Memory

RAM

"Random Access Memory"

Volatile (data lost when power is off) Read and write. Purpose: temporary store of currently executing instructions and their data. E.g. applications and the operating system in use."

ROM

"Read Only Memory"

"Non-volatile (data retained when power is off) Read only. Purpose: stores instructions for starting the computer called the bootstrap."

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Virtual Memory

**"Using part of the hard disk as if it were random access memory.
Allows more applications to be open than physical memory could hold."**

Flash Memory

"Solid state (no moving parts). Faster than a hard disk drive. Robust. Used to store the BIOS."

Binary Search

"A particularly efficient search method. It only works if records in the file are in sequence. A binary search involvers accessing the middle record in the file and determining if the target record has been found or, if not, if it is before or after in the sequence. This process is repeated on the part of the file where the target record is expected, until it is found."

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Linear Search

"Involves examining each entry in turn in the file until the time is found or the end of the file is reached. Unless the file is in some useful order a serial search has to be used."

Algorithms

Bubble Sort

"A simple algorithm popular with inexperienced programmers. It is inefficient when sorting large amounts of data as the time taken is related to the square of the number of items. If 10 items take 1ms then 100 times will take 100ms (this is 10 times the number of items and so the time will be 102 or 100 times longer)."

Merge Sort

"A type of divide and conquer algorithm that was incited by John von Neumann. First the list is divided into the smallest unit (1 element), then each element is compared with the adjacent list to sort and merge the two adjacent lists. Finally all elements are sorted and merged."

Algorithms

Insertion Sort

"A simple sorting algorithm that builds the final sorted array (or list) one item at time. It is much less efficient on large lists than more advanced algorithms such as quicksort, heapsort, or merge sort."

Algorithm

"A sequence of steps designed to perform a particular task. An algorithm may be constructed to describe the operation of a complete system or to describe a particular part of it."
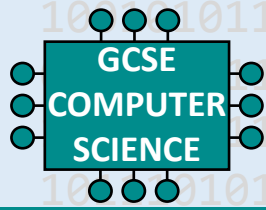
Pseudocode

"A language independent description of the steps of an algorithm. Intended for humans to express and design algorithms before coding."

Flow Diagram

"A method of designing algorithms before coding using symbols."

Variable

"A value that can change, depending on conditions or on information passed to the program."

Constant

"A value that cannot be altered by the program during normal execution, i.e., the value is constant."

Programming techniques

Inputs

"Any information or data which goes into a system."

Outputs

"Any information of data which leaves a system."

Assignments

"Giving a variable or constant a value. e.g. counter = 0"

Sequence

"One of the 3 basic programming constructs. Instructions happening one after the other in order is sequence."

Selection

"One of the 3 basic programming constructs. Instructions which can evaluate a Boolean expression and then branch the code to one or more alternatives paths is branching / selection."

Iteration

"One of the 3 basic programming constructs. A selection of code which can be repeated either a set number of times (count controlled) or a variable number of times based on the evaluation of a Boolean expression (condition controlled) is iteration."

Count Controlled Loop

"An iteration which loops a fixed number of times. The count is kept in a variable called an index or counter. When the index reaches a certain value (the loop bound) the loop will end. Count-controlled repetition is often called definite repetition because the number of repetitions is known before the loop begins executing."

Condition Controlled Loop

"A way for computer programs to repeat one or more various steps depending on conditions set either by the programmer initially or real-time by the actual program."

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String Manipulation

"Commands and techniques which allow you to alter and extract information from textual strings e.g. LENGTH, LEFT, RIGHT, SUBSTRING, UPPER, LOWER, ASC, CHAR etc."

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File Handling: Open

"File handling is the process of dealing with input to and from files. Files first have to be opened, this creates a handle to the file and allows reading and writing."

Programming techniques

File Handling: Read

"File handling is the process of dealing with input to and from files. Once a file has been opened it is possible to use commands to read its contents and return them to your program."

File Handling: Write

"File handling is the process of dealing with input to and from files. Once a file has be opened it is possible to use commands to write data to file from your program."

File Handling: Close

"File handling is the process of dealing with input to and from files. Once you are done reading / writing it is important to close a file, this releases the file handle and breaks the connection between it and your program."

Programming techniques

SQL

"The language and syntax used to write and run database queries"

Programming techniques

Arrays / Lists

"A set of data items of the same type grouped together using a single identifier. Each of the data items is addressed by the variable name and a subscript."

Programming techniques

Subroutine

"A block of code given a unique identifiable name within a program. Supports code reuse and good programming technique."

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Procedure

"A block of code given a unique identifiable name within a program. A procedure can take either zero or more parameters when it is called. The procedure should be designed and written to perform one task or action which is clearly indicated by its name."

Programming techniques

Function

"A block of code given a unique identifiable name within a program. A function can take either zero or more parameters when it is called and should return a value. The function should be designed and written to perform one task or action which is clearly indicated by its name."