Welcome Back!

CS1102

Data Structures and Algorithms

Lecturers (Section 1 and 2)

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Prof Ling Tok Wang

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How do you address me?

Lecturer (Section 3 and Section 4)

A/P Tan Tiow Seng

AS6, #04-10

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Note: Difference in email addresses:

tanst@comp.nus.edu.sg – Tan Sun Teck, course coordinator, and lecturer for section 1 and section 2, & co-lecturer is Prof Ling Tok Wang

tants@comp.nus.edu.sg – Tan Tiow Seng lecturer for section 3 and section 4

Week Outline

Topics to be covered this week:

- Course Administration << Here
- Problem Solving and Software Engineering
- Java Crash Course

Section (1 and 2) schedule

- Section 1: Monday, 9 am – 10 am
  Wednesday, 10 am – 12 noon
  LT 15 (both sessions)

- Section 2: Wednesday, 2 pm – 4 pm
  Friday, 3 pm – 4 pm
  LT 19 (both sessions)

No difference between Group 1 and 2

- Qs? See IVLE general forum
- Holiday conflicts: Good Friday (may have to conduct make-up lecture)

Section (3 and 4) schedule

- Section 3: Tuesday, 9 am – 12 noon
  PL 2 (COM1, B09)

- Section 4: Tuesday, 2pm – 5pm
  PL2 (COM1, B09)

No difference between sections

- Qs? See IVLE general forum

Sections

- Students are asked to stay within the same section – for tutorials, lectures, labs, PE, and tests

Detailed Outline

- Teaching team
- IVLE
- Objective
- Lectures, labs, homework, and tutorials
- Assessment and discipline
- Any questions?

TAs and ... Lab TAs

To be announced

IVLE: CS1102

Let's look at IVLE now

- Discussion forum
  - Check regularly
  - Emails and replies will be anonymized and re-posted
  - Place your discussions in the right forum and header
  - Do not post completed code
- Workbin
  - Course material – notes should be there 2-3 days in advance
- Webcast lectures
  - Not provided, please come to class

Course Objectives

- Knowledge of data structures and algorithms and when to use them
  - Data abstraction techniques
  - Proficiency in the design and coding of small and medium-sized programs
  - Understand algorithmic complexity issues

Lecture Schedule (Section 1 and 2)

- Tan Sun Teck
  - Java Crash Course
  - Problem Solving and Software Engineering
  - Data Structures / Abstraction
  - Linked Lists
  - Stacks, Queues
  - Recursion
- Prof Ling 
  - Algorithm Analysis
  - Sorting
  - Trees
  - Binary Search Trees
  - Heaps and Priority Queues
  - Hashing
  - Graphs
  - Mix and Match
  - Revision

Lecture Schedule (Section 3 and 4)

- Tan Tiow Seng

- Java Crash Course
- Problem Solving and Software Engineering
- Data Structures / Abstraction
- Linked Lists
- Stacks, Queues
- Recursion
- Algorithm Analysis
- Sorting
- Trees
- Binary Search Trees
- Heaps and Priority Queues
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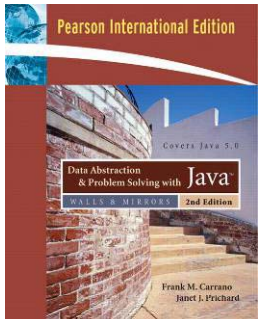
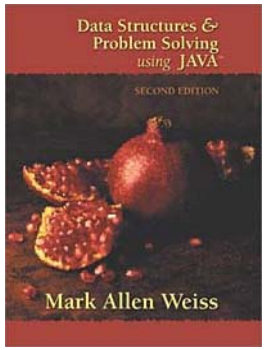
Textbooks



- Carrano and Prichard (2006), *Data Abstraction and Problem Solving with JAVA: Walls and Mirrors* (2nd Edition), Pearson
  - Source code available at: ftp://ftp.aw.com/cseng/authors/carrano/java and also in the IVLE workbin
  - Difference: Java 5



