



BRIDGING THE GAP COMPUTER SCIENCE



Course Title	Examination Board & Web Address				
A-Level Computer Science	AQA www.aqa.org.uk				
Units/Topics Studied: Problem Solving, Programming, Data Representation, Computer Components, The Stored Program Concept, The Internet, Operating Systems, Databases and Networking					
Bridging Task Part One: Find out the answers to the following questions <ol style="list-style-type: none"> 1. Explain what you would use a transition state diagram for? 2. What are the differences between declarative and imperative languages? 3. What are finite state machines? 4. What is a Mealy machine? 5. What is an Enumerated data type? 6. Explain De Morgan's law. 7. Where will you find buses in computing? 8. How is Machine code different from Assembly language? 9. What is Big-O notation? 10. How does a linked list work? Part Two: Choose ONE of the following tasks to complete <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>Useful websites:</p> <p>http://www.aduni.org/</p> <p>http://www.cs4fn.org/</p> <p>http://courses.cs.vt.edu/~csonline</p> <p>http://www.swisseduc.ch/compscience</p> <p>http://wiki.roboteducation.org/Introduction to Computer Science via Robots</p> </div> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; padding: 10px; vertical-align: top;"> <p style="text-align: center;">Model Processor</p> <p>Produce a 3-Dimensional model of a processor, using materials that you can find at home. The model should be labelled with all the major parts and include a description of their function. Processor structures to be included: ALU, buses, cache, cores and registers.</p> </td><td style="width: 50%; padding: 10px; vertical-align: top;"> <p style="text-align: center;">Interactive Poster</p> <p>Produce an A3 Size poster explaining the structure and function of a computer processor. Include the ALU, buses, cache, cores and registers as well as any other elements you think are important. Explain Moore's law and its effect on processors. Make you poster interactive, with questions, answers, hidden information etc.</p> </td></tr> <tr> <td style="padding: 10px; vertical-align: top;"> <p style="text-align: center;">Computing in the News</p> <p>Research recent news articles and select one that is based around Computing, e.g. the development of a new technology (e.g. drones and Amazon), use of computing in medicine, how computing has been used in civil unrest around the world, developments in encryption technology. Summarise the news article in your own words. Explain why you chose this article, how important the story is to humans and your opinions of future implications.</p> </td><td style="padding: 10px; vertical-align: top;"> <p style="text-align: center;">Legal and Ethical</p> <p>Choose either Hacking or Robotics. For your chosen topic, research in depth the possible effects on people and society, with a particular emphasis on the impacts these issues can have.</p> <p>Your research should be presented as a leaflet that attempts to explain why hacking should not be acceptable or why the use of robots can be both positive and negative.</p> </td></tr> </table> <p>The two parts will be graded A-E. In part one we will be looking for the correct answers. In part two we will be looking for evidence of research, computational understanding and the skill of communicating ideas with others effectively. Good Luck!</p>		<p style="text-align: center;">Model Processor</p> <p>Produce a 3-Dimensional model of a processor, using materials that you can find at home. The model should be labelled with all the major parts and include a description of their function. Processor structures to be included: ALU, buses, cache, cores and registers.</p>	<p style="text-align: center;">Interactive Poster</p> <p>Produce an A3 Size poster explaining the structure and function of a computer processor. Include the ALU, buses, cache, cores and registers as well as any other elements you think are important. Explain Moore's law and its effect on processors. Make you poster interactive, with questions, answers, hidden information etc.</p>	<p style="text-align: center;">Computing in the News</p> <p>Research recent news articles and select one that is based around Computing, e.g. the development of a new technology (e.g. drones and Amazon), use of computing in medicine, how computing has been used in civil unrest around the world, developments in encryption technology. Summarise the news article in your own words. Explain why you chose this article, how important the story is to humans and your opinions of future implications.</p>	<p style="text-align: center;">Legal and Ethical</p> <p>Choose either Hacking or Robotics. For your chosen topic, research in depth the possible effects on people and society, with a particular emphasis on the impacts these issues can have.</p> <p>Your research should be presented as a leaflet that attempts to explain why hacking should not be acceptable or why the use of robots can be both positive and negative.</p>
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