Introduction

This Java project, named "Cricket Game" simulates a cricket match between a player and a CPU opponent. The game begins with an instructional display to guide the user through the game's rules and mechanics. After that, the user participates in a coin toss to decide who bats or bowls first.

If the user wins the toss, they get to choose whether to bat or bowl. They then play their innings, followed by the CPU's turn. The game calculates the total score for each side and determines the outcome based on the runs scored.

If the user loses the toss, the CPU makes the decision to bat or bowl first. The process then proceeds similarly to when the user wins the toss.

The project uses classes such as Instruction, Toss, and Selection to encapsulate different functionalities, promoting code organization and readability. The user interacts with the game primarily through console input and output.

Overall, this project offers a simple yet engaging cricket simulation, allowing users to experience the excitement of the sport in a virtual environment.

Project Information

Packages:

This project contains the use of various packages, both in-built as well as user defined. The user defined packages are –

- batBowl
- cricket
- instructions

Classes:

This project contains the use of both built-in as well as user defined classes.

Built in classes are: -

- Random:
- Scanner:

User defined classes are: -

- Toss
- Selection
- Instruction
- CricketGame: Contains the main function

Methods:

The program contains various methods used to perform different tasks.

- show_instruction – This method is used to display the instruction to the user so that the user can play the game.
- toss_result – This method helps us to get the result if the user won the toss or the cpu.

- score - This method is used to calculate the total score of the user as well as the cpu.
- main – The main method is the entry point of the program and is used to call all the other methods.

Feasibility

Java Language: The code is written in Java, a widely used and supported programming language, making it feasible for a wide range of platforms and environments.

Standard Libraries: The code utilizes standard Java libraries like java.util.Scanner and java.util.Random, ensuring compatibility and ease of use.

Simplicity: The project's design is relatively straightforward, making it feasible for beginners to understand and modify.

Console-based Interface: The game's interaction occurs through the console, which is a simple and commonly used method for text-based games, ensuring feasibility across various systems.

Novelty

Interactive Gameplay: The code offers an interactive cricket simulation where users can participate in a virtual match against a CPU opponent. While text-based cricket simulations exist, the specific implementation and features provided in this code may offer a unique experience.

Modular Design: The use of classes like Instruction, Toss, and Selection promotes a modular and organized code structure, enhancing readability and maintainability. This approach may offer a novel way to structure similar text-based game projects.

Randomized Elements: The coin toss and CPU decisions are randomized using java.util.Random, adding an element of unpredictability to the game and potentially increasing its replay value.

Outcome Determination: The game calculates the outcome based on the total runs scored by each side, providing a realistic simulation of cricket matches' competitive nature within the constraints of a text-based environment.

