This bootcamp is to improve developers' problem-solving skills for various computational problems, especially those that are commonly asked during

- the technical interview for the software programming positions,
- the admission and the qualifying exams for the CS/SE graduate programs,
- the mid-term and the final exams for the data structures and algorithms courses in CS/CE academic program.

What will you learn?

Students will practice answering questions in class that are designed to simulate the actual technical interview or the academic exam. The instructor will review and discuss the students' answers in order to improve their correctness and quality. Correct answers will be distributed to the students and walked through with detailed explanations. Students will also be given an extended set of questions as homeworks to further strengthen their skills.

The topics covered in the practice questions include, but not limited to,

- Elementary data structures, including arrays, linked lists, stacks, queues, etc.
- Asymptotic notations such as Big O, Big Ω, etc.
- Divide-and-conquer
- Quicksort
- Binary heaps
- Order statistics algorithms
- Hash tables
- Binary search trees
- Red-black trees
- Dynamic programming
- Greedy algorithms
- Amortized analysis
- Fibonacci heaps
- Disjoint set data structures
- Elementary graph algorithms, including BFS, DFS, topological sort, finding SCC, etc.
- Shortest path algorithms
- Maximum flow algorithms
- Approximation algorithms

What do you need?

Since this bootcamp is to focus on improving the students' problem-solving skills in data structures and algorithms, the students are assumed to have some knowledge and experiences in the design and the analysis of data structures and algorithms.

What is the course format?

- Lecture

Weekly meeting for 2.5 hours for 15 weeks:
0:00 ~ 0:30   Lecture
0:30 ~ 1:30   Practice questions
1:30 ~ 2:30   Review answers

- Homework

Weekly homework assignments with answers.