CSC1024
PROGRAMMING PRINCIPLES

Programming Project:
A Master Mind Computer Game

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21026612

14 July 2021

Presentation Video Web link:
https://youtu.be/pXUjd8a01xg

Master Mind

Master Mind

Master Mind is a code-breaking game where the player(s) has to guess the color combination produced.

ABOUT THE PROJECT

To program a on-screen version of the board game MasterMind that will generate a random list of color combination for the player to guess.

How Does It Work?

RANDOMIZE

Program will produce a randomized color combination

PLAY

Player will then try to determine the color combination

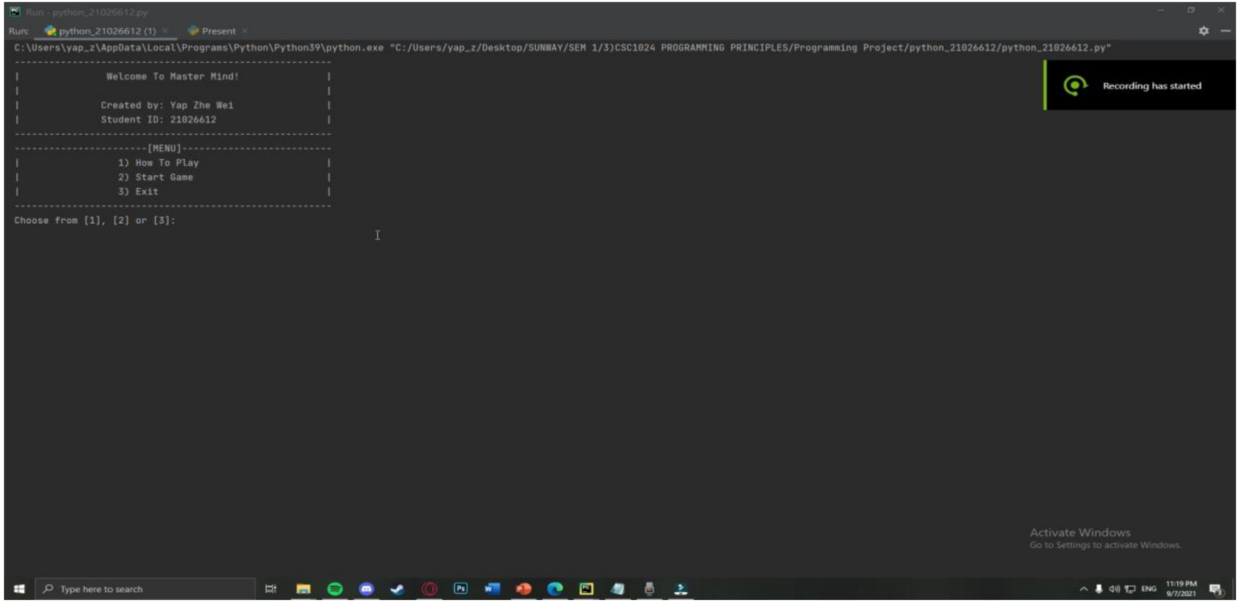
FEEDBACK

Program will then give feed back after each guesses. Player will win when they guessed correctly

Program Demonstration

How The Program Works

REFER TO: https://youtu.be/pXUjd8a01xg



```
C:\Users\yap_z\AppData\Local\Programs\Python\Python39\python.exe "C:/Users/yap_z/Desktop/SUNWAY/SEM 1/3)CSC1024 PROGRAMMING PRINCIPLES/Programming Project/python_21026612/python_21026612.py"
-------------------------------------------------------
|               Welcome To Master Mind!               |
|                                                     |
|              Created by: Yap Zhe Wei                |
|              Student ID: 21026612                   |
-------------------------------------------------------
----------------------[MENU]---------------------------
|                 1) How To Play                      |
|                 2) Start Game                       |
|                 3) Exit                             |
-------------------------------------------------------
Choose from [1], [2] or [3]:
```

