Tanya Yadav
Three Card Poker Game(java) -
Project2

How the game work?

- The game of Three Card Poker played between 2 player and Dealer. The player will have 2 section of bet: ante bet and pair_plus.
- (Ante bet or called play_wager) used when your 3 cards compare against the Dealer 3 cards - trying to see if our 3 cards sum is higher, lesser or equal to Dealer's. If equal, no money is lost; if win, receive x2 of initial ante bet; if lost, lost initial ante bet
- While, pair_plus is self card evaluation that try to see if your hand match quality of straight_flush, three_kind, straight, flush, pair. Also, depend on your which quality of pair_plus matched, player will receive x2,x3,... of player's initial pair_plus bet. But when player lost, just lost their initial pair_plus bet.
- When start, player must enter their ante bet, while pair_plus box is optional to enter (mean you can skip to pair plus bet). The bet range for both section must range between 5-25.

Card assigned:

52 cards deck, 2 to K assigned as 2 to 13 points, while A assigned as 14 (for point accumulated when ante bet).

Card.java has value and suit. Suit is ♦, ♥,♣ ,♠

Pair (x1 bet): 2 same value   (eg. A,A,2 ; J,Q,Q)

Plus (x2 bet): 2 suit match (eg.♦A,♦3,♣A ; ♥3, ♥5, ♠6)

Straight (x3): 3 value increment by 1 consecutively (eg. ♣Q,♣K, ♦A ; ♦2,♥3, ♠4)

Three kind (x4): 3 same value (eg. ♦A,♥A,♣A)

Straight plus(x5) : when plus and straight (eg. ♣Q,♣K, ♦A)

Card.java

```java
public class Card {  //have suit and value, store as 2-14, and C,D,S,H
    char suit;
    int value;
    public Card(char suit, int value) {
        // TODO Auto-generated constructor stub
        this.suit =suit ;
        this.value =value;
    }
    public char getSuit() {
        return suit;
    }
    public int getValue() {
        return value;
    }
}
```

Pair_plus rules in ThreeCardLogic.java

Tanya Yadav
Three Card Poker Game(java) -
Project2

```java
// check if there a pair
public static int pair(ArrayList<Card> hand) {
    if(hand.get(0).getValue()== hand.get(1).getValue() ) {
        return 1;
    }
    else if(hand.get(0).getValue()== hand.get(2).getValue()) {
        return 1;
    }
    else if(hand.get(1).getValue()== hand.get(2).getValue()) {
        return 1;
    }
    else {
        return 0;
    }
}

// check if there a flush
public static int flush(ArrayList<Card> hand) {
    if(hand.get(0).getSuit()== hand.get(1).getSuit() && hand.get(0).getSuit()== hand.get(2).getSuit()
            && hand.get(1).getSuit()== hand.get(2).getSuit()  ){
        return 2;
    }
    else {
        return 0;
    }
}

// check if there a three kind
public static int three_kind(ArrayList<Card> hand) {
    if( hand.get(0).getValue()== hand.get(1).getValue() && hand.get(0).getValue()== hand.get(2).getValue()
            && hand.get(1).getValue()== hand.get(2).getValue() ) {
        return 4;
    }
    else {
        return 0;
    }
}

// check if there a straight_flush
public static int straight_flush(ArrayList<Card> hand) {
    if(flush(hand) != 0 && straight(hand) !=0 ) {
        return 5;
    }
    else {
        return 0;
    }
}
```

