included in the `conio.h` header file. You will need to use the Random number generator functions that have prototypes in the `cstdlib` and `ctime` header files as specified in Project 2.

For this program you are required to write at least one function that will determine if a valid key between 0 and 9 is pressed.

To convert a numerical digit to an ASCII character, the leading four bits can be set to 0x30 using the appropriate bitwise operator. Alternatively, you may use the function `int atoi(*string)` contained in the `cstdlib` library function.

PROJECT REPORT:

Submit, on or before the due date the following for grading: A cover sheet with your name and project name. Program specifications document that describes the analysis involved during the problem solving phase. This must include a written program definition, defining diagram, all flow charts developed during project, and test data. Include a source code listing for your program and a printout of your output window for three different runs. If the results are identical make sure you initialize the random number generator seed only once. Note as specified on the Syllabus a grade of 80% will be awarded for fulfilling all program specifications in a minimal way. To exceed an 80% grade you must exceed the requirements and neatness does count. Extra work possibilities include: more than two user defined functions, multiple runs, auto-scaling, and disk write of the results. At the end of your report include a conclusion section that describes extra work efforts and items that don't work in your program. I will attempt to find the described errors in the source code.

```
#include <conio.h>
int _getche( void );
```

Description:

Get a character from the console with echo.

Return Value: character read from keyboard.

Note: that it places the 8 bit ASCII character in a 32 bit integer variable or 8 bit character variable.