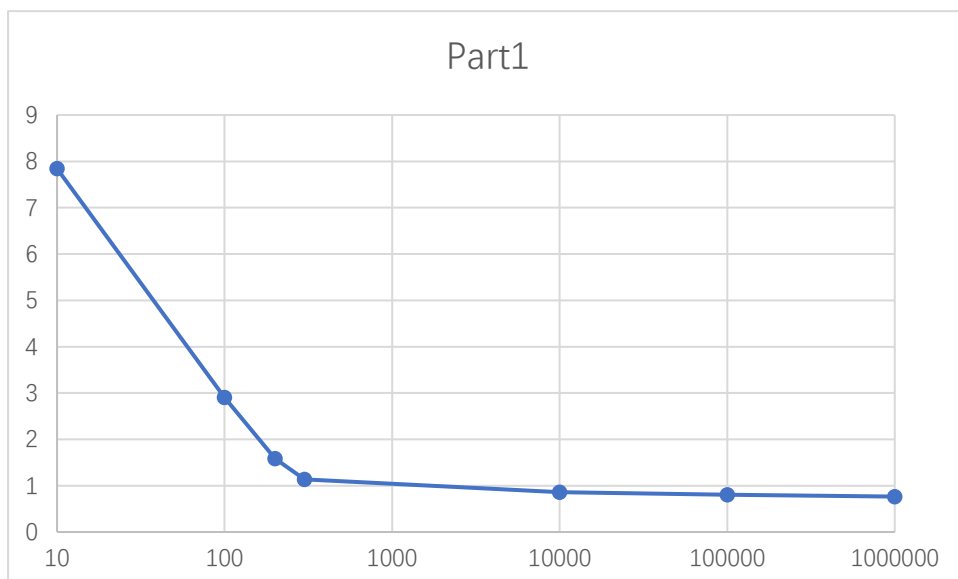
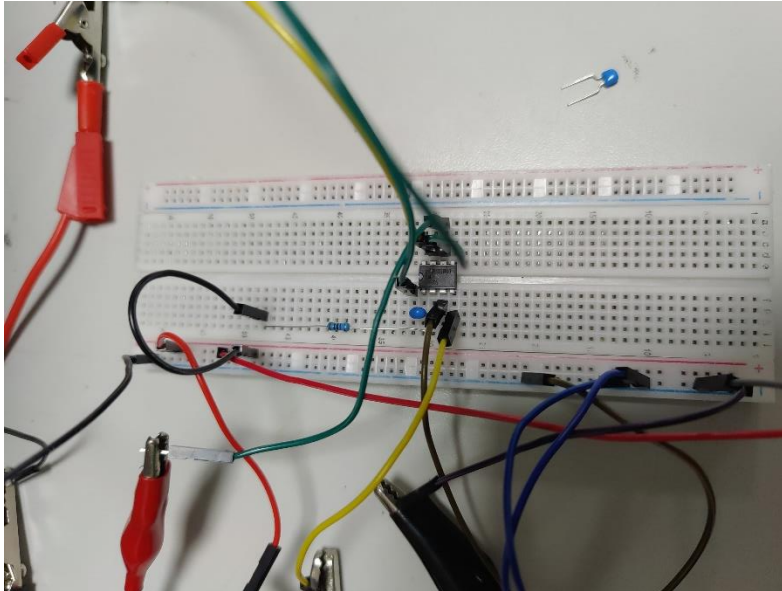
