PRACTICAL REVISION SET 1- BASED ON PRACTICAL 6B Q7

A PE teacher wants to build a JavaScript program to manage a list of students, their genders, and heights. She has an old program as listed in ANNEX 1, and She is interested to amend it using Objects Oriented Programming (OOP). She requires the program to allow her to display list of students' name, add students, create teams for the boys and girls and calculate average height of all her students.

QUESTION 1

Based on the information in ANNEX 1, create an Object class using the Objects Literal approach. The Object should be called 'class_details' and it should have the following properties studentName, studentGender, studentHeight, and methods called displayMenu, and displaySubmenu. Invoke all Methods in class_details.

ANNEX 1

```
const readline = require('readline-sync');

const studentName = ["Tommy", "Samuel", "Joy", "Ali", "Lee
Lee", "Anne", "David"];
const studentGender = ["M","M","F","M","F","F","M"];
const studentHeight = [174,170,160,165,165,151,140];

let girlsName = [];
let girlsHeight = [];
let boysName = [];
let boysHeight = [];

function displayMenu() {
    console.log("\nMenu:");
    console.log("1. Display namelist for all students");
    console.log("2. Add a student");
    console.log("3. Team Formation Submenu");
    console.log("4. Find Average Height");
    console.log("0. Exit");
}



function displaySubmenu() {
    console.log("\n\tSub Menu:");
    console.log("\t1. Create boys and girls teams");
    console.log("\t2. Display namelist of a team");
    console.log("\t0. Exit to main menu");
}
```

Question 2:

Write a method called 'displayName' inside the class_details object that can display the student names in the studentName property using a for loop. Use 'this' keyword inside the function. Invoke the Method to display the data.

Question 3:

Create a new method 'addStudent' that:

- does not accept any parameter,
- prompts user input for name, gender and height of new record
- does not return any value, and
- add into the respective array.

Invoke the 'addStudent' method with the following and enter new student record: 'Pauline', 'F', 158.

In addition, invoke the displayName method to display all students' name and check that the new student name has been added.

Question 4:

(a) Create a new method 'createTeams' that:
- does not accept any parameter,
- does not return any value, and
- create 4 empty arrays as properties in class_details object:
  - girlsName, girlsHeight, boysName and boysHeight.
- Then code your 'createTeams' method so that it can automate the sorting the girls and boys team based on existing information in class_details, and store their names and height in those 4 empty arrays. You are to use a for-loop to do so. Hard coding is not allowed. You are to use 'this' keyword where possible.

(b) Create another method in class_ details called 'displayTeamPlayers' that:
- does not accept any parameter,
- does not return any value,
- prompt user to input gender as follows:

    "Enter 'G' or girls team and 'B' for boys team for the namelist :"

- display name of players based on gender
- It should display the following information if invoked based on the user input gender:

Girls team:	Boys team:
1. Joy	1. Tommy
2. Lee Lee	2. Samuel
3. Anne	3. Ali

	4. David

- Invoke both the 'createTeams' and 'displayTeamPlayers' methods. These methods, should collectively perform the sorting and filling up the girlsName, girlsHeight, boysName and boysHeight properties, and display the sorted names of the team players as shown above.

Question 5:

Create a new method 'findAverage' that:

- does not accept any parameter.
- return the average height of all the students to be displayed as follows:

    "Average height of all students: 1.61m".

- You are to use a for-loop in your method to automate the computation of the average height. Do not hardcode.
- Use 'this' keyword where possible.
- Invoke the function to display the average height of student statement as shown above.

Question 6:

Create a new function called 'main' without parameters that is NOT part of the class_details object.

- This 'main' function will use the properties and methods in class_details to ensure that the programme runs properly.
- This 'main' function will repeat indefinitely till the user exit the system. In addition, it also has a 'subroutine', an internal loop for the 'Team Formation Submenu' that will also repeat indefinitely till user choose to exit it, and that will bring the user back to the main menu.
- You are to use switch statements for selection in 'main' menu function (for user to select the options in 'displayMenu').
- Data Validation is required. You can use any data validation techniques. It is advisable not to use functions in the readline-sync module for data validation.
- Invoke the function and make sure it can produce the desired output. Sample output are as shown in Annex 2 below.

ANNEX 2:

--- MAIN MENU, CHOICE 1 -- Menu: 1. Display namelist for all students 2. Add a student

3. Team Formation Submenu
4. Find Average Height
0. Exit

Enter a choice 0-4: 1

Namelist of all students:
1. Tommy
2. Samuel
3. Joy
4. Ali
5. Lee Lee
6. Anne
7. David

Menu:
1. Display namelist for all students
2. Add a student
3. Team Formation Submenu
4. Find Average Height
0. Exit

Enter a choice 0-4:

--- MAIN MENU, CHOICE 2 --

Enter a choice 0-4: 2

Enter new student's name: Pauline
Enter gender of new student (M or F): F
Enter height: 158

Menu:
1. Display namelist for all students
2. Add a student
3. Team Formation Submenu
4. Find Average Height
0. Exit

Enter a choice 0-4:

--- MAIN MENU, CHOICE 3 --

Enter a choice 0-4: 3

    Sub Menu:
    1. Create boys and girls teams
    2. Display namelist of a team
    0. Exit to main menu

--- ***SUBMENU, CHOICE 1 --

Enter a choice 0-2: 1

    Sub Menu:
    1. Create boys and girls teams
    2. Display namelist of a team
    0. Exit to main menu

--- ***SUBMENU, CHOICE 2; INPUT G --

Enter a choice 0-2: 2
Enter 'G' or girls team and 'B' for boys team for the namelist : G

Girls team:
1. Joy
2. Lee Lee
3. Anne
4. Pauline

    Sub Menu:
    1. Create boys and girls teams
    2. Display namelist of a team
    0. Exit to main menu

--- ***SUBMENU, CHOICE 2; INPUT B --

Enter a choice 0-2: 2
Enter 'G' or girls team and 'B' for boys team for the namelist :B

Boys team:
1. Tommy
2. Samuel
3. Ali
4. David

    Sub Menu:
    1. Create boys and girls teams
    2. Display namelist of a team
    0. Exit to main menu

--- ***SUBMENU, CHOICE 0 --

Enter a choice 0-2: 0
Exiting to main menu...

--- MAIN MENU, CHOICE 4 --

Menu:
1. Display namelist for all students
2. Add a student
3. Team Formation Submenu

4. Find Average Height
0. Exit

Enter a choice 0-4: 4
Average height of all students: 160.38

--- MAIN MENU, CHOICE 0 --

Menu:
1. Display namelist for all students
2. Add a student
3. Team Formation Submenu
4. Find Average Height
0. Exit

Enter a choice 0-4: 0
Thank you & goodbye!