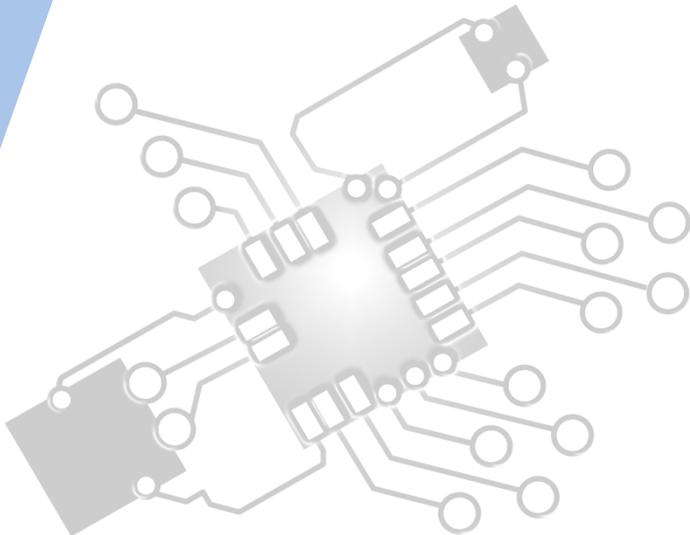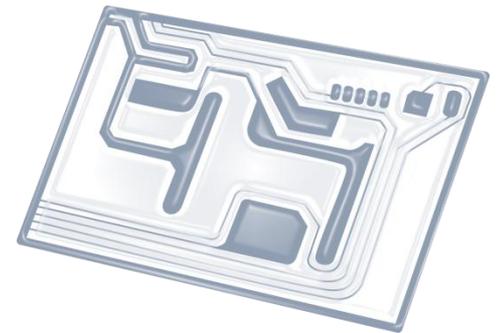# *System Design basics*

IB Computer Science

Content developed by
Dartford Grammar School
Computer Science Department

HL Topics 1-7, D1-4

1: System design

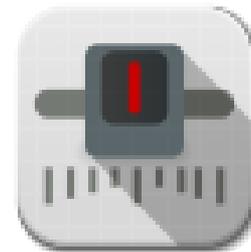2: Computer Organisation

3: Networks
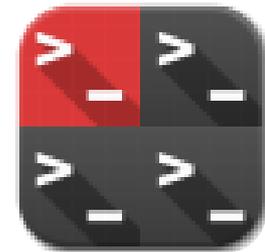
4: Computational thinking

5: Abstract data structures

6: Resource management

7: Control

D: OOP

HL & SL 1.2 Overview

Components of a computer system

1.2.1 Define the terms: hardware, software, peripheral, network, human resources

1.2.2 Describe the roles that a computer can take in a networked world

1.2.3 Discuss the social and ethical issues associated with a networked world

System design and analysis

1.2.4 Identify the relevant stakeholders when planning a new system

1.2.5 Describe methods of obtaining requirements from stakeholders

1.2.6 Describe appropriate techniques for gathering the information needed to arrive at a workable solution

1.2.7 Construct suitable representations to illustrate system requirements

1.2.8 Describe the purpose of prototypes to demonstrate the proposed system to the client

1.2.9 Discuss the importance of iteration during the design process

1.2.10 Explain the possible consequences of failing to involve the end-user in the design process

1.2.11 Discuss the social and ethical issues associated with the introduction of new IT systems

Human interaction with the system

1.2.12 Define the term usability

1.2.13 Identify a range of usability problems with commonly used digital devices

1.2.14 Identify methods that can be used to improve the accessibility of systems

1.2.15 Identify a range of usability problems that can occur in a system

1.2.16 Discuss the moral, ethical, social, economic and environmental implications of the interaction between humans and machines

1: System design

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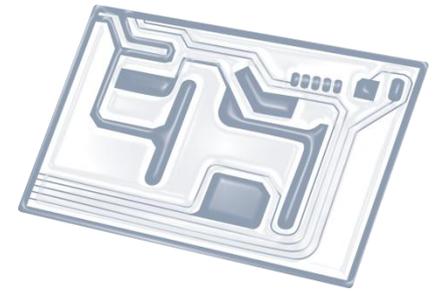5: Abstract data structures

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Topic 1.2.13

Identify a **range of usability problems** with commonly used **digital devices**

Be aware of usability problems with

- PCs (including laptops/desktops/tablets/mobile devices)
- Digital cameras
- Cell phones (mobiles)
- Games consoles
- MP3 players
- Other commonly used digital devices (e.g. printers...)

Problems could include…

- Difficult to handle/fiddly hardware
- Difficult to understand software
- Complex user interface
- Need to have lots of prior knowledge
- Specialist support needed to use device
- Each device is different to other similar devices (no standards)

Example: Games console controller

Why could this device be considered to have 'low' usability?

SUS (System Usability Scale)

In systems engineering, the system usability scale (SUS) is a simple, ten-item attitude scale giving a global view of subjective assessments of usability. It was developed by John Brooke at DEC in the UK in 1986 as a tool to be used in usability engineering of electronic office systems.
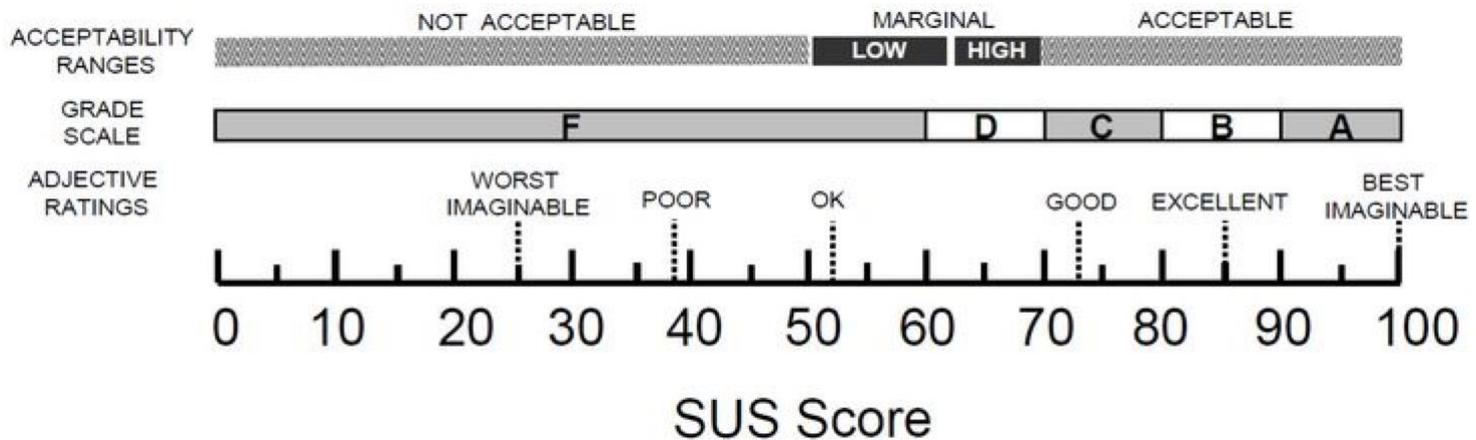
Although this is *not part of the IB CS curriculum*, it does give a fascinating insight into how usability is judged.