

# Introduction

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## 1 Preface

### 1.1 Purpose

How does the books go:

*Specific problems = Coding + Math Analysing*

Knowlegde preferred:

- intermediate programming(OOP & recursion)
- discrete Math – Ref: *COMP0147* & “*Discrete Mathematics and Its Application*”

### 1.2 Overview

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| <i>Part1 : Basic Knowlegde</i> |
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- Chapter 1: Reviewing material on discrete math & recursion + Java related(out of date, not focus on)
- Chapter 2: Algorithm analysis (important and doing exercise)
- Chapter 3: List, Stack and Queues
- Chapter 4: Tress (Basic, AVL & game trees refer to advanced part)

- Chapter 5: Hash tables
- Chapter 6: Priority Queues
- Chapter 7: Sorting
- Chapter 8: Disjoint set
- Chapter 9: Graph Algorithm

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| <i>Part2 : Advanced Knowlegde</i> |
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- Chapter 10: Algorithm on problem-solving techniques (Lots of Examples)
- Chapter 11: amortized analysis(Three data structure from C4 & C6 + Fibonacci heap)
- Chapter 12: Search tree Algorithms(advanced trees)

### 1.3 Exercise

From easy to hard(marked with \*), Last question demo the whole Chapter  
*Ref: [www.pearsonhighered.com/cssupport](http://www.pearsonhighered.com/cssupport)*

## 2 Chapter 1: Introduction

### 2.1 What is the Book About?

Running code fast and analysis them

N.B. detail contents for every chapter are in the previous section

### 2.2 Mathematics Review

*Ref: pp.3-8*