

Unit 5

1. The developer spends a great deal of time using a computer.

For each of the statements given, identify a health problem and describe a possible solution.

Your answers must be different in each case.

	Health problem	Possible solution
Using a mouse for a long period of time	Repetitive strain injury	Use a wrist rest Take regular breaks Use a trackball//an ergonomic mouse Hand exercises Voice activated software
Sitting for too long in one position	Back problems	Use a foot rest Take regular breaks Walk around//stand up Use an ergonomic/adjustable chair Sit with correct posture//with straight back

2. Microprocessor-controlled devices in the home have had positive effects on people's lifestyles. One of the positive effects of using these devices is that we can now set a cooker to switch on whilst we are out so that we arrive home to a cooked meal.

Describe the positive effects of using other microprocessor-controlled devices in the home.

Microprocessor-controlled devices reduce the need for people to do manual tasks at home.

People can use microprocessor-controlled devices for physical fitness tracking in the home.

People have more time to spend on leisure activities.

Increased sense of security as homes are protected with fire alarms.

Smart fridges can be used to improve healthy lifestyle//Smart fridges automatically order fresh food//Smart fridges reduce food waste.

Microprocessor-controlled devices can be set remotely using a smartphone.

Saves fuel as the heating/air conditioning is not on all day.

Reduces injuries by using microprocessor-controlled lights outside

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3. Smart devices and microprocessors can monitor and control devices in the home.

Describe, giving examples, the negative effects of using these smart devices.

The device can prevent users from leaving the house.

Use of this device leads to the user becoming lazy.

Using this device user becomes obese.

Using this device the user becomes de-skilled.

Using this device it affects well-being/mental health.

The device may stop working/malfunction.

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4.

The employees are given a list of strategies to follow to reduce the health risks of using laptops.

State **four** strategies that could be included in the list.

1 Regularly rest the eyes

2 Use an ergonomic chair

3 Maintain correct posture

4 Keep the laptop screen clear of dust and dirt

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5.

An autonomous vehicle uses an automated braking system. There is a sensor at the front of the vehicle to measure the distance between the vehicle and the obstacle. The brakes are applied when the vehicle gets too close to the obstacle.

Describe the use of a microprocessor in the automated braking system.

The microprocessor receives the data.

A preset value for the distance is stored in the microprocessor.

The microprocessor compares this data to the minimum distance/preset value.

If the data is less than the preset value the microprocessor sends a signal to the actuator.

The actuator applies the brakes.

If the data is more than the preset value the microprocessor does nothing.

Process is continuous

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6.

Vehicles can contain microprocessor controlled devices to improve transport safety. For example when a vehicle approaches a road speed sign the microprocessor sends an alert to the driver.

Discuss the positive and negative effects of using microprocessor controlled devices in transport safety.

Positive

Travel becomes safer

Allows the driver to concentrate more on the driving

Helps to prevent human error

Keeps pedestrians and other people safe

Can avoid accidents

Negative

Become very reliant on the technology

Very costly to repair/maintain

Makes the vehicle more expensive

The device/microprocessor could stop working/misread causing injuries

Error messages/alerts could distract the driver

7.

Cars can have sensors at the front and rear of the vehicle to detect obstacles.

Describe how the sensor detects an obstacle and sends the data to the microprocessor when parking the car.

Data are sent back to the sensor.

The sensors scan continually.

The sensor captures the reflected data.

The sensor captures analogue data.

The data from the sensor is sent by the ADC

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