Learning to Program with F#
Exercises
Department of Computer Science
University of Copenhagen

Jon Sporring, Martin Elsman, Torben Mogensen, Christina Lioma

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0.1 Getting Started

0.1.1 Teacher's guide

This exercise focusses on getting the students up an running with Scratch, how to use the command line, and how to produce a simple report in LaTeX. It has no assumtions on the student's abilities.

Topics Imperativ programmering using Scratch, command line/terminal and the file structure, a text editor, report writing using LaTeX

Difficulty level Easy

0.1.2 Introduction

Scratch is a visual programming language using the imperative programming paradigm and where the programming elements are structured as blocks with connectors.

0.1.3 Exercise(s)

0.1.3.1: Start the command line (or terminal on MacOS). Use the `cd`-command to navigate to a suitable directory for your work. (e.g. the Documents folder). Use the

```
mkdir <name>
```

command to create a new directory from the command line. Replace `<name>` with the name of your new directory. Use `ls` or `dir` to verify that the new directory is empty. Locate the same directory with the Graphical User Interface.

0.1.3.2: Make a Scratch-program, which counts up every even number from 0 to 20.

0.1.3.3: Make a Scratch-program, which counts down from 10 to 1. You must use a variable and a repeat loop.

0.1.3.4: Make a Scratch-program, which counts down from 10 to 1. The countdown should start/begin when you click the mouse.

0.1.3.5: Design a game in Scratch:
You are to design a game of your own choosing. The game must

- include 2–5 sprites
- have a typical gameplay of about 1 minute
- must include at least 1 variable

You may use any existing block in Scratch, and the game may be similar to an existing game. The graphical appeal and the sound aspects of the games are of little importance.

A good approach is to:

(a) Start by brainstorming about a game, you would like to make and what the game mechanics should be.

(b) Sketch a design on paper about the gameplay.

(c) Implement your design as a sketch of a Scratch program, still on paper.

(d) Enter your prototype into Scratch and test it.

(e) Return to the top and update your game until you are satisfied with the result.

0.1.3.6: Make your own "hello world" Scratch-program. The program must make the default sprite say "Hello World" when you press the green flag.

0.1.3.7: Install Scratch on your machine.

0.1.3.8: Install Scratch on your machine.

0.1.3.9: Make a Scratch program with a sprite of your own choosing, which moves on the screen using the 'glide'-block and the 'forever' loop-block.

0.1.3.10:

0.1.3.11: Take one or more screenshots of one of your Scratch-programs while it runs.