Testat 1

Programming in Java

SS 2020

Learning objectives:
You know first Java basics and can program a short procedural process in Java

Introduction - some theoretical knowledge

Task 1:

Create a first project in NetBeans, pay attention to the **`syllabus`** and **`BIS2151_AttestationRules_SS2020.pdf`**!
Create a subfolder called **`Docu`** inside the created project folder. Answer the following questions in a plain text file then create a PDF file **`Testat-1-Theory.pdf`** from it. Place this PDF-file in the just created **`Docu`** folder!

Task 2:

Bad identifiers
Justify in keywords why the following variable names are badly chosen or inadmissible:

- 03/17/2020
- CourseNumberJava
- best grade in SS20
- programming-SS2020
- 1stAttestation
- fußgröße (German word for foot size)
- bestaveragerating
- netto+VAT
- s

Task 3:

Enter meaningful declarations (name and type) for the following variables:

- the balance of a credit account
- the ordered quantity of articles in a shopping cart
- the **complete** DOT number of a vehicle tyre
  (You do not know this? ➔ Ask Mr. Google ☺)
- the monthly instalment for a loan agreement
- a student's matriculation number

Task 4:

Declaring variables in Netbeans

Declare all the variables above in the **main()** class of your first testat, see below.

Calculation of a virus spread

Create a program **`Viruscalculator`** that calculates the spread of a virus and shows how many infected and dead people will probably be after a certain time. It is a console application and expects the following entries in the form of program arguments:

- Argument 1: The number of infected people when calculations starts, an int
- Argument 2: The number of weeks, the calculation has to run, an int
- Argument 3: The weekly increase of infections in percent, so use double
- Argument 4: The mortality rate for this disease in percent, so use double

Your program takes the input mentioned above, checks for correctness and determines the amount of people being infected (will die) week per week.

So, your program should (as an example) be started like:

`Viruscalculator 100 26 5,5 3,5`

And then produce this output on screen:

`Viruscalculator will calculate with 100 persons at start and run for 26 weeks with an increase of infections of 25,5% and a mortality of 3,5%:`

Week	Infections	Deaths
1	100	4
2	126	4
3	158	6
4	198	7
5	248	9
6	311	11
7	390	14
8	489	17
9	614	21
10	771	27
11	968	34
12	1215	43
13	1525	53
14	1914	67
15	2402	84
16	3015	106
17	3784	132
18	4749	166
19	5960	209
20	7480	262
21	9387	329
22	11781	412
23	14785	517
24	18555	649
25	23287	815
26	29225	1023

Hint:

If it makes sense from your point of view, you are welcome to program further static methods and integrate them into the program!

Enjoy working on Testat 1!

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