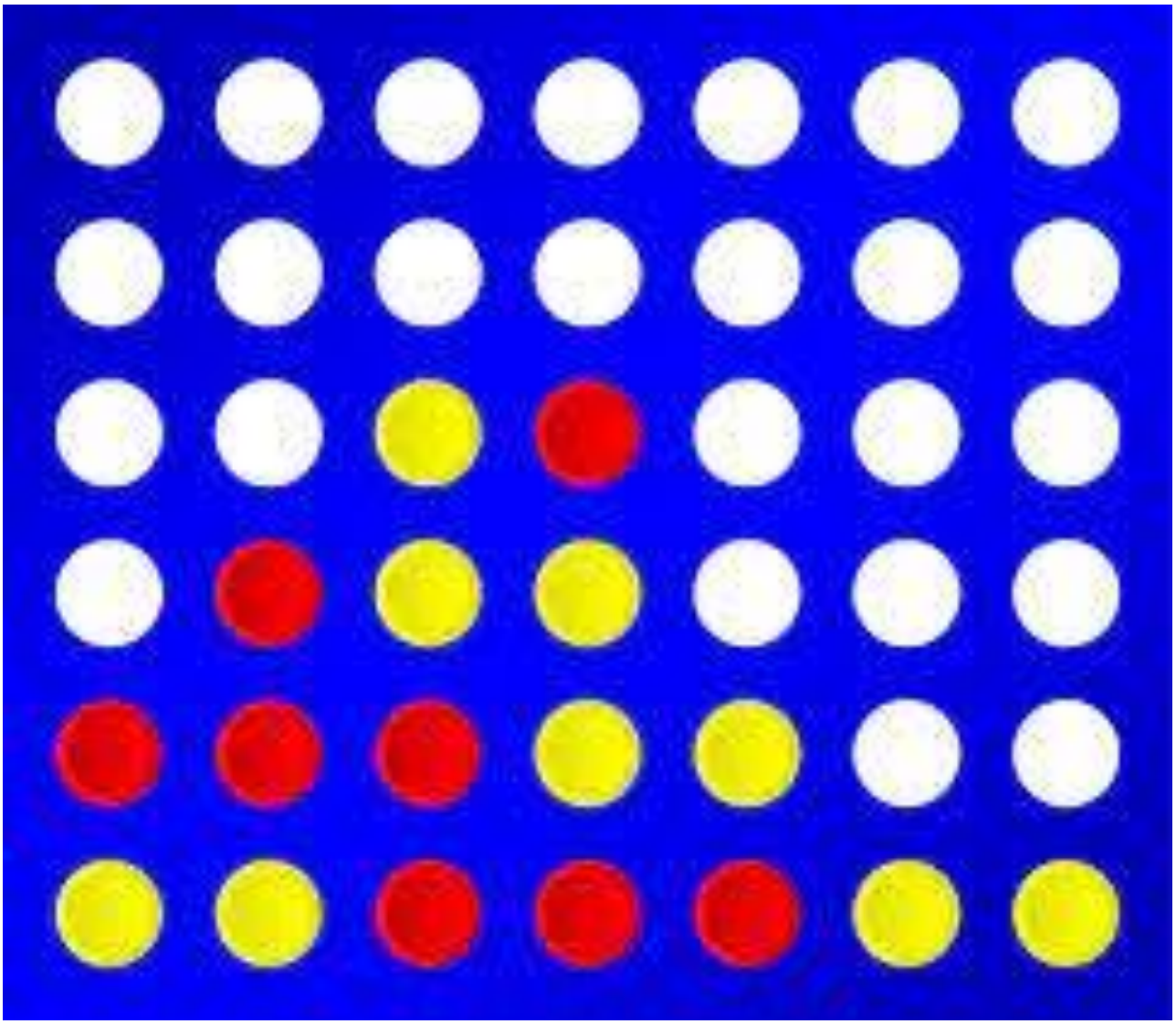


# Connect Four

(Mini Project)

(Subject: Python for Computational Problem Solving)

**Problem Statement:**

- Connect Four is a two-player strategy game that has a 6x7 grid and each player is given 21 coins of a colour (Red and Blue respectively).
- The players take alternate turns to play and the goal is to connect four coins of the same colour vertically, horizontally or diagonally.
- During his/her turn, the player can select the column in which he wishes to place the coin, and the coin gets placed in the bottommost empty slot in the selected column.
- The player who connects four coins of his colour first wins the game.
- Here, the player will be playing against the computer (Artificial Intelligence agent).

**Project Description:**

- We intend to make a game in which the computer is able to intelligently play the game of connect four.
- The graphics involved (done using Tkinter) in the game would give us an insight into efficient handling of the graphics package in Python.
- The usage of mouse makes the interface very user-friendly enabling him/her to be able to make his move at a click.
- The first player to connect four coins of his colour (Blue for the user and Red for the AI agent) wins the game.

