UCT Department of Computer Science

An Invitation to Computer Science

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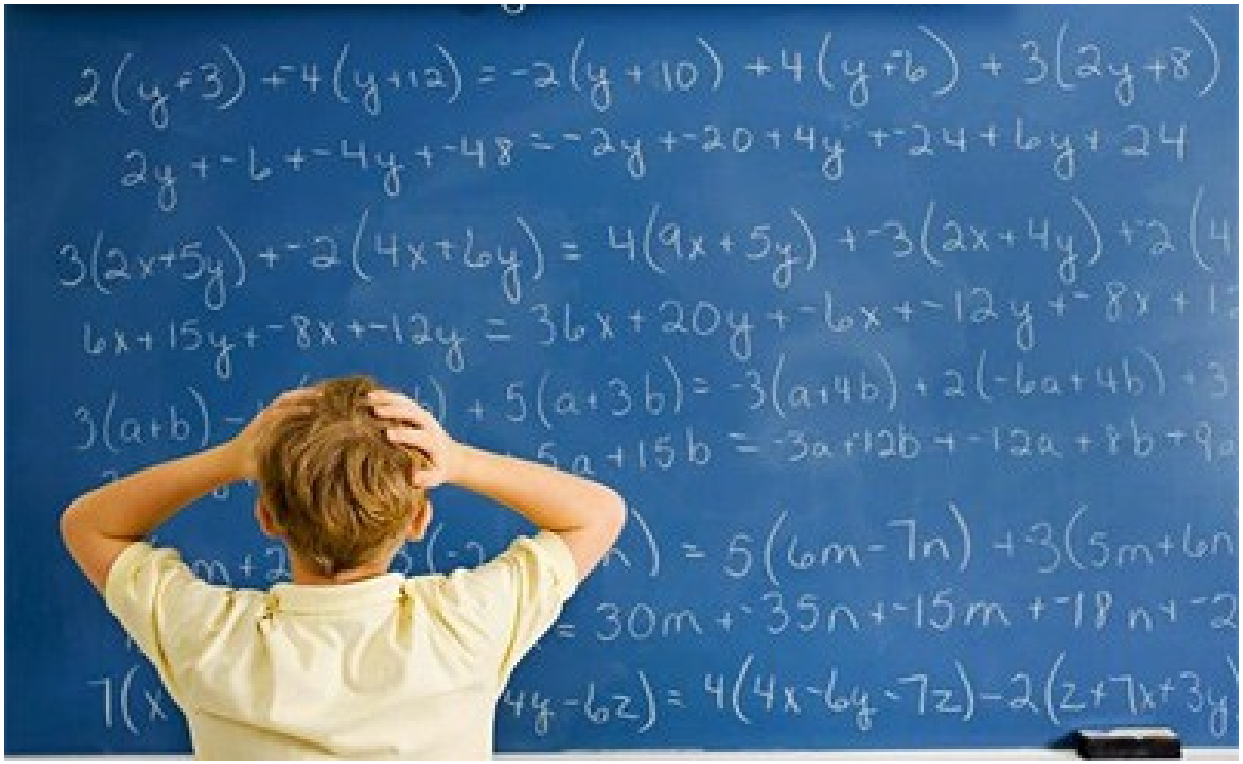
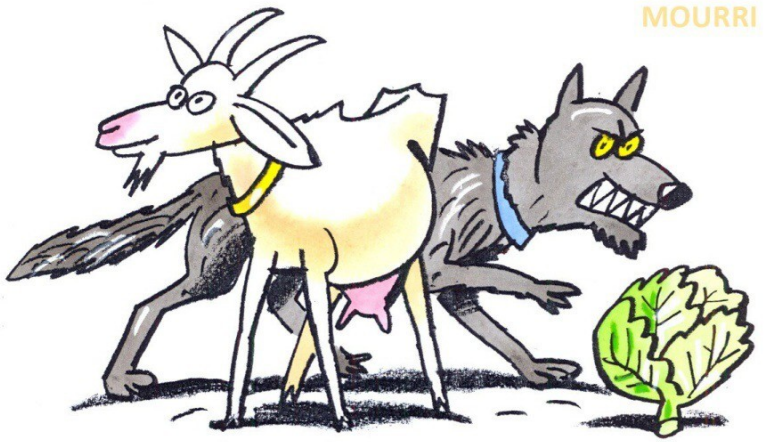
Puzzle 0

- What is half of 2 + 2?



