PROJECT 2

SPACE
BLACKJACK

CSC-5

48978

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INTRODUCTION

Blackjack, also known as twenty-one, is a comparing card game. Its first recorded history was in Spain in the early 15th century. In the game cards are given a value 1 to 11. At the start the player and dealer are both given two cards, if the cards do not add up to 21, then each player may ask for more cards, up to 8 cards total, in order to reach a number that is close to 21. If your cards value exceeds 21, then you automatically lose the game, this is referred to as a bust.

SUMMARY

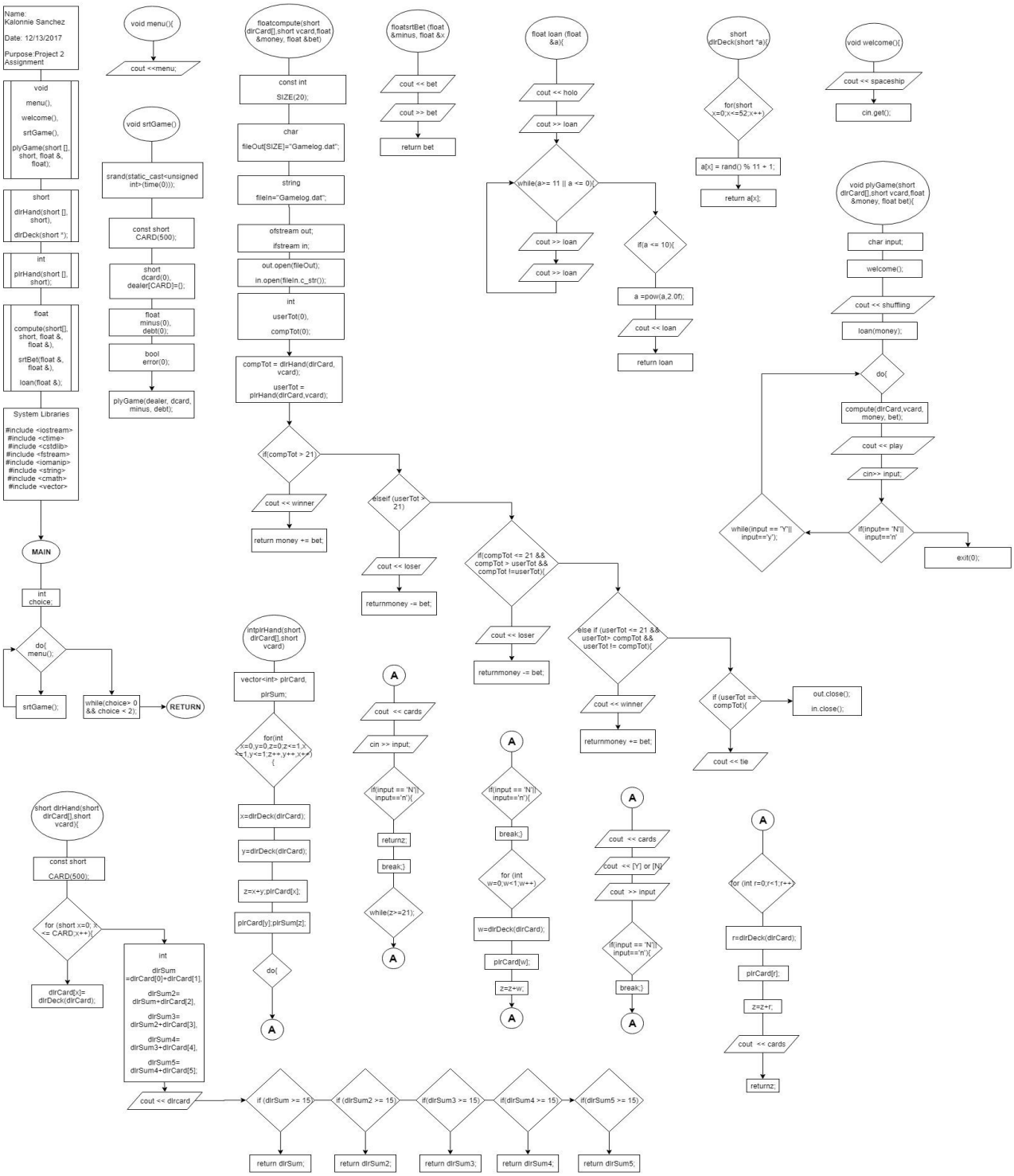
Total lines of code: 434
Total Variables: 35
Total Arrays: 9
Total Functions: 10
Total Libraries: 8

