



System Design *basics*

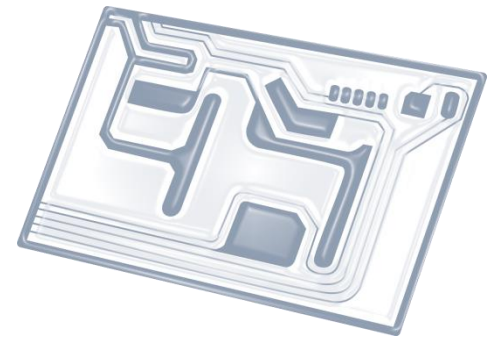
IB Computer Science



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



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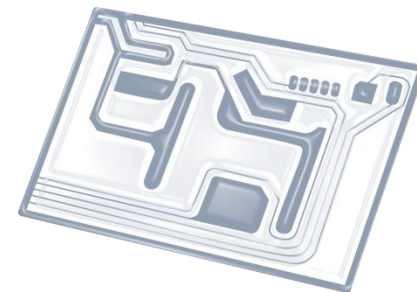


7: Control

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Topic 1.2.5



Describe **methods** of obtaining
requirements from **stakeholders**

WHAT DO YOU WANT?



What does the client want?

- Before designing a new system, it is crucial to determine exactly what the **client's requirements** are.
- There are **several ways/methods** of obtaining these requirements.



Methods of obtaining requirements

- Surveys
- Interviews
- Direct observation
- Collecting documents



Observation

- Involves walking around the organisation watching how things are done with his/her own eyes.
- **Advantages:**
 - Possibility of gathering first-hand, unbiased information
- **Disadvantage:**
 - Often people might not work the way they normally do when being observed



Interviews

- Involves the interviewing key people within the system to find out how it works.
- **Advantages:**
 - Allows a lot of very detailed information to be gathered
 - People can be asked about what they don't like on the system
- **Disadvantages:**
 - Takes a long time



Questionnaires/Surveys

- Involves handing out questionnaires for people to fill out.
- **Advantages:**
 - Large amount of data from a large group can be gathered
 - Takes little time to analyse (if done electronically)
 - Simple
- **Disadvantage:**
 - It is hard to ask the 'right question'
 - Information gathered is limited by questionnaire, can be biased
 - Quality of responses not ensured



Collecting documents

- Involves looking in the documents currently being used in the system to try to find out how the present system works
- **Advantages:**
 - Detailed information about the present system can be gathered
 - It can be seen where the old system has problems
- **Disadvantages:**
 - Time consuming
 - Just looking at the forms/outputs may be confusing

