Computer systems architectures  
CM12002

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2023/24

image

### 1. CM12002

We are now going to have a look at Operating Systems

Some appreciation of what OSs do and how they work is an essential part of being a good Computer Scientist

So you don’t treat the machine as just some magic box that runs programs

Probably there are pixies inside doing stuff

### 2. CM12002

An operating system is a thing that if it is working properly, you shouldn’t notice it all!

“Operating systems are like underwear - Nobody really wants to look at them”  
Bill Joy

### 3. Structure of teaching

I shall be covering the lectures for the next 5 (teaching) weeks; handing back to Fabio for the rest of the semester to tidy up the loose ends

Consolidation week starts Monday 11 March

* Tuesday 15:15 EB1.1
* Thursday 14:15 CB1.10 before Consolidation week
* Thursday 12:15 CB1.11 after Consolidation week, before Easter
* Thursday 14:15 CB1.10 after Easter (Fabio)

### 4. Content

From the Unit catalogue:

* introduction to operating systems: what they are and what they do, history, ownership and protection of resources
* processes: scheduling, deadlock, and inter-process communication (IPC)
* memory: virtual memory and memory management
* files and file systems

That may not sound like much, but these are all *very* complicated topics that have not yet been solved to everybody’s satisfaction

### 5. Content

So we are going to have a pretty superficial look, and mostly just demonstrate why these are difficult problems

Operating systems as a subject has been going over 60 years, but still is a matter of research and development

Part of that is because computers have changed massively, of course, but part is because the problems to solve are so difficult

### 6. Resources

Some books I found on my shelf:

* “Operating Systems Internal and Design Principles” W Stallings, Prentice Hall
* “Computer Systems Architecture A Networking Approach” R Williams, Addison-Wesley
* “Introduction to Operating Systems Behind the Desktop” J English, Palgrave
* “Operating Systems a Concept-Based Approach” D M Dhamdhere, McGraw Hill
* “Operating Systems Concepts with Java” A Silbershatz et al, Wiley

### 7. Resources

N.B. These were given to me by the publishers so I’m not saying they are the best books out there

The thing to do is look at several and find one that suits you: they all contain roughly the same material

### 8. Resources

You don’t need me to tell you that there is a large amount of material out there on the Web?

Wikipedia is fairly accurate in this area: but, as usual with Wikipedia, you should follow up the references and check with other sources

My Unit Web page: <http://people.bath.ac.uk/masrjb/CourseNotes/cm12002.html> (link on Moodle)

These slides will appear on my Web page after each lecture

### 9. Resources

Contacting me: use email

I don’t monitor all the dozens of other ways of messaging (Moodle, Teams, etc.) and email is the only way to be sure of getting a message to me

I keep a 9-5 (approx) Monday–Friday week and am unlikely to respond out of those times (a long time a ago someone said “Get a life”, so I did)

### 10. Standard Introductory Slides

Remember:

You are expected to do some work outside of lectures

Lectures are the *start* of the learning process, not the end!

These slides are reminders to me on what to say in lectures

They are often abbreviated in style, and so are not the whole story and would not be suitable to be quoted verbatim in an exam

### 11. Standard Introductory Slides

Don’t try to copy everything down from the slides in lectures—the slides will be available after each lecture

Instead, make a note of what is important and use that later—in conjunction with the slides—to guide your further reading and study

### 12. Standard Introductory Slides

Do not rely purely on my notes for your revision

People who do this live to regret it

Like every Unit, you are expected to read around the subject for yourself

You need to take your own notes, read, and *participate*

You don’t expect to get fit simply by paying to joining a gym…

### 13. Standard Introductory Slides

Computer Science is not a spectator sport

Anon