**SECTION 8 PRACTICE**

1. **SAI DHEERAJ**

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import java.util.ArrayList;

import java.util.Random;

import java.util.Scanner;

class Team {

private String name;

private int wins;

private int losses;

private int ties;

private int totalGoalsScored;

private int totalGoalsAllowed;

public Team(String name) {

this.name = name;

this.wins = 0;

this.losses = 0;

this.ties = 0;

this.totalGoalsScored = 0;

this.totalGoalsAllowed = 0;

}

public String getName() {

return name;

}

public int getWins() {

return wins;

}

public int getLosses() {

return losses;

}

public int getTies() {

return ties;

}

public int getTotalGoalsScored() {

return totalGoalsScored;

}

public int getTotalGoalsAllowed() {

return totalGoalsAllowed;

}

public void addWin() {

wins++;

}

public void addLoss() {

losses++;

}

public void addTie() {

ties++;

}

public void addGoalsScored(int goals) {

totalGoalsScored += goals;

}

public void addGoalsAllowed(int goals) {

totalGoalsAllowed += goals;

}

public void printStats() {

System.out.println(name);

System.out.println("Wins: " + wins + ", Losses: " + losses + ", Ties: " + ties);

System.out.println("Points Scored: " + totalGoalsScored + ", Points Allowed: " + totalGoalsAllowed);

}

}

class Game {

private static int gameCounter = 0;

private int gameId;

private Team awayTeam;

private Team homeTeam;

private int awayScore;

private int homeScore;

private int temperature;

public Game(Team awayTeam, Team homeTeam, int temperature) {

this.gameId = ++gameCounter;

this.awayTeam = awayTeam;

this.homeTeam = homeTeam;

this.temperature = temperature;

this.awayScore = generateScore(temperature);

this.homeScore = generateScore(temperature);

updateTeamStats();

}

private int generateScore(int temperature) {

Random rand = new Random();

return rand.nextInt(temperature / 10 + 1); // Score range increases with temperature

}

private void updateTeamStats() {

awayTeam.addGoalsScored(awayScore);

awayTeam.addGoalsAllowed(homeScore);

homeTeam.addGoalsScored(homeScore);

homeTeam.addGoalsAllowed(awayScore);

if (awayScore > homeScore) {

awayTeam.addWin();

homeTeam.addLoss();

} else if (awayScore < homeScore) {

homeTeam.addWin();

awayTeam.addLoss();

} else {

awayTeam.addTie();

homeTeam.addTie();

}

}

public int getTemperature() {

return temperature;

}

public void printGameStats() {

System.out.println("Game #" + gameId);

System.out.println("Temperature: " + temperature);

System.out.println("Away Team: " + awayTeam.getName() + ", " + awayScore);

System.out.println("Home Team: " + homeTeam.getName() + ", " + homeScore);

}

}

class Scheduler {

private Team[] teams;

private ArrayList<Game> games;

private int consecutiveFreezingWeeks;

private int hottestTemperature;

private int totalTemperature;

private int numberOfGames;

public Scheduler(Team[] teams) {

this.teams = teams;

this.games = new ArrayList<>();

this.consecutiveFreezingWeeks = 0;

this.hottestTemperature = Integer.MIN\_VALUE;

this.totalTemperature = 0;

this.numberOfGames = 0;

}

public void startSeason() {

Scanner scanner = new Scanner(System.in);

while (consecutiveFreezingWeeks < 3) {

System.out.print("Enter this week's temperature: ");

int temperature = getInputTemperature(scanner);

if (temperature <= 32) {

consecutiveFreezingWeeks++;

System.out.println("Too cold to play.");

if (consecutiveFreezingWeeks == 3) {

System.out.println("Season is over due to 3 consecutive freezing weeks.");

break;

}

} else {

consecutiveFreezingWeeks = 0;

scheduleGames(temperature);

}

}

scanner.close();

printSeasonSummary();

}

private int getInputTemperature(Scanner scanner) {

while (true) {

try {

return Integer.parseInt(scanner.nextLine());

} catch (NumberFormatException e) {

System.out.print("Invalid input. Enter a valid temperature: ");

}

}

}

private void scheduleGames(int temperature) {

numberOfGames += 2;

totalTemperature += 2 \* temperature;

if (temperature > hottestTemperature) {

hottestTemperature = temperature;

}

Random rand = new Random();

ArrayList<Integer> teamIndexes = new ArrayList<>();

for (int i = 0; i < teams.length; i++) {

teamIndexes.add(i);

}

for (int i = 0; i < 2; i++) {

int awayIndex = teamIndexes.remove(rand.nextInt(teamIndexes.size()));

int homeIndex = teamIndexes.remove(rand.nextInt(teamIndexes.size()));

games.add(new Game(teams[awayIndex], teams[homeIndex], temperature));

}

}

private void printSeasonSummary() {

System.out.println("\*\*\*\*\*\*\*\*\*RESULTS\*\*\*\*\*\*\*\*\*");

for (Team team : teams) {

team.printStats();

}

for (Game game : games) {

game.printGameStats();

}

System.out.println("Hottest Temp: " + hottestTemperature);

System.out.println("Average Temp: " + (totalTemperature / numberOfGames));

}

}

public class SoccerLeagueSimulation {

public static void main(String[] args) {

Team[] teams = {

new Team("Team 1"),

new Team("Team 2"),

new Team("Team 3"),

new Team("Team 4")

};

Scheduler scheduler = new Scheduler(teams);

scheduler.startSeason();

}

}