Shanghai Jiao Tong University

Department of Computer Science and Engineering

CS241: Principles and Practice of Problem Solving

Fall 2019

Lecture:

Monday 10:00-11:40 & Thursday 14:00-15:40 (Week 1 ~ Week 12)

Upper Hall 213

Instructors:

Yuye Ling, Ph.D.

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Office hours: Monday 1PM-2PM.

Software Building 1-1062

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Office hours: Friday 4PM-5PM.

Software Building 1-1082

Teaching Assistant:

Mr. Jiahui Sun

Ms. Wei Zhu

Office hours: TBD

Textbooks:

Bjarne Stroustrup, “Programming: principles and practice using C++”, 2nd Edition, Addison Wesley

Richard. L. Burden, J. Douglas Faires, “Numerical Analysis”, 9th Edition, Brooks/Cole.

Clifford A. Shaffer, “Data Structures and Algorithm Analysis”, Edition 3.2 (C++ Version).

Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest, Clifford Stein, “Introduction to Algorithms”, 3rd Edition, The MIT Press.

Grading (Tentative):

10-12 homework problem sets

0-2 classroom quizzes

1 course project

Week	Topic	Date (Monday)	Content	Date (Thursday)	Content
1	Programming and Numerical Analysis	9.9	Course Introduction, Review on C++(1): Programs, Computation, and Errors	9.12	Review on C++(2): Classes, Templates, and RAII
2		9.16	Numerical Analysis (1): Number-Theoretic Problems, Polynomial Arithmetic, Solving Nonlinear Equations	9.19	Numerical Analysis (2): Solving Linear Systems, Polynomial Interpolation
3		9.23	Writing a Program	9.26	Completing a Program
4	Data Strucutres and Libraries	9.30	Data Structures Recap (1): Lists, Stacks, Queues	10.3	/
5		10.7	Container and Algorithms (1)	10.10	Container and Algorithms (1)
6		10.14	Data Structures Recap (2): Binary Trees, Huffman Tree, Graph Implementations and Traversals	10.17	FLTK & GUI Programming (1)
7	Graphic User Interface	10.21	GUI Programming (2)	10.24	GUI Programming (3)
8		10.28	GUI Programming (4)	10.31	Introductions To OpenGL
9	Searching and Optimization	11.4	Greedy Algorithms (1): Activity-Selection Problem	11.7	Greedy Algorithms (2): Knight's Tour Problem
10		11.11	Dynamic Programming (1): Gold Mine Problem	11.14	Dynamic Programming (2): Longest Common Subsequence Problem
11		11.18	Genetic Algorithm (1)	11.21	Genetic Algorithm (2)
12		11.25	Artificial Intelligence and Neural Networks (1)	11.28	Artificial Intelligence and Neural Networks (2)
13-16	Project				