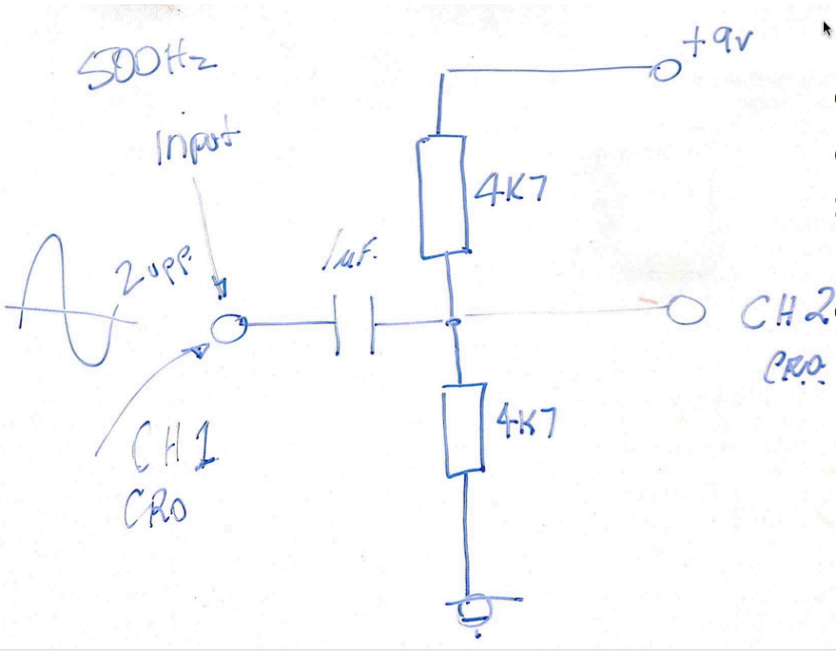
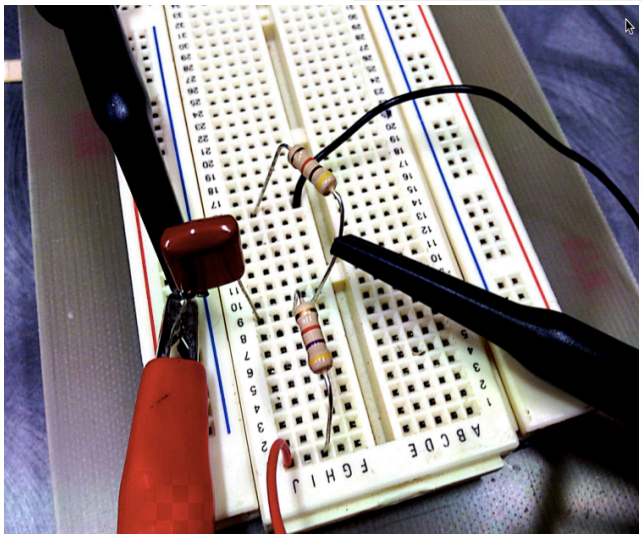
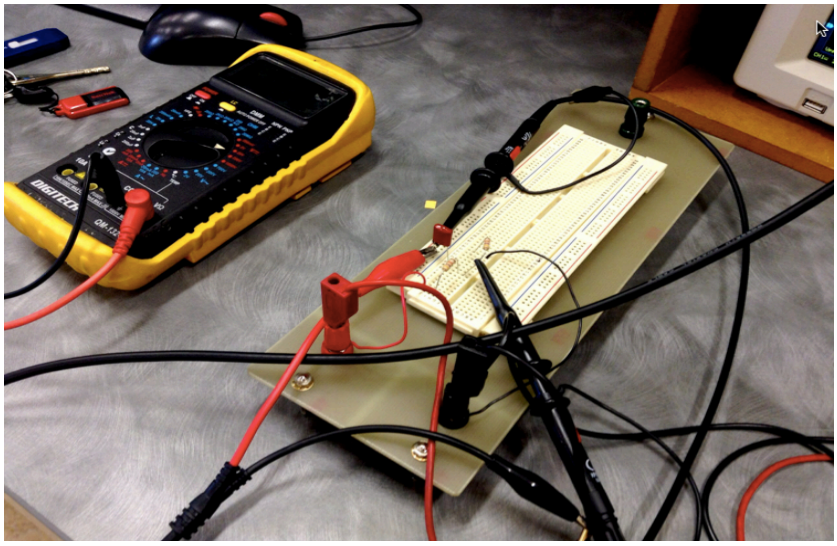
Lab 1, AC circuits…Frequency, phase and DC level shifting.

Examine the circuit shown and you will construct this on a breadboard for this lab.



