50.003 Elements of Software Construction

Instructor: Sun Jun

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Father of Two
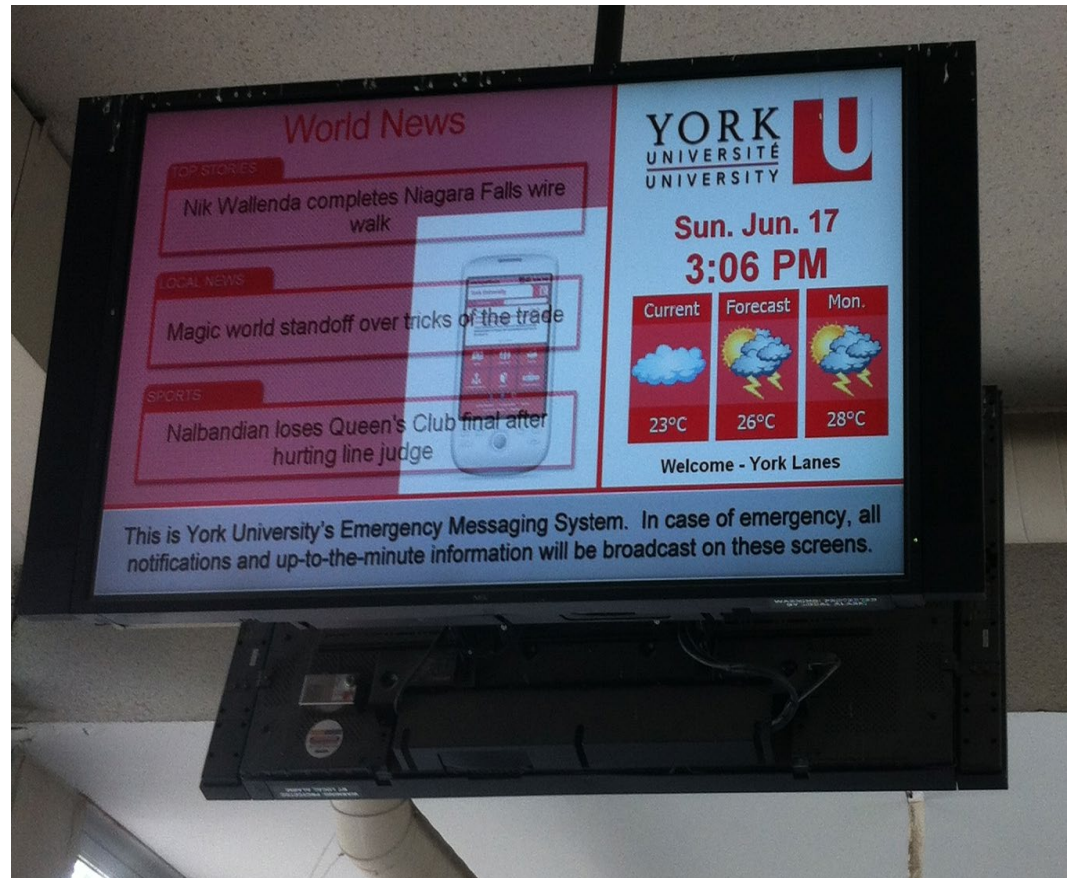
Computer Scientist

Likes Algorithms

Vulcan Type

Office: 1.302-11

sunjun@sutd

weChat: sunjunprof

Instructor: Sudipta Chattopadhyay

- Likes formula, logic, code, hardware and anything related to computer systems

- Likes Soccer

- (Sometimes) speaks fast, loud, non-stop

- Find out more at
  https://sudiptac.bitbucket.io/

- Emailsudipta_chattopadhyay@sutd.edu.sg

- Office: 1.702-14

Teaching Assistant

- Sakshi Udeshi
- Second Year PhD Student in ISTD
- Like coding and algorithms
- Research topic: program analysis, program verification, software engineering
- Email: sakshi_udeshi@mymail.sutd.edu.sg

