OCR GCSE (9-1) Computer Science

# Overview of October – December: 1.2, 1.4, 2.6, Memory, Storage and Data Representation

|  |  |  |  |
| --- | --- | --- | --- |
| Week | Statements | Teaching activities | Notes |
| 1 | The difference between RAM and ROM | <http://www.canyoucompute.co.uk/l1-ram-rom--memory.html> |  |
|  | The purpose of ROM in a computer system |  |
|  | The purpose of RAM in a computer system |  |
|  | The need for virtual memory |  |
|  | Flash memory |  |
|  | RECAP CONTENT | <http://www.canyoucompute.co.uk/l2-what-do-you-know.html> |  |

# Overview of Storage (1.3)

|  |  |  |  |
| --- | --- | --- | --- |
| Week | Statements | Teaching activities | Notes |
| 2 | The need for secondary storage | <http://www.canyoucompute.co.uk/l1-storage-part-1.html> |  |
|  | Data capacity and calculation of data capacity requirements | <http://www.canyoucompute.co.uk/l2-storage-part-2.html> |  |
|  | Common types of storage:1. Optical, magnetic, solid state
 | <http://www.canyoucompute.co.uk/l3-storage-recap.html> |  |
|  | Suitable storage devices and storage media for a given application, and the advantages and disadvantages of these, using characteristics:1. capacity, speed, portability, durability, reliability, cost
 |  |  |

# Overview of Data Representation (2.6)

|  |  |  |  |
| --- | --- | --- | --- |
| Week | Statements | Teaching activities | Notes |
| 3 | Bit, nibble, byte, kilobyte, megabyte, gigabyte, terabyte, petabyte | <http://www.canyoucompute.co.uk/l1-units.html> |  |
|  | How data needs to be converted into a binary format to be processed by a computer | <http://www.canyoucompute.co.uk/l2-numbers-binary.html> |  |
|  | How to convert positive denary whole numbers (0–255) into 8 bit binary numbers and vice versa |  |  |
| Week | Statements | Teaching activities | Notes |
| 4 | How to add two 8 bit binary integers and explain overflow errors which may occur | <http://www.canyoucompute.co.uk/l3-binary-addition.html> |  |
|  | Binary shifts |  |  |
| Week | Statements | Teaching activities | Notes |
| 5 | How to convert positive denary whole numbers (0–255) into 2 digit hexadecimal numbers and vice versa | <http://www.canyoucompute.co.uk/l4-hexadecimal.html> |  |
|  | How to convert from binary to hexadecimal equivalents and vice versa | <http://www.canyoucompute.co.uk/l5-recap.html> |  |
|  | Check digits | <http://www.canyoucompute.co.uk/l5-recap.html> |  |
| Week | Statements | Teaching activities | Notes |
| 6 | The use of binary codes to represent characters | <http://www.canyoucompute.co.uk/l6-characters.htm> |  |
|  | The term ‘character-set’ | <http://www.canyoucompute.co.uk/l6-characters.html> |  |
|  | The relationship between the number of bits per character in a character set and the number of characters which can be represented (for example ASCII, extended ASCII and Unicode) | <http://www.canyoucompute.co.uk/l6-characters.html> |  |
| Week | Statements | Teaching activities | Notes |
| 7 | How an image is represented as a series of pixels represented in binary | <http://www.canyoucompute.co.uk/l7-images.html> |  |
|  | Metadata included in the file | <http://www.canyoucompute.co.uk/l7-images.html> |  |
|  | The effect of colour depth and resolution on the size of an image file | <http://www.canyoucompute.co.uk/l8-sensehat-images.html> |  |
| Week | Statements | Teaching activities | Notes |
| 8 | How sound can be sampled and stored in digital form | <http://www.canyoucompute.co.uk/l9-sound--sampling.html> |  |
|  | How sampling intervals and other factors affect the size of a sound file and the quality of its playback: sample size, bit rate, sampling frequency | <http://www.canyoucompute.co.uk/l10-code-sound.html> |  |