Settlers of Catan

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**Problem Statement:**

We are required to build a board game that has multiple rules and conditions. For this we decided to build a popular game, Settlers of Catan. This game takes 45 minutes to 1 hour 30 minutes. We plan to use C# in visual studio with Nunit as our testing framework and NCover for metrics and code coverage

**Features:**

-Interactive and well-designed GUI

-ability to create or join a game and change the settings

-ability to log in

-ability to play with 3-4 human players through a dedicated server

-ability to trade resources with other players

-ability to chat between players

-ability to roll die

-ability to build structures and roads by clicking on a spot on the board

-Test Driven Development

-ability to play through the game normally as expected minus harbors and robber

**Rules:**

Setup:

A board is randomly generated terrain with randomly generated numbers on each hex. Players begin by rolling a die to see who goes first. The first player puts down one settlement and one road. The person counterclockwise to that person then puts down a settlement and one road. This settlement cannot be within 2 roads of any previous settlement. This continues until all players have placed one settlement and one road. Then the order reverses and the last player goes first. All players then place down a second settlement and road. All players receive resources from the bank for every hex they have a settlement on. Play starts and will finish when one player reaches 10 victory points.

Game Play:

The player with the highest roll starts the game and starts his or her turn. He or she rolls the die and players receive resources for each hex adjacent to his or her settlements. If a player has a city, he or she receives two of the resource in the adjacent hex. Players may trade resources with each other or to the bank. Players can trade 4:1 anytime on their turn with the bank. Players can build roads, settlements, cities, or development cards on their turn if they have the required resources. Players may only build on their own turn. Development cards are kept secret until played and can only be played during a player’s own turn. Knights must remain face up for players to see.

Longest Road/Largest Army:

If a player has >= 3 knights, that player has the largest army and receives the largest army card worth 1 victory point. Players can steal this card by creating an army bigger than the previous player’s army. Likewise, if a player has >=5 continuous road pieces, that player has the longest road and receives the longest road card worth 1 victory point. This card can also be stolen by creating a longer continuous road than the previous road or breaking the continuity of the previous longest road and having a longer road than the resulting pieces.