Assignment 4

Due Friday, March 15 at 11:59 pm.

Please submit all work on Canvas as a PDF or Word file. Make sure you clearly label each solution, and include the answers to the in-class quiz at the beginning of the assignment.

Part 1: Utility Theory

1) Speeding Ticket Suppose that you are pulled over for speeding. You are given a choice of either paying $150 on the spot or hiring a lawyer to appeal the ticket which has a 90% success rate. If you win the appeal, then the court pays your legal fees. If you lose the appeal, then your total cost of the ticket and lawyer is $1000.

(a) **What is the expected value of appealing the ticket? (2 points)**

(b) **What should you do according to the expected value decision rule? (2 points)**

(c) **In two or three sentences, describe a few pitfalls/considerations for this analysis and how they might affect the decision. (3 points)**

For parts (d) and (e), consider the following:

> Now suppose that you focus on the utilities rather than dollar amounts, and that you are weighting losses more than gains. Lets assume that every loss hurts twice as much as its dollar amount suggests (i.e. a loss of $100 is associated with -200 utility units).

(d) **What is the expected utility associated with appealing the ticket? (2 points)**

(e) **What should you do according the expected utility rule? (2 points)**

2) Jobs Suppose a graduating student is choosing between two jobs. Company A offers $50,000 for sure. Company B offers different salaries based on the firms profits; they offer a 49% chance of earning $40,000, a 49% chance of earning $50,000, and a 2% chance of earning $100,000.

(a) **What is the expected value of each job? (2 points)**

(b) **Which job should the student choose according the expected value rule? (2 points)**

(c) **In two or three sentences, describe a few pitfalls/considerations for this analysis and how they might affect the decision. (3 points)**

For parts (d)-(f), consider the following:

> Now suppose the student focuses on the utility of each salary rather than the dollar amount. Assume that the probabilities at which the student is indifferent between the two companies is when Company B offers a 48% chance of earning $40,000, a 48%

chance of earning $50,000, and a 4% chance of earning $100,000. Also assume the utility associated with earning $40,000 is 0 and the utility associated with earning $100,000 is 1.

(d) **What is the utility associated with earning $50,000? (3 points)**

(e) **What the expected utility of each job? (3 points)**

(f) **Which job should the student choose according the expected utility rule? (2 points)**

Part 2: Prospect Theory and Decision Weights

3) Speeding Ticket, Part 2 Now suppose that in Question 1, you relied on judgments of the probabilities (decision weights) instead of the actual probabilities. The decision weights that correspond to each percentage are shown below.

Percentage	10	90	100
Decision weight	16	84	100

(a) **What is the expected utility of each option when using decision weights? (2 points)**

(b) **Which option should you choose according the expected utility rule (when using decision weights). (2 points)**

4) Jobs, Part 2 Now suppose the student from question 2 relies on judgments of the probabilities (decision weights) instead of the actual probabilities. The decision weights that correspond to each percentage are shown below.

Percentage	2	49	100
Decision weight	9	48	100

(a) **What is the expected utility of each job when using decision weights? (2 points)**

(b) **Which job should the student choose according the expected utility rule (when using decision weights). (2 points)**