Program Demonstration

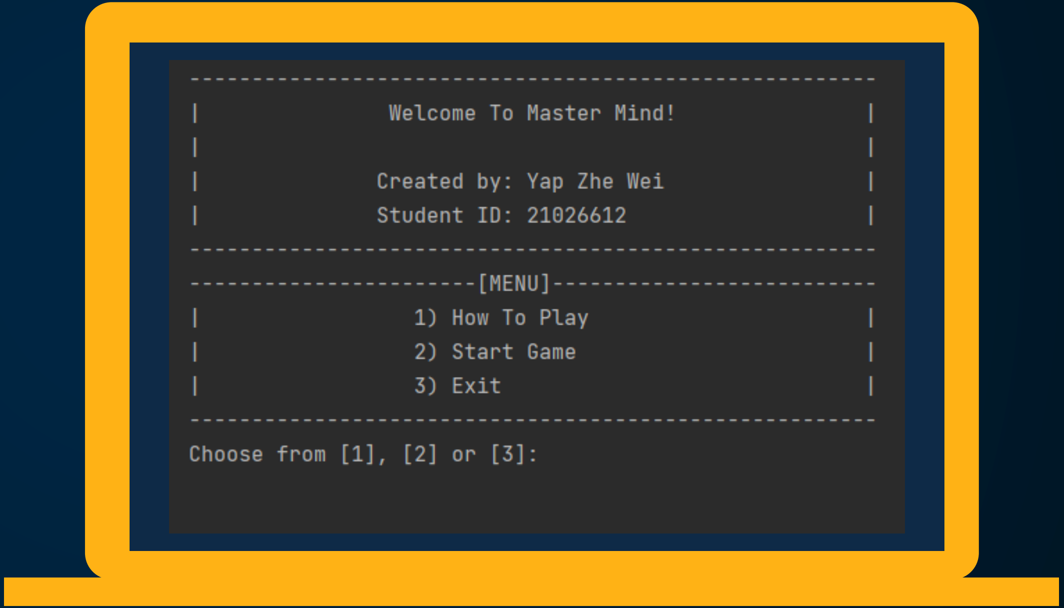
SUBSCRIBE

Program Flow

GENERATE LIST

TAKES USER INPUT

GIVES FEEDBACK ON INPUT



```
-------------------------------------------------------
|               Welcome To Master Mind!               |
|                                                     |
|               Created by: Yap Zhe Wei               |
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-----------------------[MENU]--------------------------
|                  1) How To Play                     |
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-------------------------------------------------------
Choose from [1], [2] or [3]:
```
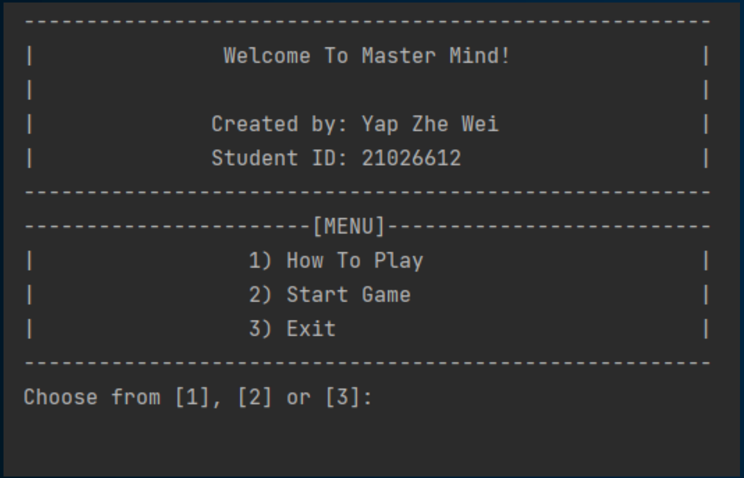

Interactive Interface

1) **How To Play**



```
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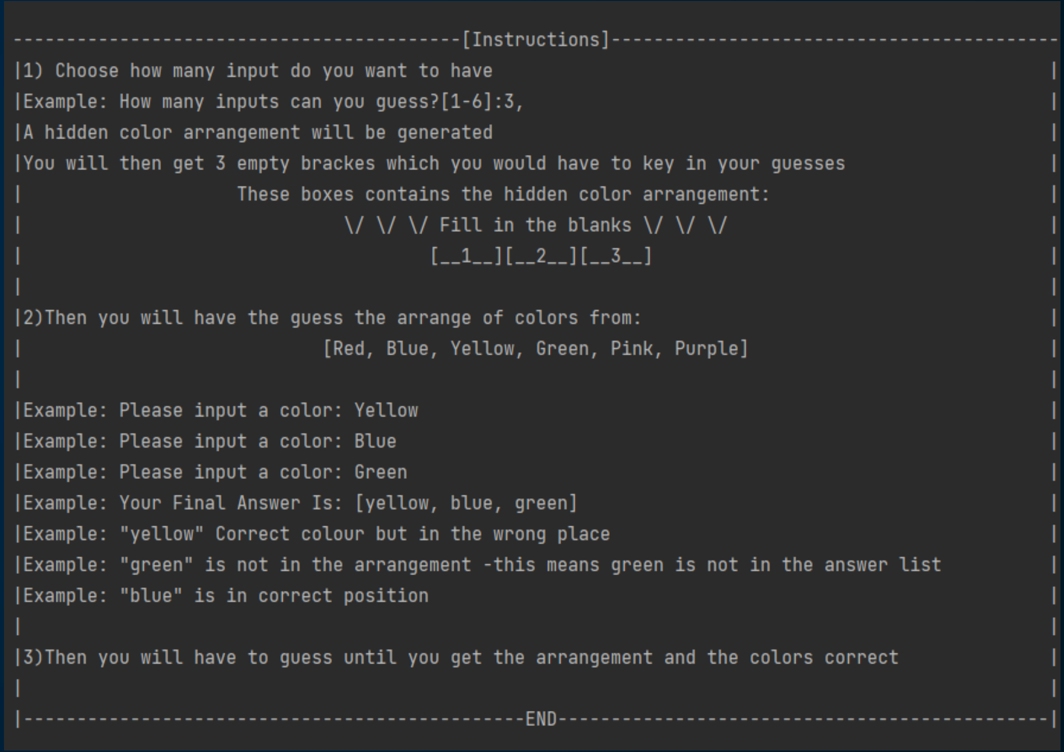
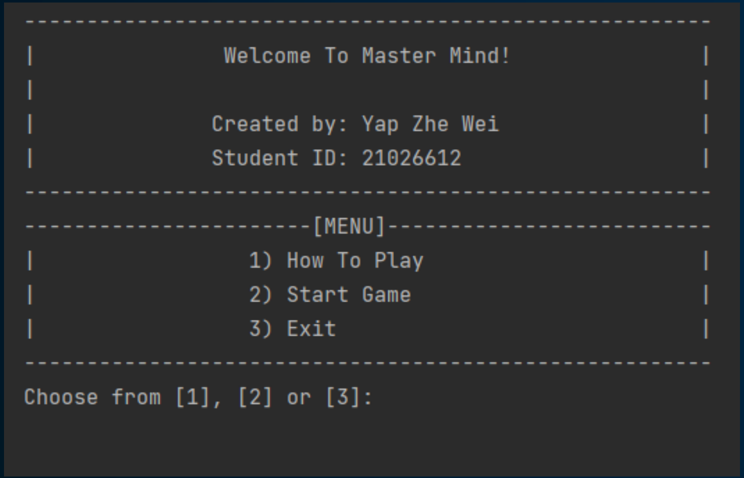


