INTRODUCTION TO COMPUTING
Assignment 4

Instructor: Drakhshan Bokhat
Total Marks: 10
Marks Obtained: _____

Roll No: _____

Mapping CLOs: CLO 3

Activity 05a Guess my Number

1. Play a number guessing game with a partner. You think of an integer between 1 and 128. Your partner will try to guess the number. You can tell them if they are too high, too low, or correct. Record your guesses in the box below, then switch roles.

Guess:								
Too Hi / Lo?								

2. Change partners and play again.
This time keep track of the lowest and highest possibility the secret number could be.

Lowest Possible #	1						
Highest Possible #	128						
Guess							
Too Hi / Lo ?							

3. Look at the table above.
   a. If the guess was too high, how did the value of the following change?
      Lowest Possible: Highest Possible:

   b. If the guess was too low, how did the value of the following change?
      Lowest Possible: Highest Possible:

   c. In both cases, how do you calculate the next guess ?

4. This algorithm is often called a Binary Search. The reason why the word “binary” is used is that the number of possibilities is cut in half each time. Write out the complete algorithm for guessing a number between Low and High using a binary search.

Activity 05b You Sort

A. In this activity, you and your partner will practice sorting a set of numbers from lowest to highest. You will need 5-10 pieces of paper or card, with an integer written on each.

B. Place all the numbers face down and mix them up. Choose about 5 of the numbers, keep them face-down, and place them in a row.

C. Decide on roles.
The “Helper” can look at the numbers and can say which one (of two) numbers is larger. The Helper cannot move the numbers or give their partner any other information.

The “Sorter” cannot look at any numbers. However, they can point to two numbers (that are face down) and ask the “Helper” which one is larger. The “Sorter” can also re-arrange the numbers.

D. Using about 5 numbers that are face-down in a row, work as a team to sort the numbers in order from lowest to highest. Once the Sorter believes they are in order, turn over the numbers to see if your team sorted them correctly. If you did not, try again. If you did, switch roles.

E. If you were successful with 5 numbers, try sorting 7, then try sorting 10 or more. Give each partner a turn at each role.

F. There are actually many ways to solve this problem! Find another pair that sorted the numbers using a different algorithm and compare your methods.