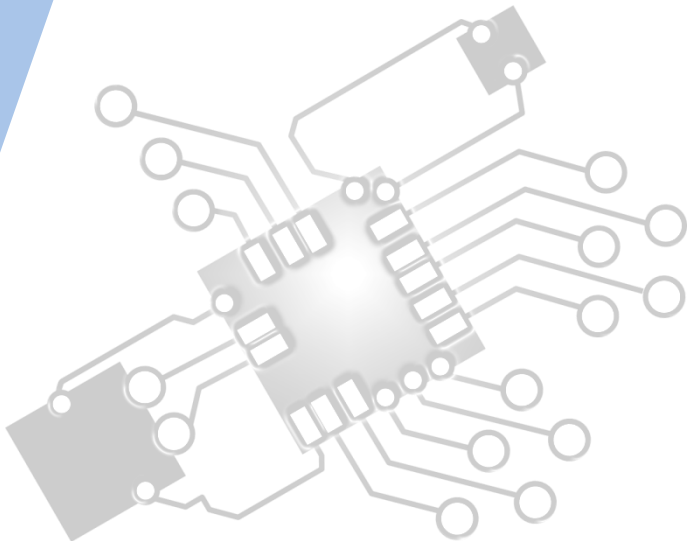




System Design *basics*

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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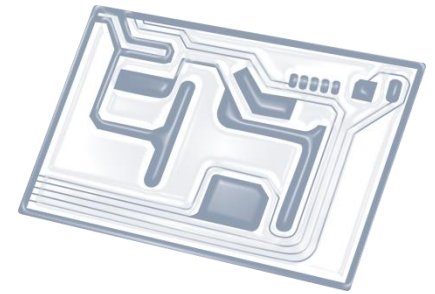


7: Control

D: OOP



Topic 1.2.8



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

Product development from an IT failures perspective



How the customer explained it



How the project leader understood it



How the business consultant described it



How the analyst designed it



How the programmer wrote it



How the project was documented



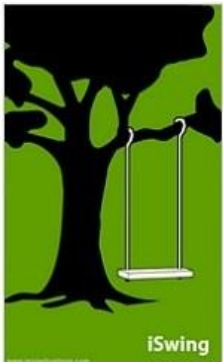
How they advertised the open source version



How they applied open source patches



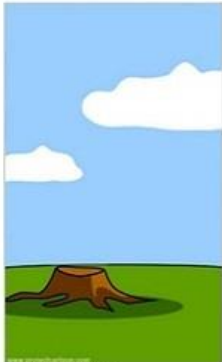
What the beta testers received



What marketing advertised



What operations installed



How it was supported



What the customer really needed



How it performed under load



The disaster recovery plan



How the customer was billed

Prototypes

- Prototypes are abstract representations of the system, often focusing on only one or two key aspects of the system.
- They are important in testing as each component of the system can be tested before implementing, and to illustrate the working of the future system to the client.
- Prototypes in systems development are usually 'ghost' user interfaces illustrating the position of control elements to the user or little programs developed to explore the working of a key algorithm in the system.

Example

- An example of prototyping is a shipyard building a prototype of an icebreaker ship to test out different bow designs without having to spend large money building a ship with an eventually unworkable design.