```
------------------------------------------[Instructions]------------------------------------------
|1) Choose how many input do you want to have                                                    |
|Example: How many inputs can you guess?[1-6]:3,                                                 |
|A hidden color arrangement will be generated                                                    |
|You will then get 3 empty brackes which you would have to key in your guesses                   |
|                    These boxes contains the hidden color arrangement:                          |
|                              \/ \/ \/ Fill in the blanks \/ \/ \/                              |
|                                      [__1__][__2__][__3__]                                      |
|                                                                                                |
|2)Then you will have the guess the arrange of colors from:                                      |
|                            [Red, Blue, Yellow, Green, Pink, Purple]                            |
|                                                                                                |
|Example: Please input a color: Yellow                                                           |
|Example: Please input a color: Blue                                                             |
|Example: Please input a color: Green                                                            |
|Example: Your Final Answer Is: [yellow, blue, green]                                            |
|Example: "yellow" Correct colour but in the wrong place                                         |
|Example: "green" is not in the arrangement -this means green is not in the answer list          |
|Example: "blue" is in correct position                                                          |
|                                                                                                |
|3)Then you will have to guess until you get the arrangement and the colors correct              |
|                                                                                                |
|-----------------------------------------------END----------------------------------------------|
```

Interactive Interface

2) **Start Game**



```
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-----------------------[MENU]--------------------------
|                  1) How To Play                     |
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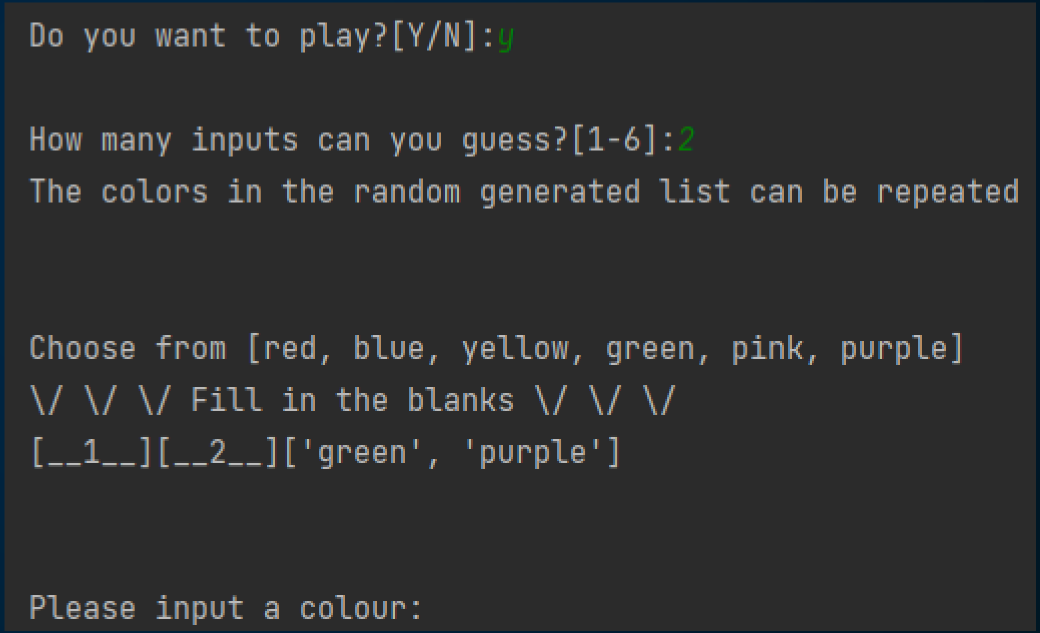
-------------------------------------------------------
Choose from [1], [2] or [3]:
```



