Workshop Questions

1. **Calling Heads or Tails.**
   Steve and Maria are lazily drifting down the river on a paddle boat, and Steve proposes the following game. They will each simultaneously shout out either Heads or Tails. Steve says " I'll give you $3, if I call Heads when you call Tails, and I'll give you $1 if I call Tails when you call Heads. To make if fair, if we ever both call the same thing then you give me $2."

   (a) This seems like it might be a fair game. Is it? To find out create the payoff matrix for this game, showing the payoffs (winnings or losses) for each player for each outcome. Are there any equilibria?

   (b) If Maria goes for the $3 by choosing heads, what will Steve do? Should she choose heads all the time? Suppose Maria plays a strategy where she chooses heads half the time and tails half the time. What should Steve do?

   (c) Find a partner, let one person play the role of Steve, and the other the role of Maria. Simultaneously shout out heads or tails and record the winnings and losses for each player. Repeat 10 times. Who wins?

2. **Bedtime**

It can be a challenge getting children to go to bed. Consider this model of a parent child interaction where each has two choices. The parent can be mild or harsh and the child can be cooperative or uncooperative when asked to go to bed. Assume the parent most prefers a mild mannered approach when the child is cooperative and least likes a harsh approach when the child intends to cooperate. Assume the child most likes to be uncooperative when the parent is mild (after all – the child wants to stay up!), and least likes the parent to be harsh when she intends to cooperate. The ordering of the other two outcomes for parent and child depend on the relationship they have. For each of the following cases find the payoff matrix based on the rankings, and find any equilibrium values for the games

(a) Suppose the parent prefers to be harsh than mild when the child intends to be uncooperative and the child prefers the outcome of being cooperative with a mild parent to being uncooperative with a harsh parent.

(b) Suppose the parent prefers to be mild than harsh with an uncooperative child and that the child prefers the outcome of being cooperative with a mild parent to being uncooperative with a harsh parent.

(c) Suppose the parent prefers to be harsh than mild when the child intends to be uncooperative and the child prefers to be uncooperative with a parent taking a harsh approach to being cooperative with a parent taking a mild approach.