Game stimulation
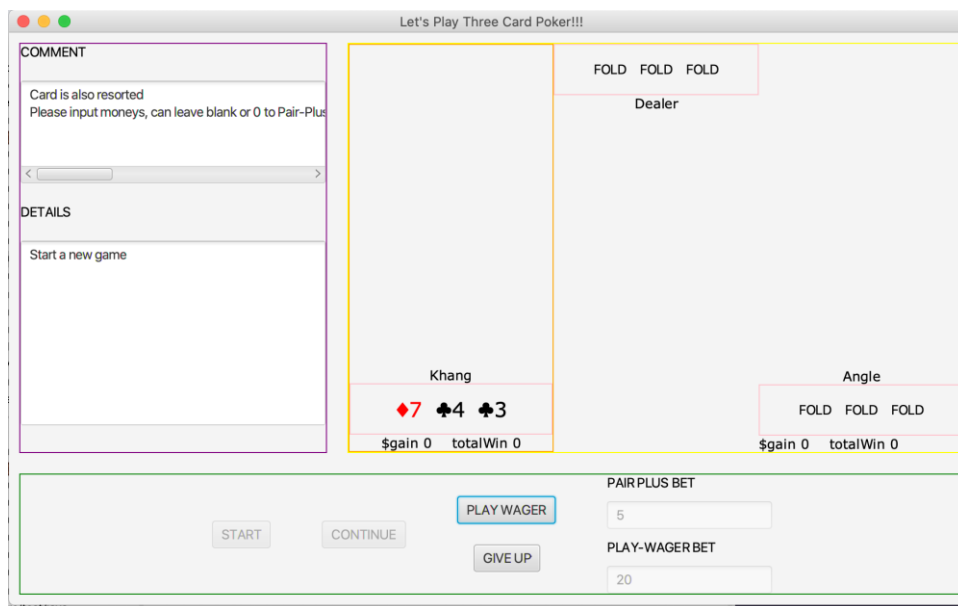
Tanya Yadav
Three Card Poker Game(java) -
Project2
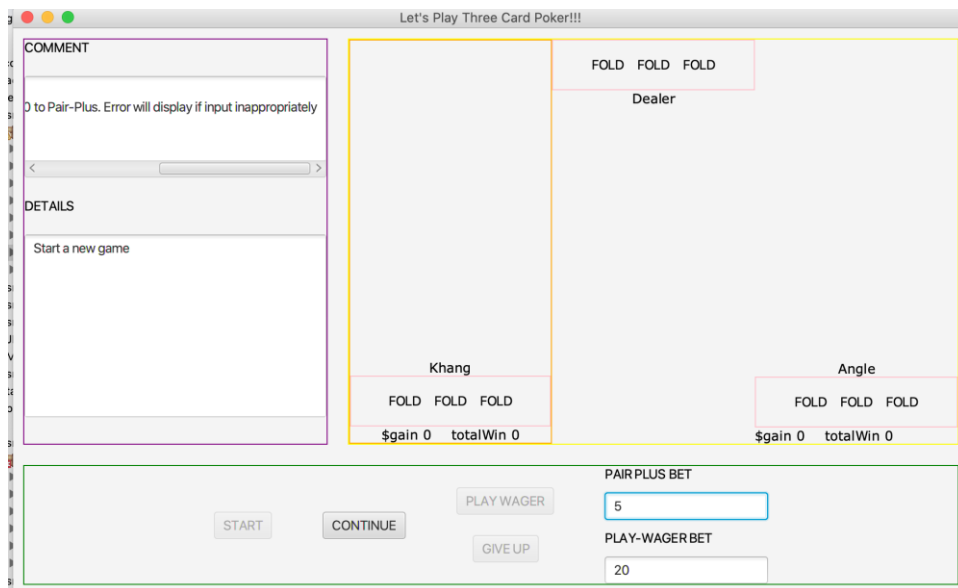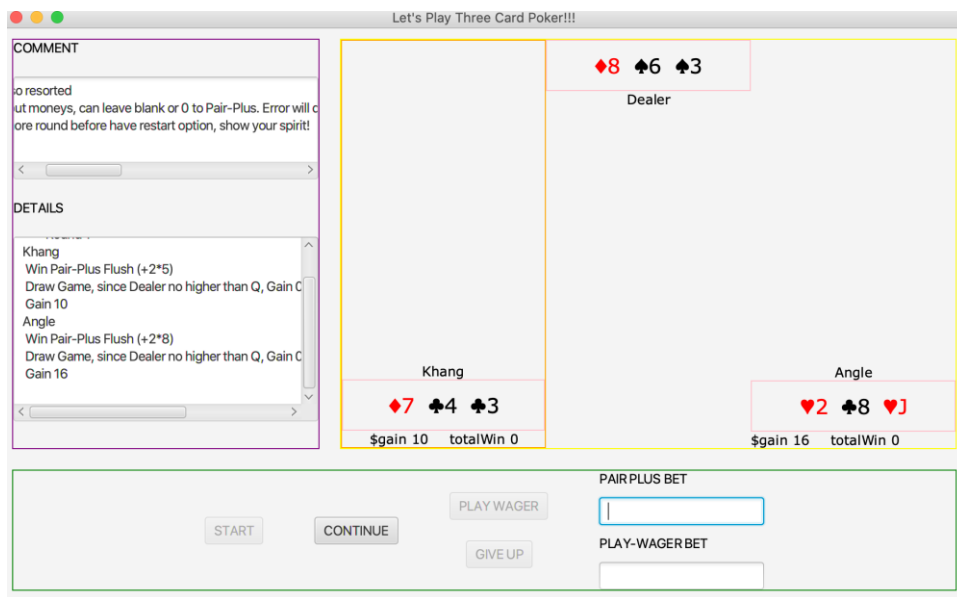