```
Do you want to play?[Y/N]:y

How many inputs can you guess?[1-6]:2
The colors in the random generated list can be repeated



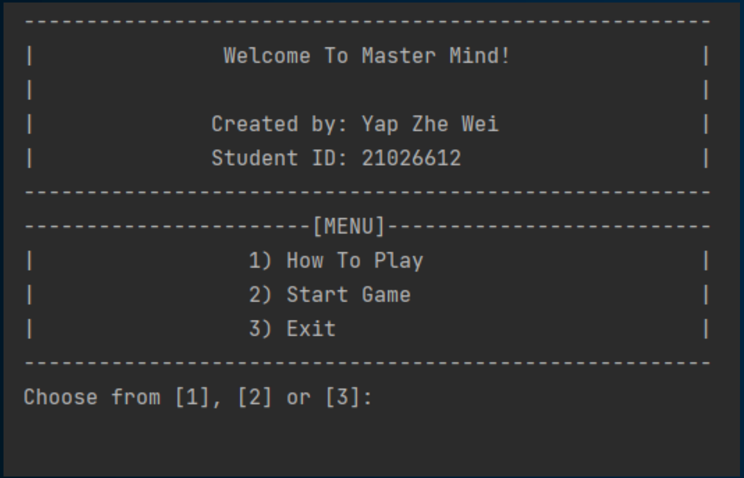
Choose from [red, blue, yellow, green, pink, purple]
\/ \/ \/ Fill in the blanks \/ \/ \/
[__1__][__2__]['green', 'purple']



Please input a colour:
```

Interactive User Interface

3) Exit



```
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|                                                     |
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----------------------[MENU]---------------------------
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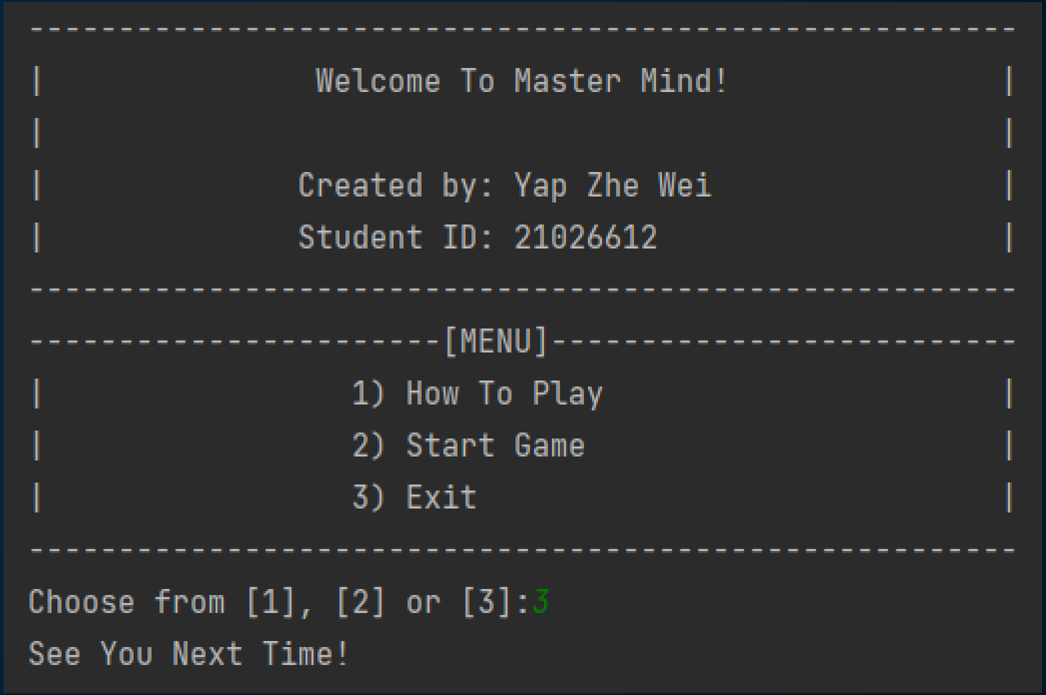
Choose from [1], [2] or [3]:
```