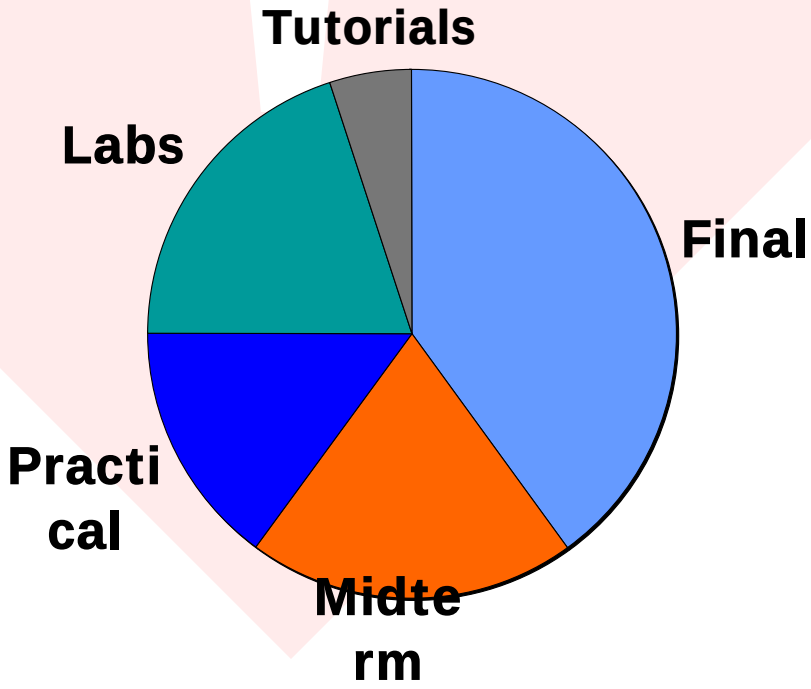
- Weiss (2001) *Data Structures and Problem Solving with JAVA*, Addison Wesley

Assessments

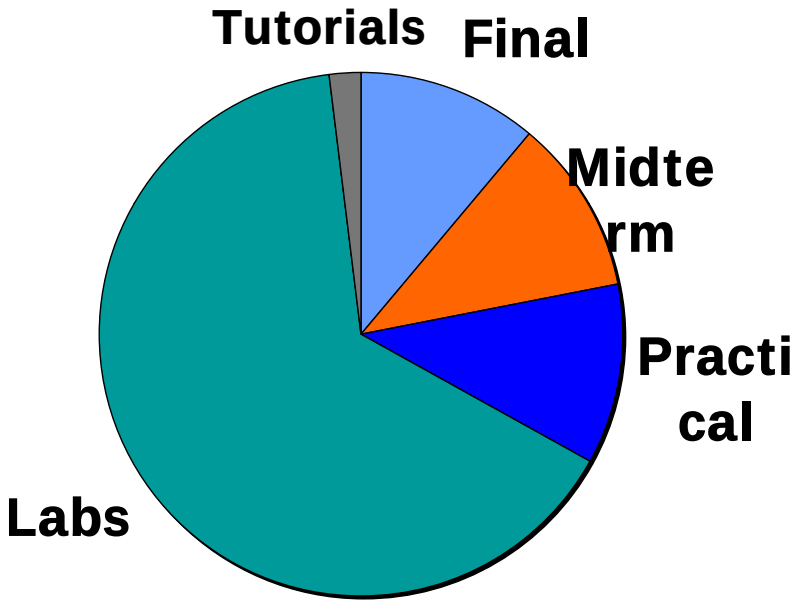
- Final Exam (Closed Book): 40%
  - 24 Apr 2010, Afternoon
- Continuous Assessment: 60%
  - Labs (Open Book): 20%
  - Practical Exam (Open Book): 15%
    - 3rd April 2010
  - Midterm Exam (Closed Book): 20%
    - 6th March 2010
  - Tutorial Participation: 5%

