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CSC 110: Survey of Computer Science

Programming Project Design

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* **Program Description**The program I will create will play the game Mastermind between two players: one as the computer who will choose the hidden colors and the other as the human who will attempt to guess the hidden colors. The human will be given ten attempts at guessing the four hidden colors in the correct particular order. After each guess, the computer will provide a clue as to how well the human guessed the order of the colors. The clues are based on the following criteria: 1 – the guess has a correct color in the correct position, or 2 – the guess has the correct color, but in the wrong position. After ten guesses, the correct hidden colors will be displayed.
* **General Solution**Create a list of random (global & fixed) colors from the computer player. The human player will guess for ten turns the order of these colors and be given clues if the guesses are incorrect. The computer wins if the human cannot guess the correct colors but if the human guesses the correct order, then he/she will win the game.
* **Pseudo code**Computer will randomly generate a list of hidden colors**.** Human will be asked to guess the colors in order (displayed in a menu). Test the guess and provide the correct clue to the human. If the guess has the correct color in the correct position, display a 1. If the guess has a correct color in the wrong position, display a two. While the user incorrectly guesses the colors, allow the human ten turns. Display the hidden colors after ten tries and display the winner of the game.
* **Function Design**def randomList():  
  # This function will generate a list of 4 random colors from the 6 possible choices  
  # It will return the list of colors  
  return randomList  
    
  def clueList(guessList, randomList):  
  # This function will be passed the human’s guess list of colors and generate a clue based on the guess  
  # If the human guesses the correct position of the correct color, the value 1 will be added to the clueList.   
  # If the human guesses the correct color but in the wrong position, the value 2 will be added to the clueList  
  # If the human guesses all incorrect colors in all incorrect positions, an empty list will be returned.  
  return clueList  
    
  def main():  
  # The main function will implement the functions defined above.  
  # This function will also display the color menu to the human and generate the guessList.  
  # If the human is wrong after ten tries, display the randomList and declare the computer the winner  
  # If the human is correct before or at the tenth try, display the randomList and declare the human the winner