Institut for Matematik og Datalogi
Syddansk Universitet

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Programming A
2nd Weekly Note (E14, Week 37)

Reading for Week 37

- Chapters 5-6 of "Think Python: How to Think Like a Computer Scientist"

Lecture: Thursday, September 11, 08-10 (U20)

In this lecture we will repeat and extend what we know about functions. Additionally, we will introduce conditional execution. Finally, we will use functions and conditional execution to solve problems by using recursive functions.

Labs: see detailed schedule on course home page

First do Exercises 1.2–1.4, and 2.1–2.4 from the textbook.

Then, write a small program that interacts with the user by e.g. asking for the users name, then welcoming the users etc. Use your creativity to create an interesting dialogue. Look up the functions "`raw_input()`" and "`input()`" in the library reference to handle user input.

Finally, do Exercises 3.1–3.5 from the textbook. Then install the `swampy` package (if it is not installed yet):

```
http://www.greenteapress.com/thinkpython/swampy/install.html
```

Do the exercises in Section 4.3 of the textbook. If you are fast, also do Exercises 4.1–4.4 of the textbook.

Exercises: see detailed schedule on course home page

First do Exercises 5.1–5.2 from the textbook.

Then do Exercises 6.1, 6.3, and 6.7. Continue with 6.4.

Finally, discuss recursive definitions in mathematics. For example, take a look at the fibonacci numbers and their definition. Find and discuss other examples of recursion, e.g., fractals in nature like the Koch snowflake or the Sierpinski triangle.

Study groups: see your personal schedule

The first year students meet with their study group. Begin by an introduction round and tell each other about your background with respect to computer science and programming. Please use some time on discussing how you are dealing with the course so far. Is there anyone who feels left behind? Can the group come to help here? It would be great to get some feedback from each group, so please write a short mail to Peter Schneider-Kamp ¡petersk@imada.sdu.dk¿ with how many met in your group and any feedback on the course that you have so far.

Download the `swampy` package and test that you can run `AmoebaWorld.py`. Now, you can repeat what you learned about Python expressions to control a blobby creature. Try different expressions for `x` and `y`.

Finally, as we are introducing recursion in the lectures, it would be good to discuss recursive definitions in mathematics. For example, take a look at the fibonacci numbers and their definition. Find and discuss other examples of recursion, e.g., fractals in nature like the Koch snowflake or the Sierpinski triangle.