QUEENSBOROUGH COMMUNITY COLLEGE
The City University of New York
Department of Engineering Technology

Connect 4 Game Part II

REPLACE THE SKELETON *drop_chip*() METHOD IN THE NEW *main*.py PROVIDED WITH YOUR OWN. AFTER THIS IS DONE RUN THE PROGRAM TO MAKE SURE YOUR *drop_chip*() WORKS AS EXPECTED.

Check Horizontal Win Logic

Your task is to implement the logic to check if the specified player has won the game **horizontally** in the Connect4 class within the given *check_win*() method skeleton.

Instructions

1. Within the *check_win*() method, locate the section reserved for checking horizontal wins.

2. Iterate over each row of the board. For each row, iterate over each column to check for four consecutive chips of the same player horizontally.

3. Compare the current cell with the next three cells in the same row to see if they all belong to the same player.

4. If four consecutive chips of the specified player are found horizontally, return *True*.

5. If no horizontal win is detected after iterating through all rows and columns, continue to the next step.

Check Vertical Win Logic

Your task is to implement the logic to check if the specified player has won the game **vertically** in the Connect4 class within the given *check_win*() method skeleton.

Instructions

1. Within the *check_win*() method, locate the section reserved for checking vertical wins.

2. Iterate over each column of the board. For each column, iterate over each row to check for four consecutive chips of the same player vertically.

3. Compare the current cell with the next three cells in the same column to see if they all belong to the same player.

4. If four consecutive chips of the specified player are found vertically, return *True*.

5. If no vertical win is detected after iterating through all columns and rows, continue to the next step.

Check Diagonal Win Logic

Your task is to implement the logic to check if the specified player has won the game **diagonally** in the Connect4 class within the given *check_win*() method skeleton.

Instructions

1. Within the *check_win*() method, locate the section reserved for checking diagonal wins.

2. Iterate over each row and column of the board. For each cell, check for four consecutive chips of the same player diagonally.

3. Compare the current cell with the next three cells diagonally to see if they all belong to the same player.

4. Check both diagonal directions: from top-left to bottom-right and from bottom-left to top-right.

5. If four consecutive chips of the specified player are found diagonally, return *True*.

6. If no diagonal win is detected after iterating through all rows and columns, proceed to the final step.

After implementing the entire *check_win*() method, copy the unittest program *test_check_win.py* to the same folder of the main program. Run the provided unittest program to ensure that your implementation works as expected. The unittest program will run four testing cases. If any of the four testing cases failed, the unittest program will show the errors. This will help verify that the method correctly handles various scenarios and properly updates the game state.

Submission Requirements:

You must submit your project with a pdf file and two source code files:

PDF Submission:

- Create a PDF document with screenshots demonstrating the steps of your project.
- Include the following:
    - Screenshots of your main.py and test_check_win.py code, with added test cases highlighted.
    - Screenshots of running the unittest tests and the results displayed in the terminal.
    - Add brief descriptions for each screenshot explaining what is being shown.
    - Ensure the PDF is well-organized.

Source Code:

- Include both main.py and test_check_win.py.
- Ensure the code is well-commented.
- Submit the code files in a ZIP file.