Code

CricketGame Class:

```
import instructions_display.*;
import cricket.*;
import batBowl.Selection;

import java.util.*;

public class CricketGame {
    public static void main(String[] args) {

        // Calling show_instructions function with class Instruction
        Instruction.show_instruction();

        Scanner scn = new Scanner(System.in);

        // Taking toss input from user for heads or tails
        int a = 1, choice = 0;
        boolean result = false;

        while (a == 1) {
            System.out.print("\nEnter '0' for Heads or '1' for Tails : ");
            choice = scn.nextInt();
            if (choice == 0 || choice == 1) {
                a--;

                // Calling toss_result function with class Toss
                result = Toss.toss_result(choice);
            } else {
                System.out.println("Invalid Input!");
            }
        }

        // Use the result variable outside the loop
        if (result) {
            System.out.println("\n\n\t\t\t\t    You won the toss!");
            System.out.println("\n\nSelect accordingly if you want to : ");
```

```
            System.out.println("0. Bat");
            System.out.println("1. Bowl");
            int y = 1;
            while(y == 1){
                System.out.print("\nEnter '0' for BATTING and '1' for BOWLING :
");
                int batbowl = scn.nextInt();
                if(batbowl == 0 || batbowl == 1){
                    y--;
                    if(batbowl == 0){
                        System.out.println("\nYou have elected to bat first.");
                        int total = Selection.score(batbowl);
                        System.out.println("\nYour Total score is : "+total);
                        System.out.println("\n\t\t\t\t   CPU need to score
"+(total+1) + " to win");
                        batbowl = 1;
                        int total1 = Selection.score(batbowl);
                        System.out.println("\nCPU Total score is : "+total1);
                        if(total > total1){
                            int diff = total - total1;
                            System.out.println("\n\n\t\t\t\t    You won the game
by "+diff+ " runs");
                        }
                        else{
                            int diff = total1 - total;
                            System.out.println("\n\n\t\t\t\t    You lost the game
by "+diff+" runs");
                        }

                    }
                    else{
                        System.out.println("\nYou have elected to bowl first.");
                        int total = Selection.score(batbowl);
                        System.out.println("\nCPU Total score is : "+total);
                        System.out.println("\n\t\t\t\t    You need to score
"+(total+1) + " to win");
                        batbowl = 0;
                        int total1 = Selection.score(batbowl);
                        System.out.println("\nYour Total score is : "+total1);
                        if(total > total1){
                            int diff = total - total1;
                            System.out.println("\n\n\t\t\t\t    You Lost the game
by "+ diff+" runs");

                        }
```

```
                        else{
                            int diff = total1 - total;
                            System.out.println("\n\n\t\t\t\t\t    You Won the game
by "+diff+" runs");

                        }
                    }

                }
                else{
                    System.out.println("\nInvalid Input!");
                }
            }


        }
        else{
            System.out.println("\n\n\t\t\t\t\t    You lost the toss!");
            Random rand = new Random();
            int cpu_choice = rand.nextInt(2);
            if(cpu_choice == 0){
                cpu_choice = 1;
                System.out.println("\nCPU has elected to bat first");
                int total = Selection.score(cpu_choice);
                System.out.println("\nCPU total score is : "+total);
                System.out.println("\n\t\t\t\\t    You need to score "+(total+1)
+ " to win");
                cpu_choice = 0;
                int total1 = Selection.score(cpu_choice);
                System.out.println("\nYour Total score is : "+total1);
                if(total > total1){
                    int diff = total - total1;
                    System.out.println("\n\n\t\t\t\t    You Lost the game by
"+diff+" runs");
                }
                else{
                    int diff = total1 - total;
                    System.out.println("\n\n\t\t\t\t    You won the game by
"+diff+" runs");
                }


            }
            else{
                System.out.println("CPU has elected to bowl first.");
```

```
                cpu_choice=0;
                int total = Selection.score(cpu_choice);
                System.out.println("\nYour total score is : "+total);
                System.out.println("\n\t\t\t\t   CPU need to score "+(total+1) +
" to win");
                cpu_choice = 1;
                int total1 = Selection.score(cpu_choice);
                System.out.println("\nCPU Total score is : "+total1);
                if(total > total1){
                    int diff = total - total1;
                    System.out.println("\n\n\t\t\t\t    You won the game by
"+diff+ " runs");
                }
                else{
                    int diff = total1 - total;
                    System.out.println("\n\n\t\t\t\t    You lost the game by
"+diff+" runs");
                }
            }

        }
    scn.close();
    }
}
```

instruction Package:

```
package instructions_display;
import java.util.Scanner;
public class Instruction{
    public static void show_instruction(){
        Scanner scn = new Scanner(System.in);
        System.out.print("\nEnter Your Name : ");
        String name = scn.nextLine();
        System.out.println("\n\n\t\t\t\t\t      Welcome "+ name + "!");
        System.out.println("\n\nThis is a online CRICKET game. Below are all the
instructions provided to help you play.\n");
        System.out.println("1. First you will be given choices of HEADS or TAILS
and you have to choose one.");
        System.out.println("2. If you win the toss , then you will have the power
to choose to BAT or BOWL first.");
        System.out.println("3. There will be six choices to score runs that will
be in the form of numbers from 1-6.");
        System.out.println("4. There are unlimited balls and only a single
wicket. The CPU will generate random number every time between 1-6.");
        System.out.println("5. The moment your input matches the random number
then you will be given out and your total score will be displayed.");
        System.out.println("6. The one with the highest score will win.");
    }
}
```

cricket package:

```java
package cricket;
import java.util.*;
public class Toss{
    public static boolean toss_result(int choice){
        boolean a = false;

        // generating random number between 0 and 1 to choose head and tail
        Random rand = new Random();
        int random_number = rand.nextInt(2);
        System.out.println("\nRandom number is : "+ random_number);

        // conditions for checking won or loss of toss
        if(choice == 0){
            if(random_number == 0){
                a = true;
            }

        }
        else{
            if(random_number==1){
                a = true;
            }
        }

        return a;
    }

}
```

