

CS101 - Introduction to Programming

Spring 2018

Instructors

Prof. Moonzoo Kim (moonzoo@cs.kaist.ac.kr, 042-350-3543, E3-1. 2434) – Sections A and B

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Prof. Soontae Kim (kims@kaist.ac.kr, 042-350-3554, N1. 903) – Sections G and H

Prof. Young Hee Lee (yhlee@cs.kaist.ac.kr, 042-350-3560, N1. 802) – Sections I and J

Teaching Assistants

5-6 TAs will be assigned to each section.

Representative TA: Minsuk Chang (minsuk@cs.kaist.ac.kr, 7865, N1 624)

(for admin. matters, contact InYang Hwang inyang@kaist.ac.kr, 3505, E3-1 1402)

Course Objective

The objective of CS101 is to teach *programming skills* and *computational thinking*. The first is important because programming is needed in all areas of science and engineering, although very different programming languages are used. The second is perhaps even more important, as it influences how you go about solving a problem. Fifty years ago, the solution to a problem in mathematics or engineering was often a formula. Today, it is usually an algorithm.

Course Structure

Starting from spring 2010, CS101 uses the programming language [Python](#), a language that was *designed to be easy to learn*. Python is used by many universities world-wide for *teaching introductory programming*. It is free, open-source, and multi-platform.

Python is not a toy. Python is the basis for much of the programming at Google (for instance, Python is the original and main framework for the [Google App Engine](#) platform). Python is used intensively in numerical computations, for instance at NASA. The *numerical Python* library supports vectorization and is widely used in scientific computation. Python is also the language of choice for writing user interfaces for applications on high-end Nokia phones. Large portions of games (such as Civilization IV) are written in Python. Python is becoming the language of choice in mathematics, used for instance by graph algorithm libraries, or the open-source mathematics software system Sage (an open-source competitor to Maple or Mathematica).

CS101 consists of 10 sections of about 45 students each. Each section meets once a week for a *three-hour lab session* supervised by a *head TA* (a Ph.D. student), with some *helper TA's* around (undergraduate and master students). Two sections take one lecture together, which is once a week for 60~120 minutes.

Students need to attend the lab session every week. One of the tasks done during the lab has to be marked off by a TA, so that we know that you were there and did your best.

There will also be four take-home assignments where you have to program slightly more complex tasks.

Lab sessions will introduce students to [pair programming](#).

The course webpage (<http://cs101.kaist.ac.kr/>) contains the syllabus, lecture notes, and slides for CS101, and links to all the software you need in the labs (or to do the lab tasks on your own computer).

All other information, such as lecturers, TAs, lecture and lab times, homework assignments, exams, and the bulletin boards can be found on the comprehensive CS101 website cs101.kaist.ac.kr.

Grading

CS101 grading consists of two parts: practice and theory.

Practice points are collected as follows:

- 100 points for lecture attendance
- 100 points for lab work
- 200 points for homework

Students need to collect at least 340 practice points. Only the students who scored 340~400 practice points are entitled to be graded. Students who did not earn 340 practice points receive a fail grade

Theory points are collected as follows:

- 100 points for midterm exam.
- 100 points for final exam.

The final score for CS101 is determined entirely by the theory points.

Repeating students: Students who have already taken advanced courses involving programming, and all students who are majoring in the following departments cannot retake CS101 if they have already passed CS101: School of Electrical Engineering, School of Computing, Information & Communications Engineering, and Industrial & Systems Engineering)

All repeating students cannot receive a grade better than A- by KAIST policy (and this applies even to students who entered KAIST before 2007).

Cheating is strongly forbidden. Cheating on homework or exams will give an F. Copier and source provider will obviously get F grade.

Waiver Exam

In the first week of the semester we offer a "Pass Exam", which students who have already learnt programming can take to fulfill the CS101 requirement.

The waiver exam consists of a 90 minute written exam, followed by a 60 minute programming exam.

The written exam is closed book, and covers programming in Python as taught in CS101, but without the `cs1robots`, `cs1media`, and `cs1graphics` modules.

The programming exam is open book (only printed materials are allowed). You will use a computer in the lab, but will have access only to the Wing or IDLE environment (no internet access).