Puzzle 1

- A man has to take a wolf, a goat, and some cabbage across a river. His rowboat has enough room for the man plus either the wolf or the goat or the cabbage. If he takes the cabbage with him, the wolf will eat the goat. If he takes the wolf, the goat will eat the cabbage. Only when the man is present are the goat and the cabbage safe from their enemies. All the same, the man carries wolf, goat, and cabbage across the river. How?



I did not come here for games …

Now what is this Computer Science thing anyway???

5 Branches of Computing

- Computer Science
  - Foundations and principles (software)
- Information Systems
  - Business processes & information
- Computer Engineering
  - Hardware and communications
- Software Engineering
  - Software development processes
- Information Technology
  - Application of computing

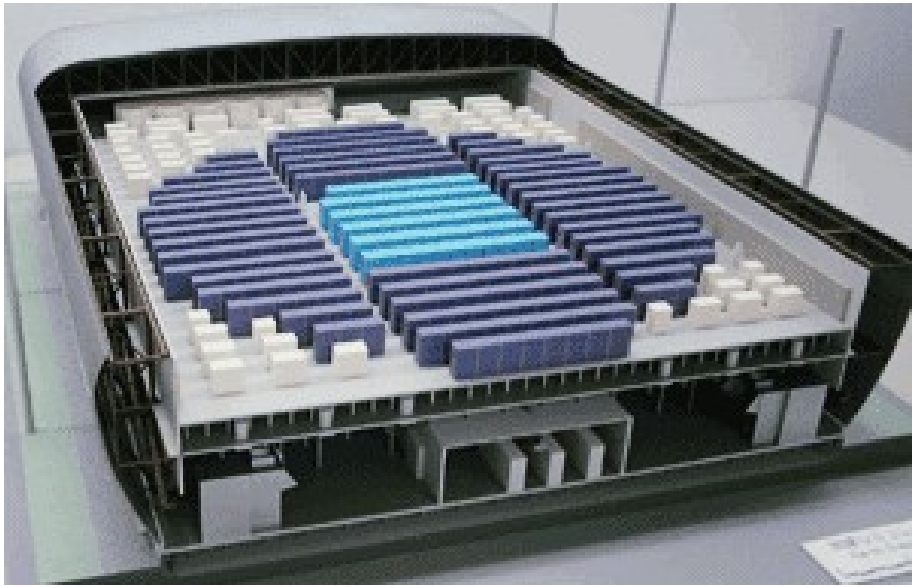
Reference: ACM Computing Curricula: Overview

Computing at UCT

- Department of Computer Science (Science Faculty)
  - Offers BSc degrees in Computer Science
- Department of Information Systems (Commerce Faculty)
  - Offers BCom degrees and BBusSci degrees in Information Systems
- Department of Electrical Engineering (Engineering Faculty)
  - Offers BSc (Eng) degrees in Electronic Engineering or Computer Engineering

Why Computing is Important 1/5

- Earth Simulator Centre in Japan provides advance notice of natural disasters to preserve human life!



