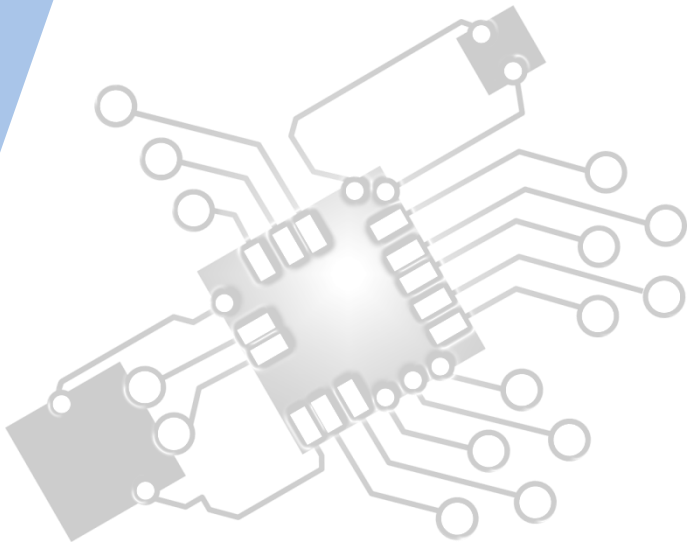




# Control Systems

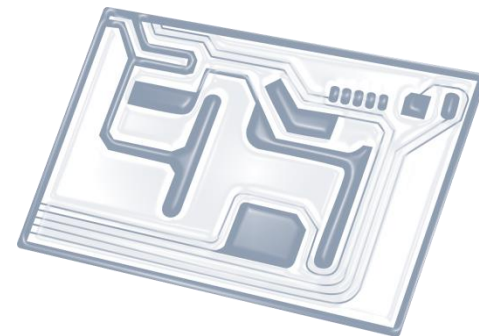
IB Computer Science



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 only 7 Overview

## Centralized control systems

7.1.1 Discuss a range of control systems

7.1.2 Outline the uses of microprocessors and sensor input in control systems

7.1.3 Evaluate different input devices for the collection of data in specified situations

7.1.4 Explain the relationship between a sensor, the processor and an output transducer

7.1.5 Describe the role of feedback in a control system

7.1.6 Discuss the social impacts and ethical considerations associated with the use of embedded systems

## Distributed systems

7.1.7 Compare a centrally controlled system with a distributed system

7.1.8 Outline the role of autonomous agents acting within a larger system



1: System design

2: Computer Organisation



3: Networks

4: Computational thinking



5: Abstract data structures

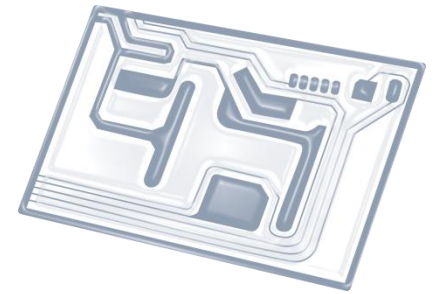
6: Resource management



7: Control

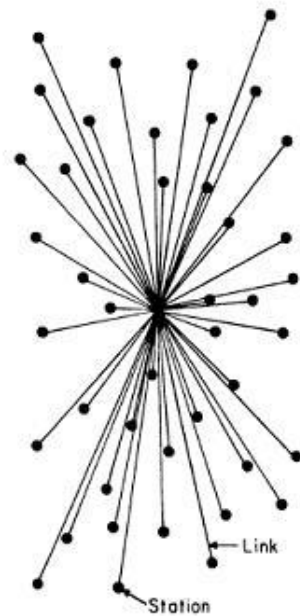
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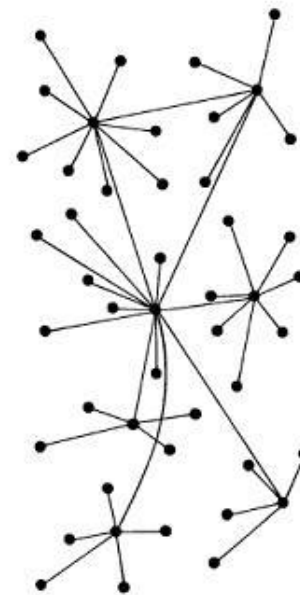


# Topic 7.1.7

Compare a **centrally controlled** system with a **distributed** system



CENTRALIZED  
(A)



DECENTRALIZED  
(B)

