CSC 1024 PROGRAMMING PRINCIPLES

Programming Project : A Master Mind Computer Game

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Presentation Video Web Link:
https://www.youtube.com/watch?v=fNVRBPVIxMU&ab_channel=YaoXian

Demonstration of Master Mind Computer Game

Input and Display Data

```python
print('..................................................................')
print('|              Welcome to Master Mind Computer Game!            |')
print('|                   By Chua Yao Xian (20042552)                 |')
print('..................................................................')
print(' ')

start = input("Enter 'P' to start the Master Mind Computer Game: ").upper()
```

```python
print('\n***How To Play***')
print('1. You are required to guess 4 colour code that in my mind.')
print('2. You are required to input the first letter of your colour choices. Example: Blue = B')
print('3. You are required to select 4 out of 6 colours from the given colour list.')
print('4. The colour choices are: ')
print('   -(B)lue, (P)ink, (R)ed, (O)range, (G)reen, (Y)ellow')
print('5. You can select the same colours more than once.')
print('6. You have a total of 10 tries to guess the colour code.')
print('7. If you input the correct sequence of the colour code then, YOU ARE A MASTERMIND!!')
print('GoodLuck!! Enjoy the game!!')
print(' ')
```

```python
colour_List = ['B', 'P', 'R', 'O', 'G', 'Y']
print('***The game start***')
print('Colour list = (B)lue,(P)ink,(R)ed,(O)range,(G)reen,(Y)ellow')
print('Choose 4 colour out of 6 from the colour list in simple form!! Example: BPRO')
```

```python
#Prompt player to enter their colour code guess
player_Guess = input('\nPlease enter 4 colour code from colour list: ').upper()
tries = tries + 1
```

Lists

This is the colour list that store the colour in the program

```
#List of colour available
colour_List = ['B', 'P', 'R', 'O', 'G', 'Y']
```

Here is a list that store player's guess in the program

```
playerGuess_2 = []
```

Here is a list that store the colour code in the program

```
colour_Code = []
```

Random Choice From A List

1st Import Random Library

```
#Importing random
import random
```

2nd Call the random function

```
random_ColourList = random.sample(colour_List, 4)
```

Example of the output

```
>>> colour_List = ['B', 'P', 'R', 'O', 'G', 'Y']
>>> random_ColourList = random.sample(colour_List, 4)
>>> print('The randomized colours is:',random_ColourList)
The randomized colours is: ['R', 'O', 'G', 'B']
```

If Statements

If player guess all 4 correct colour code

- If colourCode_Correct is equal to 4 then it will show player "YOU ARE A MASTERMIND"

```
if colourCode_Correct == 4:
    print('\nCongratulation!! YOU ARE A MASTERMIND!! ^o^')
    print('You had took', tries, 'tries to be MASTERMIND!! ^O^')
    print('The correct answer is ', random_ColourList)
    mastermind_Code = False
    game_Repeat()
```

- If colourCode_Correct is not equal to 4 then it will show player the number of correct colour in correct place and number of correct colour but incorrect place

```
else:
    print('Correct colour in right place:', colourCode_Correct)
    print('Correct colour but wrong place:', colour_Guess)
```

If Statements

If player enter Y or N or NOT Y or NOT N

- If repeat_Game is Y

```python
if repeat_Game == 'Y':
    print('\n ****************************NEW GAME****************************')
    game_Start()
```

- If repeat_Game is N

```python
if repeat_Game == 'N':
    print('The Program Ended. Thank For Playing The Master Mind Computer Game!!!!')
    quit()
```

- Elif repeat_Game is NOT Y or NOT N

```python
elif repeat_Game != 'Y' or repeat_Game != 'N':
    print("ERROR INCORRECT SELECTION, You can only enter 'Y' or 'N'")
    game_Repeat()
```

Relational Statements

To check if the length of player's input same as the length of colour list characters

- If player did not enter exactly 4 characters then it will print error message

```
if len(player_Guess) != len(random_ColourList):
    print('\nERROR INCORRECT COLOUR CODE, Please enter only 4 colour code from colour list :)')
    continue
```

Logical Operators

To check if the player entered the colour code same as the colour available in the colour list

- If player entered the invalid colour it will print error message

```python
#List of colour available
colour_List = ['B', 'P', 'R', 'O', 'G', 'Y']
```

```python
for u in range(4):
    if player_Guess[u] not in colour_List:
        print('\nERROR INCORRECT COLOUR CODE, The colour code you entered does not match colour list :(')
        break
```

Loops

While-Loops

- It will loop for randomizing the colour

```
while mastermind_Codes:
    random_ColourList = random.sample(colour_List, 4)

    #The line below is the master mind game answer and it will not show in the real game
    print(random_ColourList)
    print('Above the list it will not show in the real game, JUST A DEMO')
```

Loops

For-Loops

- If player's guess same as the randomize colour code then correct colour code place will +1

```
#The line below is for determine correct colour code place
for u in range(4):
    if player_Guess[u] == random_ColourList[u]:
        colourCode_Correct = colourCode_Correct + 1
```

User Defined Function

```python
#This function is to start the game and welcome player
def game_Start():
    print('\n......................................................')
    print('|               Welcome to Master Mind Computer Game!            |')
    print('|                    By Chua Yao Xian (20042552)                 |')
    print('......................................................')
    print(' ')

    start = input("Enter 'P' to start the Master Mind Computer Game: ").upper()
    if start == 'P':
        instruction()

    else:
        print("ERROR INCORRECT SELECTION, You can only enter 'P' or 'p'")
        game_Start()
```

User Defined Function

```python
#This function is to show the instruction of master mind computer game
def instruction():
    print('\n***How To Play***')
    print('1. You are required to guess 4 colour code that in my mind.')
    print('2. You are required to input the first letter of your colour choices. Example: Blue = B')
    print('3. You are required to select 4 out of 6 colours from the given colour list.')
    print('4. The colour choices are: ')
    print('   -(B)lue, (P)ink, (R)ed, (O)range, (G)reen, (Y)ellow')
    print('5. You can select the same colours more than once.')
    print('6. You have a total of 10 tries to guess the colour code.')
    print('7. If you input the correct sequence of the colour code then, YOU ARE A MASTERMIND!!')
    print('GoodLuck!! Enjoy the game!!')
    print(' ')
    mastermind_Codes()
```

User Defined Function

```python
#This function is ask player weather they want to play again
def game_Repeat():
    repeat_Game = input('\nDo you want to play again? (Y/N): ').upper()
    if repeat_Game == 'Y':
        print('\n ******************************NEW GAME*******************************')
        game_Start()

    if repeat_Game == 'N':
        print('The Program Ended. Thank For Playing The Master Mind Computer Game!!!!')
        quit()

    elif repeat_Game != 'Y' or repeat_Game != 'N':
        print("ERROR INCORRECT SELECTION, You can only enter 'Y' or 'N'")
        game_Repeat()
```

Error Handling & Data Validation

```python
repeat_Game = input('\nDo you want to play again? (Y/N): ').upper()
if repeat_Game == 'Y':
    print('\n *******************************NEW GAME*******************************')
    game_Start()

if repeat_Game == 'N':
    print('The Program Ended. Thank For Playing The Master Mind Computer Game!!!!')
    quit()

elif repeat_Game != 'Y' or repeat_Game != 'N':
    print("ERROR INCORRECT SELECTION, You can only enter 'Y' or 'N'")
    game_Repeat()
```

Thank You!