**INTRODUCTION**

Our tutor assigned us the task of creating the game "Guess the Number" to help us improve our coding skills. Anyone can play this game in which they must predict a randomly generated four-digit number. The player received a message on the screen concerning the hint, where A 'circle' indicates that one digit is accurate and in the correct location. In contrast, 'x' means one number is valid but in the incorrect spot. The game will display the number of attempts made, allowing the user to press 'q' and restart the game.

**REQUIREMENTS**

• Create a four-digit number at random.

• Continue to ask the player for guesses until they either guess correctly or choose to quit.

• Use the "circle" and "x" symbols to provide feedback cues for correct digits in the appropriate position and correct numbers in the wrong spot, respectively.

• Show the number of attempts required to guess successfully.

• Allow the player to leave the game at any moment.

• When the game ends, ask the player if they want to play again.

**AUTOMATED UNIT TESTING**

For this project, I choose the 'unit test' framework, which provides a straightforward way to define and test cases, thereby ensuring the validity of the code. The automated testing framework unit test verifies that the "Guess the Number" game works appropriately and consistently across multiple scenarios. The advantages of employing unit testing include that it helps to detect errors early in the process, making them easier to fix. The components of using 'unit test' are test cases, which contain test methods that check specific functions of the code; assertations that limit the actual result matches the expected result; test discovery, which automatically discovers and runs all the test cases; and test runner, which assists in executing the test cases and reporting the results.

**Brief description of the framework ‘unittest’**

A test case is a class that contains methods to test specific aspects of the code, which inherits from the 'unittest. unittest' class.

Inside Unitest, many pros help ensure the code's correctness and help catch bugs early in the development process.

The test method is a function of a 'unittest, that checks a specific aspect of the code, which derives from the name "test\_." It follows the assertations methods which are provided by 'the unit test. Test case that checks of a condition are true. 'Most units' can automatically discover and test cases by looking for the files that start with 'test' and contain the test method. The test runner inside the unit test executes the test cases and provides the results, including any errors or failures. Test cases have two methods, 'setup () and teardown (),' that run before and after each method. It supports test discovery, so you don't need to specify which tests to run manually, and it produces detailed output that helps identify which tests failed and why. It also supports test fixtures, which can help set up preconditions for testing.

The entire step Test Driven Development process of the guess the number project.

Start by writing a test for the first requirement: generating a random four-digit number in the test\_guess\_game.py file within the test’s directory:

Failing test code for generating the random number

A screenshot of a computer

Description automatically generated

Code to pass test

A screenshot of a computer

Description automatically generated

success

Failing test code for checking guess against the target number

A screenshot of a computer

Description automatically generated

Code to pass the test

A screenshot of a computer

Description automatically generated

Success

Failing test code if an incorrect guess provides

A screenshot of a computer

Description automatically generated

Code to pass the test

A screenshot of a computer

Description automatically generated

Success

Failing code for the feedback logic

A screenshot of a computer

Description automatically generated

Code to pass the test

A screenshot of a computer program

Description automatically generated

Did go through as there is invalid syntax. After the refactor the output

A screenshot of a computer program

Description automatically generated

Success

Failing code test if quitting the game is work or not

A screenshot of a computer

Description automatically generated

Code to pass

A screenshot of a computer

Description automatically generated

Success

Failing code to test playing the game with a correct guess

A screenshot of a computer

Description automatically generated

Code to pass

A screenshot of a computer

Description automatically generated

Failing code to test playing

A screenshot of a computer

Description automatically generated

Code to pass

A screenshot of a computer program

Description automatically generated

Success