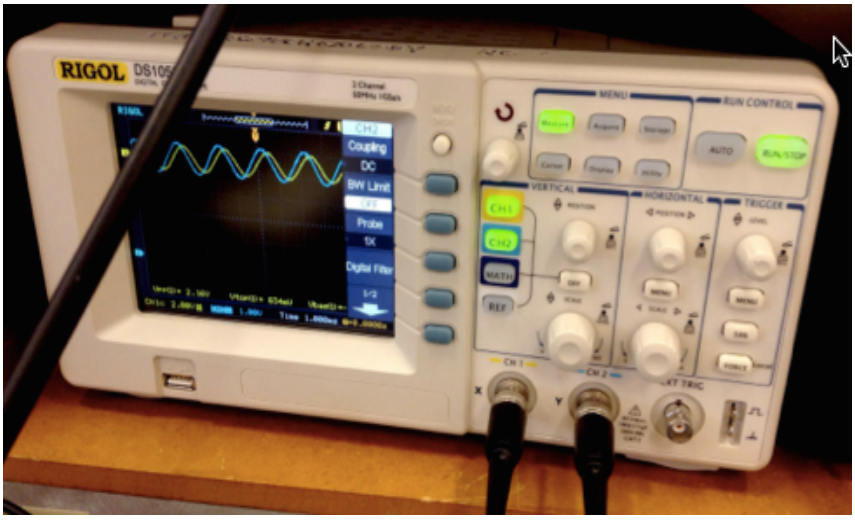


Take note how the parts are fitted in the breadboard.
Two 4.7kΩ resistors and the capacitor.



Lab 1, AC circuits…Frequency, phase and DC level shifting.

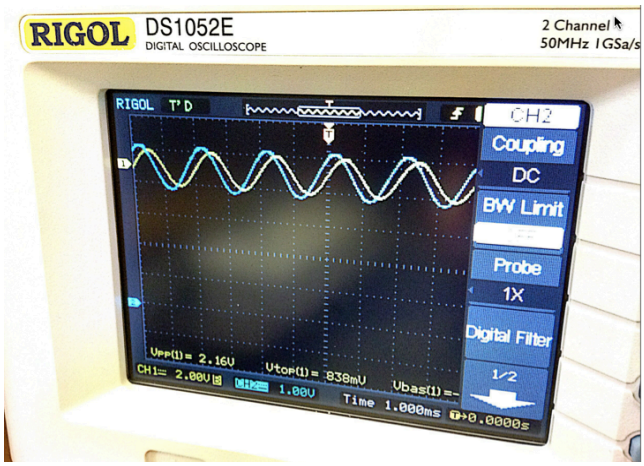
Rigol Oscilloscope



Older function generator

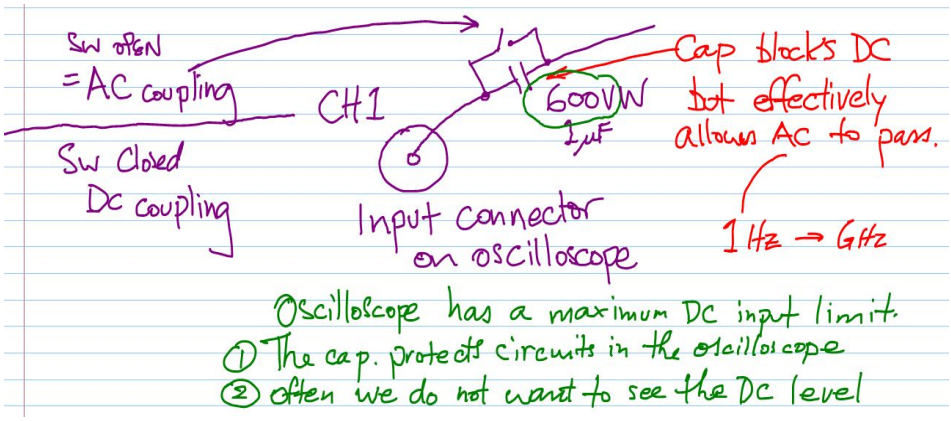
Newer function generator

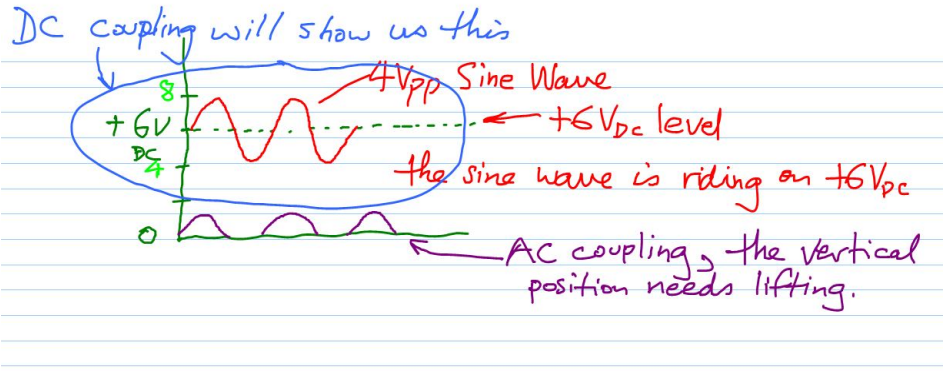
The oscillocope is easier to read than the older analogue oscilloscope.