Reference: http://www.es.jamstec.go.jp/esc/eng/

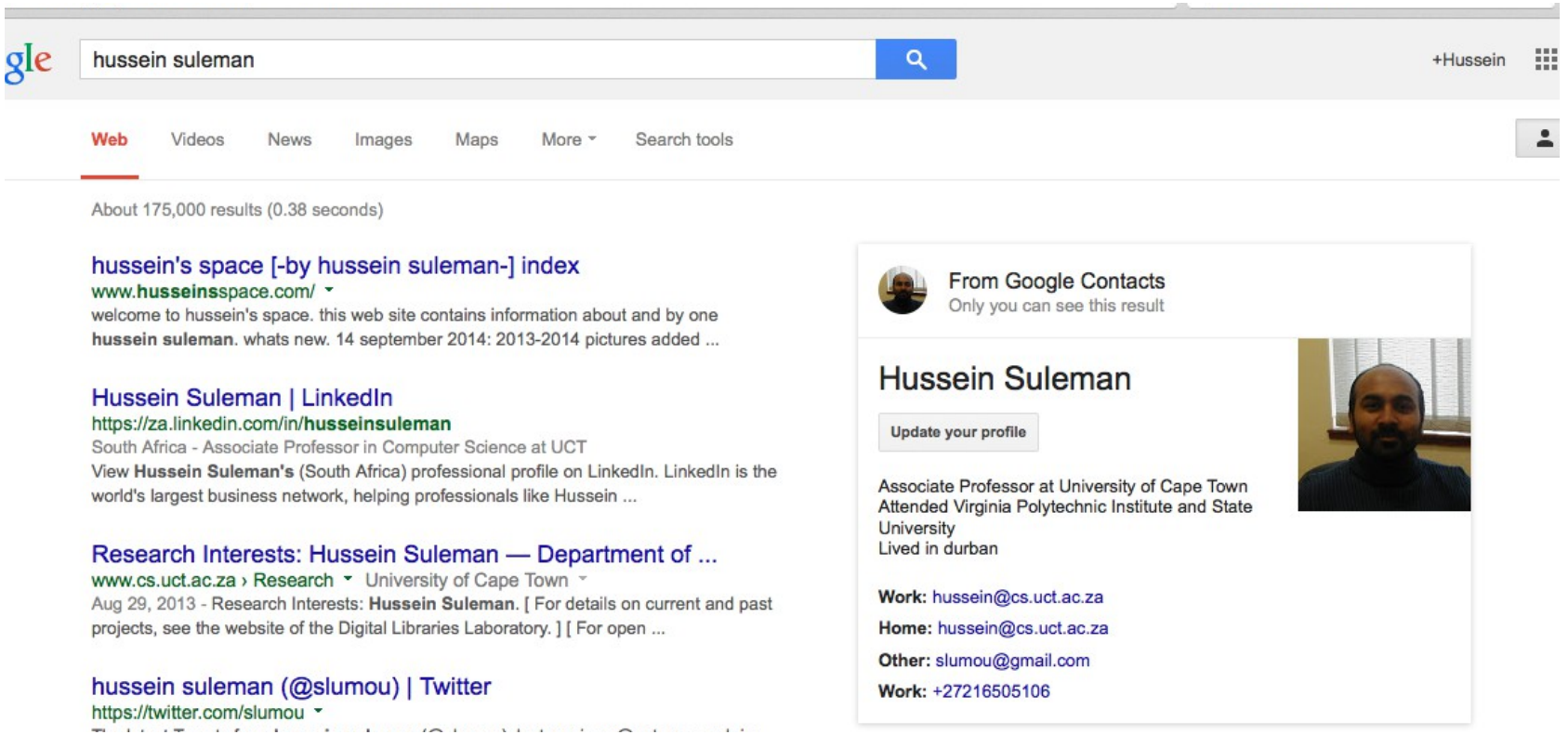
Why Computing is Important 2/5

- Computer Aided Tomography (CAT scans) are computer-reconstructed views of the internal organs that help in diagnosing patients.

Reference: Wikipedia

Why Computing is Important 3/5

- The world's information is available at our fingertips!