DESCRIPTION

In the year 2017 a student at Riverside City College made Space Blackjack for his Project 2 assignment in Dr. Lehr's Introduction to C++ Programming class. The game is based off the traditional rules of Earth blackjack. Space Blackjack starts with the user being given a menu to start the experience or exit the game. If the user starts the game then a spaceship lands letting the user know to press enter on the keyboard to enter the spacecraft. Once inside the alien craft then user sees an Alien lifeform shuffling a deck of playing cards. The user proceeds to sit in front of the alien shuffling the cards, once seated the user sees a holographic display with some information about a small interstellar loan. If the user agrees to the loan then the alien begins to deal the cards that were shuffled. The user is then given the option to keep his current hand or add another card. Unlike Earth blackjack, Space blackjack only lets a player add up to 4 cards total. One all the cards have been dealt then the user is asked to place a bet with amount borrowed. Once the space bet has been placed the game then determines if the alien or human has the card sum closest to 21, whichever has the highest sum wins the hand. The game will then ask the user if they would like to repeat the process or quit.

FLOWCHART

SPACE BLACKJACK



PSEDUO CODE

```
//System Libraries
//Input - Output Library
//Time for rand
//Srand to set the seed
//File I/O
//Format the output
//Strings, not for puppets
//everyone loves cmath
//vector library
//The Standard namespace for system libraries

//**************************************************************************
//Function Prototypes Here
//**************************************************************************

//menu function
//function to welcome user
//start game function
//funtion to play game

//dealer hand function
//dealer Deck function
//player hand function

//compute cards funtion
//compute dealer card function
//start player bet function
//ask player for loan function

//**************************************************************************
//                    MAIN FUNCTION
//**************************************************************************

//Declare Variables
//do-while loop for menu
//Input Data/Variables
//call menu function
//user input

//Process or map the inputs to the outputs
//switch menu asking user to start or end game
```

```
//function to start game
//while loop letting user end program
//Exit the program


//*********************************************************************************
//          MENU FUNCTION ASKING USER TO INPUT MENU CHOICE
//          SWITCH STATEMENT USED TO FOR MENU
//*********************************************************************************

//output menu choice
//1 to start game
//0 to close game

//*********************************************************************************
//          START GAME FUNCTION SETTING RANDOM NUMBER SEED
//          SHORT DATA TYPE FOR CARD ARRAY
//          FLOAT DATA TYPE FOR DEALER LOAN AND BET
//          PLAY GAME FUNCTION INITIALIZED
//*********************************************************************************

//set random number seed

//constant with short data type with 500 value for cards
//short data type used for dealer card variable
//dealer card array

//float data type used to hold player loan amount
//float variable used to subtract player bet from loan

//play game function called


//*********************************************************************************
//          FUNCTION TO COMPUTE DEALER CARDS
//          AND PLAYER CARDS DETERMINE WINNER
//          SAVE GAME STATS AND ADD OR SUBTRACT
//          BET FROM LOAN AMOUNT
//*********************************************************************************

//constant integer used to hold a value of twenty

//game log saving game stats
//input game stats into game log

//open game log to record stats

//integer variable used to hold user card total
```

```
//dealer card total

//pass dealer hand function to dealer card total
//pass player hand function into user card total

//call start bet function

//determine if dealer hand exceeds card limit

//determine if player hand exceeds card limit

//determine if dealer won game

//determine if player won game

//determine if player and dealer have tie

//stop recording game stats


//*********************************************************************
//              BETTING FUNTION ASKING
//              USER TO INPUT BET THEN RETURN BET AMOUNT
//              TO BE ADDED OR SUBTRACTED
//*********************************************************************

//ask user for bet amount

//if player bets exceeds amount owned then close program

//return loan amount with subtracted bet



//*********************************************************************
//            LOAN FUNCTION ASKING USER TO INPUT
//            AMOUNT TO BORROW RETURN LOAN AMOUNT
//*********************************************************************


//ask user to loan amount
//while loop
//display error if loan amount not inside range

//if loan amount inside range square value

//IOMANIP library to create loan amount in dollar value
```

```
//return loan amount



//*************************************************************************
//            FUNCITON TO SHUFFLE DEALER CARDS
//            WITH FOR LOOP AND POINTER ARRAY AND
//            RANDOM NUMBER GENERATOR
//*************************************************************************

//for loop to pass card value into array

//return array


//*************************************************************************
//            OUTPUT PROGRAM GREETING TO USER
//            LETS USER KNOW NAME OF GAME
//            ASK USER TO PRESS ENTER TO CONTINUE
//*************************************************************************

//cin.get used to pause program until user presses enter


//*************************************************************************
//               PLAYGAME FUNCTION PASSING CARD ARRAY
//               AND PASS BY REFRENCE OF LOAN AMOUNT
//               DO WHILE LOOP ASKING USER TO REPEAT GAME
//*************************************************************************

//user input variable

//call to welcome function
//call to loan function

//do while loop asking user to repeat compute game function

//call to compute function

//if yes then repeat game

//if no then exit game

//*************************************************************************
//          DEALER HAND FUNCTION PASSING ARRAY
//          USING FOR LOOP TO OUTPUT CARD VALUE
//          RETURN DEALER TOTAL CARD VALUE
```

```
//*****************************************************************************


//constant short with value of 500 for player cards
//dealer card array

//for loop to pass card value into array

//add dealer cards together

//return value of dealer hand

//*****************************************************************************
//              PLAYER CARD FUNCTION USING VECTOR ARRAY
//              TO HOLD DEALER CARDS OUTPUT THROUGH
//              PLAYER HAND WITH LOOP AND RETURN CARD VALUE
//*****************************************************************************

//vector holding player cards
//vector holding card sum
//for loop passing vector in to hold card value
//do while loop for player hand
//deal player cards
//return card value
//if card value less then limit ask user for another card
//add card value together
//ask user for another card
//return final card value
```

