Laboratory exercises 7

Exercise 1

Create class **HomeAppliance** with the following attribute and methods:

- Attribute *turnedOn* which has value TRUE if the home appliance is turned on, FALSE otherwise.
- Constructor with one input argument which is used as the initial value for the attribute *turnedOn.*
- Method *turnOn* which turns on the home appliance – sets value of the attribute *turnedOn* to TRUE.
- Method *turnOff* which turns off the home appliance – sets value of the attribute *turnedOn* to FALSE.
- Method *write* which prints on the screen a message about the current state of the home appliance– is it turned on or off.

Create class **TV** which extends class **HomeAppliance** and has:

- Attribute *channel* which represents the current channel on TV
- Constructor that has two input arguments for initializing the attributes *turnedOn* and *channel*. If the value for the channel argument is less than 1 or greater than 40, constructor should print an error message.
- Method *channelUp* which switches the channel to the next one. The next channel after 40. is 1.
- Method *channelDown* which switches the channel to the previous one. The channel before 1. is 40.
- Method *write*, which prints on the screen the current state of TV (on/off) and the current channel.

Create class **Radio** which extends class **HomeAppliance** and has:

- Attribute *frequency* which represents the current frequency on the radio (for example, 87.5).
- Constructor which has two input arguments for initializing the attributes *turnedOn* and *frequency*. If the input frequency is out of range 87.5 – 107.9, constructor should print an error message.
- Method *getFrequency* which returns the value of the attribute *frequency*
- Method *setFrequency* with one input argument which is the new value for the attribute *frequency*. If the input frequency is out of range 87.5 – 107.9, this method should print an error message.
- Method *write* that prints a message with the current frequency on the radio.

Create class **TestHomeAppliance** which creates one object of **HomeAppliance**, **TV** and **Radio**, and calls their methods.

Exercise 2

Create **abstract** class **Employee** which has:

- Attribute *salary* which is real number.
- Method *getSalary* which returns the current value of the attribute *salary*.
- Abstract method *calculateSalary*, that does not return anything, but has one input argument which represents the number of hours that employee has been working.

Create class **OfficeWorker** which extends class **Employee** and implements method *calculateSalary*. This method should calculate the salary according to the following formula:
SALARY = 100*WORKING_HOURS

Create class **Manager** which extends class **Employee** and implements method *calculateSalary*. This method should calculate the salary according to the following formula:
SALARY = 1000 *WORKING_HOURS

Create a test program in the class **TestEmployee**. Test program should create objects of classes OfficeWorker and Manager, calculate and print salaries for them. In this example assume that Manager has been working 250 hours, and OfficeWorker 200 hours.