Problem Set 3

1) Suppose two sellers of the same product interact in a market and compete on price. Firm 1 is able to set their price in the first period, and firm 2 is able to respond to this price by setting their own price in a second period. You may assume that payoffs are similar to a prisoner's dilemma game (e.g. split profits if matching price, higher profits when firms "cooperate" than when they "compete", and buyers only choose to purchase from the low-price firm).

    a. Suppose that firm 1 has a credible price-match guarantee that they are able to use in a third stage of the game. Design an extensive form game with payoffs such that the subgame-perfect equilibrium involves both firms setting high prices.

    b. Suppose that firm 1 can choose to build excess production capacity in order to produce such a great quantity of products that the market price will fall below cost for a potential market entrant, firm 2.

       The order of decisions in this game are as follows: firm 1 chooses capacity (high or low); firm 1 chooses a price (high or low); firm 2 chooses to enter the market or not (and by assumption accepts and matches the market price); if firm 1 chose low capacity in the first stage then the game is done after firm 2 chooses to enter/not enter, if firm 1 chose a high capacity and firm 2 enters, then firm 1 can then choose to drop prices below firm 2's cost, or keep them the same as before.

       Design an extensive form game and endow payoffs for each firm that shows this competitive interaction, and find the subgame perfect equilibrium. What phrase would you use to describe the choice of capacity investment in the first stage?

2) Consider the role of signaling and investment in training/education in job markets. Research has shown that employers often "over-ask" on required qualifications for a position, and further find that men are more likely to apply to a job even when they do not meet minimum qualifications than women. Discuss how persistent labor market discrimination may be the result of both "signaling" and "bluffing".

3) **Bonus:** Read the following article on the closures of rural hospitals across Oklahoma (https://www.readfrontier.org/stories/the-only-hospital-in-mangum-was-failing-they-promised-to-help-but-only-made-it-worse/). *Briefly (1-2 paragraphs)* discuss how insights from the "Market for Lemons" model are applicable to this setting