

ECS404U

Computer Systems and Networks

Week I

Teaching staff

- Lecturers:
 - Dr Akram Alomainy
 - Prof Edmund Robinson
- Demonstrators
 - To help with labs, marking

Today

- Introductory stuff
- Break
- Start of Computer Architecture

About this course

- The one-line summary of this course is: what every Computer Science student should know about basic computer architecture, digital representation and networking.
- It is mainly a “levelling up” course.
- What that means is that some of you will already know a good deal of the material we cover, and some of you will know none of it.

If you know it all...

- We'll try to make it interesting by:
 - explaining the rationale behind the structures: give an insight into the design space
 - give practical exercises so that you can do experiments and see the theory working for real

If you know nothing...

- We'll try to introduce topics in a practical way that means you are not just learning a lot of facts.

Course structure

- Four parts
 - Computer Architecture
 - Digital representation
 - Assembly Language Programming
 - Computer Networks

Computer Architecture

- The structure of modern computers
- Range of modern computing devices
- A brief history of their development

Digital Representation

- Number of things we can represent
- Positive whole numbers.
- Conversion between bases, decimal, octal, hexadecimal, binary
- Long addition and multiplication in different bases.
- (Positive and) Negative whole numbers (2s complement)
- Real Numbers
- Characters
- Sound and vision (MP3, JPEG, MP4 and DVD).

Assembly Language

- Basic assembly language instructions
- Introduction to registers, memory and addressing.
- Simple assembly language programming.

Networks

- What every CS student should know about computer networks.
- Some theory: protocols, network stack
- Some practice: basic utilities, use of network for remote work, packet sniffing

Teaching structure

- Every week:
- One 2 hour lecture: Monday 14-16 Great Hall, People's Palace
- One 2 hour lab: FIRST Floor Informatics Teaching Laboratory (ITL): Tuesday 9-11 OR 11-1 OR 2-4 OR 4-6

Labs

- One 2 hour lab: FIRST Floor Informatics Teaching Laboratory (ITL): Tuesday 9-11 OR 11-1 OR 2-4 OR 4-6
- Labs for Procedural Programming are on the ground floor.
- Labs for Computer Systems and Networks start NEXT week.

Contact

- General questions: QMPlus forum
- Individual questions: email (primary)
- Also: in lectures and labs
- Office hours

Where to get help

- Lecturers
- Demonstrators
- Other students

PASS

- Peer Assisted Study Support
- Mentoring sessions with other undergraduates
- Notices in the ITL
- Use it this year, be a mentor next year.

Teaching

- You should treat all scheduled teaching as compulsory, even if no register is taken.
- For this course, that means:
 - these lectures
 - your lab

Other work

- During lectures you should take notes.
- Research has shown that reading Facebook on your laptop/phone while pretending to listen to lectures is bad for learning.
- More surprisingly, research has shown that taking notes with old-fashioned pen and paper is more effective than trying to take notes on your laptop.
- We will make copies of slides available on line.
- Lectures will also be recorded.

What else?

- After the lecture, go over slides and your notes.
- Check QMPlus for other teaching materials and read those.
- Reading means:
 - first look through to get a feel of what the materials are like and what they are trying to say.
 - then do a more focused attack to get what you need from them.
- We will point you at some primary sources. They are not always easy to read, but the point is:
 - to teach you that they exist
 - to teach you that very often you can use them to find definitive answers to particular questions.

What to do in spare time at QM

- Have lunch
- Go to the library and:
 - read through your lecture notes
 - download and look through the lab sheet
 - start to plan how you will do your lab work
 - finish off the lab work left at the end of the previous week
 - do some of your coursework
- Form your own study groups and work on exercises from this and other courses

At labs

- Usually work in groups.
- Go through the lab sheets.
- If you get stuck, get help from Akram, me or one of the demonstrators.
- Get someone to look through and check your work.

Assessment

- Coursework: two assessed pieces of coursework, one due towards the end of this half term and the other towards the end of the full term. About two full days work each. (about 10% each)
- Midterm: held under (almost) exam conditions, probably during reading week. (about 10%)
- Final exam: held in May-June. (70%)

“Reading week”

- Week 7 is Reading week. We are not supposed to cover new material.
- This does not mean it is a holiday.
- Many courses (including this one) use it for a mid-term test.
- You WILL need to be here during “Reading Week”.

Plagiarism

- Put simply:
- When you submit a piece of work, you make (explicitly or implicitly) a declaration that it is your work except as indicated.
- Plagiarism is lying about this.

Plagiarism

- Plagiarism can be overt: simply not declaring that you got certain material off the web.
- It can also be more subtle: “when I said I received a small help, I meant that the entire answer was on a small usb drive I got from a friend...”
- The basic point is this: if we cannot clearly understand what part of the work is yours and what part is not, then you are at risk of plagiarism.
- The College has some very unfunny penalties for plagiarism. You should think in terms of 0 for the module for moderate offences.

Behaviour

- Keeping it simple: the right of others to do their work in a calm and peaceful environment trumps your right to freedom of expression.

Examples

- Late entry to lectures
- Mobile phones and talking in lectures
- Loud behaviour in labs
- Pranks that make other students uncomfortable.

Questions?