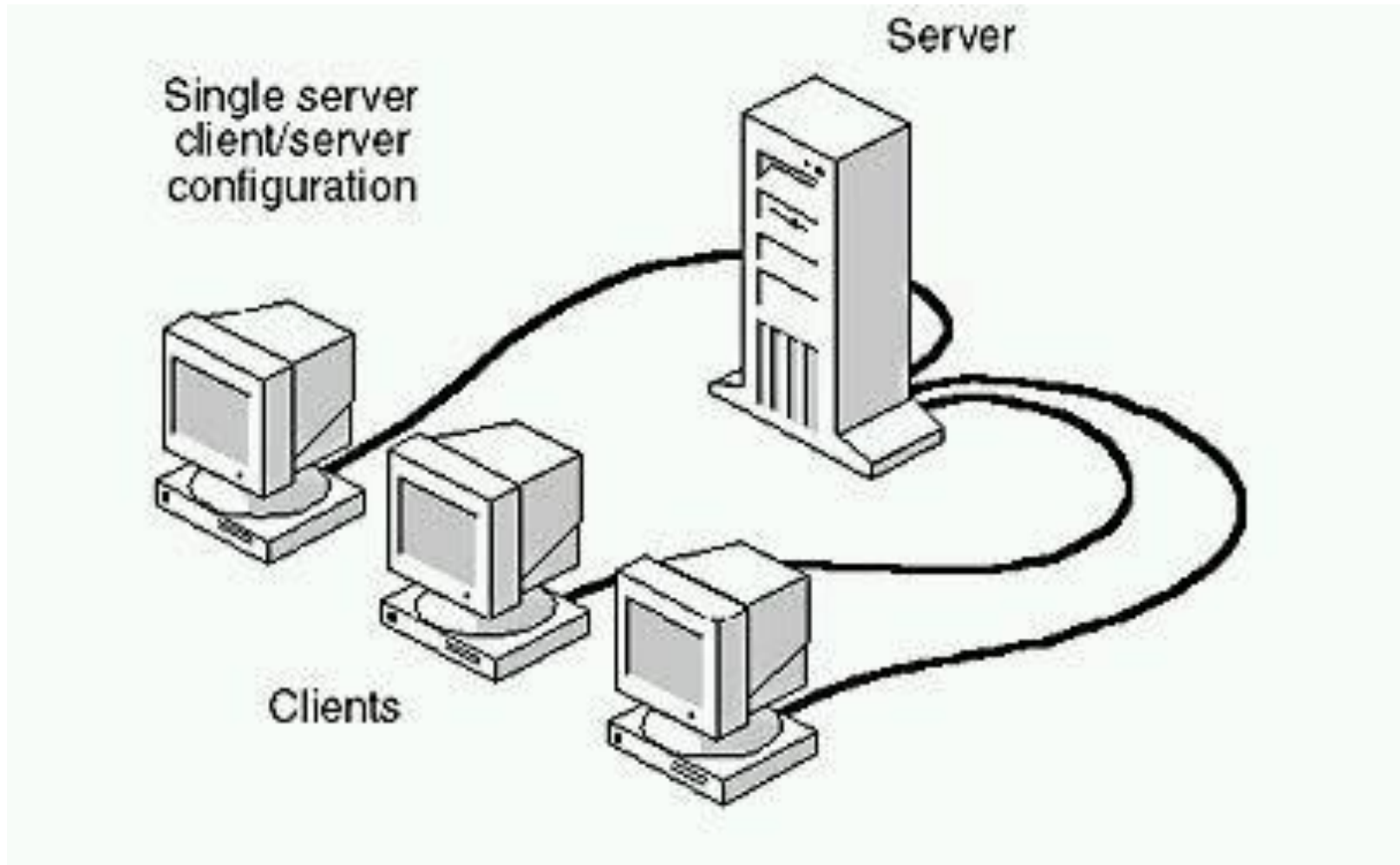
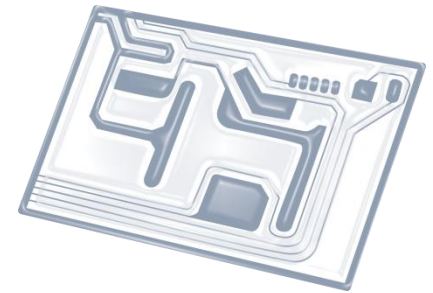


DISTRIBUTED  
(C)

