## Department of Mathematical Sciences CARNEGIE MELLON UNIVERSITY

## **OPERATIONS RESEARCH II 21-393**

Homework 4: Due Monday November 7.

- 1. Player B chooses a number  $j \in \{1, 2, ..., n\}$  and A tries to guess what it is. If A guesses correctly then A wins 1. If A guesses too high then A loses 1. If A guesses too low there is no payoff. Solve the game.
- 2. Find the optimal ordering strategy for the following inventory system. If you order an amount Q, it costs  $AQ^{\alpha}$  for some  $0 < \alpha < 1$  and the inventory cost is I per unit per period. The demand is  $\lambda$  units per period and no stock-outs are allowed.
- 3. Show that EDD is an exact algorithm for  $1 | r_j, pmtn | L_{max}$  i.e. there are *n* jobs with release dates  $r_1, r_2, \ldots, r_n$  and due dates  $d_1, d_2, \ldots, d_n$ , preemption is allowed and the goal is to minimise the maximum lateness  $C_j d_j$ .