import java.util.\*; // Import Java Class

public class ICS3UExamKelvinKellner

{

public static void main(String[] args)

{

System.out.println("\nWelcome to the Olympic Diving Event Score Calculator!"); // Welcome user

setupDB(); // Initiliaze the Database of diver scores

} // End Main

// SETUP DB: Creates and fills arrays with the info for all the divers

public static void setupDB()

{

Scanner scan = new Scanner(System.in); // Initialize scanner

System.out.println("\nHow many divers participated in the event?");

int divers = scan.nextInt(); // Find and store the # of divers

scan.nextLine(); // Clear scanner

// Initialize empty arrays for the divers' info

String[] names = new String[divers];

int[] difficulty = new int[divers];

int[][] scores = new int[divers][5];

int[] total = new int[divers];

for(int i = 0; i < divers; i++) // For the # of divers...

{

// Prompt the user for, and store, all the diver's info into the appropriate array

System.out.println("\nWhat is the name of Diver #" + (i+1) + "?");

names[i] = scan.nextLine();

System.out.println("\nWhat was the difficulty of " + names[i] + "'s dive? (integers only)");

difficulty[i] = scan.nextInt();

System.out.println("\nWhat were the scores for " + names[i] + "'s dive? (integers only)");

for(int k=0; k<5; k++) // Loop 5 times, once for each judge

{

System.out.println("Judge " + (k+1) + ":");

scores[i][k] = scan.nextInt(); // Store that judge's score into the 2D array of scores

}

scan.nextLine(); // Clear scanner

total[i] = total(scores[i], difficulty[i]); // Calculate and store the diver's total score

} // Close diver info loop

System.out.println("\nAwesome!\nWe've got all our info, now let's go to the main menu...");

menu(scan, names, difficulty, scores, total); // Go to menu method

} // End setupDB

// MENU: Opens a menu of options for the user to pick and choose from

public static void menu(Scanner scan, String[] names, int[] difficulty, int[][] scores, int[] total)

{

// Print out user options

System.out.println("\nWhat would you like to do?");

System.out.println("1 - Display winner");

System.out.println("2 - Display scores");

System.out.println("3 - Exit");

System.out.println("\nPlease enter the number matching the action you would like to perform:");

if(scan.hasNextInt()) // Check if the user entered an integer

{

int action = scan.nextInt(); // Store the action they have chosen

scan.nextLine(); // Clear scanner

// Call the appropriate method for each action

if(action==1)

winner(scan, names, difficulty, scores, total);

else if(action==2)

scores(scan, names, difficulty, scores, total);

else if(action==3)

exit(scan);

else

{

// If the user's response was not valid, make them try again

System.out.println("\nSorry, that was not a valid response :(\nPlease try again...");

menu(scan, names, difficulty, scores, total);

}

} // Close if integer

else

{

// If the user's response was not an integer, make them try again

System.out.println("\nSorry, that was not a valid response :(\nPlease try again...");

scan.next(); // Clear scanner

menu(scan, names, difficulty, scores, total);

}

} // End menu

// WINNER: Finds the diver with the highest score and celebrates them as the winner (does not account for ties)

public static void winner(Scanner scan, String[] names, int[] difficulty, int[][] scores, int[] total)

{

int winner = 0; // This int will be used to store the current highest score as we cycle through all the divers

for(int i=1; i<names.length; i++) // For each diver (skipping the first one since they start as the highest score by default)

{

if(total[i] > total[winner]) // If this diver had a higher score

winner = i; // Update the new highest score

}

System.out.println("\n" + names[winner] + " was the winner with a score of " + total[winner] + "!");

menu(scan, names, difficulty, scores, total);

} // End winner

// SCORES: Prints out a table of all the info for every diver

public static void scores(Scanner scan, String[] names, int[] difficulty, int[][] scores, int[] total)

{

System.out.println("\nDiver #\tName\t\tJudge 1\tJudge 2\tJudge 3\tJudge 4\tJudge 5\t\tDifficulty\t\tTotal"); // Setup chart

for(int i = 0; i<names.length; i++) // Print out the data for each diver

System.out.println((i+1) +"\t" + names[i] +"\t\t" + scores[i][0] +"\t" + scores[i][1] +"\t" + scores[i][2] +"\t" + scores[i][3] +"\t" + scores[i][4] +"\t\t" + difficulty[i] +"\t\t" + total[i]);

menu(scan, names, difficulty, scores, total);

} // End scores

// EXIT: Allows the program to end peacefully

public static void exit(Scanner scan)

{

System.out.println("\nOkay!\nGoodbye :)\n");

scan.close();

} // End exit

// TOTAL: Calculates and returns the total score for a diver

public static int total(int[] scores, int difficulty)

{

// Create variables

double total = 0;

int highest = 0; // Index # of highest score

int lowest = 0; // Index # of lowest score

for(int i = 1; i < scores.length; i++) // Loop through all scores

{

if(scores[i] > scores[highest]) // If this value is higher...

highest = i; // Make it the highest

} // Close highest

for(int i = 1; i < scores.length; i++) // Loop through all scores

{

if(scores[i] < scores[lowest]) // If this value is lower...

lowest = i; // Make it the lowest

} // Close lowest

for(int i = 0; i < scores.length; i++) // Loop through all scores

total += (double) scores[i]; // Add that score to the total

total -= (double) (scores[highest] + scores[lowest]); // Subtract the highest and lowest scores since they don't count

total = (total/(scores.length-2)); // Find the average

total = total\*difficulty; // Multiply by difficulty

total = Math.round(total); // Round off all digits past the 1/10ths column

return (int) total; // Return the total

} // End total

} // End class