Word to the Wise: Assessments

Actual Mark Distribution



Students' Actual Time Commitment



Homework

- Individual effort, good to test if you really understand the material
- Found at the end of each chapter of the book
- For self-assessment; do not hand in
- Answers provided at the end of the book

- Tip: do each week, don't just do it at the semester's end

Tutorials

- Weekly on Thursdays and Fridays
- Start from Week 3
- You will present solutions and participate in the discussion
  - Participation both in class and on IVLE
- Your performance will be assessed
  - Attendance is mandatory
- Solutions released when the last tutorial session is over
  - But there are often many possible correct answers, there is no one “model” answer

Take home Labs

- Lab sessions on Thursdays
- Take home questions released on Wednesday 9 am; Up to 200 submissions per lab
  - Will be marked by CourseMarker (CM)
- Clear doubts, demonstrate problems encountered
- Do not get the outline of the solution from anyone
- Contact the lab tutor directly if you need extra help

Take home Labs

Praise and Awards for CourseMarker

- “We spent all our times in doing the labs and have no time to take care of other modules.”
- “I have spent the past four days trying to pass the last test case but …. Anyone knows what is the problem?”
- “I run it in my computer and passed all the test cases provided by you, but failed all cases on CourseMarker, why?”

Ode to CourseMarker

Oh! The issues with CourseMarker...
Every student's nightmare!
Outputs: "It needs to run a little faster"
And fails us - is it fair?

Submitting's been such a fluster
Even now, its still a chore
Complains flying in all semester
It’s become such a bore

Someone please do something
So we can submit our final piece
And finally settle down to revising
For our exams - In PEACE!

Sit-in Labs

- Four sit-in labs (6% each)
- Compulsory
- 1 hours 40 minutes
- First 15 minutes, analysis and design
- Last 85 minutes, coding using plab account.
- Your program will be transferred to courseMarker for marking

Sit-in Labs

- If you are absent with valid reasons (documented proof), the % of that session will be accumulated and an extra session will be organised at the end. You may consider this as an additional Practical Exam.

Lab Marks breakdown

- Lab 0 (Familiarisation) (2%)
- 6 Take home Labs (ungraded)
  - To implement what we learn in lectures and prepare for Sit in Labs
  - 80% of the test data will be given
  - Attendance is not compulsory
  - Will be auto-graded by CourseMarker
- 4 Sit in labs (6% each)
  - Lab task distributed at the start of class
  - 1 hour and 40 minutes
  - To solve a problem which implements what you learned in the previous two weeks
  - Submit your program at the end of the lab session
  - Attendance is compulsory
  - Will be marked by LabTA for partial credit
- Will take best 3 of 4 Sit in Labs (2% + 3 × 6% = **20**%)

Lab – Marking by TAs

- Correctness and efficiency: 70%
- Programming style: 30%
  - Only given if your program works
  - Meaningful comments: 10%
    - Purpose of functions and statements
    - Pre and post conditions
  - Modularity: 10%
  - Meaningful Identifiers: 5%
  - Indentation: 5%

Our favorite friend - CourseMarker

We will be using CourseMarker's UNIX submission facility; not the Windows client

- Lab 0 will help you with this

- Make sure you have the exact format
- Do not make unnecessary assumptions

Learn to use UNIX

- Labs, CourseMarker and PE will be using UNIX based submission
- If you have time, you may find it useful to better learn the UNIX environment
- Useful tools
  - Standard UNIX tools
  - Text Editor (pico, vim, emacs)
  - File redirection (<,|,>)

Supplementary tests and PE

- An absence will result in a ZERO mark unless a valid excuse with documentation is given

- A supplementary PE and midterm test will be conducted
- Only those with proof will be qualified to attend
- The difficulty of the exam may not be the same