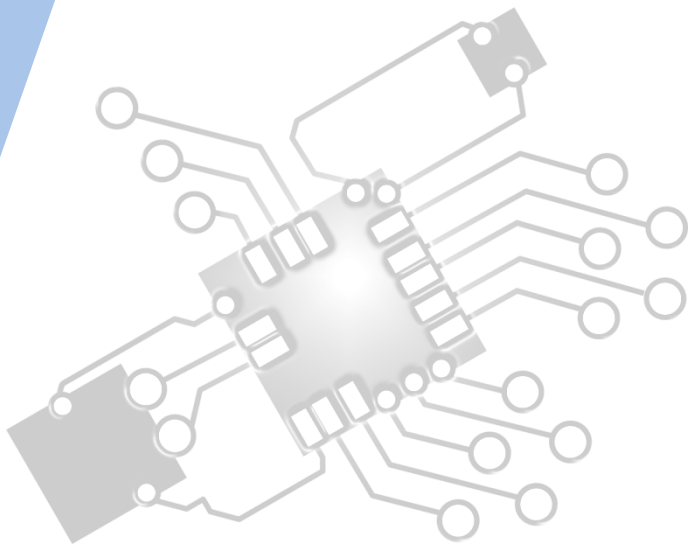
Resource Management

IB Computer Science



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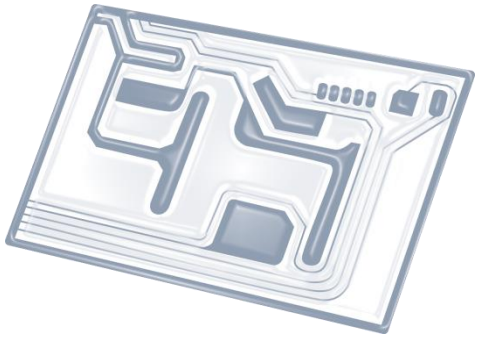
HL Topics 1-7, D1-4



1: System design

2: Computer Organisation

3: Networks

4: Computational thinking

5: Abstract data structures

6: Resource management

7: Control

D: OOP

HL only 6 Overview

System resources

6.1.1 Identify the resources that need to be managed within a computer system

6.1.2 Evaluate the resources available in a variety of computer systems

6.1.3 Identify the limitations of a range of resources in a specified computer system

6.1.4 Describe the possible problems resulting from the limitations in the resources in a computer system

Role of the operating system

6.1.5 Explain the role of the operating system in terms of managing memory, peripherals and hardware interfaces

6.1.7 Outline OS resource management techniques: scheduling, policies, multitasking, virtual memory, paging, interrupt, polling

6.1.8 Discuss the advantages of producing a dedicated operating system for a device

6.1.9 Outline how an operating system hides the complexity of the hardware from users and applications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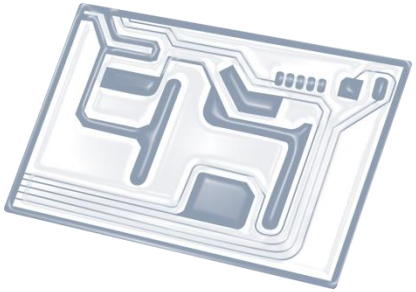
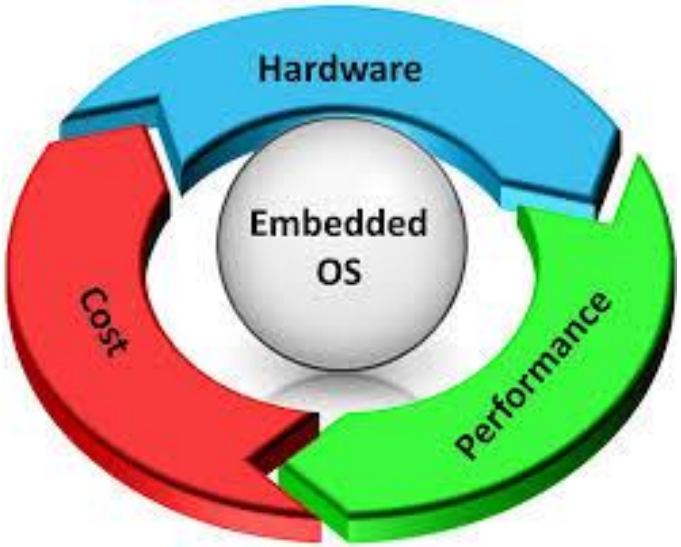


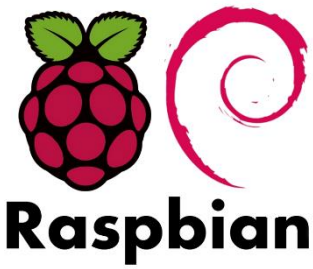
Topic 6.1.8

Discuss the **advantages** of producing a **dedicated operating system** for a device



Examples of dedicated OS

- Apple's iOS 9 for iPhones/iPads only
- Ubuntu Kylin for Chinese users
- OS for a digital camera
- OS for satellite TV receiver box
- OS for satnav



- Different versions of Linux, particular to each case – example Raspbian for the Raspberry Pi

Advantages

- **Security**: A dedicated operating system ensures a higher level of security.
  - *Example*: Banks would require a dedicated operating system to prevent cyber attacks on financial transactions
- **Customisability**: Dedicated operating systems custom made to do a specific function at maximum efficiency.
  - *Example*: A 'dumb phone' OS
- **Modify priorities**: can make running some devices easier to use or better suited to their audience. By having a custom OS you can eliminate certain aspects of the OS which are not needed, reducing the size of the OS, therefore reducing the amount of secondary memory and RAM being used
  - *Example*: Raspbian Linux on Raspberry Pi

Are you able to explain these in an exam?...

- Advantages related to **size**, **speed** and **customisation**
- Typical example to be explained: *Using a dedicated operating system for a cell phone rather than using a pre-existing operating system (e.g. difference between iOS and OS X)*
- Issue of **proprietary** software