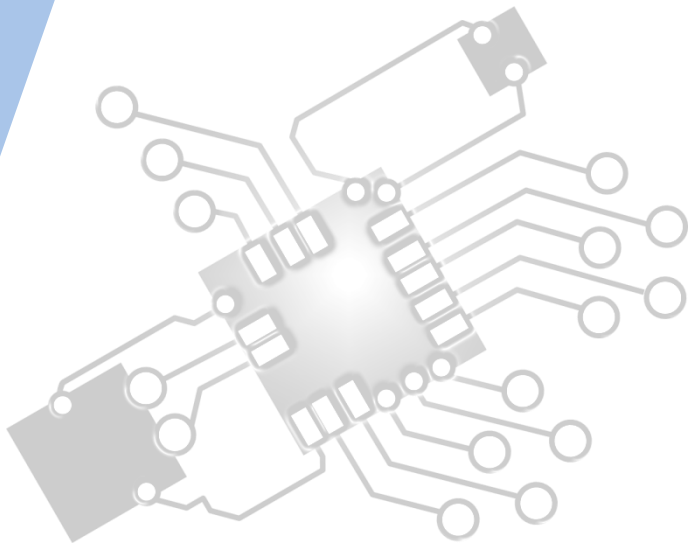
Control Systems

IB Computer Science



Content developed by
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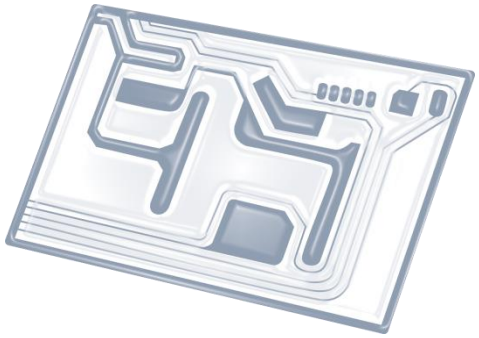
HL Topics 1-7, D1-4



1: System design

2: Computer Organisation

3: Networks

4: Computational thinking

5: Abstract data structures

6: Resource management

7: Control

D: OOP

HL 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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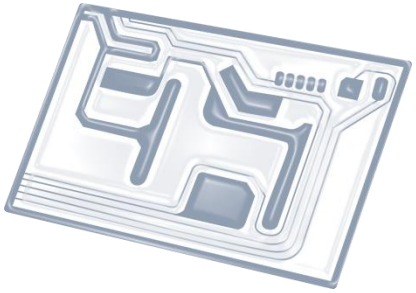


Topic 7.1.6

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

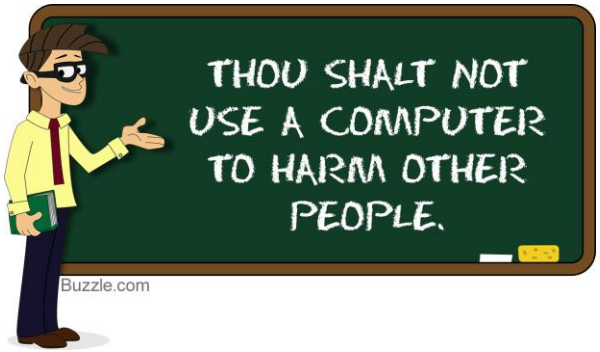
Specifically: tagging prisoners, surveillance, CCTV, improved safety systems

What is a social issue?

- A **social issue** is a problem that influences a considerable number of the individuals within a society.
- Examples of social issues are:
  - Crime
  - Health
  - Education
  - Media & Propaganda
  - Poverty
  - Terrorism

What is an ethical issue?

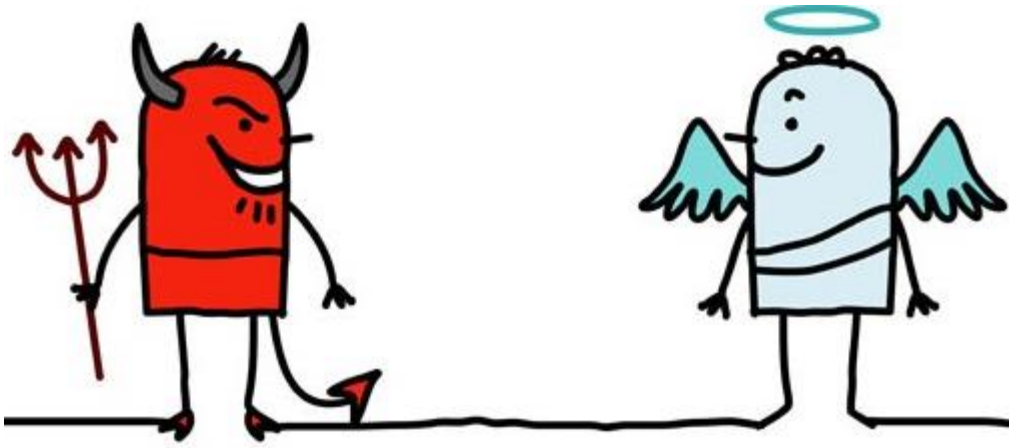
- A problem or situation that requires a person or organization to choose between alternatives that must be evaluated as **right** (ethical) or **wrong** (unethical).
- Examples of ethical issues are:
  - Computer crime
  - Responsibility for computer failure
  - Protection of computer property, records and software
  - Privacy



Exam note!

This curriculum point requires you to **discuss** a social or ethical issue.

That is exam speak for being able to discuss a given example by describing embedded systems (like CCTV) are **helping/hindering** the issue.



Tagging prisoners

Arguments for:

- Allows non-dangerous criminals to move
- Reduces number of people needed to be in prison
- Allows for tracking at all times

Arguments against:

- Loss of freedom of movement
- Could possible be hacked to track innocent people
- Tracking data could be sold off to make money

Surveillance

Arguments for:

- Allows for greater security
- Could be used as effective evidence in court cases
- Allows fewer people to have monitor others

Arguments against:

- Loss of privacy
- Could be hacked and used for unintended purposes
- Could be used to spy on people (drones)

CCTV (closed circuit television)

The CCTV debate continues with arguments for and against its effectiveness.

By APSM on Apr 24, 2013 in CCTV, Security Products, TechTime

Role of CCTV Cameras : Public, Privacy and Protection

10 Reasons why public CCTV schemes are bad.

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