

Data Acquisition

Definition:

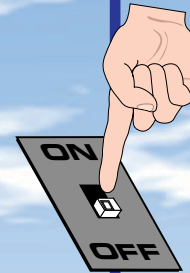
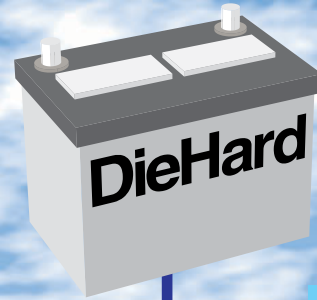
Data acquisition is the process of recording information (i.e. events, experiments, etc.) into usable or storable form.

Methodology:

- 1) Scientists devise experiments to test a hypothesis or theory.
- 2) Various methods can be used to record information from the experiment.
- 3) These methods vary from simple techniques (pen and paper) to extremely sophisticated hardware (computer).

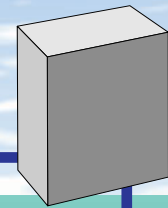
A Simple Experiment:

The setup shown tests whether or not the battery is charged by verifying that there is voltage present when the switch is closed.



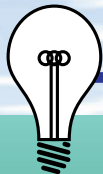
Pressing the switch closes the circuit and allows current to flow if the battery is charged.

Examples of Data Acquisition Techniques

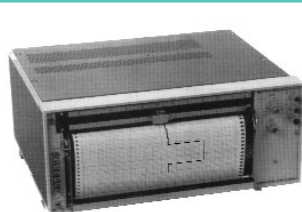


Analog to Digital Converter

Data Detection



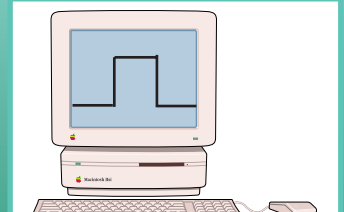
Human Eye



Strip Chart Recorder

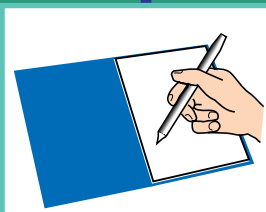


Oscilloscope

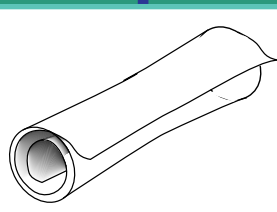


Computer

Data Storage



Paper & Pencil Description



Paper Hardcopy Analog Storage



Photograph Analog Storage



Disks and Memory Digital Storage

Advantages of a Computer:

- Record data in digital format
- Record data at a faster rate
- Easy automation of repetitive tasks
- Efficient storage of data
- Easier to manipulate data
- Record data more accurately
- Frees the experimenter to perform higher level tasks