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Java Assignment-2

Week-2

3.1 Code

```
import java.util.Scanner;
public class NumberGuessingGame {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.println("Name:B.Satlas Rohit\nRegno:2024503305");
        final int SECRET_NUMBER = 45;
        int totalGames = 0;
        int totalGuesses = 0;

        MENU:
        while (true) {
            System.out.println("\n===== Number Guessing Game Menu =====");
            System.out.println("1. Play Game");
            System.out.println("2. View Status");
            System.out.println("3. Quit");
            System.out.print("Enter your choice: ");
            int choice = sc.nextInt();
            switch (choice) {
                case 1:
                    totalGames++;
                    int attempts = 0;
                    int secretNumber = 1 + (int)(Math.random() * 100);
```

```
            System.out.println("\nGuess the number between 1 and 100. Enter -1 to quit
this game.");
            GUESS_LOOP:
            while (attempts < 10) {
               System.out.print("Enter your guess: ");
               int guess = sc.nextInt();
               if (guess == -1) {
                  System.out.println("You quit the current game.");
                  break GUESS_LOOP;
               }
               if (guess < 1 || guess > 100) {
                  System.out.println("Invalid guess! Enter a number between 1 and 100.");
                  continue;
               }
               attempts++;
               totalGuesses++;
               if (guess < secretNumber) {
                  System.out.println("Too low!");
               } else if (guess > secretNumber) {
                  System.out.println("Too high!");
               } else {
                  System.out.println(" Correct! You guessed the number in " + attempts + "
attempts.");
                  break GUESS_LOOP;
               }
            }
            if (attempts == 10) {
               System.out.println("Maximum attempts reached! The number was " +
secretNumber);
            }
```

```
                break;

            case 2:
                if (totalGames == 0) {
                    System.out.println("No games played yet.");
                } else {
                    double avgGuesses = (double) totalGuesses / totalGames;
                    System.out.println("\n===== Game Status =====");
                    System.out.println("Total games played: " + totalGames);
                    System.out.println("Total guesses: " + totalGuesses);
                    System.out.printf("Average guesses per game: %.2f\n", avgGuesses);
                }
                break;
            case 3:
                System.out.println("Thank you for playing!");
                break MENU;
            default:
                System.out.println("Invalid choice! Please select 1, 2, or 3.");
        }
    }
    sc.close();
  }
}
    sc.close();
  }
}
```

Output:

```
Name:B.Satlas Rohit
Regno:2024503305

===== Number Guessing Game Menu =====
1. Play Game
2. View Status
3. Quit
Enter your choice: 1

Guess the number between 1 and 100. Enter -1 to quit this game.
Enter your guess: 56
Too high!
Enter your guess: 35
Too low!
Enter your guess: 46
Too low!
Enter your guess: 50
? Correct! You guessed the number in 4 attempts.
```

3.2 Code

```
import java.util.Random;
class GameAthlete {
   String name;
   int energy;
   int skillPower;
   int maxEnergy;
   boolean isActive;
   static int totalAthletes = 0;
   public GameAthlete() {
      this.name = "Player";
      this.energy = 100;
      this.skillPower = 10;
      this.maxEnergy = 100;
      this.isActive = true;
      totalAthletes++;
   }
   public GameAthlete(String name, int energy, int skillPower) {
      this.name = name;
```

```
        this.energy = energy;
        this.skillPower = skillPower;
        this.maxEnergy = 100;
        this.isActive = true;
        totalAthletes++;
    }
    public void compete(GameAthlete opponent) {
        if (!this.isActive) {
            System.out.println(this.name + " is inactive and cannot compete.");
            return;
        }
        if (!opponent.isActive) {
            System.out.println(opponent.name + " is inactive and cannot compete.");
            return;
        }
        System.out.println(this.name + " competes against " + opponent.name);
        opponent.energy -= this.skillPower;
        if (opponent.energy < 0) opponent.energy = 0;

        if (opponent.energy == 0) {
            opponent.isActive = false;
            System.out.println(opponent.name + " is now inactive!");
        }
    }
    public void rest(int amount) {
        if (!isActive) {
            System.out.println(name + " is inactive and cannot rest.");
            return;
        }
```

```
        energy += amount;
        if (energy > maxEnergy) energy = maxEnergy;
        System.out.println(name + " rests and recovers " + amount + " energy. Current energy: " + energy);
    }
    public void train() {
        if (!isActive) {
            System.out.println(name + " is inactive and cannot train.");
            return;
        }
        Random random = new Random();
        int gain = random.nextInt(11);
        skillPower += gain;
        System.out.println(name + " trains and gains " + gain + " skill points. Current skillPower: " + skillPower);
    }
    public void displayStats() {
        System.out.println("===== Athlete Stats =====");
        System.out.println("Name: " + name);
        System.out.println("Energy: " + energy);
        System.out.println("Skill Power: " + skillPower);
        System.out.println("Active: " + isActive);
        System.out.println("========================");
    }
}
public class Main {
    public static void main(String[] args) {
        System.out.println("Name:B.Satlas Rohit\nRegno:2024503305");
        GameAthlete athlete1 = new GameAthlete("Alice", 100, 15);
        GameAthlete athlete2 = new GameAthlete("Bob", 100, 12);
```

```
        GameAthlete athlete3 = new GameAthlete(); // default athlete
        athlete1.displayStats();
        athlete2.displayStats();
        athlete3.displayStats();
        athlete1.compete(athlete2);
        athlete2.compete(athlete3);
        athlete3.compete(athlete1);
        athlete1.rest(20);
        athlete2.rest(15);
        athlete3.rest(10);
        athlete1.train();
        athlete2.train();
        athlete3.train();
        athlete1.displayStats();
        athlete2.displayStats();
        athlete3.displayStats();
        System.out.println("Total athletes created: " + GameAthlete.totalAthletes);
    }
}
```

Output:

```
Name:B.Satlas Rohit
Regno:2024503305
===== Athlete Stats =====
Name: Alice
Energy: 100
Skill Power: 15
Active: true
========================
===== Athlete Stats =====
Name: Bob
Energy: 100
Skill Power: 12
Active: true
========================
===== Athlete Stats =====
Name: Player
Energy: 100
Skill Power: 10
Active: true
========================
Alice competes against Bob
Bob competes against Player
```

```
Bob competes against Player
Player competes against Alice
Alice rests and recovers 20 energy. Current energy: 100
Bob rests and recovers 15 energy. Current energy: 100
Player rests and recovers 10 energy. Current energy: 98
Alice trains and gains 4 skill points. Current skillPower: 19
Bob trains and gains 5 skill points. Current skillPower: 17
Player trains and gains 5 skill points. Current skillPower: 15
===== Athlete Stats =====
Name: Alice
Energy: 100
Skill Power: 19
Active: true
========================
===== Athlete Stats =====
Name: Bob
Energy: 100
Skill Power: 17
Active: true
========================
```

```
===== Athlete Stats =====
Name: Player
Energy: 98
Skill Power: 15
Active: true
==========================
Total athletes created: 3
```