

Problem Solving in Information Technology

Course Introduction

Chotipat Pornavalai

PSIT2016

Lecture 1

Course Description

- Principle and concept of solving computational problem, python programming language, Encapsulation, Generalization, Interface Design, Source Configuration Management (SCM) with Git, coding standard with Python Style Guide (PEP-8), algorithmic thinking, complexity analysis, Python Standard Library, software development principles, Test-driven Development (TDD), unit testing, refactoring, peer code review, pair programming, application development

Objectives

- Have good learning/working discipline
- Understand the concept of problem solving
- Understand the principles of computer programming
- Be able to think algorithmic and write computer program (python) to solve computational problems
- Be able to apply several good software engineering best practices

Staffs

- Instructor: Chotipat Pornavalai
 - Email: chotipat@it.kmitl.ac.th
 - FB: facebook.com/chotipat
 - Room 537
- Instructor: Nol Premaisathian
- TA: Pichatorn Eak-Une (Master student)
- TA: Thanakrit Julavanich (Senior student)
- TA: Tanasab Permpool (Senior student)

Resources (1)

- Online ITKMITL (outdated)
 - <https://online.it.kmitl.ac.th>
 - Enroll to course “Introduction to Python Programming”
- Judge
 - <https://ejudge.it.kmitl.ac.th>
- Pair
 - <https://pair.it.kmitl.ac.th/>
- FB group (PSIT ITKMITL 59)
 - <https://www.facebook.com/groups/1140263599358772/>

Resources (2)

- Textbook
 - Think Python 2nd edition –
<http://greenteapress.com/thinkpython2/thinkpython2.pdf>
 - ภาษาไพทอน ชั้นมัธยมศึกษาปีที่ 4-6 กลุ่มสาระการเรียนรู้การงานอาชีพและเทคโนโลยี สสวท.

Course Schedule

- Lecture (1 sec):
 - Tue 09:00-11:00 @ Auditorium
- Lab (4 secs):
 - Thr 09:00-11:00 @ Lab308
 - Thr 12:00-14:00 @ Lab308
 - Thr 14:00-16:00 @ Lab308
 - Tue 11:00-13:00 @ Lab308?

Lecture Plan (1)

- 1st Half:

2 Aug: week 1: Introduction, problem solving, and pair programming

9 Aug: week 2: Function, Modules and Conditions

16 Aug: week 3: Interface Design

23 Aug: week 4: Coding standard (pep8 and pylint)

30 Aug: week 5: Iteration

6 Sep: week 6: Strings

13 Sep: week 7: SCM (Git)

Week 8: Midterm Exam

Lecture Plan (cont.)

- 2nd Half:

27 Sep: week 9: List

4 Oct: week 10: Dictionary

11 Oct: week 11: Tuple

18 Oct: week 12: Python Standard Library

25 Oct: week 13: File and Error Handling

1 Nov: week 14: Algorithmic Thinking and Complexity

8 Nov: week 15: Test Driven Development

15 Nov: week 16: Python Library

Week 17: Final Exam

SE Best Practices

- Pair Programming
- Test-driven Development (TDD)
 - Unit test
 - Refactoring
- Peer Code Review
- Source Configuration Management (SCM) with Git
- Coding Standard (PEP8)

Grading

- Midterm = 35%
- Final = 35%
- Project (group of 2 students) = 20%
- Others (10%):
 - Homework
 - Class participation
 - Pair Evaluation and peer code review

Grade Criteria (plan)

- A = 90+
- B+ = 85+
- B = 80+
- C+ = 75+
- C = 70+
- D+ = 65+
- D = 60+
- F = 60-

Workload

- Estimate ~ 8-12 hours/week
 - online.it.kmitl.ac.th ~ 1-2 hrs (outdated)
 - lecture ~ 2 hrs
 - lab ~ 2hrs
 - homework and pair eval. ~ 2-3 hrs
 - study group or self study and peer code review ~ 4-5 hrs
 - project

Policy

- Please do not use computer/notebook/tablet/phone/etc during lecture.
- Do not use computer for other activities, such as playing game, watching youtube during lab.
- Cheating in any forms will not be tolerated.
- Collaboration for homework is encouraged through pair programming.