

Project Overview

Develop a software application for the card game called Gin Rummy.

Project Terms

The following terms and acronyms are defined and used within this document.

Term/Acronym	Definition
card	A single playing card that has both a rank and a suit.
card rank	One of Ace, 2, 3, 4, 5, 6, 7, 8, 9, 10, Jack, Queen, or King.
card suit	One of spade, heart, club, or diamond.
deadwood	A card that is not part of a meld.
deck	A standard collection of 52 playing cards, where each card has a distinct value.
discard pile	A pile of cards face up.
game total	A player's total score.
meld	A set of three or four cards with the same rank OR a run of three or more cards in sequence and in the same suit.
stock pile	A pile of cards face down.

Project Requirements

The project requirements include a description of the way in which the game is played and processing requirements. Please note that all of the project requirements are numbered so they can be referenced in your spiral plan (more on this when we get to assignment 8).

Game Description

Equipment

1. A standard 52-card deck of playing cards. The ranking from low to high is Ace-2-3-4-5-6-7-8-9-10-Jack-Queen-King.

Rules

2. Gin Rummy is played by two or more players, with each player in succession having a turn. Each player's turn may result in the player knocking or calling out "gin" (see *Scoring* below). The first player to reach 100 or more points wins the game.
3. The game begins by the dealer shuffling the deck and dealing ten cards to each player. The dealer then places the remaining cards face down as the stock pile and flipping over the top card in the stock pile to create the discard pile. The player to the left of the dealer begins play. The dealer rotates to the left after each hand.
4. The basic game strategy is to improve one's hand by forming melds and eliminating deadwood. Gin Rummy has two types of meld:
 - a. Sets of 3 or 4 cards sharing the same rank, e.g. three eights.
 - b. Runs of 3 or more cards in sequence and in the same suit. e.g., 3-4-5-6 of heart.
5. On each turn, a player must do two things, in order:
 - a. Draw either the top card from the discard pile or the top card from the stock pile.
 - b. Discard one card from his or her hand onto the discard pile.

6. Player's alternate taking turns until:
 - a. One player ends the hand by having all ten cards in melds.
 - b. One player chooses to knock.
 - c. The stock pile is empty. When the game ends because the stock pile is empty, no points are awarded.

Scoring

7. A player wins the hand by having the smallest deadwood count.
8. The player that wins the hand accumulates the deadwood count from all other players; this number is added to the player's game total. When the winning player has a non-zero deadwood count, the winning player's deadwood count is subtracted from the accumulated deadwood counts from all other players.
9. The deadwood count is the sum of the point values of the deadwood cards, as follows:
 - a. Aces are scored at 1 point.
 - b. Face cards at 10.
 - c. All other cards according to their numerical value.
 - d. Intersecting melds are not allowed. That is, if a player has a 3-card set and a 3-card run sharing a common card, only one of the melds counts, and the other two cards count as deadwood.