Automated motor vehicles (Rovers) that propel themselves across the surface of Mars are used to examine its surface and can be directed to interesting features. These vehicles search for evidence of ancient life, and water, indicating Mars may have been habitable. The Rover is controlled by an embedded computer system, embedded because the computer is part of the vehicles ‘it is embedded’. The systems on board the Mars rovers must withstand the high radiation levels and large temperature changes in space and the software in the system makes decisions based on information from sensors. Direct control of the rover is not possible, therefore, a rover command team on earth plans, then sends, a set of commands, a programme, to the Rover in one go.

Computing skills are also needed to help get the Rovers up to Mars. For example Margaret Hamilton a computer scientist and software engineer helped develop the on-board flight software for the Apollo craft that landed on the moon.

This activity challenges you to get a Lego Mind Storm Robot, our automated vehicle, across a planet surface using a specific safe path. You will do this by write and then testing your own computer programme.

What is a Computer programme?

1. A collection of instructions that performs a specific task when executed by a computer.
2. A TV show that explains what a computer is and does.
3. A TV show you can only watch on a computer.

Why do we test programmes?

1. To see how clever the computer is.
2. To find out how intelligent the person who wrote the programme was.
3. To find errors or mistakes in the programme.

Where would you find a computer?

1. Only in a place of work or in school.
2. Only in an indoor location.
3. Anywhere is was needed.

What is an embedded computer system?

1. A computer that is switched off and considered to be asleep.
2. A computer that has been broken by being flattened and crushed into another object.
3. A computer system with a dedicated function within a larger mechanical or electrical system is called an embedded computer systems.