A Report on Card Game

1. **Introduction of game:** Implemented Game is a Card game that have usual 52 cards i.e. 13 cards of 4 suits each. This is a multi-player game in which there will be 4 players. There is a option that 1 player can be human/user controlled and remaining 3 can be computer players or bots. In this game a 52-card deck is initialized and shuffled. These shuffled cards are then distributed among the four players i.e. 13 cards a player. Now after this for each player 13 cards are sorted and arranged for playing.

2. **Environment used:** This task is implemented in eclipse java IDE that is compatible in Linux as well as in Windows.

3. **Language used:** This project is implemented in Java. As java is a pure Object-oriented language. This is implemented using OOP concepts. I have used 4 classes for this project. Following is the list of classes used
    - Card: Represents a single card that have rank and suit.
    - Deck: A 52 cards combined, sorted, shuffled. It also distributes cards among players.
    - Player: Represents a player. It also maintains player's owned cards. Player card selection and playing criteria.
    - CardGame: This is main class that have Deck object and player objects. All the game is executed in this.

4. **External Libraries used:** Java libraries are used for random number generation during the process of shuffling. For result writing in XML file different java libraries are used for XML writing and handling. Following is the list of imports
    - import java.io.File;
    - import java.util.Scanner;
    - import javax.xml.parsers.DocumentBuilder;
    - import javax.xml.parsers.DocumentBuilderFactory;
    - import javax.xml.transform.OutputKeys;
    - import javax.xml.transform.Transformer;
    - import javax.xml.transform.TransformerFactory;
    - import javax.xml.transform.dom.DOMSource;
    - import javax.xml.transform.stream.StreamResult;
    - import org.w3c.dom.Document;
    - import org.w3c.dom.Element;

5. **How to play:** Games is played using the following steps
    - When game starts it shows all 52 cards
    - It asks to enter if you want to play as human or computer.
    - Press 1 for human, When its done, human player will be activated
    - Game shows all cards of human players and asks to select a card

- Cards are indexed 0 to N. where N is the number of cards.
- Press any index (preferably any large card)
- All remaining bots play the card
- Game analyzes that which players played the highest card and hand overs all four cards to the winning player.
- This process continues till any players win all 52 cards.
- The result is stored in XML file.

6. **Which cards have more value:** Following rules the applied in ranking the cards
    - Card with a higher rank have higher value irrespective of the suit of the card
    - if two or more cards have the same rank then following value sequence is used for suits
        - Spades have the highest value
        - Hearts have the 2nd highest value
        - Diamonds have the 3rd highest value
        - Club have the lowest value
7. **How game ends:** After playing continues rounds whenever any player wins all of the 52 cards is declared winner.
8. **How results are saved at the end:** At the end when there is a winner, all player scores along with the number of rounds are stored in XML file.