**import** java.util.\*;

/\*\*

\* **@author** Sergey Ganous

\* **@since** January 28, 2016

\* 012278381

\* Methods in order to execute a card game of War.

\* Input: None

\* Output: None

\*/

**public** **class** Deck {

//Initialize Variables

ArrayList<String> cards = **new** ArrayList<String>();

ArrayList<String> player1 = **new** ArrayList<String>();

ArrayList<String> player2 = **new** ArrayList<String>();

ArrayList<String> tempList = **new** ArrayList<String>();

/\*\*

\* Constructor to create a deck of 52 cards

\*/

Deck(){

cards.add("02H");

cards.add("03H");

cards.add("04H");

cards.add("05H");

cards.add("06H");

cards.add("07H");

cards.add("08H");

cards.add("09H");

cards.add("10H");

cards.add("11H");

cards.add("12H");

cards.add("13H");

cards.add("14H");

cards.add("02S");

cards.add("03S");

cards.add("04S");

cards.add("05S");

cards.add("06S");

cards.add("07S");

cards.add("08S");

cards.add("09S");

cards.add("10S");

cards.add("11S");

cards.add("12S");

cards.add("13S");

cards.add("14S");

cards.add("02C");

cards.add("03C");

cards.add("04C");

cards.add("05C");

cards.add("06C");

cards.add("07C");

cards.add("08C");

cards.add("09C");

cards.add("10C");

cards.add("11C");

cards.add("12C");

cards.add("13C");

cards.add("14C");

cards.add("02D");

cards.add("03D");

cards.add("04D");

cards.add("05D");

cards.add("06D");

cards.add("07D");

cards.add("08D");

cards.add("09D");

cards.add("10D");

cards.add("11D");

cards.add("12D");

cards.add("13D");

cards.add("14D");

}

/\*\*

\* Method to shuffle cards in a deck.

\*/

**public** **void** shuffle(){

Collections.*shuffle*(cards);

}

/\*\*

\* Method to sort cards to 2 players

\*/

**public** **void** sort(){

**for**(**int** i=0;i<(cards.size()/2);i++){

player1.add(cards.get(i));

player2.add(cards.get((cards.size()/2)+i));

}

}

/\*\*

\* Converts string cards into an integer value.

\* **@param** card String card value.

\* **@return** value Integer card value.

\*/

**public** **int** value(String card){

**int** value = Integer.*parseInt*(card.substring(0,2));

**return** value;

}

/\*\*

\* Method to compare two integer values of cards.

\* **@return** result Returns a value determining the greater card.

\*/

**public** **int** compare(){

**int** result;

**if**(value(player1.get(0)) > value(player2.get(0))){

result = 1;

}

**else** **if**(value(player1.get(0)) < value(player2.get(0))){

result = 2;

}

**else**{

result = 0;

}

**return** result;

}

/\*\*

\* Method to expand card name.

\* **@param** card String card value.

\* **@return** cardName Returns expanded car name.

\*/

**public** String cardName(String card){

String cardName;

String cardNum;

String cardSuit;

//Converting Card Number

**if**(card.substring(0,2).equals("02")){

cardNum = "Two";

}

**else** **if**(card.substring(0,2).equals("03")){

cardNum = "Three";

}

**else** **if**(card.substring(0,2).equals("04")){

cardNum = "Four";

}

**else** **if**(card.substring(0,2).equals("05")){

cardNum = "Five";

}

**else** **if**(card.substring(0,2).equals("06")){

cardNum = "Six";

}

**else** **if**(card.substring(0,2).equals("07")){

cardNum = "Seven";

}

**else** **if**(card.substring(0,2).equals("08")){

cardNum = "Eight";

}

**else** **if**(card.substring(0,2).equals("09")){

cardNum = "Nine";

}

**else** **if**(card.substring(0,2).equals("10")){

cardNum = "Ten";

}

**else** **if**(card.substring(0,2).equals("11")){

cardNum = "Jack";

}

**else** **if**(card.substring(0,2).equals("12")){

cardNum = "Queen";

}

**else** **if**(card.substring(0,2).equals("13")){

cardNum = "King";

}

**else**{

cardNum = "Ace";

}

//Converting Card Suit

**if**(card.substring(2,3).equals("D")){

cardSuit = " of Diamonds";

}

**else** **if**(card.substring(2,3).equals("H")){

cardSuit = " of Hearts";

}

**else** **if**(card.substring(2,3).equals("S")){

cardSuit = " of Spades";

}

**else**{

cardSuit = " of Clubs";

}

//Returning Card Strinng

cardName = cardNum.concat(cardSuit);

**return** cardName;

}

/\*\*

\* Execute card game method.