PROGRAM

```
#include <iostream>
#include <ctime>
#include <cstdlib>
#include <fstream>
#include <iomanip>
#include <string>
#include <cmath>
#include <vector>

using namespace std;

void
menu(),
welcome(),
srtGame(),
plyGame(short [], short, float &, float);

short
dlrHand(short [], short),
dlrDeck(short *);

int
plrHand(short [], short);

float
compute(short[], short, float &, float &),
srtBet(float &, float &),
loan(float &);

int main(int argc, char** argv) {
   //Declare Variables
   int choice;
   //Loop the Menu
   do{
      //Input Data/Variables
      menu();

      cin
         >> choice;
```

```
      cin.ignore();
      //Process or map the inputs to the outputs
      switch(choice){
         case 1:srtGame();
         break;

         default:{
            cout<<"Exiting, have a great day!"<<endl;
         }
      }
   }while(choice > 0 && choice < 2);
   //Exit the program
   return 0;
}
void menu(){
   //Input Data/Variables
   cout
      <<"Choose from the Menu\n"
      <<"1. Space Black Jack\n"
      <<"0. Exit Program\n";
}
void srtGame(){

   srand(static_cast<unsigned int>(time(0)));
   const short
   CARD(500);

   short
   dcard(0),
   dealer[CARD]={};

   float
   minus(0),
   debt(0);

   bool
   error(0);

   plyGame(dealer, dcard, minus, debt);
}
float compute(short dlrCard[],short vcard,float &money, float &bet){
   const int
   SIZE(20);

   char
   fileOut[SIZE]="Gamelog.dat";

   string
```

```
fileIn="Gamelog.dat";

ofstream out;
ifstream in;

out.open(fileOut);
in.open(fileIn.c_str());
int
userTot(0),
compTot(0);

compTot = dlrHand(dlrCard, vcard);
userTot = plrHand(dlrCard, vcard);
srtBet(money, bet);
if (compTot > 21){
   out
      << "\nOh no the dealer busted with "<< compTot
      << "\nYou win."
      << setprecision(2) << fixed <<endl
      <<setw(30)<< "$" << money+(bet+bet);
   cout
      << "\nOh no the dealer busted with "<< compTot
      << "\nYou win."
      << setprecision(2) << fixed <<endl
      <<setw(30)<< "$" << money+(bet+bet);
   return money += bet;
}
else if (userTot > 21){
   out
      << "\nOh no you busted with "<< userTot
      << "\nDealer wins."
      << setprecision(2) << fixed
      <<endl<<setw(30)<< "$" << money-bet;
   cout
      << "\nOh no you busted with "<< userTot
      << "\nDealer wins."
      << setprecision(2) << fixed
      <<endl<<setw(30)<< "$" << money-bet;
   return money -= bet;
}
if (compTot <= 21 && compTot > userTot && compTot != userTot){
   out
      << "\nDealer wins with "<< compTot
      << setprecision(2) << fixed
      <<endl<<setw(30)<< "$" << money-bet;
   cout
      << "\nDealer wins with "<< compTot
      << setprecision(2) << fixed
```

```
        <<endl<<setw(30)<< "$" << money-bet;
      return money -= bet;
   }
   else if (userTot <= 21 && userTot > compTot && userTot != compTot){
      out
         << "\nYou win with "<< userTot