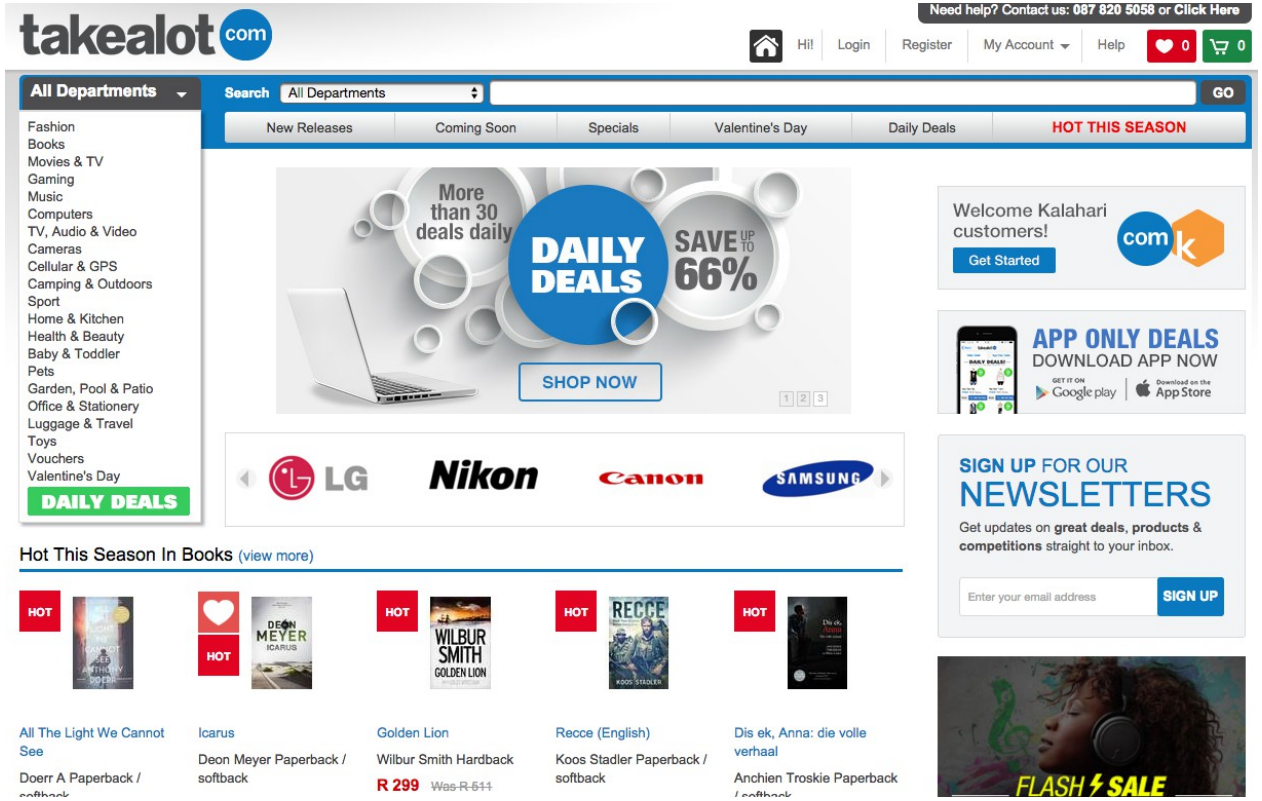
Why Computing is Important 4/5

- Games, Movies, WhatsApp, Facebook …

Reference:
World of Warcraft,
The Burning Crusade,
Blizzard Entertinment

Why Computing is Important 5/5

- 1.5 trillion dollars are spent every year in online purchases around the world!



What is Computer Science?

- Computer Science (CS) is the study of:
  - Computer software
  - Algorithms, abstractions and efficiency
  - Theoretical foundation for computation

- What you learn in Computer Science:
  - Principles of computation
  - How to make machines perform complex tasks
  - How to program a computer
  - What current technology exists and how to use it
  - Problem solving

The Computer Science degree

- Focuses on:
  - Programming
  - Problem solving
  - Abstractions
  - Logic
  - Practical skills and technology
  - Deep understanding of technology

Computer Science @UCT topics

- CS1
  - Problem solving and programming in Python
  - Object-oriented design in Java
- CS2
  - Data structures, databases, HCI, parallel computing, computer architecture, software engineering
- CS3
  - Operating systems, networking, functional programming, compilers, algorithms, advanced software engineering, (C++, machine learning, graphics)
- CS Honours: a whole lot of cool stuff ...

Why study Computer Science?

- ...as a Major (everyone should do Intro Prog!)

- Most exciting discipline
- Phenomenal growth, "made countries"
- Can make lots of money (Apple?)
- Can get famous (Gates?)
- Can study further or even teach
- Complementary to almost any other discipline
- One major for fun; one for a career

Why Study CS @ UCT

- Degree accredited by British Computer Society (international curriculum)
- CS department ranked highest in country
- Innovative teaching (Games course, Research course, etc.)
- Diverse staff interests
- Enthusiastic staff and students!

… but will I get a job?

Glassdoor's Best Jobs In 2016			
1	Data Scientist	13	Product Marketing Manager
2	Tax Manager	14	Marketing Manager
3	Solutions Architect	15	QA Manager
4	Engagement Manager	16	Finance Manager
5	Mobile Developer	17	Business Development Manager
6	HR Manager	18	UX Designer
7	Physician Assistant	19	Strategy Manager
8	Product Manager	20	Technical Account Manager
9	Software Engineer	21	Consultant
10	Audit Manager	22	Construction Superintendent
11	Analytics Manager	23	Nurse Practitioner
12	Software Development Manager	24	Electrical Engineer
		25	Software Architect

What does a CS graduate do?

- Not just sitting in a dark room by a terminal
- Learn by doing
- Variety
- Helping people
- Entrepreneurial
- No ‘one’ career

What do I need to get in?

- High school Mathematics!
  - 70% in NSC
- 60% in Physics or IT if you want a BSc (otherwise you can get a BCom or BA)
- Everything else we will teach you.
- No Matric IT needed!
  - Seriously, we can teach this stuff better :)

So what degree do I apply for?

- BSc with a major in Computer Science
- BBusSci with a specialization in CS
- BCom with a specialization in IS+CS
- BA with a major in Computer Science

Interested?

- ask questions or find me later
- hussein@cs.uct.ac.za
- OR simply ask at the Computer Science stall in Jameson Hall today

- Questions? Questions? Questions?