If you pass the exam with a grade of B- or better, you can choose to accept the score as your CS101 score, or to give up the score and take the CS101 class.

Literature

CS101 uses the following materials:

- [Practical programming: an introduction to computer science using python 3 \(pragmatic programmers\)](#) by Paul Gries and Jennifer Campbell.
- Jason Montojo, and Greg Wilson. Pragmatic Programmers, 2009. ISBN 978-1934356272.
 - A [Korean translation](#) is also available (ISBN 978-8960771338).
- [Robot lecture notes](#) Lecture notes to be used together with `cs1robots.py`.
- [Photo processing lecture notes](#) Lecture notes to be used with `cs1media.py`.
- [Tutorial for cs1graphics](#) (The original is <http://www.cs1graphics.org/>)

The slides used in the lectures will also be available online, and there will be slides for every lab session.

Software

We will make use of the following freely available software: *Python 3*, *PyCharm IDE*, *Python Imaging Library (Pillow)*, `cs1graphics.py`, `cs1robots.py`, and `cs1media.py`.

We will also make use of the online programming education platform, [Elice](#).

Lecture and Lab Schedule

Lecture Date & Time: Tuesday 10:30AM-12:30PM

Lecture Rooms: Creative Bldg. 202 (A & B), 203 (C & D), 101 (E & F), 102 (G & H), 103 (I & J)

Lab. Dates & Times:

	MON	TUE	WED	THU	FRI
9:00~12:00	A & B		E & F		I & J
13:00~16:00		C & D		G & H	

Additional announcements will be posted on the course webpage (<http://cs101.kaist.ac.kr/>) during winter vacation.

February/March

Mon	Tue	Wed	Thu	Fri
26 Lab 1 (A/B)	27 Lecture 1 Lab 1 (C/D)	28 Lab 1 (E/F)	1 Lab 1 (I/J)	2 Lab 1 (I/J)
5 Lab 1 (A/B)	6 Lecture 2 Lab 2 (C/D)	7 Lab 2 (E/F)	8 Lab 1 (G/H)	9 Lab 2 (I/J)
12 Lab 2 (A/B)	13 Lecture 3 Lab 3 (C/D) OH1	14 Lab 3 (E/F)	15 Lab 2 (G/H)	16 Lab 3 (I/J)
19 Lab 3 (A/B)	20 Lecture 4 Lab 4 (C/D) OH2	21 Lab 4 (E/F)	22 Lab 3 (G/H)	23 Lab 4 (I/J)
26 Lab 4 (A/B)	27 Lecture 5 Lab 5 (C/D) OH3	28 Lab 5 (E/F) HW1 Out	29 Lab 4 (G/H)	30 Lab 5 (I/J)

April

Mon	Tue	Wed	Thu	Fri
2 Lab 5 (A/B)	3 Lecture 6 Lab 6 (C/D) OH4	4 Lab 6 (E/F) HW1 Due	5 Lab 5 (G/H)	6 Lab 6 (I/J)
9 Lab 6 (A/B)	10	11	12 Lab 6 (G/H)	13
16 MIDTERM EXAM	17	19	20	21
23	24 Lecture 7 Lab 7 (C/D) OH5	25 Lab 7 (E/F)	26 Lab 7 (G/H)	27 Lab 7 (I/J)
30 Lab 7 (A/B)				

May

Mon	Tue	Wed	Thu	Fri
	1 Lecture 8 Lab 8 (C/D) OH6	2 Lab 8 (E/F) HW2 Out	3 Lab 8 (G/H)	4 Lab 8 (I/J)
7	8 Lecture 9 Lab 9 (C/D) OH7	9 Lab 9 (E/F)	10 Lab 9 (G/H) HW2 Due	11 Lab 9 (I/J)
14 Lab 8 (A/B)	15 Lecture 10 HW3 Out	16	17	18
21 Lab 9 (A/B)	22	23	24	25
28 Lab 10 (A/B)	29 Lecture 11 Lab 10 (C/D) OH8 HW3 Due	30 Lab 10 (E/F)	31 Lab 10 (G/H)	

June

Mon	Tue	Wed	Thu	Fri
				1 Lab 10 (I/J)
4	5 OH9	6	7	8
11 FINAL EXAM	12	13 13	14	15
18	19	20	21	22
25	26	27	28	29