

13016235: C Programming

First Semester, 2020

Project Proposal

1. Project developer

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2. Project title

C Blackjack

3. Project description and requirements

Project description:

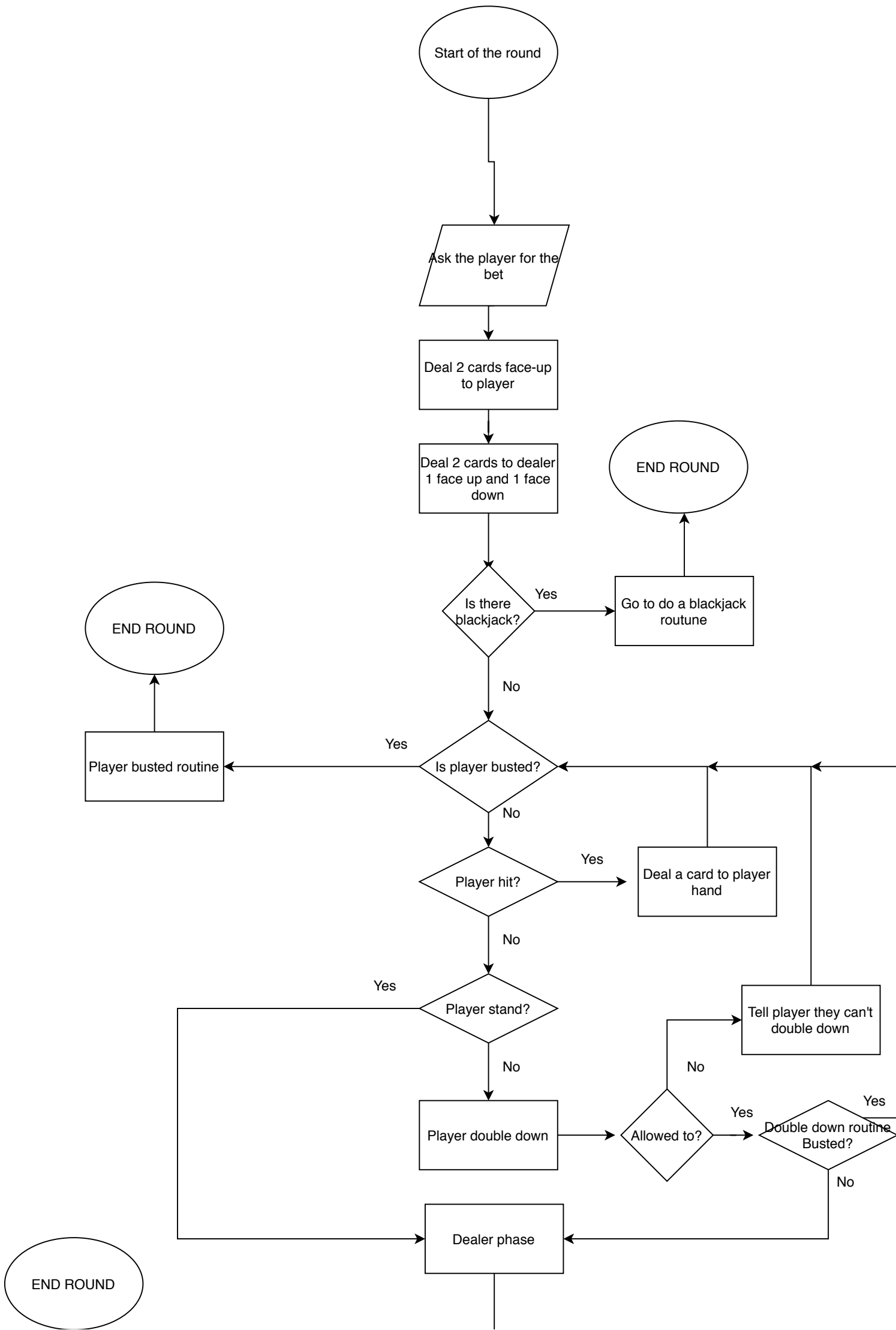
(Note: figures, flowcharts, diagrams may be used to describe the project)

