COMP3702 - Assignment 3

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1 Problem Definition

1.1 State Space

The state space will be a set of tuples of integers from 0 to the maximum number of items the shop can stock. The size of the tuple is the number of items a shop can stock. Thus for a tiny store it will be $\{(0,0),(0,1),(1,0),\ldots,(3,3)\}$.

1.2 Action Space

The actions space will be the set of all actions that can be performed by the customers. Thus for a tiny store, it will look like the following:

```
{
    buy 0 of item 1,
    buy 1 of item 1,
    ...,
    buy 2 of item 2,
    buy 3 of item 2
}
```

1.3 Transition Function

The transition function will be a matrix for each item type where the rows and columns are the number of items the store stocks.

Item 1	(0, 0)	(0, 1)	(1, 0)
(0, 0)	0.2	0.3	0.1
(0, 1)	0.2	0.3	0.1

1.4 Reward Function