batBowl Package:

```
package batBowl;
import java.util.*;
public class Selection {
    public static int score(int choice2){
        int cpu_total_score = 0;
        int user_total_score = 0;
        Random obj = new Random();
        boolean ans = true;
        switch (choice2) {
            case 0:
            while(ans){
                boolean user_input_check = true;
                int cpu = obj.nextInt(6)+1;
                Scanner run = new Scanner(System.in);
                while(user_input_check){
                    System.out.print("\nHow much runs you want to score between
1-6 : ");
                    int user_score = run.nextInt();

                    if(user_score > 0 && user_score < 7){
                        user_input_check = false;
                        if(cpu != user_score){
                            user_total_score += user_score;
                            System.out.println("\nThe CPU picked up : "+cpu);
                            System.out.print("Your score is :
"+user_total_score);
                        }
                        else{
                            ans = false;
                            return user_total_score;
                        }
                    }
                    else{
                        System.out.println("\n\nInvalid Input!");
                    }

                }
            }
                break;
            case 1:
            while(ans){
```

```
                boolean user_input_check = true;
                int cpu = obj.nextInt(6)+1;
                Scanner run = new Scanner(System.in);
                while(user_input_check){
                    System.out.print("\n\nPredict the run of cpu between 1-6 :
");
                    int user_score = run.nextInt();
                    if(user_score > 0 && user_score < 7){
                        user_input_check = false;
                        if(cpu != user_score){
                            cpu_total_score += cpu;
                            System.out.println("\nCPU picked up : "+cpu);
                            System.out.print("CPU total score is :
"+cpu_total_score);
                        }
                        else{
                            ans = false;
                            return cpu_total_score;
                        }
                    }
                    else{
                        System.out.println("\n\nInvalid Input!");
                    }
                }
            }
            break;
        }
        return 0;
    }
}
```

Output

1. Displaying the instructions

```
PS C:\Users\Admin\Desktop\Java Mini Project>  & 'C:\Program Files\Java\jdk-21\bin\java.exe' '-XX:+ShowCodeDetailsI
nExceptionMessages' '-cp' 'C:\Users\Admin\AppData\Roaming\Code\User\workspaceStorage\b9d0dd8038e760535088ec3d02b5a
291\redhat.java\jdt_ws\Java Mini Project_8df4735c\bin' 'CricketGame'

Enter Your Name : Devansh Maheshwari

                                        Welcome Devansh Maheshwari!


This is a online CRICKET game. Below are all the instructions provided to help you play.

1. First you will be given choices of HEADS or TAILS and you have to choose one.
2. If you win the toss , then you will have the power to choose to BAT or BOWL first.
3. There will be six choices to score runs that will be in the form of numbers from 1-6.
4. There are unlimited balls and only a single wicket. The CPU will generate random number every time between 1-6.
5. The moment your input matches the random number then you will be given out and your total score will be display
ed.
6. The one with the highest score will win.
```

2. Asking for user input and trapping into loop if invalid input.

```
Enter '0' for Heads or '1' for Tails : 5
Invalid Input!

Enter '0' for Heads or '1' for Tails : 6
Invalid Input!

Enter '0' for Heads or '1' for Tails : 0
```

3. **Displaying winner of the toss and asking for bat/bowl if you win.**

```
Enter '0' for Heads or '1' for Tails : 0

Random number is : 0


                                    You won the toss!


Select accordingly if you want to :
0. Bat
1. Bowl

Enter '0' for BATTING and '1' for BOWLING :
```

4. **Selecting as per the given instructions.**

```
Select accordingly if you want to :
0. Bat
1. Bowl

Enter '0' for BATTING and '1' for BOWLING : 1

You have elected to bowl first.
```

5. **Predicting what cpu will score to get it out for as less runs as we can and displaying the total score of the cpu will every ball.**

```
Predict the run of cpu between 1-6 : 4

CPU picked up : 5
CPU total score is : 5

Predict the run of cpu between 1-6 : 5

CPU picked up : 1
CPU total score is : 6

Predict the run of cpu between 1-6 : 4

CPU picked up : 3
CPU total score is : 9

Predict the run of cpu between 1-6 : 5

CPU picked up : 2
CPU total score is : 11

Predict the run of cpu between 1-6 : 6

CPU picked up : 5
CPU total score is : 16

Predict the run of cpu between 1-6 : 5
```

6. **Displaying total score of cpu and the total runs we need to score to win.**

```
Predict the run of cpu between 1-6 : 6

CPU Total score is : 82

                                    You need to score 83 to win
```

7. Chasing the score and displaying the result.

```
How much runs you want to score between 1-6 : 6

The CPU picked up : 5
Your score is : 6
How much runs you want to score between 1-6 : 5

The CPU picked up : 1
Your score is : 11
How much runs you want to score between 1-6 : 6

The CPU picked up : 5
Your score is : 17
How much runs you want to score between 1-6 : 4

The CPU picked up : 6
Your score is : 21
How much runs you want to score between 1-6 : 3

The CPU picked up : 5
Your score is : 24
How much runs you want to score between 1-6 : 2

The CPU picked up : 3
Your score is : 26
How much runs you want to score between 1-6 : 1
```

```
The CPU picked up : 4
Your score is : 32
How much runs you want to score between 1-6 : 4

Your Total score is : 32


                                    You Lost the game by 50 runs
```

8. **CPU will pick if we will bat or bowl if we lose the toss.**

```
Enter '0' for Heads or '1' for Tails : 1

Random number is : 0


                                    You lost the toss!

CPU has elected to bat first
```

References

- **Online Courses**
- **Java Documentation**
- **Java Tutorials**
- **Java: A beginner's guide by Herbert Schildt**