Assignment: Array and Objects

//*Q1. In the following shopping cart add, remove, and edit items

```
const shoppingCart = ['Milk', 'Coffee', 'Tea', 'Honey'];
//    *add 'Meat' in the beginning of your shopping cart if it has not been already added.
if(shoppingCart.includes("Meat")){
    return null;
}else{
    shoppingCart.unshift("Meat");
    console.log(shoppingCart);
}

//    *add Sugar at the end of you shopping cart if it has not been already added.
if(shoppingCart.includes("Sugar")){
    return null;
}else{
    shoppingCart.push("Sugar");
    console.log(shoppingCart);
}
//    *remove 'Honey' if you are allergic to honey.
let shoppingCart2 = shoppingCart.filter(x=>x!=='Honey');

console.log(shoppingCart2);
//    *modify Tea to 'Green Tea'.
let index = shoppingCart2.findIndex(x=> x==='Tea');
shoppingCart2[index]= 'Green Tea';
console.log(shoppingCart2);
```

//Q2. The following is an array of 10 students ages:

```
const ages = [19, 22, 19, 24, 20, 25, 26, 24, 25, 24];
//   *Sort the array and find the min and max age
//Ans:
ages.sort(function(a,b){return a-b;});
console.log(ages);
let maximumOfArray = Math.max(...ages);
let minimumOfArray = Math.min(...ages);
console.log("Maximum age = ",maximumOfArray," Minimum age= ", minimumOfArray);
```

```
//   *Find the median age(one middle item or two middle items divided by two)
//Ans: since array ages is already sorted,
function FindMedian(arr){
    let median;
    arr.sort(function(a,b){return a-b;});
    let n = arr.length;
    if(n % 2 ===0){
        median = (arr[n/2]+arr[n/2 + 1])/2;
    }else{
        median = arry[(n+1)/2];
    }
    return median;
}
console.log(FindMedian(ages));

//   *Find the average age(all items divided by number of items)
//ans:
function FindAvg(arr){
    return arr.reduce(function(a,b){return (a+b);})/arr.length;
}
console.log(FindAvg(ages));

//   *Find the range of the ages(max minus min)
//ans:
function FindRng(arr){
    return Math.max(...arr)-Math.min(...arr);
}
console.log(FindRng(ages));

//   *Compare the value of (min - average) and (max - average), use abs() method
//ans:
let Avg = FindAvg(ages);
let minDif = Math.abs(minimumOfArray - Avg);
let maxDif = Math.abs(maximumOfArray - Avg);
if(minDif>maxDif){
    console.log("Min is further from average");
}else{
    console.log("max is further from average");
}
```

//*Q3. Object Extensibility and Sealing

//ans:

```
let student ={
    name : "kanah",
    age : 16
};
```

//a) Use the Object.preventExtensions method to prevent any further additions of properties to the student object.

```
Object.preventExtensions(student);
```

/*b) Use the Object.isExtensible method to check if the student object is extensible. Store the result in a variable
called extensibleStatus.*/

```
let extensibleStatus = Object.isExtensible(student);
```

//c) Create a new object called teacher with a 'subject' property set to 'Math'.

```
let teacher={

    name : "Narayan Mishra",

    subject:"Math"

};
```

//d) Use the Object.seal method to seal the teacher object, preventing any additions or deletions of properties.

```
Object.seal(teacher);
```

/*e) Use the Object.isSealed method to check if the teacher object is sealed. Store the result in a variable called
sealedStatus.*/

```
let sealedStatus = Object.isSealed(teacher);
```

//f) Print the extensibleStatus and sealedStatus to the console.

```
console.log("Extensible status of student object: ", extensibleStatus);
console.log("seal status of object teacher : ",sealedStatus);
```

/*Q4. Assignment: Building a Student Management System

Description:

You are tasked with building a student management system using JavaScript. The system should allow you to perform various operations on a list of students, including adding, updating, deleting, and displaying student information.

Requirements:

Here is an initial array of students. Each student is represented as an object with the following properties: id, firstName, lastName, age, and grade.*/

```
const students = [

  { id: 1, firstName: "John", lastName: "Doe", age: 20, grade:
"A" },

  { id: 2, firstName: "Jane", lastName: "Smith", age: 22, grade:
"B" },

  { id: 3, firstName: "Bob", lastName: "Johnson", age: 19, grade:
"A" },

  // Add more students as needed

];
// displaying all list of student's details.
function DispList(){
    return students.forEach(x=> console.log("id :",x.id, ",student's name :
",x.firstName,x.lastName, " ,age :",x.age, ",Grade:",x.grade));
}
DispList();
```

```
// adding student:
function addstd(ID,fname,lname,Age,Grade){
    let newstd = {id : ID, firstName: fname, lastName: lname, age: Age, grade: Grade};
    students.push(newstd);
    console.log("New student added successfully.\ndisplaying new list :");
    DispList();
}
addstd(4,"Ramu","Sharma",12,"C");
addstd(5,"shyamu","panday",14,"D");

//delete student:
function Delstd(i){
    const indx = students.findIndex(x => x.id === i);
    if(indx !==-1){
        students.splice(indx, 1);
        console.log("sucessfull.");
    }else{
        console.log("not found.");
    }
}

Delstd(3);
DispList();

// updating information:
function updateStudent(id, updatedData) {
  const student = students.find(s => s.id === id);

  if (student) {
    Object.assign(student, updatedData);
    console.log("Student updated successfully.");
  } else {
    console.log("Student not found.");
  }
}

updateStudent(4,{age:24});
DispList();
```