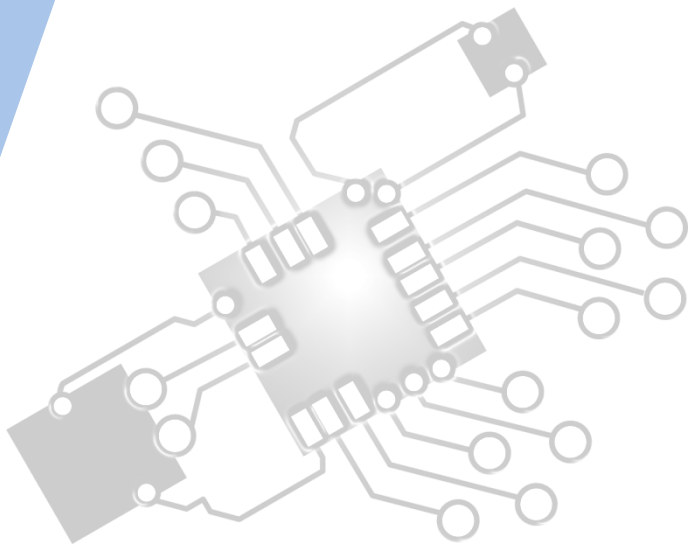
System Design basics

IB Computer Science



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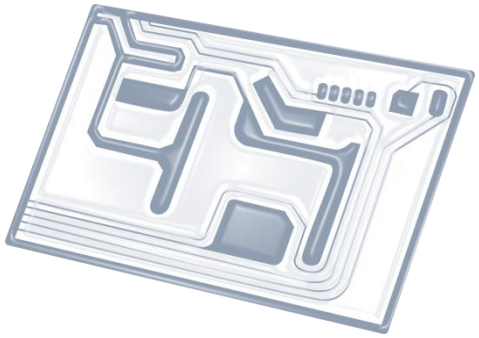
HL Topics 1-7, D1-4



1: System design

2: Computer Organisation

3: Networks

4: Computational thinking

5: Abstract data structures

6: Resource management

7: Control

D: OOP

HL & 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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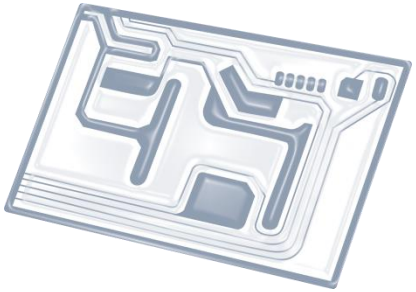

Topic 1.2.5

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

Methods:

- Surveys
- Interviews
- Direct observation
- Collecting documents

Observation

- Involves systems analyst 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 don't work the way they normally do when being observed

Interviews

- Involves the systems analyst 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 the systems analysts handing out questionnnaries for people to fill out.
- Advantages:
  - Large amount of data from a large group can be gathered
  - Takes little time
  - Simple
- Disadvantage:
  - It is hard to ask the 'right question'
  - Information gathered is limited by questionnaire
  - It may not be taken seriously

Collecting documents

- Involves the systems analysts looking in the documents in the archive 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 may be confusing