|  |
| --- |
| CS 360 Object-Oriented Programming in C++ |
| Tic Tac Toe |
| Responsibility Driven Design |
|  |

|  |
| --- |
| Sara Dowty  5-5-2025 |

## Identifying Objects

Identifying the components, responsibility and collaborators.

### Components

* Players: 1 & 2 players
* Symbol: [x, o]
* Player Turn: save turn(play)
* Square: default unmarkedSquare()
* Row: Contains square 1, square 2, square 3
* Grid: Contains 8 rows
* The Grid (View): vertical lines, horizontal lines, squares.
* The Grid: [User interface]
* TicTacToe: win, lose, cat’s game (tie)

### Responsibility & Collaborators

CRC: Component, responsibility, collaborators

* Symbol
  + *Responsibility*: Hold “x” or “o” to assigned player
  + *Collaborators*: Player (assigned to player 1 or player 2), square (holds symbol & resets square symbols), GridView
* Square
  + *Responsibilities:* Hold symbol until game is over then rests square
  + *Collaborators:* GridView
* *Row*
  + *Responsibility: Hold 3 empty squares*
  + *Collaborates: Grid*
* *Grid*
  + *Responsibility: Hold 8 rows*
    - *Horizontal Rows*
      * *topRow: topLeftSquare, topMiddleSquare, topRightSquare*
      * *middleRow: middleLeftSquare, Center, rightMiddleSquare*
      * *bottomRow: bottomLeftSquare, bottomMiddleSquare, bottomRightSquare*
    - *Vertical Rows*
      * *leftRow: topLeftSquare, middleLeftSquare, bottomLeftSquare*
      * *centerRow: topMiddleSquare, center, rightMiddleSquare*
      * *rightRow: topRightSqure, rightMiddleSquare, bottomMiddleSquare*
    - *Diagonal Rows*
      * *rightDiagonal: topLeftSquare, center, bottomRightSquare*
      * *leftDiagonal: leftBottomSquare, center, topRightSquare*
  + *Collaborates with TicTacToe [TicTacToe Manages Grid View & Grid UI]*
* GridView [Display Grid]
  + *Responsibilities:* Display 2 vertical lines, contain 2 horizontal lines that cross each other to contain 9 squares that hold input of symbol
  + *Collaborators:* TicTacToe
* *GridModel [User Interface]*
  + *Responsibilities: Interact with user input*
  + *Collaborators: TicTacToe, Player, symbol*
* Player Input
  + *Responsibility:* The player inputs symbol
  + *Collaborators:* The Grid (user interface)
* *Player Turn*
  + *Responsibility: Output grid with squares to obtain input of player turn.*
  + *Collaborators: Player, symbol, square, TicTacToe*
* TicTacToe
  + *Responsibility*: Track symbol to identify win, lose or cat’s game. updateGrid().
  + *Collaborators*: the grid [display], the grid[user interface]

### Diagram \*needs updating

The diagram displays the class and interaction/relationships between objects. The diagram is not final, it is a document that will be updated during coding as changes will be made as needed during programming final code. This is a baseline starting point.