         << setprecision(2) << fixed



 <<endl<<setw(30)<< "$" << money+(bet+bet);
      cout
         << "\nYou win with "<< userTot
         << setprecision(2) << fixed
         <<endl<<setw(30)<< "$" << money+(bet+bet);
      return money += bet;
   }
   if (userTot == compTot){
      out
         << "\nLooks like a tie.\nNo Winner."
         << setprecision(2) << fixed
         <<endl<<setw(30)<< "$" << money;
      cout
         << "\nLooks like a tie.\nNo Winner."
         << setprecision(2) << fixed
         <<endl<<setw(30)<< "$" << money;
   }
      //Close the file
   out.close();
   in.close();
}

float srtBet (float &minus, float &x){
   cout
      << "\nThe display says enter bet amount\n$";
   cin
      >> x;
   if(x > minus){
      cout << "Your vision grows dark and you wake up in your bed.";
   exit(0);
   }
   else {

   return minus;
   }
}
float loan (float &a){
```

```
   cout
      <<  " +------------------------+\n"
         " |.-----------------------.|\n"
         " ||      ..:.    ..:     ||\n"
         " || ... .:.....:..      ||\n"
         " ||     ..:..       ..   ||\n"
         " ||       ..:..  :.     ||\n"
         " |+----------------------+|\n"
         "                          \n"
         "     +-..--------..-+\n"
         "    .-----------------.\n"
         "   / /================\\ \\\\\n"
         "  / /==================\\ \\\\\n"
         " /_____________________\\\\\n"
         " \\_____________________/\n"
         "\nThe holographic display next to you reads\n"
         "\"Enter the amount you wish to borrow\"\n";
         cin
            >> a;

   while(a >= 11 || a <= 0){
   cout
      << "The display makes and ERROR sound.\n"
        "Enter a value between 1 and 10\n";
   cin
      >> a;
   }
   if (a <= 10){
   a = pow(a,2.0f);
   cout
      <<  "\nA mechanical laugh comes from the display.\n"
          "On the display is the amount you have borrowed"
      <<  setprecision(2) << fixed <<endl<<setw(30)<< "$" <<a;
   return a;
   }
}
short dlrDeck(short *a){
   for (short x=0;x<=52;x++){
      a[x] = rand() % 11 + 1;
   return a[x];
   }
}
void welcome(){

  cout
      << "    *                .--.\n"
      "                    / /  `\n"
      "      +             | |\n"
```

```
      "           '        \\ \\__,\n"
      "        *       +   '--'  *\n"
      "          +   /\\\n"
      " +          .'  '.   *\n"
      "       *     /======\\     +\n"
      "           ;:.  _   ;\n"
      "           |:. (_)  |\n"
      "           |:.  _   |\n"
      "    +       |:. (_)  |         *\n"
      "           ;:.      ;\n"
      "          .' \\\:.    / `.\n"
      "         / .-'':._.'`-. \\\n"
      "         |/    /||\\    \\|\n"
      "       _..--\"\"\"\"\"\"\"\"\"\"--.._\n"
      "    _.-'``                 ``'-._\n"
      " -\'                            '-\n"
