Project Design Document (Cribbage Project)
CPSC 101, Winter 2023
Team Breve

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□ List of Verbs (methods):

- (Play) Scoring
- (Show) Scoring
- Displaying board
- Pegging (moving peg)
- Cut
- Announcement (announce winner, skunk, or double skunk, say GO, announce sum and possible points during play/pegging)

▯ Paragraph Description:

This part of the document describes each noun precisely.

- **Player:** Interacts directly with a deck of cards. A total of six cards are originally held by each of the two players, but they each place two cards on the crib for the dealer to utilize during the Show stage. The participants placed their cards to get 31 points, or as near to it as possible, throughout each round. Up until the first person reaches 121 points, the process is repeated.

- **Human:** The player controlled by the one playing. It has control of their own actions.

- **HumanPlay:** The moves done by the human player during the play part of the game.

- **CPU:** The player controlled by the computer, with some level of randomness to its actions.

- **CPUPlay:** The moves done by the CPU player during the play part of the game.

- **Game Board:** Works to record the track of the score. It is a visual representation of the total points the player made to that point in the game. It only goes to 121, marking the victory for the player that gets to that point. There are two pegs for player, one that moves during the Play, and another for the points acquired at the Show.

- **Referee:** The one that keeps track of the winner. It announces whoever wins the game.

- **Card:** Objects of specific suit (Hearts, Diamonds…) and value (1,2,3, 4..) that goes from one, being this represented by the Ace card, and ten, represented by ten, Jack, Queen and King.

- **Round:** The moment the cards are put and the player gets the points to move the peg. There are two stages on a round, the first where the cards are laid down, until both players no longer have any cards. The second stage is the show, where the players analyze their hands, seeing any possible combinations and points they can get from it.

- **Crib:** Four extra cards (faced down) that the dealer of the round has access to, to count for points during the show stage, and only during that stage. When both players start the round, they both get six cards, and two of each goes to the crib.

- **Game:** The main part of the program, where everything else starts to run.

- **Preparation:** Refers to the steps previous to starting the game, and necessary to its start, such as making a crib or picking a dealer.

- **Score:** The points the players, human and cpu, acquire through the play and the show.

- **Play:** The first part of a round, where the players put down the cards until they reach the number 31 and their hands are empty. In case they reach 31 or near, and they still have cards that would surpass this value, the count is restarted until they no longer have cards in their hands.

- **Show:** The second part of a round, where the points were not counted during the play are now revised, and added to the total points of the player.

- **guiCPUcrib:** The visual representation of the CPU crib, in case the CPU is the dealer.

- **guiCPUcard:** The visual representation of the cards in the CPU's hands.

- **guiGameBoard:** The visual representation of the board, where the peg is seen.

- **guiGameFrame:** The window where all the components, buttons and board, are visualizable.

- **guiPeg:** The visual representation of the pegs that are used to form the GameBoard.

- **guiPersonCard:** The visual representation of the cards in the human's hands.

- **guiPersonCrib:** The visual representation of the human crib, in case the human is the dealer.

□ List of Facts

This part of the document describes a list of facts about each noun which is followed by attributes, behaviors, and messages sent to other objects.

● Player

Facts:

1. Each player has 4 cards (dealer has crib).

Attributes:

2. Play Peg count:int
3. Show peg count:int
4. Score: int
5. DEALER:boolean
6. Pone:boolean
7. Cards: Arraylist of cards
8. Crib: ArrayList of cards

Behaviors:

1. Place cards
2. Choose cards for crib
3. Move peg (interact with game board)
4. Say go

Messages:

1. Announce go
2. Send peg count to board

● Human

Facts:

1. It calls go when the cards in their hand, if added, would surpass 31.

Attributes: and
Everything in player and Human: boolean(true)

Behaviors:

2. Place cards
3. Choose cards for crib
5. Move peg (interact with game board)
6. Say go

Messages:

7. Announce go

● HumanPlay

Facts:

1. The moves done by the human player, as put down a card or call go, during the Play.

Attributes:

None.

Behaviors:

2. Test for go.

Messages:

3. None.

● CPU

Facts:

1. It calls go when the cards in their hand, if added, would surpass 31.

Attributes:

2. Human: boolean(false)

Behaviors:

3. Place cards
4. Choose cards for crib
5. Move peg (interact with game board)
6. Say go

Messages:

7. Announce go

● CPUPlay

Facts:

1. The moves done by the CPU player, as put down a card or call go, during the Play.

Attributes:

None.

Behaviors:

2. Test for go.

Messages:

3. None.

● Cards:

Facts:

1. Deck of 52 Cards (Joker not included).

Attributes:

2. Rank
3. Suit

Behaviors:

None.

Messages:

1. Cards will be used in other Classes.

● Round:

Facts:

1. The objective of the game is to be the first player to score (at least) 121 points.
2. The dealer is determined by drawing cards, thereafter, the loser of the previous game deals first in the next game.

3. There are no draws in Cribbage
4. The play count only goes to 31.
5. If cards remain and the count is 31, the count is reset and the rest of the cards are placed.
6. The Pone counts their hand first, then the dealer's hand, then the dealer's crib.

