Lecture #14: Oracle Reductions
Questions for Review

1. What is a ***reducibility***? (Please define this as precisely as you can.)
2. What is an ***oracle for a language*** $\boldsymbol{L \subseteq \Sigma_L^\star}$?
3. What is an ***oracle Turing machine with an oracle for a language*** $\boldsymbol{L \subseteq \Sigma_L^\star}$? What "real world" thing does this model?
4. What is an ***oracle reduction*** from a language $L_1 \subseteq \Sigma_1^\star$ to a language $L_2 \subseteq \Sigma_2^\star$? What ***notation*** can be used to state that there is an oracle reduction from L_1 to L_2?
5. What is another ***name*** for an oracle reduction that you might find in the computing literature?
6. Describe a ***process*** that you can follow to show that there is an oracle reduction from L_1 to L_2, for a given pair of languages $L_1 \subseteq \Sigma_1^\star$ and $L_2 \subseteq \Sigma_2^\star$.
7. Describe a ***process***, that includes giving an oracle language, that can be used to prove that a given language, $L \subseteq \Sigma^\star$ is ***undecidable***.
8. Can this process also be used (in a very slightly changed way) to prove that a given language, $L \subseteq \Sigma^\star$, is ***unrecognizable***? Why, or why not?