Introduction to IT fundamentals – 19.09.19

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* CMPU1012 – Brightspace discover code
* IT Fundamentals = one semester *(not continued after Christmas)*
* On the timetable the lecture is broken up, in reality we will probably stay in the first room for the entire two hours.
* Review Week = Week 7 (Probably no exam this week, the exam will probably be week six)
* First exam week: 16-20 December.
* End of semester 20th of December
* Second and third exam weeks: 6-10 January, 13-17 January
* Highly unlikely this module will be during the first exam week, far more likely to be in the second or third. *(Second week being highest chance)*
* “This module provides an overview of the discipline of Information Technology (IT) and describes how it relates to other computing disciplines.
* “FAQ for the IT course”
* - “The module’s aim is to help students understand the diverse contexts in which information technology (IT) is used and the challenges inherent in the diffusion of this type...”
* Computers in practice, People of Information Technology, Systems evolution
* Lab-based quiz (50 questions) – 30%
* Written exam – 70% (read exam predictions above)
* 40% (overall) pass mark
* SYALLYBUS – describe: User centredness and advocacy, information assurance and security, IT systems model, Management of complexity.
* PROPOSED LECTURE HEADINGS:
* W1, Introduction/Computers and Tech
* W2, Information technology (IT) components
* W3, History of information technology
* W4, Technology for problem-solving
* W5, New systems
* W6, It Security
* W7, Review Week
* W8, User centredness
* W9, IT professionals
* W10, Managing complexity
* W11, IT disciplines
* W12, IT domains
* W13, Revision
* ^ Might change over time
* Week 13 will include an extended look at exam questions, to prepare for the January exam
* Reading list: (not necessary, but good to look at)
* New Perspectives on Computer Concepts
* Comprehensive Review of Information Technology Fundamentals
* Fundamentals of Information Systems
* Course notes on the Brightspace
* Revision not necessary for CA (continuous assessment) but good to do if you want high marks.
* Information can be encoded via letters I.E language, etc
* Static = unchanging
* Dynamic = changes
* Analogue devices can display and encode information, I.E thermometer, speedometer, clock, etc
* Devices were also invented to manipulate data, I.E analogue/mechanical computers.
* Grant’s Barrel, Walther Calculator, etc
* AKAT-1 = Electronic Analogue Computer = Used electronics but did not do calculations. Created an oscilloscope type wave on a screen, used to represent waves.
* Analog computers are very specialised, and very difficult to reconfigure for different tasks.
* Analogue computers were very difficult to calibrate, making them inaccurate between devices and calibrations.
* Electrical based analogue computers often had to be rewired/recircuited to have a different function making them even harder to change.
* NUMBERS AS BINARY
* Base ten number system, decimal, uses ten number representations 0-9.
* Base two number system, binary uses two number representations: 0 and 1
* Numbers are recorded in digital computers using binary representation, this allows for high volumes of storage efficiently.
* For example, 200 degrees can be described as “11001000”
* Alphabetic characters can be represented as numbers in binary for example A is represented as 1001001
* Colours can be recorded by storing three numbers (Red Green Blue, RGB). By producing an intensity of those three prime colours, then combining them. Forming a specific colour.
* The opposite of Analogue computers. Digital computers are general purpose, and easily reconfigured.
* Digital computers are often used to enhance other appliances, for example the Engine Monitoring System in cars. Deterring the correct fuel and air inputs to generate an optimal combustion.
* The digital revolution has led to aspects such as working from home (telecommuting) due to the World Wide Web.
* Computers used to control machines may not have the I/O (input and outputs) that we are used to, E.G pressure gauges, thermometers. Instead of keyboard, mouse and monitor.
* Computers are ubiquitous and convergence is rampant.
* Convergence is the redundancy of another machine as a computer can do it also
* E.G Audio call, used to be only possible via radio or mobile phone. Now possible with VOIP (Discord, Skype, etc)
* Modern computer systems are based on the Von Neumann architecture
* NOTE TAKING NOTE: He went way too fast for me here, I would read the slides for that on the Brightspace (The Von Neumann architecture)
* Computer Classifications, smallest to largest.
* Smartphone > Laptops > Personal Computers > Workstations > Network Computers > Mini and Micro Computers (cabinet computers) > Servers > Mainframes > Supercomputers
* Desktop (PC’s) are the most familiar and probably most versatile computer available to us.
* Computers are getting smaller over time
* Mainframes/Supercomputers are used for large processing tasks.
* Computers are very sensitive to temperatures and cleanliness. If a computer gets too hot, components may burn out or have a reduced lifetime. Large amounts of dust may cause shorts or clog up cooling mechanisms.
* Mainframes and Supercomputers are immensely expensive and costly to maintain, as such many companies choose to rent space on other companies’ computer systems.
* Most modern supercomputers are often networks of inexpensive computing systems, I.E a hundred dell towers.
* Some are even network over the internet, where end users donate processing power to a project.
* A server rack is a standard computer designed to work in parallel with other racks.
* Some racks have specialised processes, I.E “Blade” (Storage) or Networking Racks
* A “Server” specifically refers to the software running on the hardware. However most IT industry people use “Server” as shorthand for the hardware aswell as software.
* TUTORIAL
* Past paper question
* “Outline the features of modern computer systems of several different types”
* Note seven different computer types, and their features.
* Statement then explanation E.G “The cake is a lie, because GlaDOS wanted to trick you”.
* *Read Brightspace notes for longer answer, can’t write it all down here*
* Each of these is a ten-mark question
* Can use bullet points
* Will be covered more in the Revision week