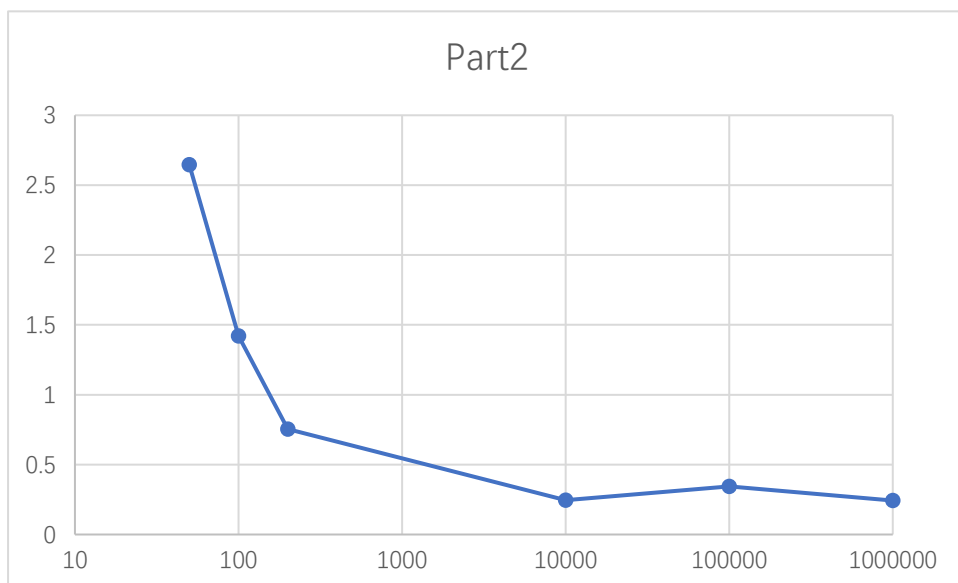
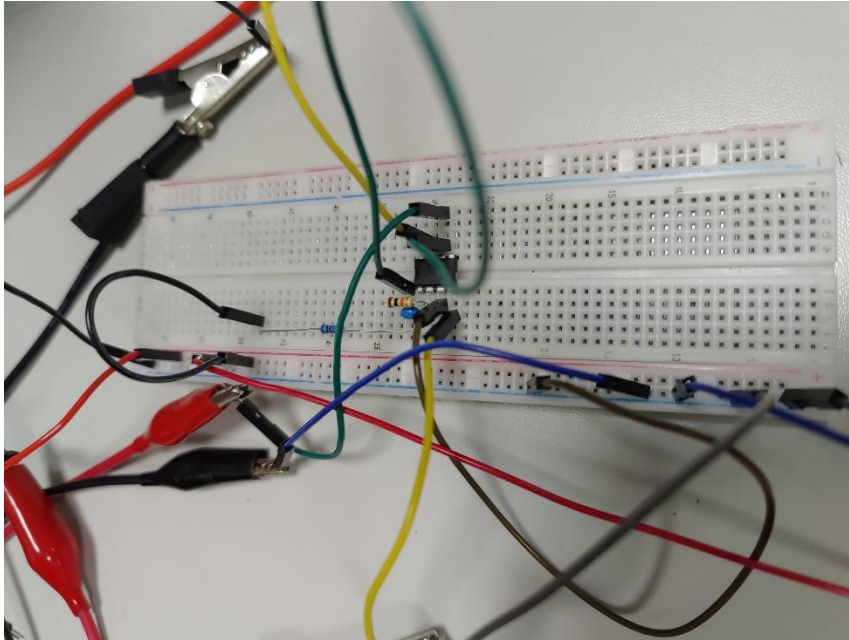


