

(Object Oriented) Programming Techniques

3 laboratory work „Data input and output“

Aim of the work – get know the principles of data input and output in Java.

Workflow and tasks or the work:

1. Create a method for Exception messages in the same class as method main(). It should get an Exception object and to print Your excuse message as well as the message, which is generated in Exception object. This method should be used for all exceptions which would occur in the code.
2. Create class withString, where describe all String methods and call them by main() from class Test
 - 2.1. Create a new method which would count how many words contains a text You provided as an argument. The file where all words are stored is <https://www-cs-faculty.stanford.edu/~knuth/sgb-words.txt> Call the method `startsWith()/endsWith()` in the `main()` method by providing the first 3 letters of Your name. Note: Object of class URL has a function `openStream()` it can be useful for readings from the URL.
 - 2.2. Choose any text file and to apply these functions: how many text fragment you find in the text by the most common symbol (for example: ., /: ;, ? # and etc.); To compare how much you find word with word, wich user inputting from keyboard.
 - 2.3. Select the additional String method and apply it with text from file
 - 2.4. Print results with explanations in the file.
3. Create new class to define the structure and actions of real time object, provided in table 1. The object number will be equal to count of letter of you name. The class should have all attributes and methods, mentioned in the table as well as two constructors: one with no parameters to set default values and one with parameters to set all main attribute values. If You want, you can add additional attributes and methods to the class.
4. Create a method for input of designed class object. The method should ask to input values for all attributes and to return a new created object.
5. Create a possibility the user sequential to execute such functions as:
 - 5.1. Add new object. You should choose do You want to enter it by keyboard or to import it from provided file. The created file should be added to a list.
 - 5.2. Delete object. Confirm it.
 - 5.3. Print the list of objects. Sort the list of objects (create the comparison method). Print all objects from the list by showing the number of the object in the list.
 - 5.4. Save object to file. User can provide this object he wants to save (according to the number in the list) and to write the name of file he wants to save to.
 - 5.5. And the work of the program.
6. Upload the .java files/project into the course (Moodle system).

Table 1. Variant for class creation.

No.	Object	Mandatory attributes	Mandatory methods
4	Car	Producer, model, production year, type of fuel.	Print the main information about the object. Get how old is the car, by providing the current year through the method parameters.
5	Book	Author, title, publication year, publisher.	Print the book information by showing the title in upper case letters. Return is the book older than 5 years in years, passed through method parameters.
6	Building	Address, number of floors, building year, number of flats in one floor.	Return the number of flats in the building (all floors). Print does the building has a floor, provided in method parameters.

7	Item	Title, producer, country of origin, price, production year.	Print all the information of the item, by increasing the price in percentage, provided in the method parameters. What would be the price of the item in Litas (1 Euro = 3.4528 Litas).
8	Dog	Breed, gender, year of birth, weight, name.	By passing the current year, get the dog age in dog years (7 dog years = 1 human years). Print all the information of the dog.