```
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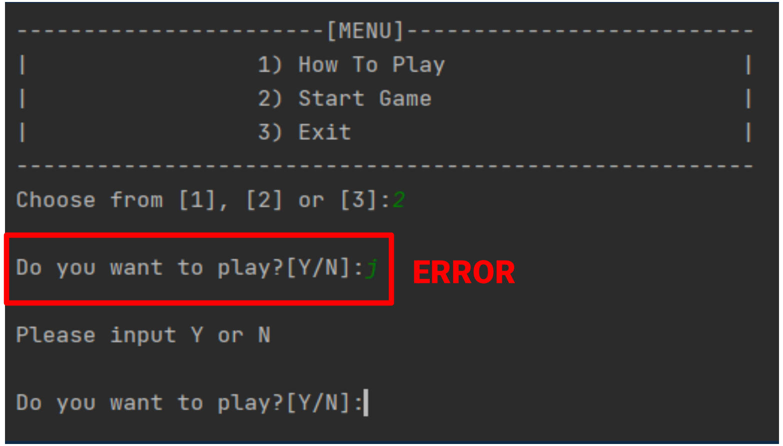
|              Welcome To Master Mind!                |
|                                                     |
|             Created by: Yap Zhe Wei                 |
|             Student ID: 21026612                    |
-------------------------------------------------------
----------------------[MENU]---------------------------
|                1) How To Play                       |
|                2) Start Game                        |
|                3) Exit                              |
-------------------------------------------------------
Choose from [1], [2] or [3]:3
See You Next Time!
```

Error Handling



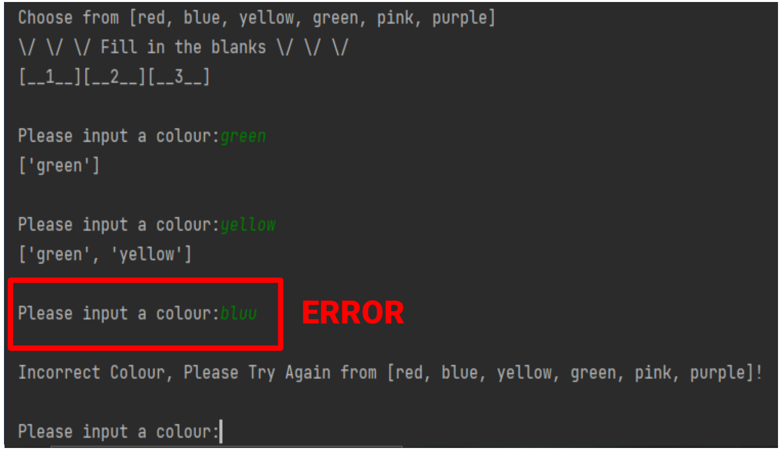
```
----------------------[MENU]-------------------------
|                1) How To Play                     |
|                2) Start Game                      |
|                3) Exit                            |
-----------------------------------------------------
Choose from [1], [2] or [3]:2

Do you want to play?[Y/N]:j

Please input Y or N

Do you want to play?[Y/N]:
```

ERROR



```
Choose from [red, blue, yellow, green, pink, purple]
\/ \/ \/ Fill in the blanks \/ \/ \/
[__1__][__2__][__3__]

Please input a colour:green
['green']

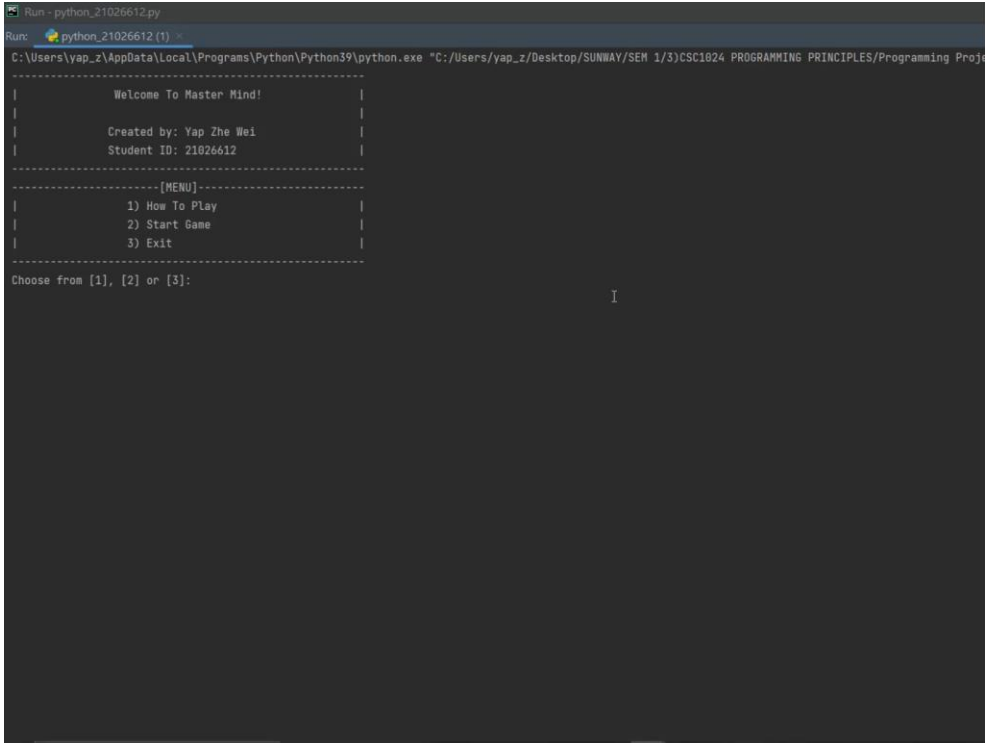
Please input a colour:yellow
['green', 'yellow']

Please input a colour:bluu

Incorrect Colour, Please Try Again from [red, blue, yellow, green, pink, purple]!