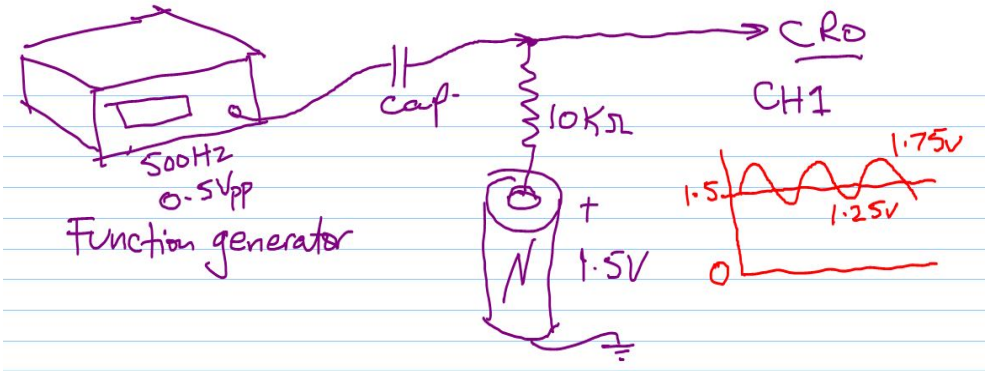


In the graphical explanation overpage, the idea of the Oscilloscope DC AC

Lab 1, AC circuits…Frequency, phase and DC level shifting.







Outcomes:

- ☐ The phase difference between each waveform
- ☐ The peak to peak voltage of the output of signal generator
- ☐ The peak to peak voltage of the junction of the voltage divider
- ☐ The DC voltage measured on the CRO for the junction of the VD
- ☐ The DC voltage as measured with DMM at junction of VD

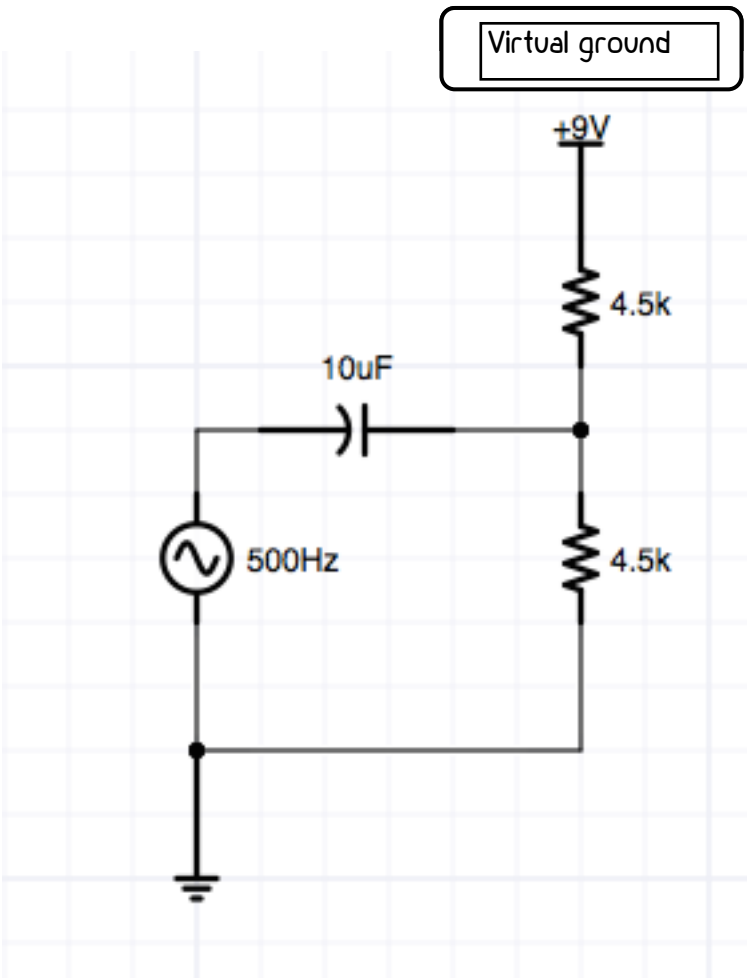
Over page…

Lab 1, AC circuits…Frequency, phase and DC level shifting.

Why is the AC waveform a different voltage on each side of the blocking capacitor?

What do you know about Capacitive reactance and it's possible cause for this effect? Please read about this and do some calculations.

The Power supply positive and the ground are both virtual grounds for AC.. see below.



So when solving reactance for this circuit, what do we need to do?