

Electronics Block Diagrams

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May 29, 2017

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By identifying the modules, and showing how they are connected, it provides a simple overview.
- Each module can then be described individually, and its function more easily understood.

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which *changes* the temperature of the environment
- A *controller*
which uses information from the sensor to *adjust* the heater.

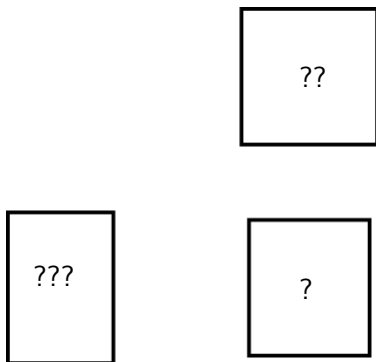
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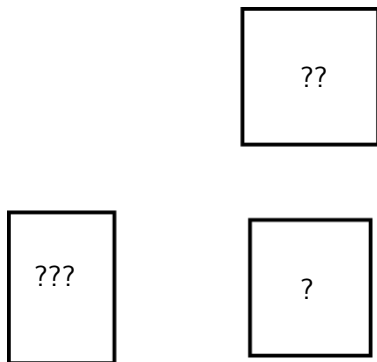
A diagram is simple to make.

Block diagram



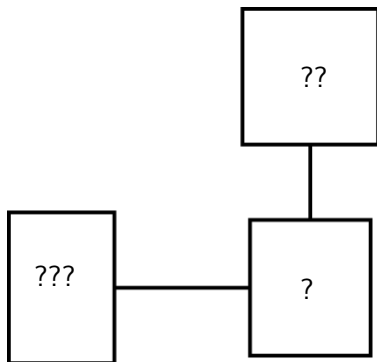
Heating System Block Diagram

Block diagram



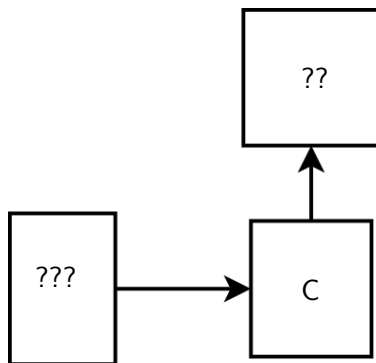
Can you tell which part is which?

Block diagram



Now can you tell which part is which?

Block diagram



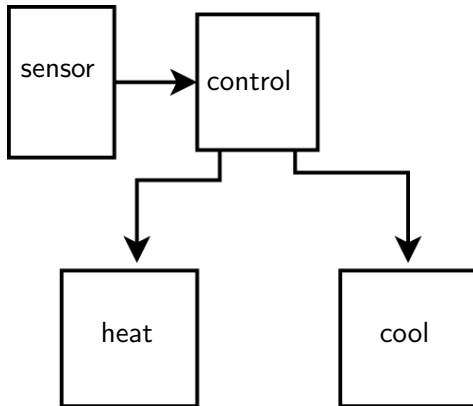
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The diagram can be easily adapted to more complex systems.

Slightly more complex example



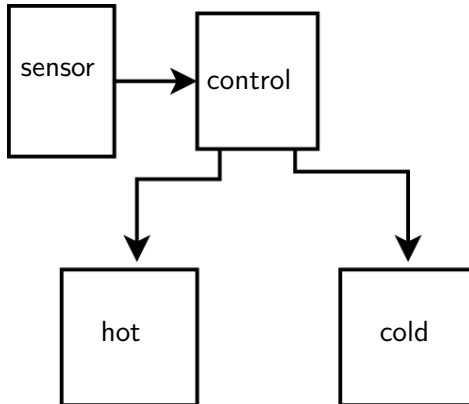
Heating and Cooling System Block Diagram

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- For instance, this system could be used for controlling the water temperature in a shower

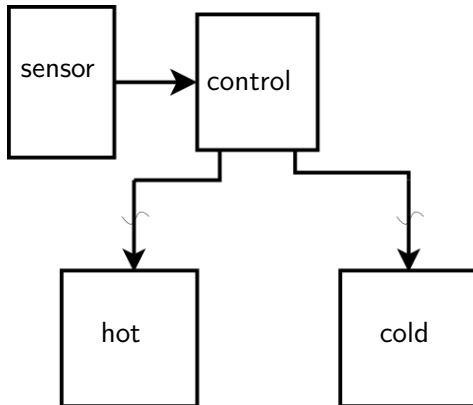
- The same block diagram could be used for a similar system in a different context
- For instance, this system could be used for controlling the water temperature in a shower
- To do this, replace heater and A/C with valves on the hot and cold lines

Adapted example: shower control



Is there anything that needs to change?

