Introduction to Programming
2nd Weekly Note (E17, Week 37)

Reading for Week 37

- **Obligatory:** Chapters 5–7 of "Think Python: How to Think Like a Computer Scientist"

- *Supplementary:* Chapters 6–9 of "The Coder's Apprentice: Learning Programming with Python 3"

Lecture: Monday, September 11, 12-14 (U140)

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

Lecture: Thursday, September 14, 14-16 (U140)

We will start by repeating the idea of recursive functions. Please take a look at the slides from the previous lecture and try to understand what questions you want to ask during the lecture.

Then we will learn about programming using iteration (while loops and for loops).

Labs: see your personal schedule

- **Obligatory:** Exercises 1 and 2 from Chapter 4. Exercise 3 from Chapter 5.

- *Supplementary:* Exercises 3 and 4 from Chapter 4. Exercises 2 and 5 from Chapter 5.

- Challenging:
  Read the definition of a Dragon curve here: `https://en.wikipedia.org/wiki/Dragon_curve`
  Write a function that takes two parameters (the length of each segment and the number of iterations) and draws the corresponding Dragon curve using the turtle module.

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 (`mailto:prog@imada.sdu.dk`) with how many met in your group and any feedback on the course that you have so far.

Make sure that everyone in the group has a running Python installation, where the turtle module is usable. Then spend some time experimenting with the awesome drawings it can generate!

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.