Please input a colour:
```

ERROR



```
C:\Users\yap_z\AppData\Local\Programs\Python\Python39\python.exe "C:/Users/yap_z/Desktop/SUNWAY/SEM 1/3)CSC1024 PROGRAMMING PRINCIPLES/Programming Proje
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|                  Welcome To Master Mind!                   |
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-------------------------[MENU]-------------------------------
|                     1) How To Play                         |
|                     2) Start Game                          |
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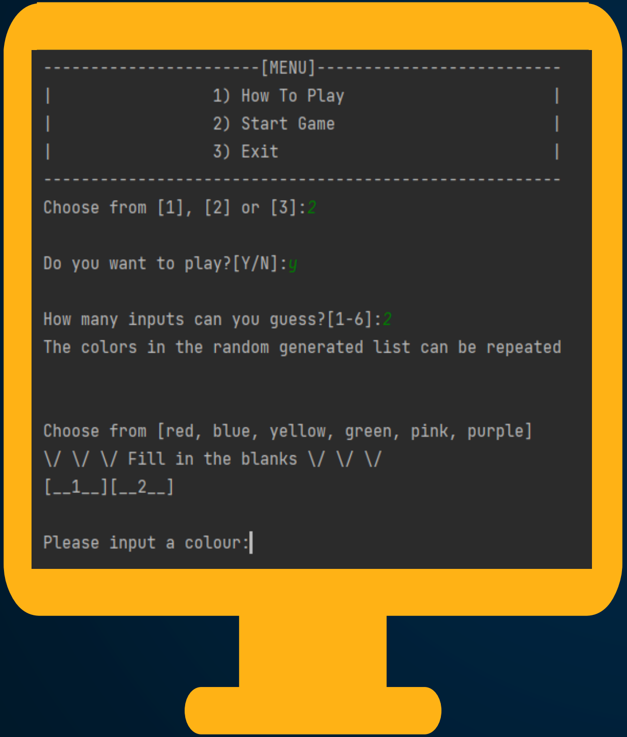
REFER TO: https://youtu.be/pXUjd8a01xg

Error Handling Demonstration

Programming Techniques Used

- INPUT/OUTPUT
- LIST
- RANDOMIZATION
- IF ,Relational & Logical Operators
- LOOPS
- USER-DEFINED FUNCTION

Programming Techniques Used

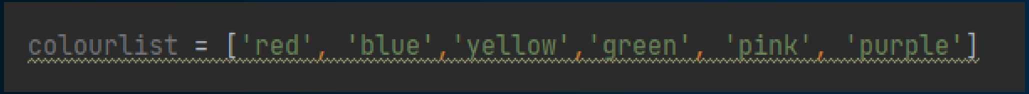


```
-----------------------[MENU]-------------------------
|                 1) How To Play                      |
|                 2) Start Game                       |
|                 3) Exit                             |
------------------------------------------------------
Choose from [1], [2] or [3]:2

Do you want to play?[Y/N]:y

How many inputs can you guess?[1-6]:2
The colors in the random generated list can be repeated



Choose from [red, blue, yellow, green, pink, purple]
\/ \/ \/ Fill in the blanks \/ \/ \/
[__1__][__2__]

Please input a colour:
```

INPUT/OUTPUT

Take the Input of user
and Output a
statement

Programming Techniques Used

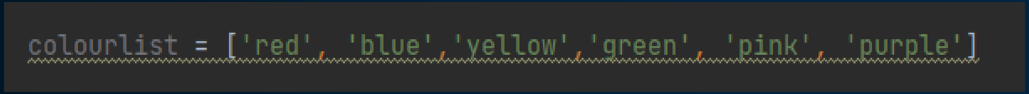


```
colourlist = ['red', 'blue','yellow','green', 'pink', 'purple']
```

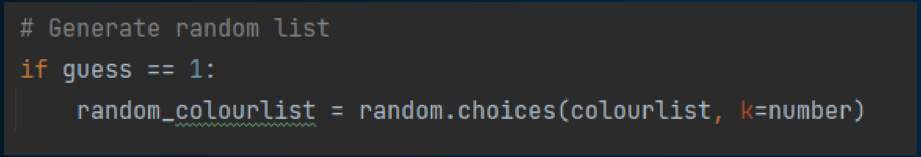
LIST

- Group variables into a list
- Used to store data and information
- Create a form of order with the data

