

## ASSIGNMENT (AFLEVERINGSOPGAVE) 2

### GENERAL INFORMATION

This assignment is made public on Friday, February 13th, 2004. The assignment is due on

Friday, February 20th, 1 PM.

Hand in your assignment to the teaching assistant running your lab session.

The first page of your (written) assignment has to contain at least the following information:

- the course name (Grundlæggende Programmering)
- name and student number of the fellow student(s) in your group (max two)
- assignment number

*Please staple your assignment!*

You will get back the graded assignment one week after submission deadline.

### WARM-UP AND SUGGESTIONS FOR FURTHER EXERCISES

As warm-up I suggest that you have a look at the review questions of Chapter 2 of the course book. As to further exercises I suggest the following from Chapter 2 of the textbook (pp. 49–52 of my copy):

- Exercises 1-18 are all suited as further simple exercises.

It is up to you whether or not you want to work on these exercises. Those exercises will not be marked.

### ØVELSER

Arbejd i små grupper.

- Fejlmeldinger: 5, 6 og 7 fra kapitel 2.
- Programmering: 9, 10 eller 11 fra kapitel 2.
- Typen `char`: 14 og 15 fra kapitel 2.

## AFLEVERINGSOPGAVE: VOLUMEN AF EN PYRAMIDE

### ASSIGNMENT: VOLUME OF A PYRAMID

You are supposed to write a Java program that will calculate the volume of a (regular) pyramid with circular ground area. Recall from high-school geometry that for any pyramid the volume is one third of the ground area multiplied with the height. Thus, if the height is  $h$  and the radius is  $r$  then the volume of the pyramid is calculated by the formula

$$V = \frac{r^2 \times \pi \times h}{3}$$

where  $r^2$  is  $r \times r$  ( $r$  to the power of 2), and  $\pi$  is the mathematical constant 3.14159... To do so modify the program `SimpleInput.java` from Chapter 2 of the textbook, which performed a similar task: asking the user for input, doing some calculation, and then output a result on the screen.

- Copy the file `SimpleInput.java` from the course homepage. The program is from Chapter 2 of the textbook.
- Change the name of the file to `Volume.java` (either use the Linux command

```
mv SimpleInput.java Volume.java
```

which renames the file, or open the file `SimpleInput.java` with `emacs` and then use the command `Save Buffer As ...` from the pull-down menu `Files`).

- Open the file using `emacs` (if you haven't done so already).
- Modify the comments at the beginning so that they contain at least your name, the date when you write your program, and the purpose of the program.
- Change the name of the main class to `Volume`. (Why?)
- Change the body of the `main` class so that you ask the user to input the radius of the ground area of the pyramid, input the radius, ask the user to input the height of the pyramid, input the height, do the calculation, and output the result. Make sure that the user of your program will see some informative text on the screen when running the program. The mathematical constant  $\pi$  can be accessed through `Math.PI`. It is of type `double`.
- Compile your program. If you get error messages, read them carefully and try to correct your code. Most likely you will make some typing errors, or omit braces or semi-colons.
- Run your program.
- Print your final program once you are satisfied with its performance.

**Opgaven:** Skriv kildekoden, tjek at koden kan oversættes og at programmet kører korrekt. Aflever din kode.