CSC 225 - Computer Architecture/Assembly Language

FINAL EXAM – Spring 2022

General Directions:

1. **The Final Exam is available from Thursday, May 5th at 12:01 a.m. – Monday, May 9th at 11:59 p.m. The exam will not be accepted late. No exceptions.**
2. When you have completed the exam, upload the design and program to the **Final Exam drop box** located under the Assignment tab on D2L.
3. **40 Points – Design / 50 Points – Code / 60 Points – Comments**

Directions for the Exam: Design and Program:

1. **Menu driven program**
2. **Data input not "hard coded" within the program**
3. **Error for entering wrong menu item**
4. **Access to functions**
5. **Exit for program**

The functions are as follows:

1. **Function 1**: Design/Code a *recursive function.* Label the function recProc. Inside this function, add 1 to a counter so you can verify the number of times it executes. Run your program with a debugger, and at the end of the program, check the counter's value. Put a number in NUMTIMES that specifies the number of times you want to allow the recursion to continue.

2. **Function 2**: Design/Code and write one versions of a function that, given a simple list of objects (e.g., integers or strings) as a parameter, checks whether there are duplicate elements in the list and return True of False accordingly. The input list should not be changed.

3. **Function 3**: Design/Code a *recursive function* called **ANS** that takes parameters a and b and returns their greatest common divisor. You can assume that both a and b are positive integers. Make sure your code is written such that ANS(a, b) == ANS(b, a). Of course, also include test code that calls your ANS function to demonstrate that the results are correct.