Programming Techniques Used

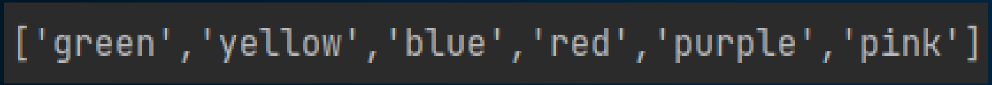


```
colourlist = ['red', 'blue','yellow','green', 'pink', 'purple']
```



```
# Generate random list
if guess == 1:
    random_colourlist = random.choices(colourlist, k=number)
```

RANDOMIZED LIST



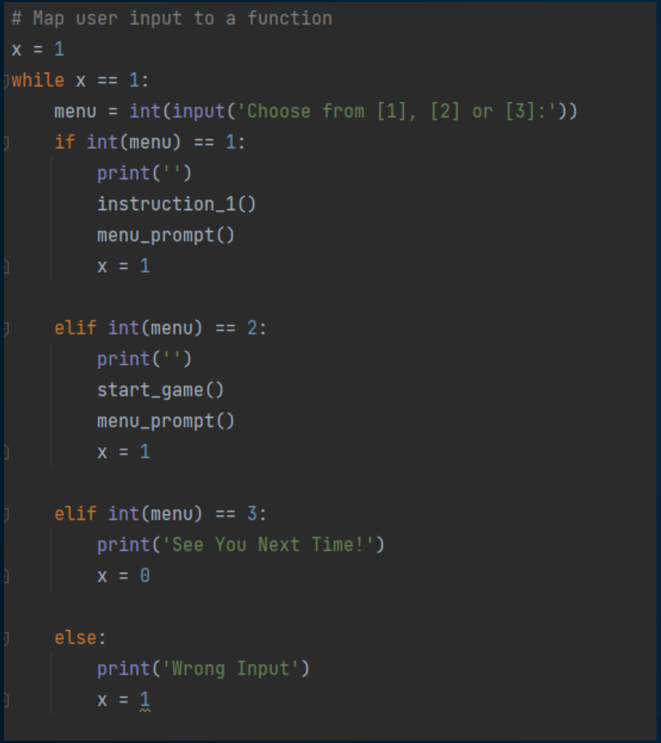
```
['green','yellow','blue','red','purple','pink']
```

RANDOMIZATION

Importing random library module

- Can be used to randomize a list of integers
- Generate random passwords, numbers, integers, etc.

Programming Techniques Used



```python
# Map user input to a function
x = 1
while x == 1:
    menu = int(input('Choose from [1], [2] or [3]:'))
    if int(menu) == 1:
        print('')
        instruction_1()
        menu_prompt()
        x = 1

    elif int(menu) == 2:
        print('')
        start_game()
        menu_prompt()
        x = 1

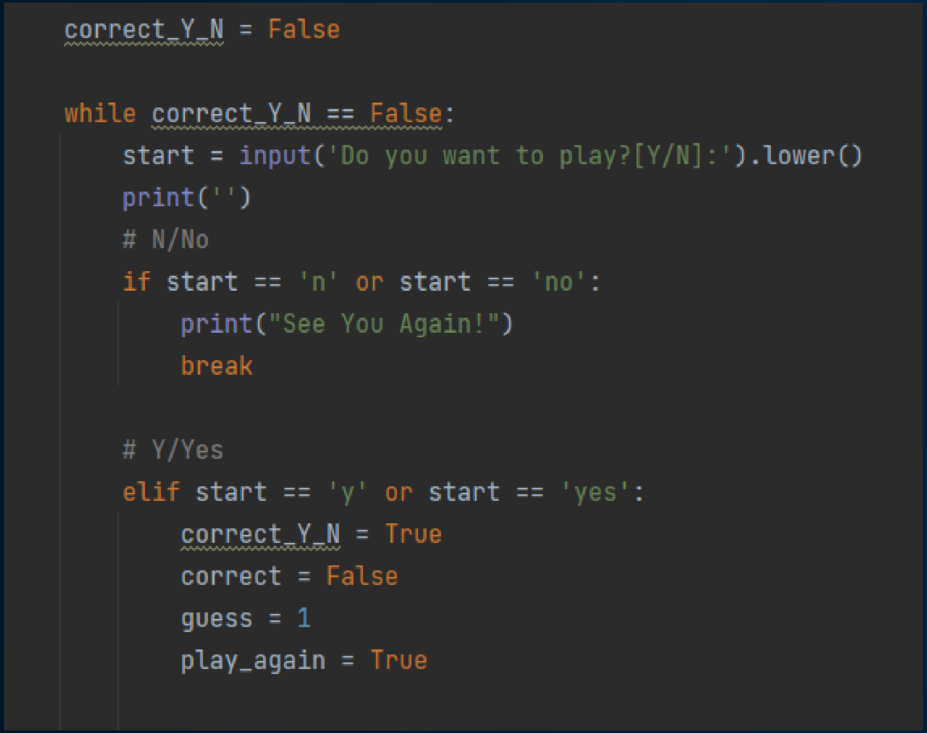
    elif int(menu) == 3:
        print('See You Next Time!')
        x = 0

    else:
        print('Wrong Input')
        x = 1
```