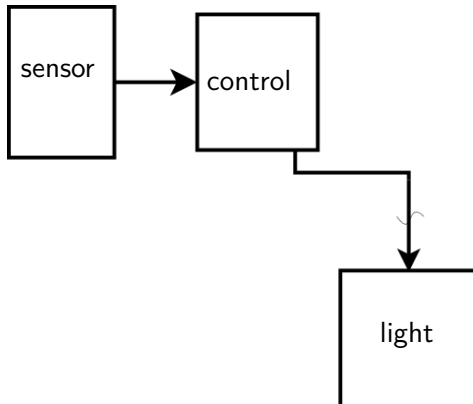
Adapted example: shower control



Indicating the **type** of signal conveys important information.

- The original block diagram could also be used for a light control system

Light control system

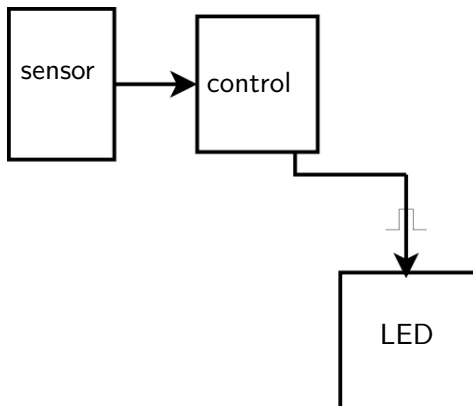


Incandescent Light Control

- This will work for *incandescent* lights

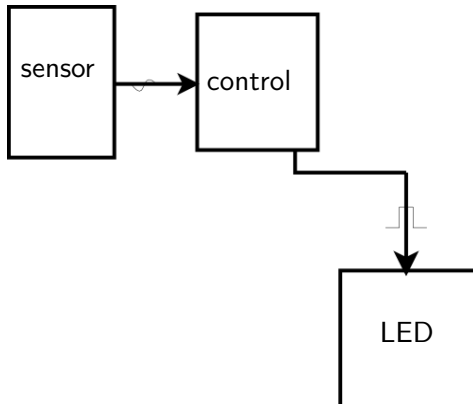
- This will work for *incandescent* lights
What need to change for LED lights?

LED light control system



LED Light Control; not quite done

LED light control system



Complete LED Light Control

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which takes in the *analog* signal from the sensor and produces a *pulse-width modulated* signal to the LED light.

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All of this can be determined without any other documentation.

Multiple signals and interfaces

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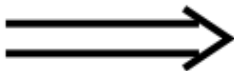
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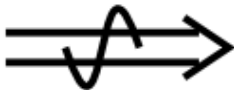
It is easy and useful to have symbols for these as well.

Multiple signals



Multiple digital signals

Multiple signals



Multiple analog signals

Multiple signals



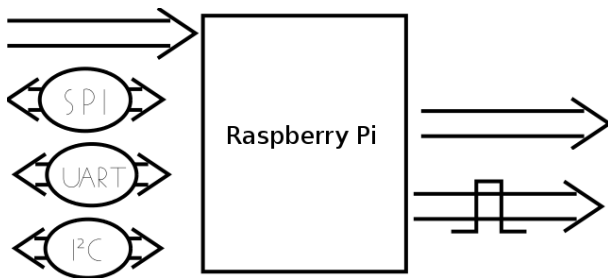
Multiple pulse-width modulated signals

Multiple signals



UART interface

Evaluation



What can you tell about the Raspberry Pi?