**Assignment on Inventory System Simulation**

In this assignment you have to simulate a (M,N) inventory system. The distribution of daily demands and lead time are given below:

|  |  |
| --- | --- |
| Demand | Probability |
| 0 | 0.10 |
| 1 | 0.25 |
| 2 | 0.35 |
| 3 | 0.21 |
| 4 | 0.09 |

|  |  |
| --- | --- |
| Lead Time | Probability |
| 1 | 0.6 |
| 2 | 0.3 |
| 3 | 0.1 |

Tasks:

1. Input value of m and n. m = maximum inventory

n = review period

1. Assume that orders are placed at the close of business and are received for inventory at the beginning of business as determined by the lead time.
2. The simulation has been started with the inventory level at 3 units and an order of 8 units scheduled to arrive in 2 days' time. (Initially)
3. Values of daily demand and lead time must be sampled randomly from the above distribution Table. See **np.random.choice(a, p)** function to do this task. This function has 3 parameters. a = a list, a random sample is generated from its elements p = The probabilities associated with each entry of a. (You should use np.random.seed() for consistent random values. )
4. Simulate the system for 5 cycles. Estimate average ending units in inventory and how many days shortage occurs,
5. Change the value of m and n. And observe how things change with the change of m and n
6. Draw inventory\_level vs day graph .

X -axis : day number

Y- axis : Ending\_inventory of each day

**Instruction:**

1. You have to submit one .py file to ELMS. The name of the .py file should be your Student ID.
2. Do not copy codes. Understand the class code and Do the assignment. Blindly detected Copy will be penalized by negative marks.