CS2311 Computer Programming

MS Y. MONG

LT1: Introduction to Programming

Outline

- About the course
- What is a computer, what is a program?
- Programming languages
- Being a Programmer
- Basic concept of programming
- A simple program

About the Course

- Lecturer
  - Ms. Y MONG,
    - YEUNG(AC1)Y6415, 3442 8503, csymong@cityu.edu.hk
- TAs
  - Offer general help on exercises and software setup during labs
- Labs
  - 2-hour "hands-on" practice in CSC labs
  - Analyzing simple problems and implementing computer programs

About the Audience

- Who are you?
  - ECE, year 1 and year 2?
  - Minor in computing?
  - Mainland? Other countries?
  - Programming background?

About the Course – Course Outcomes

1. Explain the structure of an object-oriented computer program;
2. Analyze, test and debug computer programs;
3. Solve a task by applying effective programming techniques, which involve advanced skills like using dynamic data structures;
4. Design and construct well-structured programs with good programming practices.

Assessment

- Coursework (40%)
  - One Quiz (15%), week 7
    - One question is going to be very similar to an exercise from the labs.
  - Assignments: (15%)
    - analyze more challenging problems
    - implement and present solutions
  - Lab Exercises (7%)
    - we'll randomly take 1 exercise from 7/12 labs to mark
    - Deadline is 2 hours after your lab session
  - Lecture Attendance (3%)
    - attend more than 9 lectures
    - to encourage continuous learning

Assessment

- Exam (60%)
  - 2-hour closed book exam, 7-8 questions
- Coursework is important and is designed to help you pass
- Historical data:

Offering	Total no. students	F Grade	A Grade
2017 Sem. A	221	7.7%	18.05%
2016 Sem. A	133*	3.01%	23.31%
2015 Sem. A	213	27.7%	29.1%
2014 Sem. A	196	30.61%	27.3%

Assessment

- To pass the course you must:
  - Obtain at least 30% of the maximum mark on the exam (No. 1 reason to fail this course)
  - Obtain at least 30% of the coursework marks

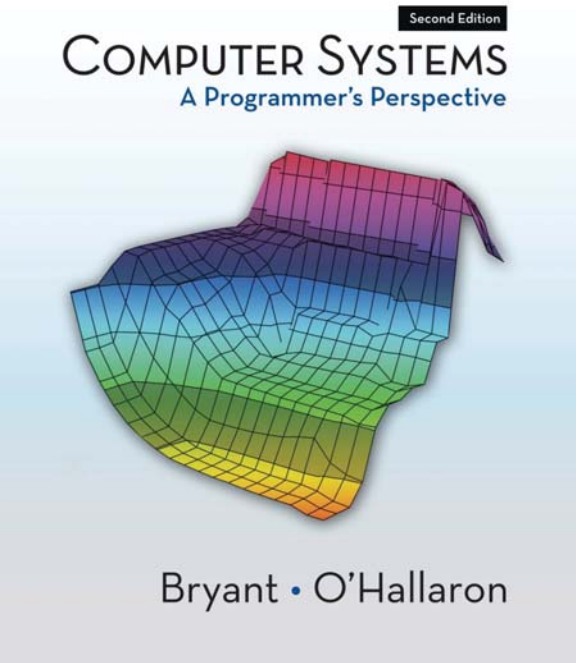
Student	Coursework	Exam	Final Mark	Grade
1	94.3	95.5	95.14	A+
2	33.8	34	34	D
3	86.8	26.5	44.59	F

About the Course – Resources

- Course website on Canvas
  - Lecture slides
  - Lab notes
  - Assignments
  - Announcements, etc.
- Microsoft Visual Studio 2015 (Windows)
  - For compiling & debugging programs
  - Can be installed on your Windows machines
  - *Your best friend for this course*
  - More info in Lab 1, including Mac/Linux alternatives
- PASS (Program Assignment aSsessment System)
  - Program testing and submission
  - For labs & assignments

About the Course – Reference

- Randal E. Bryant and David R. O'Hallaron, **Computer Systems: A Programmer's Perspective.** Prentice Hall, 2011