      "Welcome aboard the Spacecraft\n"
      "Today's game is\n"
      "\t[S][P][A][C][E]\n  [B][L][A][C][K] [J][A][C][K]\n"
      "Press Enter to continue\n";
   cin.get(); //cin.get used to pause program until user presses enter
}
void plyGame(short dlrCard[],short vcard,float &money, float bet){
   char
   input;

   welcome();
   cout
      << "\nYou take a seat in front of the Alien shuffling cards.\n";
   loan(money);
  do{
   compute(dlrCard, vcard, money, bet);
   cout
      <<"\n\nWould you like to play again?\n"
      "Press [Y] for yes or [N] for no.\n";
   cin >> input;
   if(input == 'N'|| input=='n'){
      exit(0);
   }}while (input == 'Y'|| input=='y');
}
short dlrHand(short dlrCard[],short vcard){
   const short
   CARD(500);
   dlrCard[CARD];
   for (short x=0; x <= CARD; x++){
      dlrCard[x] = dlrDeck(dlrCard);
   }
   int
```

```
   dlrSum = dlrCard[0]+dlrCard[1],
   dlrSum2= dlrSum+dlrCard[2],
   dlrSum3= dlrSum2+dlrCard[3],
   dlrSum4= dlrSum3+dlrCard[4],
   dlrSum5= dlrSum4+dlrCard[5];
   cout
      << "\nDEALER CARDS :" <<"["<< dlrCard[0]<<"]"<<"[?]";

   if (dlrSum >= 15){
   return dlrSum;
   }
   if (dlrSum2 >= 15){
   return dlrSum2;
   }
   if(dlrSum3 >= 15){
   return dlrSum3;
   }
   if(dlrSum4 >= 15){
   return dlrSum4;
   }
   if(dlrSum5 >= 15){
   return dlrSum5;
   }
}
int plrHand(short dlrCard[],short vcard){
   vector<int>
   plrCard,
   plrSum;

   char
   input;

   for (int x=0,y=0,z=0;z<=1,x <=1,y<=1;z++,y++,x++){
      x=dlrDeck(dlrCard); y=dlrDeck(dlrCard);
       z=x+y;plrCard[x]; plrCard[y];plrSum[z];
      do{
         cout
            << "\nPLAYER CARDS :" <<"["<< x<<"]"
            <<"["<< y<<"]"<<"="<<z;
         cout
            <<  "\nWould you like another card?\n"
               "Press [Y] for yes or [N] for no.\n";

         cin
            >> input;
         if(input == 'N'|| input=='n'){
            return z;
            break;}
```

```
      }while(z>=21);{
         if(input == 'N'|| input=='n'){
            break;}
      for (int w=0;w<1;w++){
         w=dlrDeck(dlrCard);
         plrCard[w];
         z=z+w;
         cout
            << "\nPLAYER CARDS :" <<"["<< x<<"]"
            <<"["<< y<<"]"<<"["<< w<<"]"<<"="<<z;
         cout
            <<  "\nWould you like another card?\n"
               "Press [Y] for yes or [N] for no.\n";
         cin
            >> input;
            if(input == 'N'|| input=='n'){
              break;}
         for (int r=0;r<1;r++){
         r=dlrDeck(dlrCard);
         plrCard[r];
         z=z+r;
         cout
            << "\nPLAYER CARDS :" <<"["<< x<<"]"
            <<"["<< y<<"]"<<"["<< w<<"]"<<"["<< r<<"]"<<"="<<z;
         }
      }return z;
      }
   }
}
```

REFRENCES

Gaddis, Tony. *Starting Out with C++ from Control Structures to Objects 8th* Pearson, 2015. Print
http://www.cplusplus.com