Computer Science Year 10
Half Term 1

Computing Strands:
Computer Science

DELTA

welcome

YEAR 10

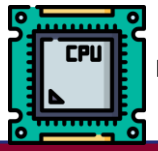
WHERE HAVE YOU BEEN?

Intro to Comp Sci

ecification requirements. Overview of course expectations.

1.1 System Architecture

What is the CPU? Function of the CPU. CPU Components

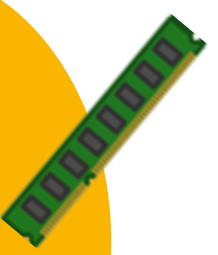


FDE Cycle – what is the purpose of the FDE cycle? How are instructions executed inside CPU?

What is an embedded system? List examples

Registers – What is MAR/MDR/PC/ACC? What's the role of registers?

Performance – What factors affect CPU performance? What is cores, cache, clock speed?



Additional Binary – identify binary addition rules. Add binary values together

Calculate various capacity storage space between devices.

RAM/ROM/VM What is the difference and purpose of RAM, ROM and VM?

1.2 Memory and Storage

Binary – what are binary units? How to convert between binary – denary..

Storage devices – List secondary storage types and devices. Identify when they would be used.

Assessment preparation – exam retrieval practice

Assessment

Component One Assessment
1.1 // 1.2

NEXT Y10

HALF TERM 2

SKILLS TAUGHT:

- Computer Hardware
- Function of CPU
- Registers
- FDE Cycle
- CPU Performance
- Memory
- Storage
- Data conversions

Why are we learning this? To be able to understand the components that make up the digital systems, and how they communicate with one another and with other systems.

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WHERE HAVE YOU BEEN?

Assessment Recap

Assessment feedback. Responding to assessment

1.2 Memory and Storage

Hexadecimal – how can you convert between hex, binary and denary?

Image representation in binary including metadata

What is compression? What's the difference and uses of lossy and lossless compression?

Representing characters – What is the difference between ASCII and Unicode?

Representing sound – How is sound stored? Sample size, bit rate etc.

Star and mesh networks. Characteristics about each adv and disadv.

Wireless technology – What factors affect the performance of a network including bandwidth.

Networks Hardware – What hardware makes up the network?

1.3 Networks

P2P/Client server – What are the characteristics? What are the advantages/disadvantages?

LAN/WAN – What is a LAN/WAN? What are the characteristics of both?.

SKILLS TAUGHT:

- Data representation – characters, images and sound.
- Computing Networks
- Types of networks
- Wireless Technology
- Network Topologies
- Client and peer networks

Assessment preparation – exam retrieval practice

Assessment

NEXT Y10

HALF TERM 3

Component One Assessment
1.1 // 1.2 // 1.3

Why are we learning this? To be able to understand the components that make up the digital systems, and how they communicate with one another and with other systems.

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Half Term 3

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WHERE HAVE YOU BEEN?

Assessment Recap

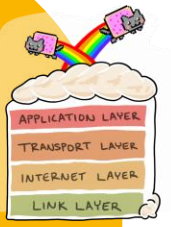
Assessment feedback. Responding to assessment

1.3 Networks

Internet – What's the role of the internet? What is the difference between WWW and the Internet?

The role of and purpose of DNS

State and explain the purpose of layers including linking protocols.

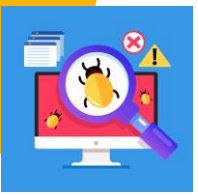


IP and MAC address – What is the purpose? What is the difference?

State and explain the purpose of protocols on a network.

Explain methods to keep computer system secure from malwares/attacks

Malware – What are the different forms of malware? What is the role of malware?



1.4 Network Security

Explain what makes a good network policy.

Explain the purpose of network attacks including brute force, SQL injection and DDOS.

What is the purpose of operating systems? What are the different types of operating systems that may be used on digital devices?

1.5 System Software

Explain the role and purpose of software managers. What is memory, peripheral, user and file management?

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HALF TERM 3

SKILLS TAUGHT:

- Role of the Internet
- IP addresses
- MAC addresses
- Domain Name System
- Layers/Protocols
- Malwares
- Network Security
- Purpose of Operating Systems

Why are we learning this? To be able to understand how to keep networks safe and protected. To be able to explain how data can be sent on a network.

