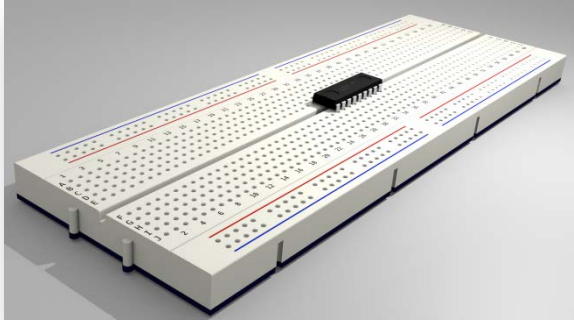
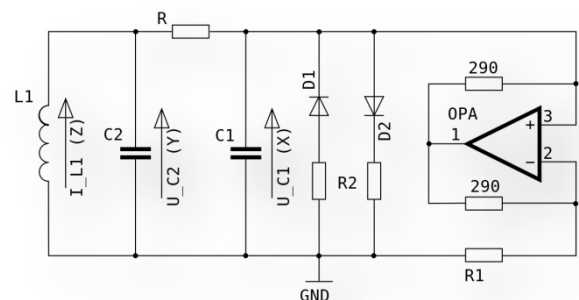
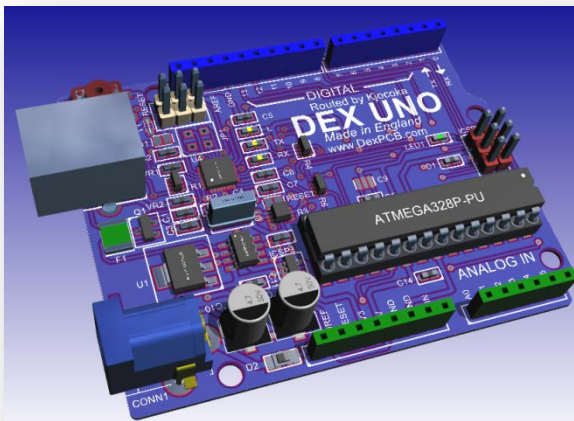


# Modelling Electronic Circuits

Electronic circuits can be modelled using a prototyping board (or breadboard).



This can be time consuming and uses real components, which can be damaged. Computerised simulation software can be used to test circuits without the need to physically build them. In addition, the computer simulation can be saved and edited.



Software can also be used to simulate control programmes for programmable interface controllers (PIC). Flowchart symbols can be placed or dragged on-screen. The action will be **simulated** to ensure that they operate as intended.

## **Advantages and disadvantages of using modelling and simulation**

### **Advantages**

- You can save and edit ideas, which make it easier and cheaper to modify your design as you go along.
- Speeds up production process.
- Doesn't require any physical components, so money isn't wasted on expensive parts.
- You can choose pre-drawn circuits or system blocks, which speeds up the process even further.
- Communicating within organisations via e-mail – and to other suppliers.

### **Disadvantages**

- Staff need to be trained on how to use the software, which also adds to costs.
- The software itself can be expensive so initial costs are high. There are free software packages though.
- It doesn't always accurately simulate 'real world' circuits or ideas, so may not be as effective as a prototyping board.
- Requires a PC.