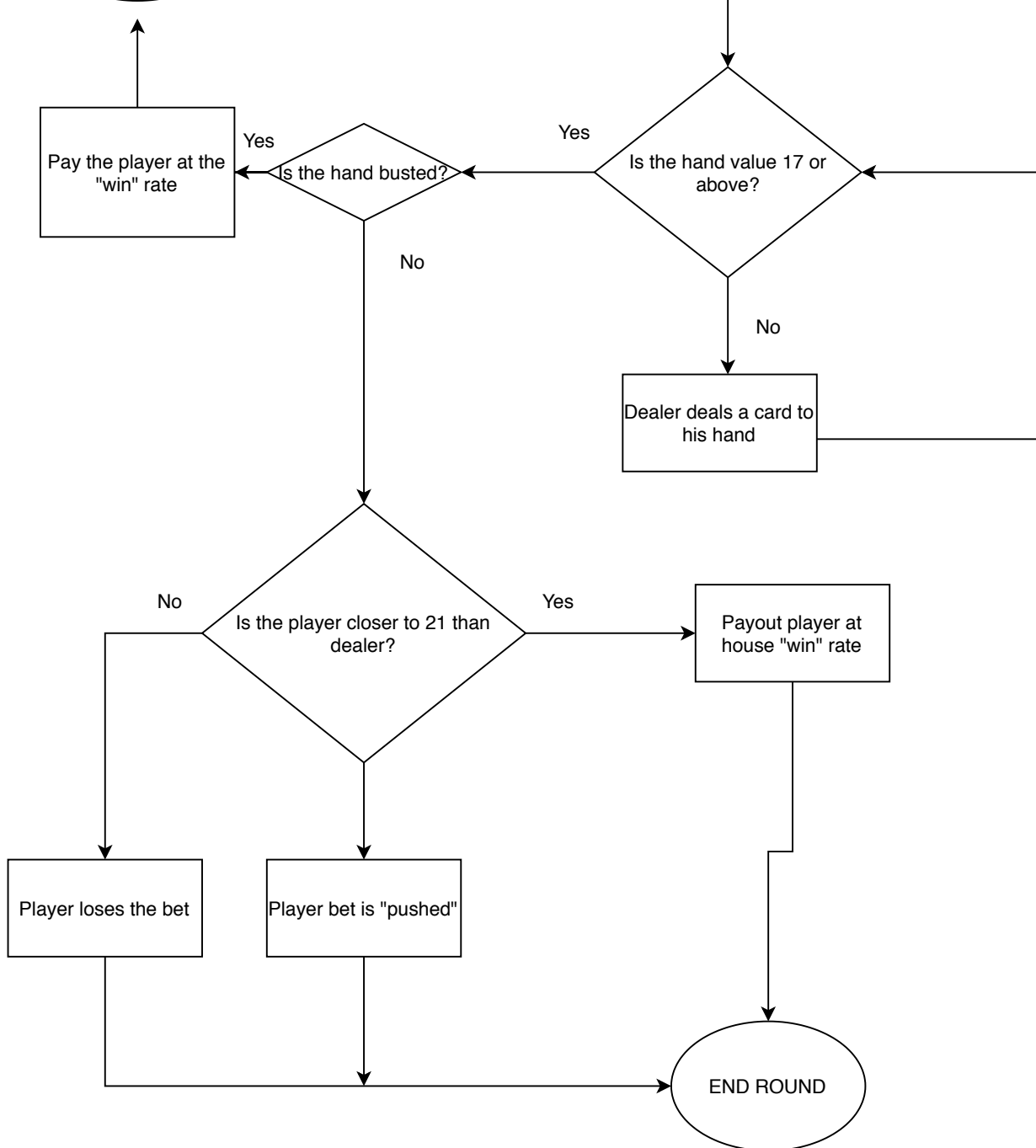
This program represents the game of blackjack inside the terminal

The flowchart is attached to the file.

