IT5003 Mar-May 2024

Data Structures and Algorithms

Tutorial+Lab 01
Basic Python

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1 Introduction and Objective

The purpose of this first tutorial+lab session (all onsite) is to recap the first two (or three, if you count the recitation 1 too) sessions of IT5003: Introduction, basic Python, basic analysis of algorithm, and to ensure that all students can code a simple Python program using their own computer/laptop at home and submit code to Kattis for automatic judging. The first half of the session is generally the 'tutorial' part and the second half of the session is generally the 'hands-on/lab' part. The tutors will control the timings and they don't have to divide the sessions exactly by half. There will be a short break during the transition.

As this is the first session, we will do a quick ice breaking at the start of the session.

To get the most out of the tutorial part of these sessions, please try out all the questions in the tutorial component and give some answer even if you encounter difficulties in answering some of them. Before, during, or after the tutorial session, don't hesitate to clear up all doubts and questions you might have, with the tutor.

Every week, you will try to solve one selected Kattis problem during the 'hands-on/lab' component. The tutors already know the selected Kattis problems for this semester. However, these selected problems will be revealed to you on the spot each week – true for Saturday groups but Monday groups will see the tasks about two days earlier – (if you happen to already solve it, then you are free to just leave the session or actually you can stay back to help your peers – you can learn more things by observing how others approached the problem that you have solved – possibly with another way). Tutor will guide all students to get (near) Accepted solution for each problem. These problems are not graded but attempting them during the hands-on time (and possibly to fully complete them afterwards) is beneficial to better understand IT5003 material.

The tutorial/lab participation marks are there to encourage class participation. These marks will be given by the tutor **at the end of the semester** using the following guideline:

- 0% if you only attend ≤ 4 out of 7 (Saturdays) or 8 (Mondays) tutorial/lab sessions (7 for Saturdays this semester due to long well-being day/passion weekend holiday),
- 1% for **at most the bottom three** most-passive students (assuming these students attend > 4 tutorial/lab sessions),
- 3% for **at least the top three** most-active students (answering questions when asked by TA – the correctness of your answers are secondary; or even just by asking your own questions to TA before/during/after class/during consultation); in each tutorial group, and
- 2% for the rest.

2 Questions

There is no specific tutorial questions this time, but full hands-on. See below.

Hands-on 1

TA will run this session with a few to do list:

- First, we will continue tinkering with `https://www.comp.nus.edu.sg/~stevenha/cs2040/demos/SpeedTest.py` to highlight a few more common time complexities,
- Next, this is the time to review the easy Python/coding challenges (PS0 at `https://nus.kattis.com/courses/IT5003/IT5003_S2_AY2324/assignments/c7nm37/standings`. This time, we also analyze the time complexities of our solutions.
- Finally, live solve one chosen Kattis problem involving basic Python.

Problem Set 1

We will end the tutorial with high level discussion of PS1 A+B.