IF ,Relational & Logical Operators

Checks whether the condition is met.
It will decide on the next program execution depending on the condition requirements

Programming Techniques Used



```
correct_Y_N = False

while correct_Y_N == False:
    start = input('Do you want to play?[Y/N]:').lower()
    print('')
    # N/No
    if start == 'n' or start == 'no':
        print("See You Again!")
        break

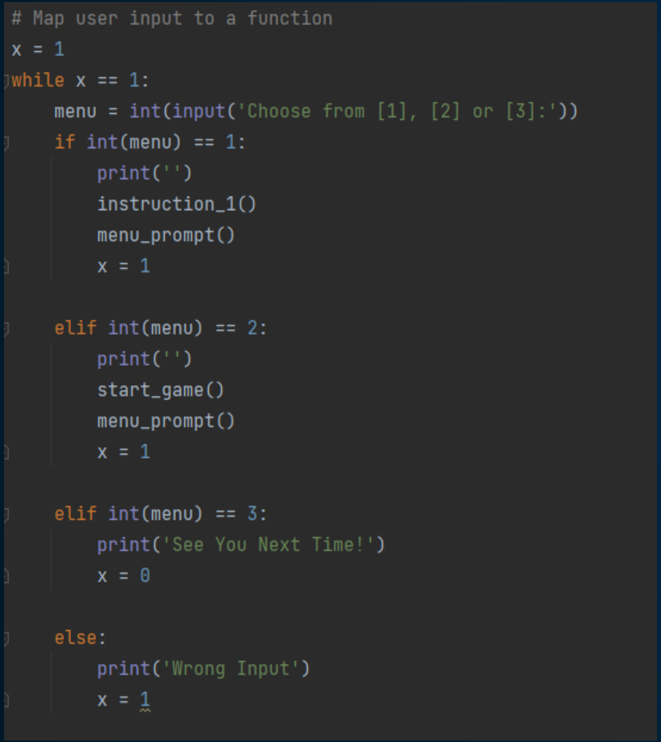
    # Y/Yes
    elif start == 'y' or start == 'yes':
        correct_Y_N = True
        correct = False
        guess = 1
        play_again = True

```

LOOPS

- Used to repeat instruction(s) until a certain condition is met

Programming Techniques Used



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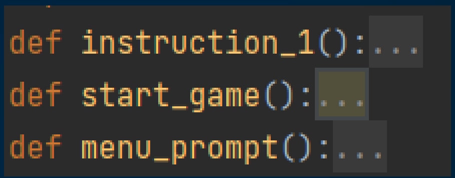
    if int(menu) == 1:
        print('')
        instruction_1()
        menu_prompt()
        x = 1

    elif int(menu) == 2:
        print('')
        start_game()
        menu_prompt()
        x = 1

    elif int(menu) == 3:
        print('See You Next Time!')
        x = 0

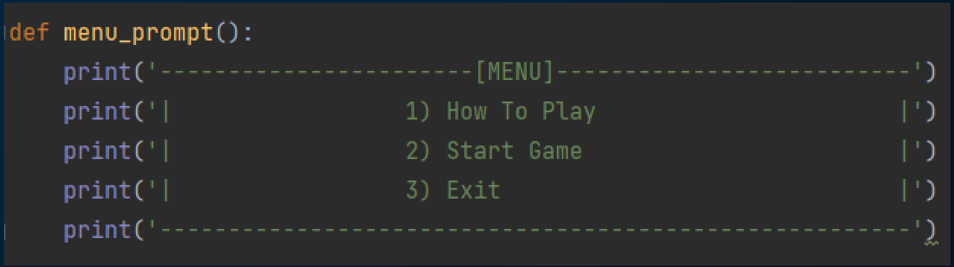
    else:
        print('Wrong Input')
        x = 1
```



```python
def instruction_1():...
def start_game():...
def menu_prompt():...
```

USER-DEFINED FUNCTION

- Function is a sub-program used by programmers to write instruction(s)
- Can be reused in the program
- Easier to understand and troubleshoot



```python
def menu_prompt():
    print('-------------------------[MENU]----------------------------')
    print('|                  1) How To Play                         |')
    print('|                  2) Start Game                          |')
    print('|                  3) Exit                                |')
    print('-----------------------------------------------------------')
```

THANKS!

For Further Enquiries Do Contact at:
21026612@imail.sunway.edu.my