Click start. After that, play wager and pair_plus box activated. Fill your bet between 5-25, then click continue

The card look positive, although sum of 3 cards is not high, but you win a pair_plus (Flush in this case). So between play wager and give up, we do play wager
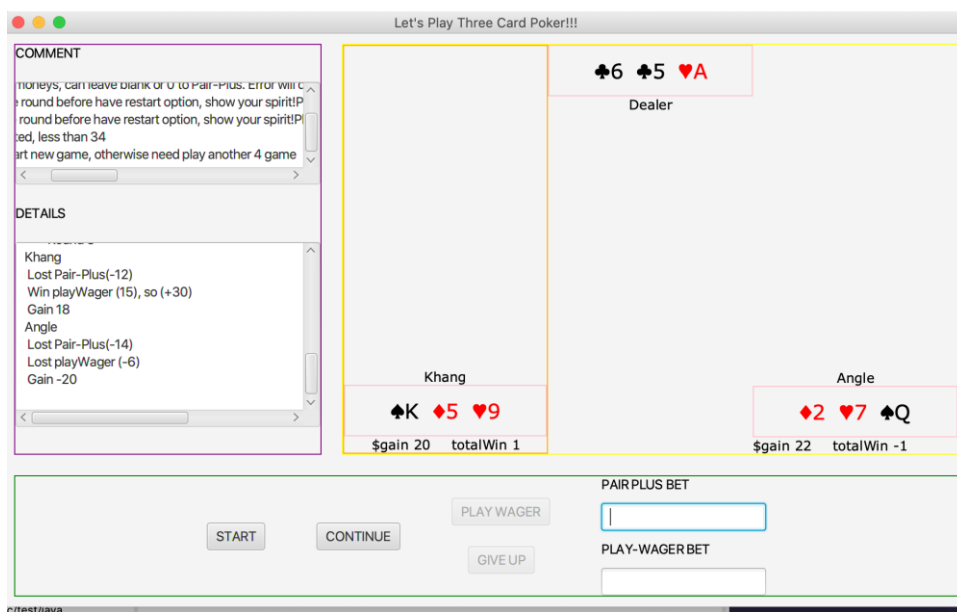
Tanya Yadav
Three Card Poker Game(java) -
Project2

Card of dealer, and other player (Angle) is open. Seem like Dealer hand doesn't have any card bigger than J, so we call it a draw. But me and Angle win Pair-plus, so earn score (but totalWin remain the same)


Let assume below is that we repeat with some rounds, which have some special case to consider

Here me win Dealer, so totalWin increment by 1 (meanwhile, if next round we lost, our totalWin = totalWin –1, so = 0). Since, my play wager is 15, so win will receive double the amount, but lost pair_plus, so the gain is 30-12 =18. Gain of this round add up to mine total gain.

