CAIE Computer Science IGCSE
6.1 Automated systems

Flashcards

What is an automated system?

What is an automated system?

A technology-driven mechanism designed to perform tasks with minimal or no human intervention.

Name the three distinct components of most automated systems.

Name the three distinct components of most automated systems.

Sensors, microprocessors, and actuators.

What are sensors?

What are sensors?

Sensors are devices that detect physical inputs from the environment and convert them into electrical signals.

What are microprocessors?

What are microprocessors?

Small computers or processors embedded within a system that receive data from sensors, process that data, and make decisions.

What are actuators?

What are actuators?

Devices that take action based on commands from the microprocessor to physically change something in the system.

What are some advantages of automated systems in industry?

What are some advantages of automated systems in industry?

Increased efficiency and speed of production, improved accuracy and consistency, ability to work continuously without fatigue.

What are some disadvantages of automated systems in industry?

What are some disadvantages of automated systems in industry?

High initial setup and maintenance costs, potential job losses due to reduced need for human labour, and system failures can halt production.

What are some advantages of automated systems in transport?

What are some advantages of automated systems in transport?

Increased safety by reducing human error, optimised traffic flow and reduced congestion, and better fuel efficiency with environmental benefits.

What are some disadvantages of automated systems in transport?

What are some disadvantages of automated systems in transport?

High development and infrastructure costs, complex technology can fail or be hacked, and ethical/legal challenges about responsibility in emergencies.

What advantages do automated systems bring to agriculture?

What advantages do automated systems bring to agriculture?

Precise watering and fertilising reduce waste, ability to monitor crops constantly for disease or growth, and reduced labour in harsh environments.

What are disadvantages of automated systems in agriculture?

What are disadvantages of automated systems in agriculture?

Expensive to install and maintain, dependency on technology may reduce traditional farming skills, and sensors can fail due to weather or damage.

What advantages do automated weather systems have?

What advantages do automated weather systems have?

Continuous data collection improves forecasting accuracy, can operate in remote or dangerous locations, and quick data processing and reporting.

What disadvantages come with automated weather systems?

What disadvantages come with automated weather systems?

Equipment can be damaged by extreme weather, high initial costs, regular calibration is required, and system outages can disrupt data flow, which may be crucial to some people's' wellbeing.

What are advantages of automated systems in gaming?

Provide challenging and adaptive gameplay, automate bug testing, and allow real-time interaction without human opponents.

What are disadvantages of automated systems in gaming?

What are disadvantages of automated systems in gaming?

AI may not behave realistically or fairly, can reduce social interaction if overused, and complex AI development is costly and time-consuming.
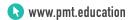
What are advantages of automated lighting systems?

What are advantages of automated lighting systems?

Energy savings by switching lights on/off based on presence or daylight, improved safety with better control, and reduced maintenance through automated monitoring.

What are disadvantages of automated lighting systems?

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What are some advantages of automated systems in science?

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High precision and repeatability in experiments, reduces human error in data collection, could remove some risk involved with hazardous experiments.

What are some disadvantages of automated systems in science?

What are some disadvantages of automated systems in science?

Over-reliance on automation can reduce hands-on skills, technical failures can disrupt experiments or data accuracy.