Part1



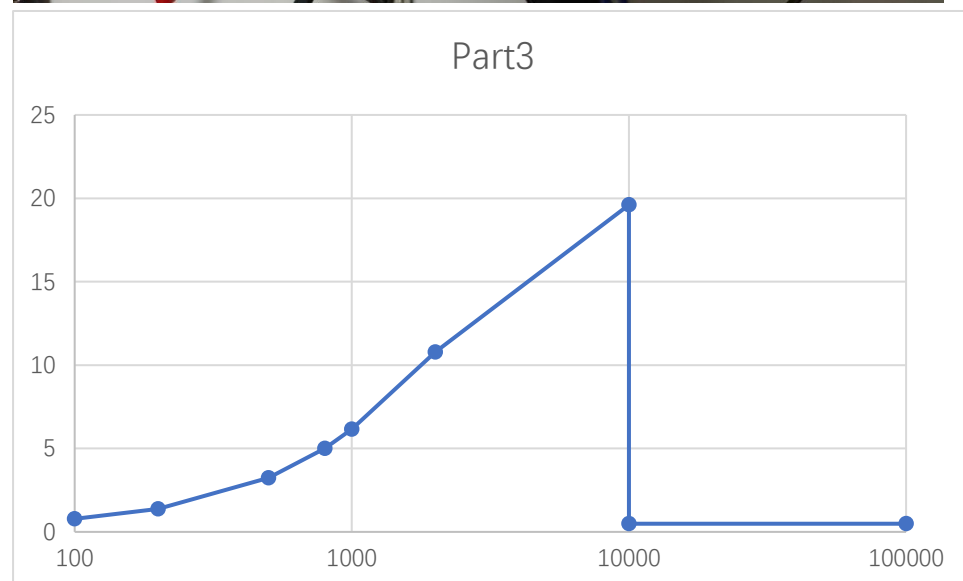
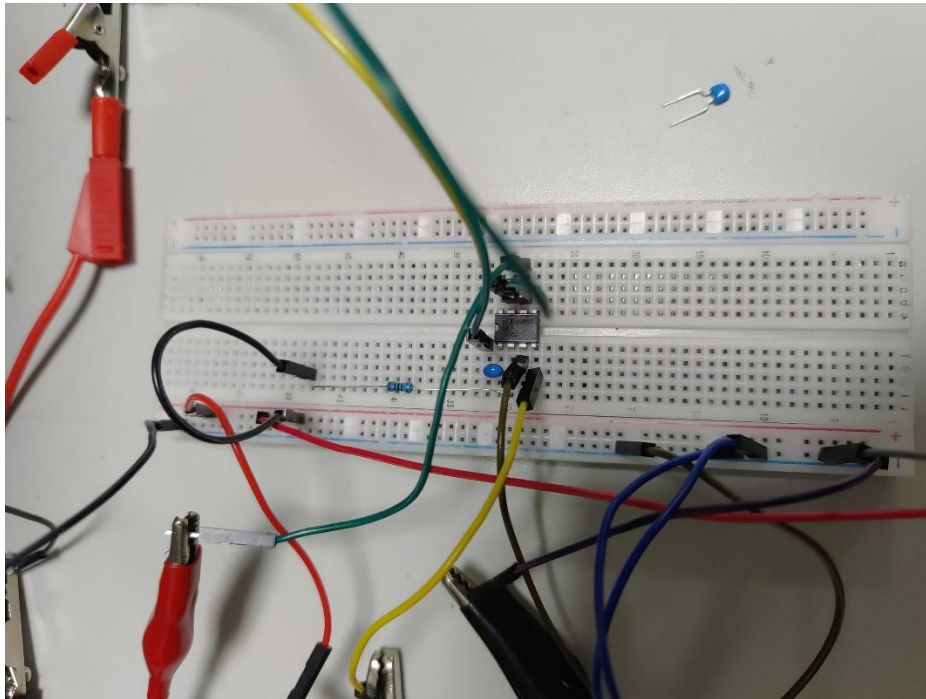
As we change frequency from 10Hz to 100MHz the V_{out} / V_{in} decrease. I change frequency from 10 to 500Hz, the V_{out} / V_{in} decreases dramatically from 8 to 1. When we change frequency=500Hz or bigger, the V_{out} / V_{in} become stable. It acts as a low pass filter, when I use low frequency, we will get a higher gain while high frequency we get a lower gain.