About the Course – Key to Success

Do it yourself
Practice, practice, practice

How to Get Help

- Ask TAs in the lab; ask helpers; ask online on Canvas; ask instructors
  - We're not here to give you answers, NOR act as your debugger…
- Post your questions on Canvas. Do NOT email instructor or TAs
- Programming clinic, TBD
- Tons of online resources on C++
  - http://stackoverflow.com/
  - https://en.cppreference.com/w/
  - https://msdn.microsoft.com/en-us/library/hh279654.aspx

Competitive Coding Websites

- If you want to have more practice:
  - https://leetcode.com/ used by many looking for tech interviews
  - https://www.hackerrank.com/
  - https://www.topcoder.com/
- If you only want questions
  - https://www.geeksforgeeks.org/
- Caution: these are for more advanced learners and emphasize on algorithms/data structures

About the Course – Other Issues

- During the lecture
  - Do not be disruptive to others
  - Turn your phones to silent mode
- There is no make-up exam, except for medical/MTR emergencies
  - You must provide a signed note from your medical doctor
- If you are sick, it's recommended you do not come to school
  - Drop the doctor's note later in my mailbox

About the Course – Academic Honesty

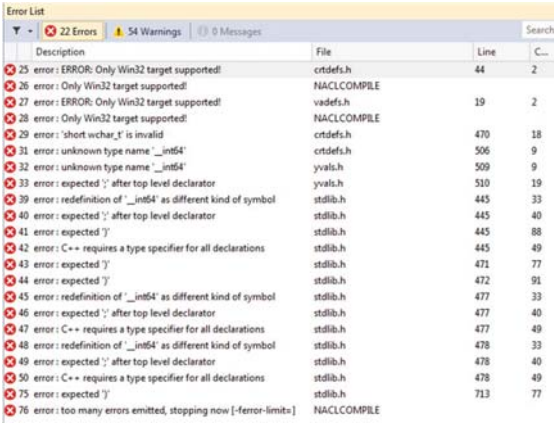
- Plagiarism
  - It is serious fraud to plagiarize others' work.
  - Punishment ranges from warning to course failure.
- How to prevent plagiarism…
  - Protect your code; don't give it away as a "reference" copy.
  - In plagiarism cases, we treat the giver and the copier as both guilty.
- As instructors:
  - We have the responsibility to report academic dishonesty cases so as not to compromise the quality of education
  - We take suspected plagiarism cases very seriously.

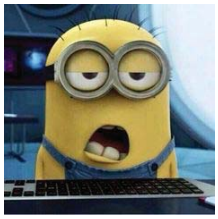
About the Course – Really Important

- Ask questions!
  - Let us (me, TAs) know your difficulties. Is the lecture too fast, or too slow?
  - We can teach better, you can learn better
  - During the lecture, during the lab, and on Canvas
- Practice independently!
  - Questions in our labs are limited

What to Expect

- Programming is fun
- Learning programming is not fun!
- You'll see learn lots of syntax (rules for programming languages), yes they are boring…
- You'll see lots of errors, that'll take you lots of time to fix…





What to Expect

- But to have fun, usually we need to go through lots of boring stuff first –> learning curve
- Also true in our daily life, sadly

One More Tip

- If the computer says you're wrong, you are wrong!
  - Don't ever doubt the computers. They are always right (unlike your parents or CNN or Mr. Trump)
- Focus on finding out what made the computer thinks you're wrong

About the Course – Course Schedule (Tentative)

Wk	Lecture Topic	Tutorial Topic	Assessment
1	Introduction, simple programs	Intro to VS2013	
2	The C++ programming language, operators, data Types	Simple programs & PASS	
3		Simple programs & operators	
4	– N/A –		
5	Flow control (if, switch)	Flow control (if, switch)	
6	Flow control (for, while)	Flow control (for, while) Intro to VS Debugger	Assign. 1 Due
7	Arrays (1D and 2D)	Arrays	Mid-Term Test
8	Functions		
9	Class and Object	Class and object	Assign. 2 Due
10	Pointers (pass by ref)	Pointers (pass by ref)	
11	Pointers (arrays)	Pointers (arrays)	
12	Strings	Strings	
13	File I/O, Other topics (if time) Revision	File I/O, Other topics (if time), revision	Assign. 3 Due