

# Lab 13 – 07-01-2020

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## Task 01 (10 Marks each)

You are provided with code as: Tic-Tac-Toe.cpp

**01.1** Run Tic-Tac-Toe.cpp and check its:

- Draw functionality by selecting cells for both players appropriately
- Win functionality by selecting same row for any player
- Win functionality by selecting same column for any player
- Win functionality by selecting diagonal for any player

**01.2** Write class "Nonsense Computer Player" as Child of Player class. In function `getMove` select any cell at random and show message which cell computer has selected. Add option at start of game, press 1 to select Human vs. Human & press 2 to select Human vs. Nonsense Computer. Make objects according to choice & run the game.

**01.3** Write class "Sensible Computer Player" as Child of Player class. Make week aggregation of board with this player. Pass object of board to constructor of Sensible Computer Player. In function `getMove` get array from board by calling **`getBoard`** function. Find best available move:

- If there are 2 marks in any row or column or diagonal & 3<sup>rd</sup> is free, select that cell
- If there are 2 marks of opponent in any row or column or diagonal & 3<sup>rd</sup> is free, select that cell
- If there is 1 mark in any row, column or diagonal & 2<sup>nd</sup>, 3<sup>rd</sup> are free select one of free cells.
- Lastly if no above situation possible select any empty cell

Next add option, press 3 Human vs. Sensible Computer, Press 4 Nonsense vs. Sensible Computer. Give choice to select mark for player 1 & player 2. Also add option for play again. For play again initialize board & call `runGame` function.

**01.4** Write a function `toss`, at start in case of computer player. Select player 1 & player 2 according to toss value. This means in game Human vs Any Computer Player; both can be player 1 or player 2.

Similarly, in case of both computer players both can be player 1 & player 2.

Courtesy: Sir Abdul Mateen