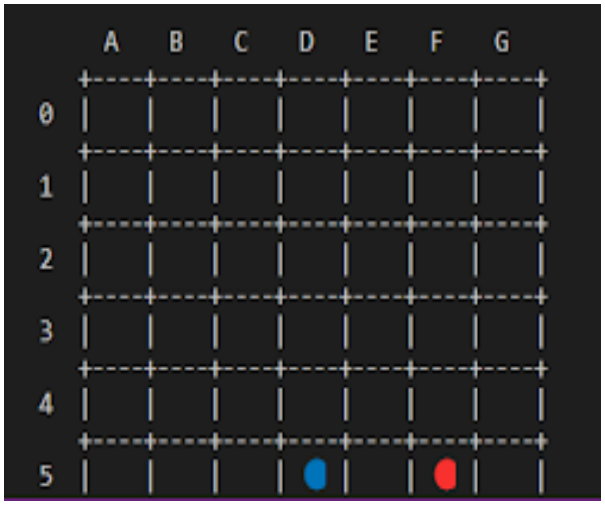
**Program Input:**

- As soon as the user runs the program the game will start.
- The game will ask the name of the user. (which will be stored in SQL)
- The player will be asked to enter his/her desired position to make his/her move.
- The input is taken in the form of an alphanumeric string. (an example is shown below)

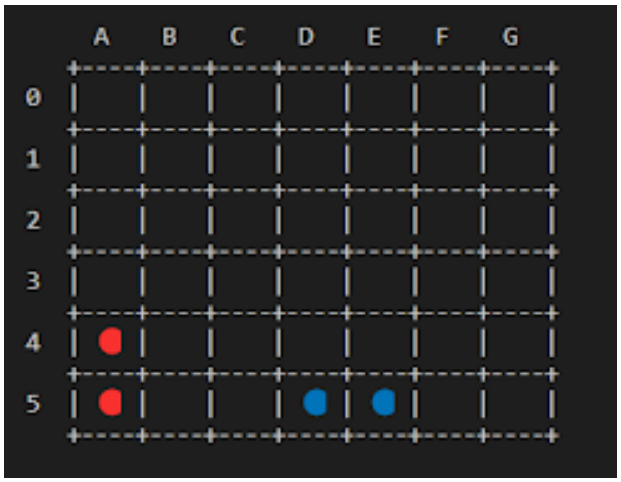
```
Choose a space: D5
```

**Program Output:**

- On entering the appropriate position/location of the coin, the coin would be inserted in the appropriate location which is the lowest unoccupied slot. (Gravity is taken into consideration in the further moves. If the user chooses his/her move without asking gravity into consideration, he/she will be asked to choose his/her move again) (def functions are used)
- The moves of the user are stored in a database.
- The computer would then analyse the game field and make a move. (done using random module) After having decided on the move the computer would then insert the coin in the decided slot. And similarly, the moves of the computer are stored in the database.



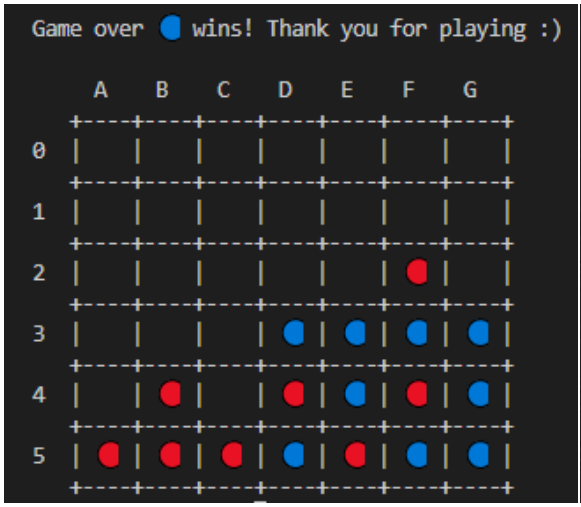
- The above steps continue until either the user or the computer satisfies the winning condition.




- The condition for the winner(any one of the following)
    - four coins in horizontal row
    - four coins in vertical row
    - four coins in diagonal (top left to bottom right)
    - four coins in diagonal (top right to bottom left)

  This is done using nested for loops and def functions.

- Thus, the game ends when either the user or the computer wins. The program displays a message along with the board as shown below.




- The data of the moves of both the user and the computer are stored in the database. (SQL)

| Mario | Computer |
|---|---|
| C5 | - |
| - | D5 |
| C4 | - |
| - | E5 |
| D4 | - |
| - | G5 |
| E4 | - |
| - | B5 |
| B4 | - |

- The moves of all the players (which are being stored in the database) will be displayed as a ‘Leader board’.

| Rank | Users | Total winnings |
|---|---|---|
| 1 | Mario | 475 |
| 2 | Luigi | 25 |
| 3 | Princess | 0 |
| 4 | Yoshi | 0 |

**Team:**

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Semester-1, Section-I, Batch-I2
Branch: Computer Science and Engineering (CSE)

**Individual Contributions:**

Below is a table outlining the responsibilities of each member:

| | |
|---|---|
| **Siri N Shetty** | *Source code, GUI* |
| **Shreya S** | *DBMS (Using SQL), GUI* |
| **Shreya Vijay** | *Created document for the review* |