

# Icebreaker

- Introduce yourself to the person next to you
- Discuss fun things to do in Hong Kong
  - Activities?
  - Sights?
  - Food?

# COMP1010 – Computational Thinking and Problem Solving

## Course Information

Alexander Lam

# Basic Information

- Lecturer: Alexander Lam

Email: [alexander-a.lam@polyu.edu.hk](mailto:alexander-a.lam@polyu.edu.hk)

Office hours/Consultation:

- Every Wed 14:00 – 16:00 Online on MTeams (link on Blackboard)
- PQ733, Email me to schedule in-person or online consultation at other times.
- Subject Leader: Dr Muhammad Tayyab
- Lectures: Monday 12:30—14:20 FJ301
- Labs (**Starting from Week 2**):
  - Monday 10:30—11:20 PQ604{A,B,C}, PQ603

# Pre-requisites and Course Study

- **Prerequisites:** None
- **Course Study:** Regular practice
  - Design computer solutions for problems.
  - Implement these solutions as programs.
  - Check that the programs work.
  - Teach your friends
  - Ask LLMs (ChatGPT, DeepSeek etc.) for more problems
  - Blackboard discussion

# Intended Learning Outcomes

Upon completion of this subject, students will be able to

- Professional/Academic knowledge and skills
  - (a) Show a basic understanding of concepts of computational thinking
  - (b) Understand the nature and characteristics of real-life problems and model them as computational problems
  - (c) Develop computer solutions to basic and standard problems and implement them using a high-level programming language, e.g. Python
  - (d) Acquire some specialised programming skills to implement solutions using suitable data types and constructs
  - and (e) Recognise the properties of a competent problem solver and self-learner.

# Lecture Schedule (Will very likely change)

Week	Date	Topic
1	Sep. 1	Introduction to Computational Thinking
2	Sep. 8	Number Systems, Functions and Procedures
3	Sep. 15	Pseudo-Code, Computation Constructs, Nested Loop
4	Sep. 22	Conditionals, Decision Trees <b>Flipped Learning I</b>
5	Sep. 29	Sorting Algorithms, Basic Arithmetic, Computation
6	Oct. 6	Basic Arithmetic, Computation, Symbolic vs Numeric Computation
7	Oct. 13	Computational Challenges
8	Oct. 20	Problem Solving Principles, Abstraction, Graphs in Problem Solving
9	Oct. 27	Bridges, Coloring, Scheduling, State Models, Puzzles <b>Flipped Learning II</b>
10	Nov. 3	Graph Representation
11	Nov. 10	Short Path Algorithms <b>Flipped Learning III</b>
12	Nov. 17	Algorithmic Refinement and Lessons
13	Nov. 24	Wrap-Up

# Assessments

- Continuous assessment 30%
  - Assignments 20% = 10% + 10%
  - (Flipped Learning) Quizzes 10% = 5% + 5%
- Final Exam (3 hr, closed book) 70%

If a student fails either the continuous assessment component or the final exam component, his/her overall grade shall not exceed C-.

# Assessment Policies

Plagiarism cases will be strictly handled according to the university's regulation!

Assignments announced and submitted on Blackboard  
(<https://learn.polyu.edu.hk/>)

- Assignment 1: 10%
  - Released Week 5, Due Week 6
- Assignment 2: 10%
  - Released Week 10, Due Week 12
- Late hand-ins will lead to deducted points:  
$$\text{points} = \text{points}_{\text{before deduction}} * (1 - 0.25 * D),$$
  
where D is the number of days delayed (rounded up).



# Assessment Policies

Quizzes will be part of the Flipped Learning lectures

- Quiz 1: 5%
  - Week 9
- Quiz 2: 5%
  - Week 11

# Reference Books

- Kowalski, Robert, *Computational Logic and Human Thinking: How to be Artificially Intelligent*, 1st Edition, Cambridge University Press, 2011.
- Dromey, R. G., *How to Solve It by Computer*. Prentice-Hall International, Englewood Cliffs, NJ, USA, 1982. (There is a free copy online.)
- Zelle, John, *Python Programming: An Introduction to Computer Science* 3rd Edition. Franklin, Beedle & Associates Inc., 2017.
- Downey, Allen B., *Think Python: How to Think Like a Computer Scientist*, Green Tea Press, 2015.
- Punch, William F. and Enbody, Richard, *The Practice of Computing Using Python*, 3rd Edition, Addison Wesley, 2017.
- Gries, Paul, Campbell, Jennifer and Montojo, Jason, *Practical Programming: An Introduction to Computer Science Using Python 3.6*. Pragmatic Bookshelf, 3rd Edition, 2017

# What we expect from you

- Participation
  - Lectures, lab sessions, and Blackboard discussions
  - Continuous assessment
- Practice
- Performance
  - Continuous assessment + Final exam

# Languages

- English
- Pseudocode
- Python

# Any Questions?