While Angle total hand lesser than Dealer, so lost play wager. And she also lost pair plus,

Tanya Yadav
Three Card Poker Game(java) -
Project2
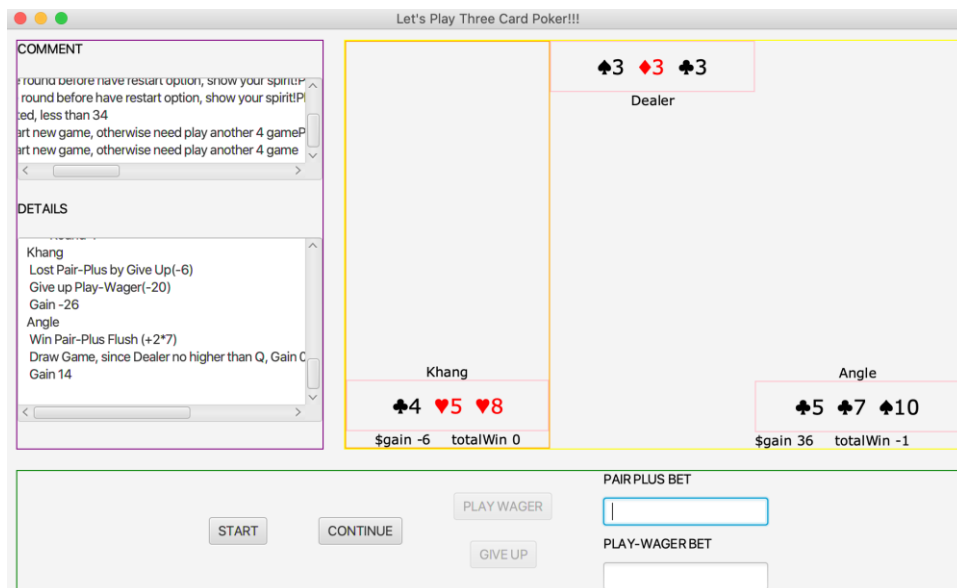
This time me click "give up". Me will instantly lost money from pair_plus and play wager before even compare to Dealer (mine pair_plus is not considered as well- even here I win Flush). However, Angle is not necessary to give up because she also has small self- intelligence kit to determine when to give up.

Also here, the "start" activate together with "continue", because when every 3 round done, player has option to restart the game(mean you can get out to let other in).
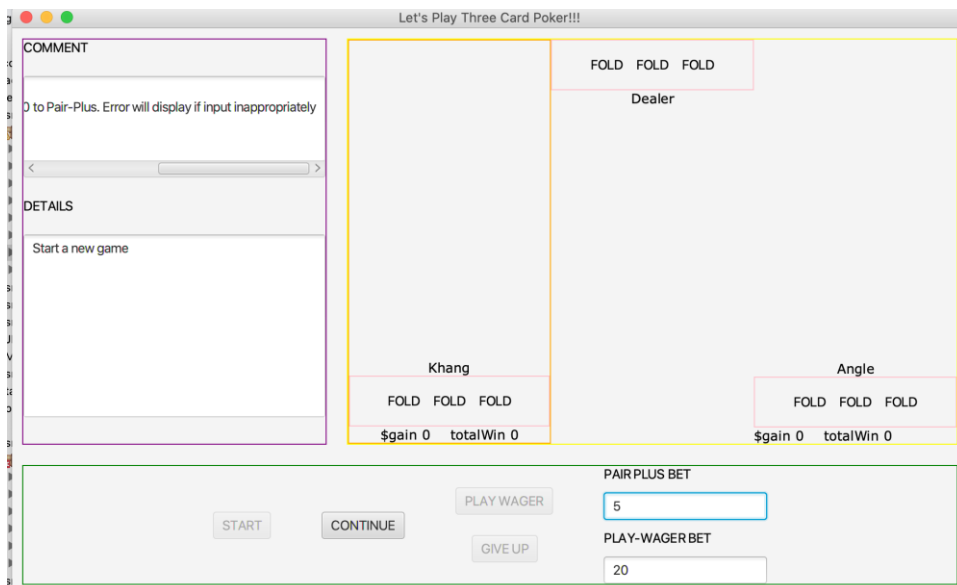
Tanya Yadav
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Project2
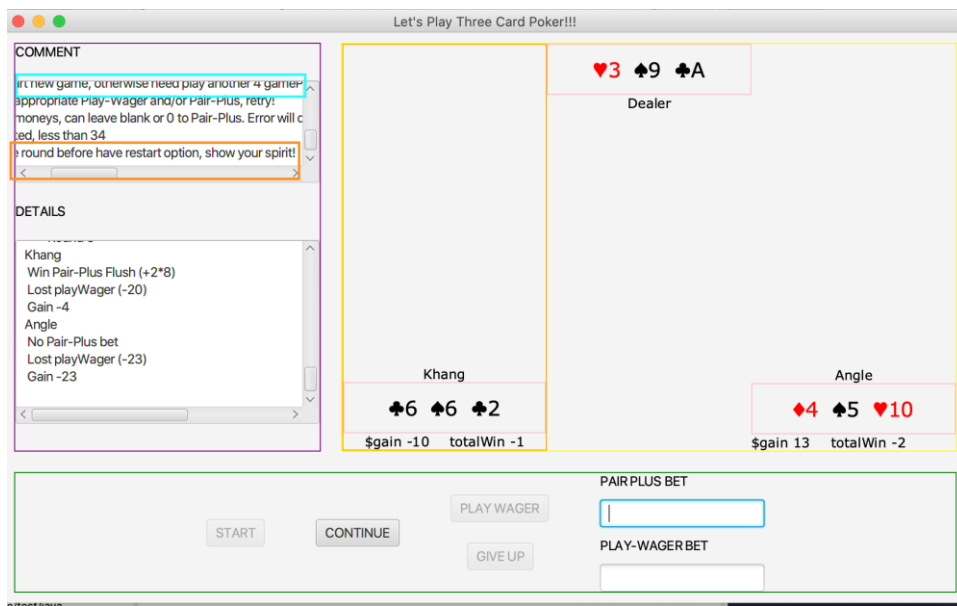
After click start, we has a new game with no ground with gain and totalWin reset. Otherwise, "continue" will still record your gain and totalWin, and you need 3 more round before have option "start" again

