Meetings 3&4 Exercises

Q1: Write a Java class called `Machine` which has:

- 2 instance variables `brandName` and `power` (to check if it is On or not)
- 2 constructors (a multi-argument constructor and a zero-argument one)
- getters for the two instance variables
- a setter for `brandName`
- 2 methods `switchOn()` and `switchOff()` which change the value of `power`
- a method called `display()` to print the status of the machine

Q2: Write a Java class called `TestMachines` which has a main method to test your code as follows:

- create a `Machine` object to be initialized to "Dell" brand and to be Off.
- create another `Machine` object using the zero-arg constructor. Then change its brand to "Sharp" and switch it on.
- print the status of the 2 machines.
- declare and create an array that can hold up to 3 machines
- fill the array with suitable data
- print how many machines of brand "Dell"
- declare and create an `ArrayList` of machines
- fill the list with suitable data
- print how many machines are On.

M251 Meeting 3 and 4 Exercises Solutions

Question 1

```
public class Machine {
    String brandName;
    boolean power;

    public Machine (String brandName, boolean power) {
        this.brandName = brandName;
        this.power = power;
    }

    public Machine () {
        this("", false);
    }

    public String getBrandName () {
        return brandName;
    }

    public boolean getPower () {
        return power;
    }

    public void setBrandName (String brandName) {
        this.brandName = brandName;
    }

    public void switchOn() {
        power = true;
    }

    public void switchOff() {
        power = false;
    }

    public void display() {
        System.out.println (brandName + " is currently " + ((power)? "ON" : "OFF"));
    }
}
```

Note: The above code should be placed in a file with filename: Machine.java

Question 2

```
import java.util.ArrayList;
public class TestMachines {
    public static void main (String[] args) {
        Machine machine1 = new Machine("Dell", false);
        Machine machine2 = new Machine();
        machine2.setBrandName("Sharp");
        machine1.display();
        machine2.display();

        Machine[] machines = new Machine[3];
        machines[0] = new Machine("Dell", false);
        machines[1] = new Machine("Dell", true);
        machines[2] = new Machine("Sharp", false);

        int countDell = 0;
        for (int i = 0; i < machines.length; i++)
            if (machines[i].getBrandName().equals("Dell"))
                countDell++;

        System.out.println (countDell + " machines are of brand Dell.");

        ArrayList<Machine> machinesList = new ArrayList<>();
        machinesList.add(new Machine("Dell", false));
        machinesList.add(new Machine("Sharp", true));
        machinesList.add(new Machine("LG", true));

        int countON = 0;
        for (int i = 0; i < machinesList.size(); i++)
            if (machinesList.get(i).getPower())
                countON++;

        System.out.println (countON + " machines are ON.");
    }
}
```

Note: The above code should be placed in a file with filename: TestMachines.java

Sample Run:

Dell is currently OFF
Sharp is currently OFF
2 machines are of brand Dell.
2 machines are ON.