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WHERE HAVE YOU BEEN?

1.5 Cont

Software utilities – What is utility software? Why is encryption/ defragmentation/ data compression needed?

What are the issues created and addressed by technology and the impact on society including ethical, legal, cultural, environmental and privacy.

Assessment

Assessment preparation – exam retrieval practice

Component One Assessment
1.1 // 1.2 // 1.3 // 1.4 // 1.5

Assessment feedback. Responding to assessment

Legislation – Data protection act, computer misuse, copyright and licenses

1.6 Ethical, Legal & Cultural Concerns

What are the issues created and addressed by technology and the impact on society including ethical, legal, cultural, environmental and privacy.

2.2 Programming

Programming Fundamentals –Using variables, constants, operators, inputs/outputs. Sequences, selection & iteration. Arithmetic, integers, Boolean. Characters & string manipulation, data types and casting. String manipulation & file handling, open, read, write, close. Storing data in records. Using SQL to search for data. Using arrays, sub programs.

NEXT Y10

HALF TERM 4

SKILLS TAUGHT:

- Digital technology
- Social and cultural impacts of using technology
- Computing legislation
- Electronic Waste
- Privacy issues with using technology

Why are we learning this? To be able to understand the impacts of digital technology to the individual and to wider society.

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Computer Science Year 10
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Computing Strands:
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WHERE HAVE YOU BEEN?

Assessment practice – walking talking exam questions

Exam Retrieval

Assessment practice – walking talking exam questions

2.2 Programming

Assessment practice – walking talking exam questions

Exam Retrieval

Assessment practice – walking talking exam questions

Programming Fundamentals –Using variables, constants, operators, inputs/outputs. Sequences, selection & iteration. Arithmetic, integers, Boolean. Characters & string manipulation, data types and casting. String manipulation & file handling, open, read, write, close. Storing data in records. Using SQL to search for data. Using arrays, sub programs.

SKILLS TAUGHT:

- Computational thinking
- Thinking abstractly
- Concepts of decomposition
- Sequence / Selection and Iteration in programming
- Debugging programs
- Designing programs
- Writing programs

Assessment feedback. Responding to assessment

Assessment

Assessment preparation – exam retrieval practice

Component One Assessment
1.1 // 1.2 // 1.3 // 1.4 // 1.5 // 1.6

Assessment practice – walking talking exam questions (4)

Exam Retrieval

2.2 Programming

Programming Fundamentals –Using variables, constants, operators, inputs/outputs. Sequences, selection & iteration. Arithmetic, integers, Boolean. Characters & string manipulation, data types and casting. String manipulation & file handling, open, read, write, close. Storing data in records. Using SQL to search for data. Using arrays, sub programs.

NEXT Y10

HALF TERM 6

Why are we learning this? To be able to analyse problems in computational terms through practical experience of solving such problems, including designing, writing and debugging programs.

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WHERE HAVE YOU BEEN?

Assessment practice – walking talking exam questions

Assessment practice – walking talking exam questions

Assessment practice – walking talking exam questions

Exam Retrieval

Assessment practice – walking talking exam questions

Assessment practice – walking talking exam questions

Assessment practice – walking talking exam questions

Assessment

Assessment preparation – exam retrieval practice

Component One Assessment
(Mock Exam)
1.1 // 1.2 // 1.3 // 1.4 // 1.5 // 1.6

2.2 Programming

NEXT Y11

Next Year

Programming Fundamentals –Using variables, constants, operators, inputs/outputs. Sequences, selection & iteration. Arithmetic, integers, Boolean. Characters & string manipulation, data types and casting. String manipulation & file handling, open, read, write, close. Storing data in records. Using SQL to search for data. Using arrays, sub programs.

SKILLS TAUGHT:

- Computational thinking
- Thinking abstractly
- Concepts of decomposition
- Sequence / Selection and Iteration in programming
- Debugging programs
- Designing programs
- Writing programs

Why are we learning this? To be able to analyse problems in computational terms through practical experience of solving such problems, including designing, writing and debugging programs.