Intro to code of round evaluation

Player.java

```
1   import java.util.ArrayList;
2   public class Player {
3       ArrayList<Card> hand;
4       int anteBet;
5       int playBet;
6       int pairPlusBet;
7       int totalWinnings=0;
8       int money_gain = 0;
9       public Player() {
            // TODO Auto-generated constructor stub
        }
        public void getCard(ArrayList<Card>c){
            hand =c;
        }
        public void set_anteB(int x) {
            anteBet = x;
        }
        public void set_playB(int b) {
            playBet =b;
        }


        public void set_pairPlusB(int c) {
            pairPlusBet =c;
        }
        public int get_pairPlusB() {
            return pairPlusBet;
        }


        public int get_anteB() {
            return anteBet ;
        }

        public int get_playB() {
            return playBet;
        }



        public ArrayList<Card>  myCard() {
            return hand;
        }
        public void setWinnings(int i) { // pass either 1 or -1 to this parameter
            totalWinnings+=i;
        }
        public void setMoney(int q) {  //pass positive or negative $gain to this parameter
            money_gain += q;
        }
        public int getWinnings() {
            return totalWinnings;
```

Arraylist<Card> is compose of a 3 card hand of a player. And also keep amount of ante bet and pair_plus bet, totalWinning, and total gain of that player.

