EMBEDDED SYSTEMS

Key Revision Facts: GCSE Computer Science

An embedded system is a small computer that forms part of a larger system, device or machine. Its purpose is to control the device and to allow a user to interact with it. They tend to have one, or a limited number of tasks that they can perform.

Examples of embedded systems include:

- central heating systems
- engine management systems in vehicles
- domestic appliances, such as dishwashers, TVs and digital phones
- digital watches
- electronic calculators
- GPS systems
- fitness trackers

Embedded devices are not usually programmable by a user – the programming is usually done beforehand by the manufacturer. However, it is often possible to upgrade the software on an embedded device, the software is typically called firmware. For example, fitness trackers are embedded systems, but the software can often be upgraded by connecting the device to a PC and installing the new software.

Embedded systems can have advantages over general purpose computers in that:

- Their limited number of functions means they are cheaper to design and build.
- They tend to require less power. Some devices run from batteries.
- They do not need much processing power. They can be built using cheaper, less powerful processors.