Teaching Assistant

- Bo Gao

- Second Year PhD Student in ISTD

- Like coding and algorithms

- Research topic: program analysis, program verification, software engineering

- Email: bo_gao@mymail.sutd.edu.sg

Course Plan

Week	Cohort Class 1	Cohort Class 2	Cohort Class 3	Remarks
1 (Jan 28)	Software Development Process			
2 (Feb 4)	Software Design and UML		**Project Meeting I**	Problem Set 1
3 (Feb 11)	Software Design and UML			
4 (Feb 18)	Software Testing			Problem Set 2, Quiz 1
5 (Feb 25)	Basics of Concurrency: Threads, Synchronization, Sockets		**Project Meeting II**	
6 (Mar 4)	Thread Safe Java Class			Problem Set 3
7 (Mar 11)	Recess			Problem Set 4
8 (Mar 18)	Testing Concurrent Programs		**Project Meeting III**	Quiz 2
9 (Mar 25)	Performance			Problem Set 5
10 (Apr 1)	Design Patterns			Problem Set 6; Quiz 3
11 (Apr 8)	Advanced Software Testing		**Project Meeting IV**	Problem Set 7
12 (Apr 15)	Software Debugging, Code smells and Maintenance			Quiz 4
13 (Apr 22)	**Final Project Presentation (15 minutes for each group)**			Project Report/Code Due
14 (May 2)	Final Exam			

Components

- Problem Sets – 20%

- Quizzes – 10%

- Course Project – 40%
  - Project Meetings 1, 2, 3, 4 (each 5%)
  - Final presentation, demo and report (20%)

- Final Exam – 30%

The project weights more than the exam.

Course Project

- You and your team will form a software company.

- Your company will develop a product
  - Clients are
    - SUTD
    - Global Mangrove Trust
    - Accenture

- Project descriptions
  - See edimension ("/Project" folder)

You have only three months!

Vote for Project

https://doodle.com/poll/g4d6bgr4iywdb7bw

Deadline Thursday 31st January, EOD

More on Project

- For each project meeting, each group submits a short report in eDimenstion

- Project Meeting 1 (5%)
  - At least **five use cases** of your product (informal, such as via a sketch board, is OK) 2%
  - Clarification of doubts or gaps in the requirement 1%
  - Development Process, Constraints and risks 1%
  - Project timeline and distribution of workloads 1%

You have only three months!

More on Project

- Project Meeting 2 (5%)
  - Any changes in requirement (compared to 1st meeting) 0.5%
  - Formal documentation of use cases 1%
  - Initial design (at least class diagrams and preferably more) 1%
  - Implementation of some basic features (demo) 1%
  - Testing plan 1%
  - Commit records to show workload distribution 0.5%

You have only three months!

More on Project

- Project Meeting 3 (5%)
  - Any changes in requirement and design (compared to 2nd meeting) 0.5%
  - (Almost) complete design 1%
  - Implementation of additional features (over last meeting) in your product (demo) 2%
  - Implementation of some tests (demo) 1%
  - Commit records to show workload distribution 0.5%

You have only three months!

More on Project

- Project Meeting 4 (5%)
  - Any changes in requirement, design and implementation (compared to 3rd meeting) 0.5%
  - Implementation of most features in your product (demo) 1.5%
  - Implementation of unit tests (demo) 1%
  - Implementation of some system tests (demo) 1%
  - Commit records to show workload distribution 1%

More on Project

- Final presentation and demo (20%)
  - 15 minutes presentation that includes demo of the product, a short video for a high-level description of the software and how it was tested (5%)
  - Report and code (one per group, 10%)
    - Includes final requirement, design, implementation structure, test structure, challenges faced and how they were resolved
    - A github (or similar) repository link for the project source code
  - Individual report on your contribution to the project (5%)

Final Words

- We expect everyone to contribute to both implementation and testing

- Ideally everyone should contribute to requirement, design, implementation and testing.

Miscellaneous

- Course Website:
  - Will be on eDimension
- Office Hour: Just send an email to set an appointment

Cohort Exercise 1 (10 Min)

- Find your group and sit together.

- Say hello to each other.

- Come up with a name for your app company.

- Discuss how you plan to finish it before the deadline.