FIT3139: Tutorial questions for week 12

Question 1

Discuss your Specification Table for your Final Project with your Applied Class demonstrators.

If you do not have a Specification Table yet, try to put one together and then discuss.

Base model	One sentence description of the base model
Extension assumptions	One paragraph description on how assumptions are modified and the nature of the extension
Techniques showcased	Technique 1. Technique 2.
Modelling question 1	Questions being addressed.
Modelling question 2	

Your Specification Table should include;

- Base Model: A one sentence description of the base model
- Extension Assumptions: One paragraph description on how assumptions are modified and the nature of the extension
- Techniques Showcased: Which modelling and simulation techniques are you using
- Modelling Questions: The questions you will address in your assignment.

Keep in mind that the Specification Table you present today is not set in stone, and can still be changed. This is an iterative process and will be refined as you progress in the assignment. The point of this task is to get you started and on the right track for getting the assignment completed in time, and to make use of the advice you receive form your lab demonstrators.

Once you have set up the table, make sure to think and discuss how to answer the questions (what plots or visualisations you envision) and how your extension assumptions align well with the questions you are asking.

Question 2

If possible, find a solution to the game below using iterated removal of dominated strategies. If a solution cannot be found, discuss why.

	x	y	z
X	1, 1	-2, 0	4, -1
Y	0, 3	3, 1	5, 4
Z	1, 5	4, 2	6, 2

Question 3

Create a program that takes a bimatrix game and returns all pure strategy Nash equilibria. For this you should build a best-response correspondence for each player, and deduce all (pure) strategy profiles that imply players are best-responding to each other.

You can test your function out on the following matrix:

$$A = \begin{pmatrix} 5 & 7 & 2 \\ 8 & 6 & 5 \\ 1 & 8 & 4 \end{pmatrix}, B = \begin{pmatrix} 5 & 8 & 1 \\ 7 & 6 & 8 \\ 2 & 5 & 4 \end{pmatrix}$$

Question 4

Review the support enumeration algorithm. Use it to determine if there is a Nash equilibrium with full support (where all players are using a mixture of all available strategies) for the game below.

	L	M	R
U	0, 0	50, 40	40, 50
C	40, 50	0, 0	50, 40
D	50, 40	40, 50	0, 0

Question 5

Create a program that outputs all mixed Nash equilibria for any given two player game (A, B). Assume the game is non-degenerate, this means you only need to focus on supports of the same size.

Use this program to determine all the mixed Nash equilibria of the game given by A and B in Questions 2 and 3.