Part2



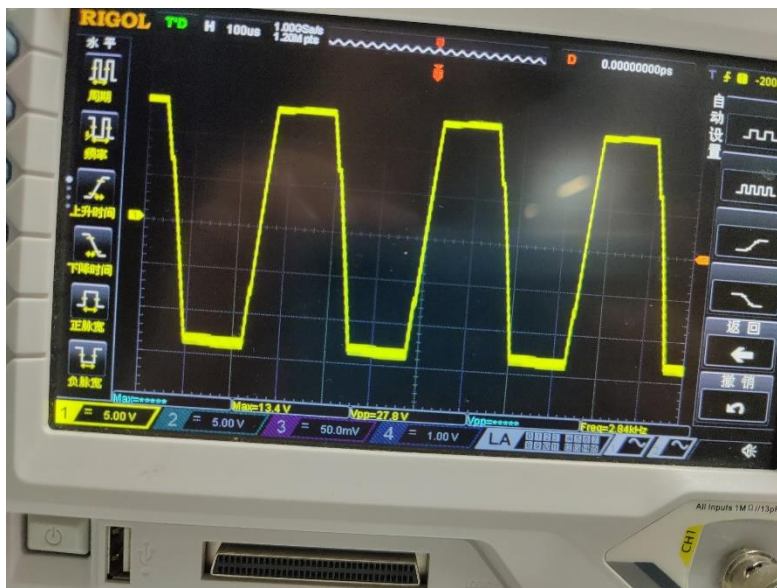
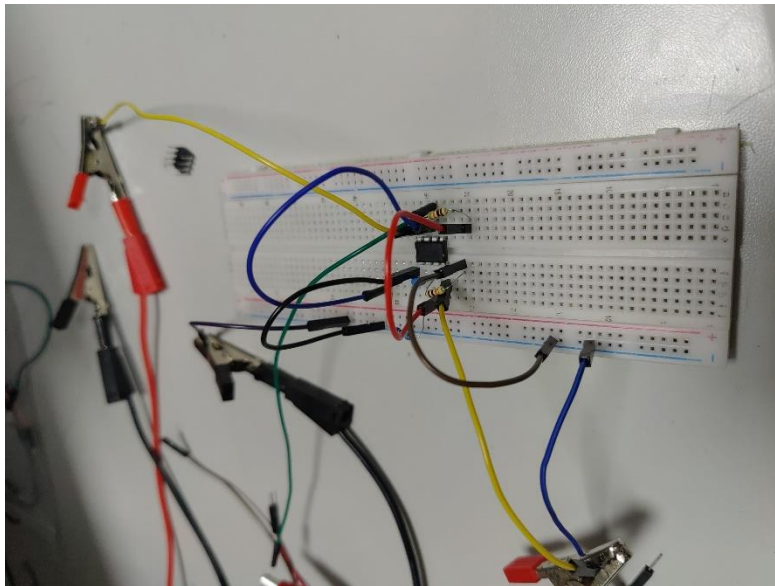
Compared to Part1, the V_{out}/V_{in} is smaller because we add a capacitor in parallel to the resistor. The gain becomes smaller.

Part3



As we change the frequency from 100 to 1KHz, the V_{out} / V_{in} becomes larger at a low rapid, when we increase frequency from 1KHz to 10KHz, the V_{out} / V_{in} increase dramatically. When we increase frequency from 10KHz to 10MHz, the V_{out} / V_{in} become almost zero. We think that the LM741 op-amp cannot work correctly, so we cannot get desired graph

Part4



We could identify that the maximum voltage is 27.8V the frequency is 2.84KHz

Summary:

We constructed a low pass filter by using capacitor and resistor. When we input a low frequency filter, the V_{out} / V_{in} is very large and will decrease dramatically with increase of frequency. When we input a high frequency signal, the V_{out} / V_{in} is very small, and will not change a lot with the increase of frequency

By contrast, when we contrast a high pass filter, when we input a higher frequency signal, the V_{out} / V_{in} become larger. When we input a low frequency signal, the V_{out} / V_{in} is very small