Lab #2 Addition

Some interesting things to know. From EE times.

For more than 15 years, Robert Hanssen led a double life. In one life he was a 25-year veteran with the Federal Bureau of Investigation (FBI) who had access to some of the nation's most-classified information. In his other life, he allegedly was spying for the Russian government. Hanssen's deception was finally discovered, and in February 2001 he was arrested and later pled guilty to 15 espionage-related charges. Spies are probably the world's best liars, because they have to be, but most of us practice deception on some level in our daily lives, even if it's just telling a friend that his horrible haircut "doesn't look that bad."

An analog polygraph instrument
Most analog polygraphs are being replaced by digital devices.

People tell lies and deceive others for many reasons. Most often, lying is a defense mechanism used to avoid trouble with the law, bosses or authority figures. Sometimes, you can tell when someone's lying, but other times it may not be so easy. Polygraphs, commonly called "lie detectors," are instruments that monitor a person's physiological reactions. These instruments do not, as their nickname suggests, detect lies. They can only detect whether deceptive behavior is being displayed.

To know more about this machine you can visit www.howstuffworks.com
This little excerpt has been taken from www.howstuffworks.com
Back to PSpice. In this lab we will go back to the rectifier circuit. Our main aim will be to analyze:

1) The use of the RC (Resistor-Capacitor) circuit.
2) Half-Wave rectification.

Open Orcad-Capture Lite.
Goto File → Open → Project

Open the rectifier circuit and you should be able to see the circuit you completed last week.

Change the Capacitor value to **100µF** and the resistor value to **1k-ohms**.

Run the simulation and watch what the output graph looks like. It has a small ripple and looks much more like a DC curve.

Now delete the Capacitor and Resistor and watch the output. (It will be a non filtered signal). Ask one of the mentors if you don’t understand the graphs.

**Half wave rectification**

Now delete the left two diodes. I mean the one on the top left and bottom left.
Then connect the ground to the bottom right diode.
Please look at the figure below for a better understanding.

This is what you circuit should look like at this point.
Look at the output graph and notice the Half wave rectification of the input signal.

Now place a 100uF capacitor and a 1k-ohm resistor. You should see the filtered signal.
**Now the negative half rectification.**

Now rotate the two diodes by a 180 degrees and delete the capacitor and resistor. You should be able to see the negative half of the signal rectified.

Now place a 100μF capacitor and a 1k-Ohm resistor and watch what happens.

You will be able to see a clean filtered signal with a few ripples.

**Please don’t hesitate to play with the circuit, don’t worry you wont burn anything!**

Feel free to ask any questions. Also try flipping only one diode and note what happens.

So now you can see how both the negative and the positive signals are rectified and filtered.