ANCHORMEN
a Quint company

1 > Introduction

The company named ‘Bring-it-on’ has decided to market multiple (casino) games. One of those games is TwentyOne (“Eenentwintigen”), which is a Dutch variant of Blackjack

It’s your assignment to implement a playable version of this game to show off your software development skills. You will (probably) not have enough time to implement the full game, so make sure you choose wisely! It is more important to have a working system with clean code than all features. Of course, the more features you do have, the better your score…

2 > Assignment

You will develop a playable version of the game using either **Java or Python** for the backend part, possibly in conjunction with something like a REST API and/or a Javascript frontend based on a framework like Vue.js or Angular, allowing the client to assess whether they want to continue with the further development. **Choosing another language is NOT allowed.**

The client assesses whether the game is playable, but also looks if the code is of sufficient level (quality, structure, orderliness), because their reputation is on the line. The client expects a game free from bugs, does not like spaghetti code and values unit testing.

1.1.1 Delivery

The source code can be sent as a zip or tar file. Please include clear instructions on how to build and start the game.

Please do not post your submission on Github or any other public code repository.

1.1.2 How will you be assessed?

The most important thing is that the game can actually be played. Because time is limited, the client does not expect a prize-winning UI. The client will assess the code using questions like the examples below:

- Can the game be played according to the rules?
- How is the structure of the code?
- How ‘clean’ is the code?
- Can the program be compiled?
- Does the program contain bugs?
- Does the code include unit tests?
- Is there any documentation?

The evaluation questions are summarized in **5 categories with 37 points in total**. The categories are:

1. Readability (7 points)
2. Tests (6 points)
3. Documentation (5 points)

4. Features (12 points)
5. Technical Design/Architecture (7 points)

Omitting parts of the solution (e.g. no tests, no documentation) means 0 points in that category.

1.1.3 What else?

The choice of UI is for you, as long as the game is playable. A command line or REST interface is also an option. In the case of the latter, please provide sample requests so we can test your system.

If you have used certain frameworks and dependencies, make sure that they can easily be used by the client, since they will try to (compile and) run your code. For example by using Maven, Gradle, PIP or SBT.

3 > Rules of play

TwentyOne is a game of chance. The chance of winning is based on the cards dealt by the program. The game is similar to Blackjack, but differs in some areas, so please read this section carefully.

All players in the game place their bets after receiving their first card. Once everyone has placed their bets, the participants get a second card.

One by one, the players of the game get the opportunity to play until they are finished. This means that player 1 plays until they stand or are bust, after which player 2 plays, etc. Each play, the players have the option to 'stand' (hold your total and end your turn, you cannot play any further), 'hit' (ask for a card to bring your points as close as possible to 21), or perform special actions (here only 'split'). If a player has more than 21 points in her hand, they are 'bust', and her bets are lost.

If all players are ready (stand or bust) the bank must play (only if there are players who are not bust). The rules for the bank are simple: The bank must hit when it has a total of 16 points or less and must stand with a total of 17 points or more. When the bank and player have the same number of points, the bank wins. If the bank has more than 21 points, the bank is bust and all players that are standing, win. A player who wins, gets the amount that was betted back in double.

When a player gets two cards with the same value, they can choose to 'split'. This means that the cards are placed next to each other on the table and the player can play twice, one game per card. The bet doesn't split but both cards get the original bet amount.

The number of points for the cards is as follows:

- King 3 points, queen 2 points, jack 1 point.
- Ace is 1 or 11 points. Normally it counts as 11, unless that busts the hand. Then it will count as 1.
- Cards 2 to 10 have their normal point value.
- The 'suit' of the card is not important.
- The Joker does not play

Note that the game cards must be pre-shuffled and that you cannot have more than 3 players per deck (for more players you will need more than one deck, which can be another feature in your game…).