ThreeCardPoker.java

```
//player wager deal
wager.setOnAction(e->{

    me.set_playB(me.get_anteB());   // set up play wager bet
    player.set_playB(player.get_anteB());
    //evaluate total $gain from pair plus
    int pp_me = ThreeCardLogic.evalPPWinnings(me.myCard(),me.get_pairPlusB());
    int pp_player =ThreeCardLogic.evalPPWinnings(player.myCard(), player.get_pairPlus


    int b_me ;
    int b_player;
    if(d.evalQ()==true) {
        // who will win against ? 1 for win.  2 for lost. 0 for draw
        b_me = ThreeCardLogic.compareHands(d.myCard(),me.myCard());
        b_player =ThreeCardLogic.compareHands(d.myCard(),player.myCard());
    }
    else {  //draw if dealer no Q or higher
        b_me =0;
        b_player =0;
    }
    unfold(fd1,fd2,fd3,d.myCard()); // you can see other cards
    unfold(fp1,fp2,fp3,player.myCard());

    adjustWinnings(b_me,me);
    adjustWinnings(b_player,player);
```

```
turn++;
detailArea.appendText("----Round "+turn+ "----\n");
detailArea.appendText("Khang\n");
evalRound(me,d,pp_me,b_me);

detailArea.appendText("Angle\n");
evalRound(player,d,pp_player,b_player);

win_p2.setText("totalWin "+ Integer.toString(player.getWinnings() ));
mon_p2.setText("$gain "+ Integer.toString(player.getMoney() ));
win_p1.setText("totalWin "+ Integer.toString(me.getWinnings() )  );
mon_p1.setText("$gain "+ Integer.toString(me.getMoney() ));

if(turn %3 !=0) {
    errorArea.appendText("There "+(3*turn_i-turn)+" more round before have rest
}
if(turn %3 ==0) {
    turn_i++;
    errorArea.appendText("You can restart new game, otherwise need play another
    start.setDisable(false);
}

});
```

ThreeCardLogic.java

```
//against dealer with total value of 3 cards.
public static int compareHands(ArrayList<Card> dealer,
ArrayList<Card> player) {
    int sum_p=0;
    int sum_d=0;

    for(Card x : dealer) {
        sum_d += x.getValue();
    }
    for(Card y : player) {
        sum_p += y.getValue();
    }

    if(sum_d < sum_p) {
        return 1;
    }
    else if(sum_d >sum_p) {
        return 2;
    }
    else {
        return 0;
    }

}
```

+ Me.set_playB and player.set_playB to set play_wager in Player.java.

+ ThreeCardLogic.evalPPWinnings(me.myCard(),me.pairPlusB) will check if win pair_plus (if win then pp_me = 1,2,3, or 4 to indicate multiply of gain, while pp_me = 0 indicate loss).

+d.evalQ check if Dealer has hand with at least one card (>J). If dealer has, then proceed compare hand with me and other Player.

ThreeCardPoker.java

```java
//evaluate Pair-Plus gain (if made one) , Play wager gain from one round per player
public void evalRound(Player p,Dealer d, int evalPP,int b_me) {
    int Gain =0;
    if(p.get_pairPlusB() !=0 ) {
        if(evalPP ==0) {
            detailArea.appendText(" Lost Pair-Plus"+"("+p.get_pairPlusB()*-1+")\n");
            Gain  += p.get_pairPlusB()  *-1;
        }
        else {
            detailArea.appendText(" Win Pair-Plus "+PP_name(evalPP/p.get_pairPlusB())+ " ("+"+"+evalPP/p.get_pairPlusB()+"*"
            Gain  += p.get_pairPlusB()* (evalPP/p.get_pairPlusB() ) ;
        }
    }
    else {
        detailArea.appendText(" No Pair-Plus bet\n");
    }

    if(b_me ==0) {
        if(d.evalQ() == true) {
            detailArea.appendText(" Draw Game by against card, Gain 0 from Play-wager and Ante bet \n");
        }
        else if(d.evalQ() ==false){
            detailArea.appendText(" Draw Game, since Dealer no higher than Q, Gain 0 from Play-wager and Ante bet\n");
        }

    }
    else if(b_me !=0) {
        if(b_me ==1) {
            detailArea.appendText(" Win playWager "+"("+p.get_playB()+"), so ("+"+"+p.get_playB()*2+") \n");
            Gain +=  p.get_playB()*2;
        }
        else if(b_me==2) {
            detailArea.appendText(" Lost playWager "+"("+p.get_playB()*-1+")\n");
            Gain +=  p.get_playB()*-1;
        }

    }
    detailArea.appendText(" Gain "+Gain+"\n");

    p.setMoney(Gain);

}
```

+ evalRound() will accumulate gain/lost due to pair_plus (pp_me) and play_wager (b_me) of this round , and update to money_gain of correspond player though p.setMoney(Gain).

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