WELCOME TO
COMPUTER PROGRAMMING

HOW DOES COMPUTER PROGRAMMING WORK?

MAGIC.
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WHAT ABOUT YOU?

Name?

What are you studying?

Where are you from?

Previous experience?

What motivates you to learn to program?
Course overview


Tests, submission of exercises, points - https://moodle.ut.ee/
Grading

https://courses.cs.ut.ee/2018/nkp/fall/Main/Grading

• Homework (exercises + test) & participation in the sessions
• Assignment each session
• Mid-term test
• Project (formulation + solution)
• Exam (test on paper + programming exercise)
Sessions

• **Before:**
  • Video
  • Test
  • Homework

• **Sessions on Wednesdays**
  • Reimo: 3, 4, 5, 10, 11, 12, 13
  • Ljubov: 6, 7, 8, 9, 14, 15, 16
Software

• Thonny
  • Python 3

• IDLE or Notepad++

• CMD???
Questionnaire

https://goo.gl/forms/snYS6JjOWsArJF9W2
By now...

- Independently covered 2 chapters of Charles Severance:
  - 6 videos lectures
  - 1 test
PROGRAMMING

• Computers want to be helpful,
  but we need to speak their language

• Programmers are people who know how to communicate with computers in a programming language
  They know how to write programs

• Program is a sequence of stored instructions (commands)
  • Programmers figure out the sequence and encode it
Python

• Python
  • A programming language developed by Guido van Rossum in 1991
  • A way to communicate with computers and encapsulate our instructions
WHY PYTHON?

Python:
print "Hello, world!"

Java:
public class HelloWorld {
   public static void main (String[] args) {
      System.out.println("Hello, world!");
   }
}
Advice

At the beginning, the language is new. It is hardly possible to pick up a language over the night.

There will be lots of mistakes (e.g. syntax error):

• PC is not cruel nor making jokes
• It says: “I don’t understand what you are saying. I only know a few words. Please speak in Python.”
• Be ready that PC don’t correct you as teachers do. They can hardly listen or understand our awkward Shakespearian Python

Keep going, wondering throughout, editing, playing, understanding

• It is easier for you to learn Python than to make computers understand English
Interactive or Script

• Interactive Python
  • Type directly one line at a time and Python responds
  • It is good for experiments and programs of 3-4 lines

• Python Script
  • Enter a sequence of statements (lines) into a file using a text editor and tell Python to execute the statements in the file
  • Add .py as the suffix on the end of these files to indicate they contain Python
Chapter 2 - Expressions

• Variables
  • *mnemomically* named place in the memory where a programmer can store a value and later retrieve it using the variable name
    • Must start with a letter or underscore _
    • Must contain letters, numbers or underscore
    • Case sensitive

• Constants
  • Numbers, letters, and string are constants
  • They do not change their value
    • 123  98.6  ‘Hello, world’ “Hello, world”
  • type()  
    • Types int float str
    • Type conversion int() float() str()
Expressions

• Assignment statement
  • e.g. $x = 2$
    • Hey, Python, go and find a place called 'x' and store there 2

• Assignment with expression (e.g. $x = x + 2$)

• Operators
  • Addition +
  • Substracion -
  • Multiplication *
  • Division /
  • Power **
  • Remainder or moder %
    • (450 % 100 result is 50)
  • Whole part of ivision //
    • (450 % 100 result is 4)

Order of evaluation (operator precedence)   ()  **  */%  +-  left to right
Expressions

• Reserved words (e.g. `print`, `for`, `elif`, `while`)
• User input `raw_input('Hello')`
• Comments `#`
Input, output, comments

• User input

```python
name = input("Enter name:")
weeks = int(input("Enter weeks:"))
rate = float(input("Enter rate:
```

• Output

```python
print("Hello")
print("Hello", name)
print("Weeks: " + str(weeks))
```

• Comments    #
Test 1

Questions?
Thonny - https://thonny.org/
Exercises

https://courses.cs.ut.ee/2018/nkp/fall/Main/During1