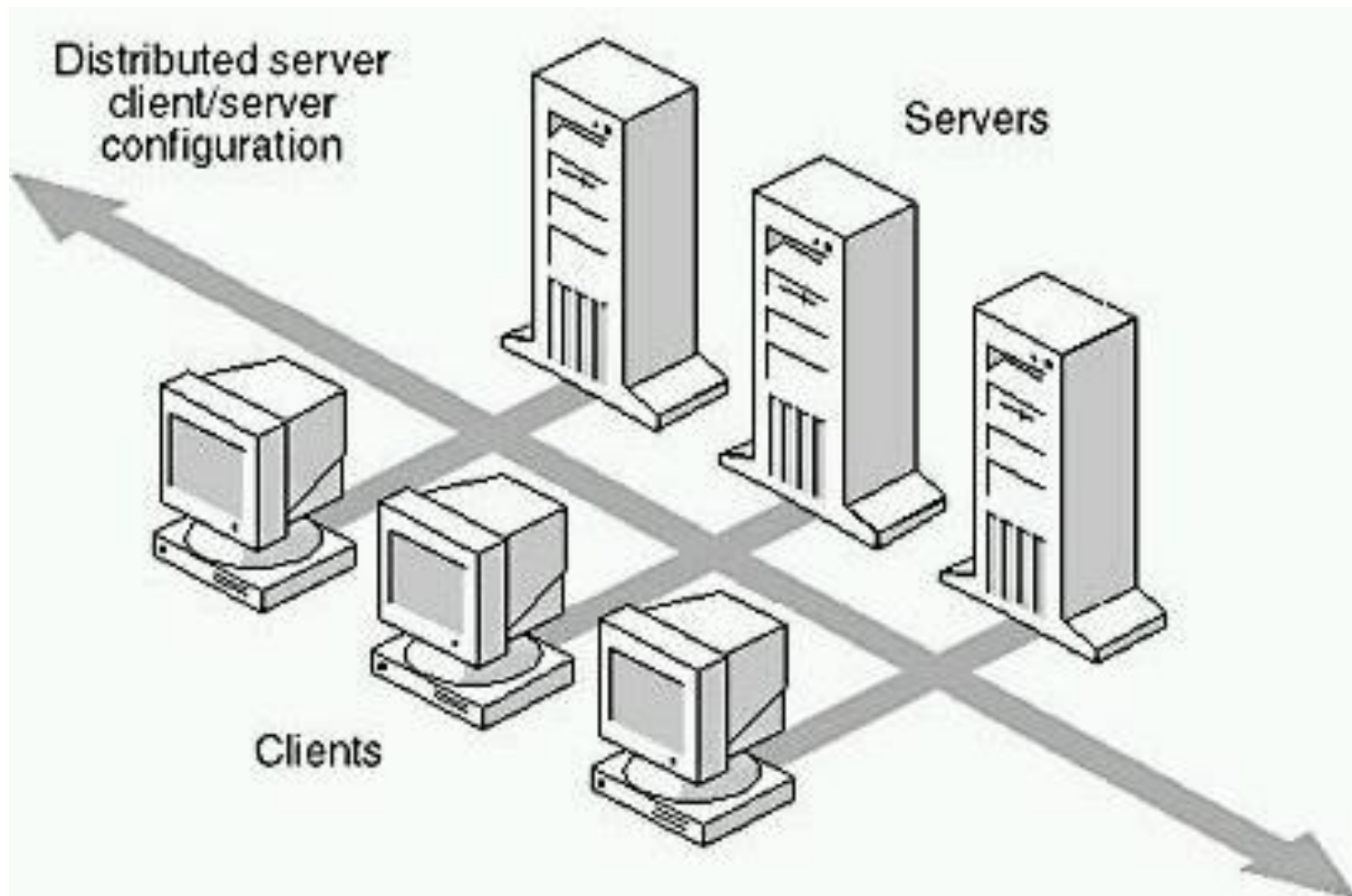
# Definitions:

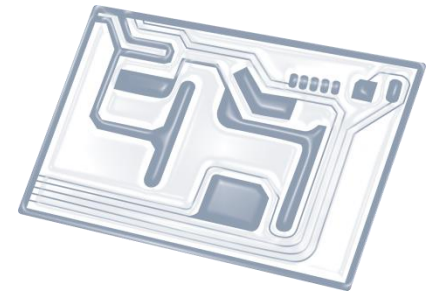
- **Centralised system:** is computing done at a **central location**, using **terminals** that are attached to a central computer. The computer itself may control all the peripherals directly (if they are physically connected to the central computer), or they may be attached via a terminal.
- **Distributed system:** is a **system** in which components located on **networked computers** communicate and coordinate their actions by passing messages. The components **interact** with each other in order to achieve a common goal.

# Centralised system



# Distributed system





# Advantages

## Advantages of central system:

- Easier to administrate
- More control

## Advantages of distributed systems:

- Quicker access
- Shared load
- Response more specific to environment