

Year 12 – Computer Science: Component 1

Assessment Window 1

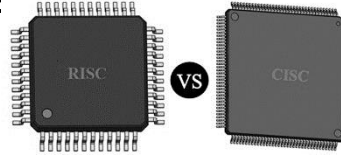
1. Structure and Function of Processor



- Components of the CPU
- CPU Performance
- Pipelining

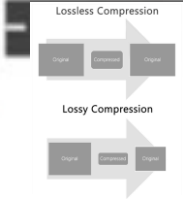
2. Types of Processors

- CISC vs RISC
- GPU's and their uses
- Multicore and Parallel systems



3. Input, Output and Storage

- How to apply different devices to solve problems
- Magnetic, flash and optical storage
- RAM and ROM
- Virtual Storage



7. Compression, Encryption and Hashing

- Lossy vs. Lossless
- Symmetric and Asymmetric encryption
- Different uses of Hashing

6. Software Development

- Different methodologies of software development
- Evaluating these methodologies
- Writing and following algorithms
- Test strategies

5. Applications Generation

- Nature of Applications
- Utilities
- Open vs Closed Source
- Translators
- Stages of Compilation
- Linkers and Loaders

4. Systems Software & Operating Systems

- Function and Purpose of Operating Systems
- Memory Management
- BIOS
- Device Drivers
- Virtual Machines

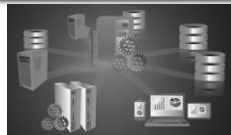


Assessment Window 2



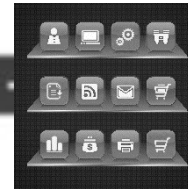
8. Databases

- Relational Database
- Methods of Capturing, Selecting, Managing and Exchanging data
- SQL
- Referential Integrity
- Transaction processing, ACID, record locking and redundancy



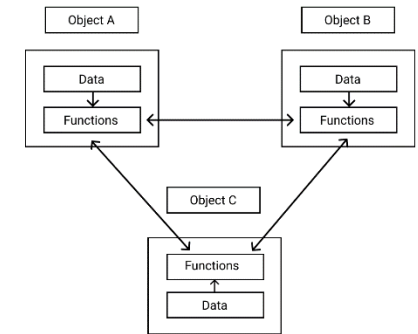
9. Networks

- Characteristics of networks
- Protocols and Standards
- Internet Structure
- Network Hardware
- Network Security and Threats



10. Types of Programming Language

- Procedural languages
- Assembly Language
- Modes of addressing memory
- Object Orientated Languages



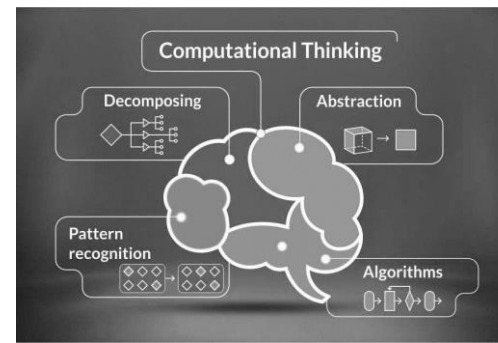
CAREERS: At every available opportunity, teachers will introduce and promote careers links to the topics being studied (See Careers booklets)

Year 12 – Computer Science: Component 2



1. Understand what is meant by Computational Thinking

- Thinking Abstractly
- Thinking Ahead
- Thinking Procedurally
- Thinking Logically
- Thinking Concurrently



Assessment Window 1



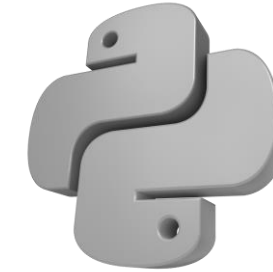
Assessment Window 2



```
{
  div() {
    var atpos=inputs[i].indexOf("#");
    var dotpos=inputs[i].lastIndexOf(".");
    if (atpos<1 || dotpos<atpos+2 || dotpos>inputs[i].length-1)
      document.getElementById("errorMsg").innerHTML+=
        "Invalid email address: " + inputs[i] + "\n";
    else
      document.getElementById("div").innerHTML+=
        "Valid email address: " + inputs[i] + "\n";
  }
}
for (i=0; i<inputs.length; i++) {
  div(inputs[i]);
}
```

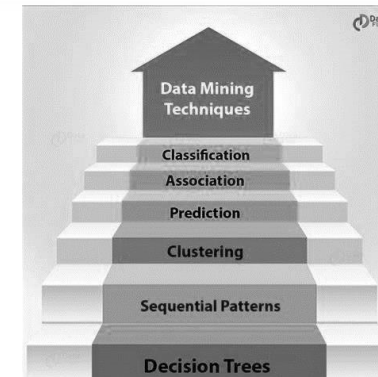
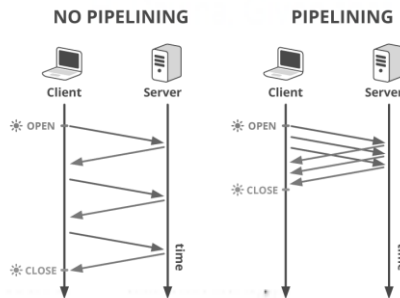
2. Programming Techniques

- Programming constructs: sequence, iteration, branching
- Recursion, how it can be used and compares to an iterative approach.
- Global and local variables.
- Modularity, functions and procedures, parameter passing by value and by reference.
- Use of object oriented techniques.



3. Computational Methods

- Problem recognition and decomposition
- Use of divide and conquer
- Learners should apply their knowledge of:
 - Backtracking
 - Data mining
 - Performance modelling
 - Pipelining
 - Visualisation to solve problems
 - Heuristics



Throughout the year students will engage in practical programming activities and develop skills to use during their Project, which we aim to start at approximately Easter of Year 12.

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