\*/

**public** **void** play(){

String tempCard;

**while**(!player1.isEmpty() && !player2.isEmpty()){

System.***out***.println("Player1 plays: "+ cardName(player1.get(0)));

System.***out***.println("Player2 plays: "+ cardName(player2.get(0)));

//Player1 Wins

**if**(compare() == 1){

tempCard = player1.remove(0);

player1.add(tempCard);

player1.add(player2.get(0));

player2.remove(0);

System.***out***.println("Player1 wins the round!");

}

//Player2 Wins

**else** **if**(compare() == 2){

tempCard = player2.remove(0);

player2.add(tempCard);

player2.add(player1.get(0));

player1.remove(0);

System.***out***.println("Player2 wins the round!");

}

//WAR

**else** **if**(compare() == 0){

**if**(player1.size()>3 && player2.size()>3){

war();

}

**else**{

**if**(player1.size()>player2.size()){

System.***out***.println("Player2 does not have enough cards to finish the war.");

player2.clear();

}

**else**{

System.***out***.println("Player1 does not have enough cards to finish the war.");

player1.clear();

}

}

}

}

//Print the Winner

**if**(player1.isEmpty()){

System.***out***.println("Player2 Wins!");

}

**else**{

System.***out***.println("Player1 Wins!");

}

}

/\*\*

\* Method to determine a war winner.

\*/

**public** **void** war(){

System.***out***.println("War");

System.***out***.println("Player1 submits: xx xx xx");

System.***out***.println("Player2 submits: xx xx xx");

//Remove 3 cards from each player

**for**(**int** i = 0; i<3; i++){

tempList.add(player1.remove(0));

tempList.add(player2.remove(0));

}

System.***out***.println("Player1 war card is: "+cardName(player1.get(0)));

System.***out***.println("Player2 war card is: "+cardName(player2.get(0)));

//Decides War winner

**if**(compare() == 1){

player1.add(player2.remove(0));

**for**(**int** i = 0;i<tempList.size();i++){

player1.add(tempList.remove(0));

}

System.***out***.println("Player1 wins the war!");

}

**else** **if**(compare() == 2){

player2.add(player1.remove(0));

**for**(**int** i = 0;i<tempList.size();i++){

player2.add(tempList.remove(0));

}

System.***out***.println("Player2 wins the war!");

}

**else**{

**if**(player1.size()>3 && player2.size()>3){

war();

}

**else**{

**if**(player1.size()>player2.size()){

System.***out***.println("Player2 does not have enough cards to finish the war.");

player2.clear();

}

**else**{

System.***out***.println("Player1 does not have enough cards to finish the war.");

player1.clear();

}

}

}

}

/\*\*

\* Method to print the hands of both players.

\*/

**public** **void** print(){

System.***out***.println(player1);

System.***out***.println(player2);

}

}

**Main Method**

**import** java.util.\*;

**public** **class** WarGame {

**public** **static** **void** main(String[] args){

Deck cards = **new** Deck();

cards.shuffle();

cards.sort();

cards.print();

cards.play();

}

}

**OUTPUT**

Player1 plays: Four of Clubs

Player2 plays: Six of Clubs

Player2 wins the round!

Player1 plays: Jack of Spades

Player2 plays: Eight of Hearts

Player1 wins the round!

Player1 plays: Five of Clubs

Player2 plays: Four of Hearts

Player1 wins the round!

Player1 plays: Queen of Hearts

Player2 plays: Five of Hearts

Player1 wins the round!

Player1 plays: Three of Spades

Player2 plays: Three of Diamonds

War

Player1 submits: xx xx xx

Player2 submits: xx xx xx

Player1 war card is: Five of Clubs

Player2 war card is: King of Hearts

Player2 wins the war!

Player1 plays: Four of Hearts

Player2 plays: King of Hearts

Player2 wins the round!

Player1 plays: Queen of Hearts

Player2 plays: Ten of Spades

Player1 wins the round!

Player1 plays: Five of Hearts

Player2 plays: Ten of Diamonds

Player2 wins the round!

Player1 plays: Queen of Hearts

Player2 plays: Eight of Clubs

Player1 wins the round!

Player1 plays: Ten of Spades

Player2 plays: Ten of Hearts

Player1 does not have enough cards to finish the war.

Player2 Wins!