Project requirements:

The project requirement is attached in the file





Program Specification

The program is supposed to partly replicate the game of blackjack, which is played in a casino

Each component of the game has broken down into the functions below

Functions required:

- Find value of a card
- Finding the value of the hand
- Pre-round routine
 - Clear the dealer hand
 - Clear the player hand
 - Clear the player bets
 - Set player hand state to be playing
- Input validation for the bet
- Input validation for the playing decision
- Input validation for choosing whether to keep playing
- Displaying hands (with option for hidden card)
- Checking for sufficient money
- Generate a random card and hit card to hand
 - Generate card
 - Appending it to the hand
- Check for blackjack in hand
- Check for busted hand
- Check if player is allowed to double down

Concerned moving parts/variable:

- Constants
 - MINIMUM_BET 10
 - MAX_INPUT 255

- MAX_CARD 5
- MAX_HAND 25
- TRUE 1
- FALSE 0

- Dealer

- House payout
 - Blackjack rate
 - Winning rate
 - Push rate
- Hand (which holds cards)
 - Value
 - State
 - Playing
 - Busted
 - Over

- Player

- Money
- Current bet
- Hand (which hold cards)
 - Value
 - State
 - Playing
 - Busted
 - Over

- Cards

- Name

- Suit

This is the pseudocode of the program

Please note that this may be incomplete of the actual program

This is built off from the specification of the program

Some notes concerning the game

Blackjack(naturals) trumps 21 Ex: 6 + 7 + 8 loses to Ace + 10

Dealer must keep dealing til he is 17 or above

Functions for the blackjack game

def check_if_above_21:

 Look at the hand

 Do a soft value of the hand

 If the total value is already above 21 bust the hand

 For each card in hand

 If it is an ace and soft count is <11

 Add 10 to the total

 Return the final count

def generate_card():

 card_name = [A,2,3,4,5,6,7,8,9,10,J,Q,K]

 card_suit = [C, H, D, S]

 Pick a random card name

 Pick a random card suit

 Return card_name + card suit

Pregame set up

If the player has lower money than the minimal bet(10\$):

 Tell the player they are broke and shoo them off

Player walks up to the table

Clear the dealer hand

Clear the player hand

Clear the current bet of player

Player will put down some amount of bet

 If the player didn't give a number the dealer will keep asking

 IF the player gives a negative bet, the dealer will keep asking

 If the player says a number bigger than what he has, the dealer will keep asking for a valid bet

Take away that amount of bet from the player

Dealer will deal 2 cards faceup to the player

Dealer will deal 1 faceup card and 1 facedown card to himself

Check for blackjacks

If the player has blackjack:

 Dealer will reveal his card

 If the dealer DON't have blackjack

 Tell the player he got a blackjack

 Pay the player according to (His bet * House rate for blackjack)

 END OF ROUND

Else

 Tell the player the bets are pushed

 Pay the player according to (His bet) (Since it is a pushed hand)

 END OF ROUND

If the dealer has a face up card with a value of 10 or Ace:

 The dealer check if they have blackjack

 If the dealer has blackjack:

 Dealer reveals his cards

 Tell the player he is unlucky and the dealer has blackjack

END OF ROUND

Player main playing decision

Checking for bust and ending of hand

While the player hand is not busted or over

Ask the player what they want to do

If they give an invalid response

Clear the response

Ask the player the give a new response

Continue

If the player choose to stand his hand:

The hand will be "over"

If the player choose to hit:

The dealer will add one more card to the hand

If the player choose to double down:

If the hand is allowed to be doubled down: # Only having 2 cards

Ask the player how much they want to add

The player will add up to an equal amount of money to the initial bet on the hand

The dealer will hit one more card to the hand

The hand is over

Else:

Tell the player they can't double down

If busted(hand):

Tell player the value of his hand

Tell player he is busted

Make the player hand state busted

Continue

If player hand is busted

END OF ROUND

The dealer playing of hands

The dealer will reveal his hidden card

While his hand is not satisfied by the house condition and not busted: # Keep hitting till hard/soft 17 or 16

Dealer will hit new card to his hand

If busted(dealer hand):

The dealer hand state is busted

Break

If the dealer bust:

Tell player the dealer bust

Tell player the wins

Dealer pays the player (His bet * 2)

END OF ROUND

Else:

If the dealer hand is closer to 21 than the player hand:

The dealer will payout that hand according to a house rate ($\text{Bet} * \text{win rate}$)

If the dealer hand is the same as the player hand:

The bets are pushed

If the dealer hand is farther away from 21 than the player hand:

The player loses his hands bet

END OF ROUND