7. Combinations for play and show:
    - **Fifteen:** For adding a card that makes the total 15, score 2 points.
    - **Pair:** For adding a card of the same rank as the card just played, score 2 points.
    - **Pair of three:** For adding a card of the same rank as the last two cards, score 6.
    - **Pair of four:** For adding a card of the same rank as the last 3 cards, score 12.
    - **Run (sequence) of three or more cards:** Score 1 point for each card in the sequence. The cards Basically if you can take n cards that are in order and rearrange them so all the n cards form a numerical sequence.
    - **Last card makes less than 31:** Score 1 point.
    - **Last card makes 31:** Score 2 points.

Additional to show:

1. **4 card Flush:** If all the cards in your hand are of the same suit, score 4 points. You cannot have three cards in your hand and the starter to count as a flush. This flush is only forming the hand not the crib.
2. **5 card Flush:** If all the cards in your hand, and the starter card, are of the same suit, score 5 points.

Attributes:
Not an object.

Behaviors:
1. Play and Show

● Game Board:

Facts:

1. 2 pegs per player
2. Goes to 121

Attributes:
Static.

Behaviors:
None

Messages:
None

● Game:

Facts:

1. Where the players are switched in between rounds.
2. Where the main part of the game happens.

Attributes:

3. Crib: ArrayList of cards

Behaviors:

4. Switch Players
5. Do play
6. Do show

Messages:

7. Announces players and cards

● Preparation:

Facts:

1. Prepares crib, picks dealer, gets the information necessary to start the game.

Attributes:
None.

Behaviors:

2. Picks dealer.
3. Make the crib.
4. Provide it to the dealer.

Messages:

5. Ask players to pick the cards for the crib.

● Play:

Facts:

1. The points the player acquires through the play, by fulfilling different rules, for example, the rule of fifteens.

Attributes:

2. playSum: int
3. playList: arraylist of cards
4. startCard: card
5. hcards: arraylist of cards
6. cpucards: arraylist of cards
7. human: human
8. cpu : cpu
9. x: player
10. go: boolean

Behaviors:

11. Check the cards put down by both players to assign points when some rule is fulfilled.

Messages:

None

● Show:

Facts:

1. Revision of the cards put down by the players, to count down anymore points that can be added to their score, according to the different combinations they can possibly make.

Attributes:

2. dealer: player
3. pone: player
4. dealerpoints: int
5. ponepoints: int

6. starterCard: card

Behaviors:

7. Add points to the respective player that got them, by the different combinations that can be made by their hands, and crib, for the dealer.

Messages:
None

● Score:

Facts:

8. The total points of the players, acquired through both play and show.

Attributes:

9. Showscore: int
10. Playscore: int

Behaviors:

11. Add points to the respective player that got them.

Messages:
None

● Referee:

Facts:
Only one Referee

Attributes:
Static.

Behaviors:

1. Announce winner
2. Let player quit or restart
3. Displays the board

Messages:
Announce winner, quitter, restart.

- ## Crib:

Facts:

1. Only used in show
2. Only dealer has a crib
3. Crib has 4 cards (2 from each player)

Attributes:
Array list of 4 cards.

Behaviors:
None

Messages:
None

- ## guiCPUcard:

Facts:

1. The visual representation, through the use of buttons, of the cards in the CPU hands.

Attributes:

2. cpucards: arraylist of cards
3. JButton(six jbuttons) as the cards
4. Cards: jpanel

Behaviors:

5. Puts the buttons that refers to the cpu's hands on the frame.

Messages:
None

- ## guiCPUcrib:

Facts:

1. The visual representation, through the use of buttons, of the cards the CPU has when it is the dealer.

Attributes:

2. card1 through card4: jbutton
3. Cards: jpanel
4. Visible: boolean

Behaviors:

5. Puts the buttons that refer to the cpu's crib, when the cpu is the dealer, on the frame, but not making it visible to human.

Messages:
None

● guiPersonCard:

Facts:

1. The visual representation, through the use of buttons, of the cards in the human hands.

Attributes:

2. card1 through card6: jbutton
3. Cards: jpanel

Behaviors:

6. Puts the buttons that refer to the human's hands on the frame.

Messages:
None

● guiPersonCrib:

Facts:

6. The visual representation, through the use of buttons, of the cards the human has when the human is the dealer.

Attributes:

7. card1 through card4: jbutton
8. Cards: jpanel
9. Visible: boolean

Behaviors:

10. Put the buttons that refer to the human's crib, when the human is the dealer, on the frame, and make it visible.

Messages:
None

- **guiGameFrame:**

Facts:

1. The visual representation of the game, with the board, pegs and buttons representing the cards.

Attributes:

2. Pegs: guiGameBoard
3. Hc: guiPersonCard
4. Cpuc: guiPersonCard
5. hcrib: guiPersonCrib
6. Cpucrib: guiCpuCrib
7. Hpanel: JPanel
8. Hcrpanel: JPanel
9. Cpupanel: JPanel
10. Cpucrcpanel: JPanel
11. Framepanel: JPanel

Behaviors:

12. Shows the hands, through buttons, and board by the pegs.

Messages:
None

- **guiPeg:**

Facts:
The visual representation of the pegs in the horizontal direction

Attributes:
ArrayList: pegscpu
ArrayList: pegsh

Behaviors:
Shows board by the pegs.
Updates the board.

Messages:
None

- **guiGameBoard:**

Facts:

13. The visual representation of the board with the counting of the pegs.

Attributes:

14. bp: jpanel
15. Tracks: guiPeg

Behaviors:

16. Keeps track of the points acquired by both players, representing it by filling the pegs on the screen.

Messages:

17. Shows the score of the players through the pegs.