

Euchre Problem Statement

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High Level Problem Summary

Create a fun, easy-to-use game so that players can learn the basics of Euchre.

Summary of Primary Success Criteria

- A working game that follows all of our given rules
- A working AI that provides a reasonable challenge for players
- AI takes less than a second to play

Scope

The primary goal of the software is to fully implement the core rules of Euchre listed below. The other optional rules that are played with occasionally will not be implemented. The AI is going to be very basic and is not the focus of the game. Multiple levels of AI and intelligent AI that plan ahead are not in the scope of this project.

Detailed Problem Statement

Function

Key Business Features

1. Play cards
2. AI plays cards
3. Score Tricks
4. Score rounds
5. Select Trump
6. Dealer shuffles cards and deals them out correctly
7. Deal at the beginning to determine first dealer
8. Going alone

Key Concurrency Issues

There will only be a single process running the game, so there won't be any concurrency issues.

Form

Key Attributes

Performance

Since the user will be playing the game in real time, we do not want long delays between the user's turns. This means that the calculations for the AI's turn and the game mechanics must be efficient.

Usability

We want this program to be simple to use and understand. This means that we will have a simple GUI that will simulate a card table. We will have images of all the cards in play, as well as buttons that the user can use to interact with the game.

Testability

The software must be very testable and will have a complete domain layer that can be tested without use of a GUI. Exploratory testing must also be done on the GUI layer before project submission.

Customizability

Because Euchre often features different variations to the rules, we plan on eventually adding features to accommodate for these variants.

Hardware and Software Constraints

The program will be developed in Java. To run the game on different hardware, it must have Java installed. The user must also have a mouse as some of the features require clicking.

Economy

There will be no monetary costs in developing this project and it will not be commercialized.

Time

The game will be developed over the course of 8 weeks.

Game Rules

1. Start with a standard card deck and remove all cards other than the 9 through Ace.
2. The deck is shuffled each player successively flips the top card until a Jack is flipped, that player begins as the dealer.
3. The dealer shuffles the deck and deals out five cards to the players, normally in a 3, 2, 3, 2 pattern. There should be four cards left over, these are called the kitty.
4. The dealer then flips over the top card of the kitty.
5. Starting from the player to the left of the dealer each player either says “pass” or “pick it up”.
 - a. If “pick it up” is called the trump is determined to be the suit of the flipped over card, the dealer replaces the flipped over card with another card in their hand and places the displaced card face down on the kitty .
 - b. If it reaches the dealers turn and the dealer passes then the dealer flips the card yet again so that it is face down on the kitty and the person on the dealer’s left starts again and may choose any other suit to be trump.
 - c. If the dealer is reached a second time then that person must choose a trump suit.
 - d. At this point any player may say that they are “going alone”.
 - i. When this happens that player’s partner lays down their hand and does not participate in the round.
6. The person on the dealer’s left may play any card in their hand.
 - a. Each of the remaining players (in clockwise order) must play the suit that the first player played if they have that suit in their hand, otherwise they can play any card that they like.
 - b. The winner of that trick is determined by the following ordering: Jack of the trump suit, Jack of the same color as the trump suit, Ace of the trump suit, King of the trump suit, Queen of the trump suit, 10 of the trump suit, 9 of the trump suit, Ace of the suit first played, King of the suit first played, Queen of the suit first played, Jack of the suit first played (if not the same color as the trump suit), 10 of the suit

first played, 9 of the suit first played.

- c. The person that won the trick begins the next trick, until all five have been played.
 - d. Scoring of the round occurs as follows: 1 point if the team that called trump wins 3 or 4 tricks, 2 points if the team that called trump wins 5 tricks, 2 points if the team that didn't call trump wins more than 2 tricks and 4 points if the winning team "went alone" and won all five points.
7. This continues until one of the teams reaches 10 points and that team is declared the winner.

A more complete set of rules can be found at <http://en.wikipedia.org/wiki/Euchre>, however bidding does not take place, we will not allow reneging and we will use screw the dealer.

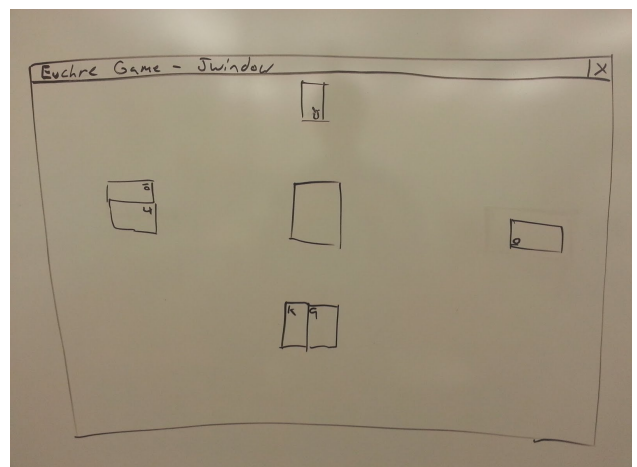
Key Stakeholders

Logan Hallowell	<i>Developer</i>	_____
Alex Memering	<i>Developer</i>	_____
Erik Sanders	<i>Developer</i>	_____

The repository can be found at <https://github.com/Memeriaj/Euchre>.

GUI Layout

This photo shows the initial dealer selection process. The rectangle in the middle is the deck and it distributes cards to each player until a jack appears.



In this photo the beginning of a round is shown without any of the scoring. The first person has played (the person on the right) and the player (bottom person) has selected the card that they will play, once they click it again then it will be played.

Here the more of this round has been played. Notice the scoreboard in the upper lefthand corner as well as the two trick piles that indicate the number of trick won by each team. An alternate design for the scoreboard would be the standard method of displaying score in Euchre where the four and six of one particular suit is used and the number of visible suit symbols is the current score for the team.

