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**Week 1: Day 001.1 – “Simple” Dice Game:**

Using C++ and Visual Studio, create a simple game of dice based upon the following rules:

- Two players: one human, one computer AI.
- The rules:
  - Each player gets one turn per round.
  - On a turn the player rolls two six-sided dice.
  - The player that gets a double (or highest double) wins the round.
  - If neither player gets a double, the highest total wins.
  - If both players roll the same total, then it’s a draw.
  - On the next round, the player swap turns.
    - Previous second roller is now the first roller... etc.
  - The game rounds continue, until the human player decides to quit.
  - There is one final requirement...
    - The computer AI must have a winning average of close to 70%.
    - However, the game should still appear random...
      - And hence fair to the player...

Before programming, start by using Microsoft’s Visio to create a flowchart to document the logic for the game design.

Upon completion of the flowchart, implement a text-based version of game. Create a Visual Studio Solution and Project for this exercise.

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**Week 1: Day 001.2 – Noughts and Crosses:**

Implement a game of Noughts and Crosses using C++. Add a second Visual Studio Project to the Exercise 001.1’s Visual Studio Solution.

At the start of the game, the board should be displayed as follows:

```

      A   |   B   |   C
      ---+---+---
      D   |   E   |   F
      ---+---+---
      G   |   H   |   I
  
```

Two human players will take turns to place pieces on the board. They will specify location via entering a letter on the keyboard which corresponds to a position on the board.

As each turn plays out, check for the winning condition. Three playing-pieces of the same type in a row (either: horizontal, vertical, or diagonal) causes the player to win, and the game to end. If all spaces are filled, and there is no winner, the game is declared a draw.

Upon completion of the game, the result should be announced, and the board should look similar to the following:

```

      o   |   B   |   C
      ---+---+---
      D   |   o   |   o
      ---+---+---
      ==x==|==x==|==x==
      |   |   |
  
```

Before programming, start by using Microsoft's Visio to create a flowchart to document the logic for the game design. Upon completion of the flowchart, implement a text-based version of game using C++.

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### Week 1: Day 001.3 – “Simple” Dice Game, with Statistics Reporting:

Duplicate the completed “Simple” Dice Game project from Exercise 001.1 and use this as the base to start from for this exercise.

Improve the “Simple” Dice Game by adding the following debugging features:

- Record the winner of each round.
- Allow a round to be played automatically without any human interaction with the game.
- When the program is run, the first prompt must ask how many rounds are to be played.
- The game must play the requested number of rounds.
- Upon completion of all rounds, report statistics for the following:
  - Total number of rounds played.
  - Total number of rounds won by the human player.
  - Total number of rounds won by the computer AI player.
  - Human player winning average.
  - Computer AI winning average.
- Allow the above debugging features to be turned off and on.

Add the Visual Studio Project for this exercise to the Solution from Exercise 001.1.