Exercise 1

A. Assume a representative household which lives for one period and is endowed with $k_0$ units of capital and $l_0$ units of labor. Derive equilibrium production, consumption, the real interest rate, and the real wage, assuming that households maximize utility subject to the relevant resource constraints, firms maximize profits, and product and factor markets are competitive. Assume a Cobb-Douglas production function that depends on capital and labor. Discuss the properties of the equilibrium and how it depends on factor endowments, preferences, and technological parameters.

B. Assume that the representative household lives for two periods, and is endowed with $k_0$ units of capital in period 1, and $l_0$ units of labor in each of periods 1 and 2. Derive equilibrium production, consumption, the real interest rate, and the real wage for each period, assuming that households maximize utility subject to the relevant resource constraints, firms maximize profits, and product and factor markets are competitive. Assume a CES intertemporal utility function and a Cobb-Douglas production function. Discuss the properties of the intertemporal equilibrium and how it depends on factor endowments, preferences, and technological parameters.