Criteria A:

Defining the problem:

Gomoku is a popular game around the world, people spend times to play it. There is a 15x15 board for two players to play. The player who let the 5 pieces connect in one line horizontally, vertically or slantly will win the game. The reason my client, Michael want to do this is simply because he had enough boring experience on the plane, train and other long trips, so he needs take the trip need ways to kill time, Gomoku could be a good choice so he wants me to make one. In this project, my computer science teacher will be my advisor and my friend Michael will be the client for this project. My program will generally meet the need of Michael and reach his standards, to make this program, I will basically gain advices from my CS teacher Wu Di and solve the problem. The rules and the way to play game will remain the same of the traditional way, the program will be coding on the computer and used on the PC.

Rationale for solution:

The reason to code this game is to understand the strategies Gomoku player may deal with and make a AI which could respond every movement player done. Here is the requirements and success criteria to make this game:

1. A Graphical User Interface
2. Java will be used, as an object-oriented program, Java allows me to use inheritance, Encapsulation and polymorphism to make the program more efficient.
3. Java could be freely download and use.
4. A randomly respond AI which could make different strategies for the same situation, a predictable AI is boring to play with.
5. 2 game mode: play with AI and play with human, allows client to play for different situation.

And from the conversation I made with Michael, he considers neatly GUI is important, there are a lot of Gomoku program on the internet but many of them have a poor GUI and can't make people want to use it. A good GUI don't need to be fancy, but neat and clear.

Another important thing is the intelligence of the AI, as a skillful player, Michael don't like a simple UI that he can defeat all the time, that will be too boring to play with, so he desire an intelligent AI program so that he could have a good using experience.

Success Criteria:

After talk with my clients, there are several requirements to success:

1. A neat clear GUI before playing game to choose the game mode
2. predict possible movements player may down, design strategies for different situation.
3. AI should have many strategies to respond instead of one, the movement should be randomly chosen. If the movement of AI could be predicted, then it will be too boring to play with.
4. Algorithm will be used in the game for AI to respond. Machine learning will be used to learn situations and make respond to each movement of the player and make the best choice of it. Alpha beta tree will be use to do finite calculation. Monte carl AI will be another important algorithm to be used.
5. The game should be restarted again.

Word Count: 178+220