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Resumed Inventory code Assignment

```
In [1]: from decimal import Decimal
```

```
In [2]: a,b = [int(x) for x in input("Daily Demand Range: ").split('-') if x.isdigi
        t()]
```

Daily Demand Range: 0-4

```
In [3]: probability = [Decimal(x) for x in input("Distribution of Probabilities:
        ").split(',') if 0<Decimal(x)<1]
```

Distribution of Probabilities: 0.1,0.25,0.35,0.21,0.09

```
In [4]: demand_random = [int(x) for x in input("Random Digits: ").split(',') if x.i
        sdigit()]
```

Random Digits: 24,35,65,81,54,3,87,27,73,70,47,45,48,17,9,42,87,26,36,40,7,
63,19,88,94

```
In [5]: demand = [[a,b] for a,b in zip(range(a,b+1),probability)]
        print()
```

```
In [6]: a,b = [int(x) for x in input("Lead Time Range: ").split('-') if x.isdigit
        ()]
```

Lead Time Range: 1-3

```
In [7]: probability = [Decimal(x) for x in input("Distribution of Probabilities:
        ").split(',') if 0<Decimal(x)<1]
```

Distribution of Probabilities: 0.6,0.3,0.1

```
In [8]: lead_random = [int(x) for x in input("Random Digits: ").split(',') if x.isd
        igit()]
```

Random Digits: 5,0,3,4,8

```
In [9]: lead = [[a,b] for a,b in zip(range(a,b+1),probability)]
        print()
```

In [10]:
```python
initial, mx = [int(x) for x in input("Initial and Maximum Inventory levels:
").split(',') if x.isdigit()]
```

Initial and Maximum Inventory levels: 3,11

In [11]:
```python
weeks, days = [int(x) for x in input("Number of Weeks, Days in a week: ").s
plit(',') if x.isdigit()]
```

Number of Weeks, Days in a week: 5,5

In [12]:
```python
shipment, duration = [int(x) for x in input("Next Shipment Quantity, Days t
o Arrival: ").split(',') if x.isdigit()]
```

Next Shipment Quantity, Days to Arrival: 8,2

In [13]:
```python
temp, rand = 0, 1
for i in range(len(demand)):
    temp+=demand[i][1]
    demand[i].append(temp)
    demand[i].append([rand,int(str(demand[i][2]).split('.')[1])+1])
    rand = demand[i][3][1]
    if rand == 1:
        demand[i][3][1] = 10**len(str(demand[i][3][0]))

temp, rand = 0, 1
for i in range(len(lead)):
    temp+=lead[i][1]
    lead[i].append(temp)
    lead[i].append([rand,int(str(lead[i][2]).split('.')[1])+1])
    rand = lead[i][3][1]
    if rand == 1:
        lead[i][3][1] = 10**len(str(lead[i][3][0]))

print()
print("{0:<12}{0:<12}{1:<12}{2:<14}{0:12}{3:<12}{0:<12}{4:<12}{2:<14}{5:<1
4}"\
      .format(" ","Start","Random Digit","End","Shipment","Days Until"))
print("{0:<12}{1:<12}{2:<12}{3:<14}{4:<12}{2:<12}{5:<12}{6:<12}{7:<14}{8:<1
4}"\
      .format("Cycle","Day","Inventory","(Demand)","Demand","Shortage","Qua
ntity","(Lead Time)","Next Shipment"))
print("="*126)

shortage = counter = average = 0
for week in range(1,weeks+1):
    print("{:<12}".format(week),end='')
    temp = duration
    for day in range(1,days+1):
        index = ((week-1)*days+day)-1
        if demand_random[index] == 0:
            order = len(demand)+shortage
        else:
            order = [x[0] for x in demand if demand_random[index] in range
(*x[3])][0] + shortage
        if day == duration+1:
            initial+=shipment
        if order > initial:
            eventual = 0
            shortage = order-initial
            counter+=1
        else:
            eventual = initial-order
            shortage = 0
            average += eventual
        if day != days:
            if temp != 0:
                temp -= 1
                print("{0:<12}{1:<12}{2:<14}{3:<12}{4:<12}{5:<12}{6:12}{6:1
4}{7:<14}"\
                      .format(day,initial,demand_random[index],order,eventual,s
```

```python
hortage," ",temp))
            else:
                print("{:<12}{:<12}{:<14}{:<12}{:<12}{:<12}"\
                    .format(day,initial,demand_random[index],order,eventual,s
hortage))
            print("{:12}".format(" "),end='')
        else:
            print("{:<12}{:<12}{:<14}{:<12}{:<12}{:<12}"\
                    .format(day,initial,demand_random[index],order,eventual,s
hortage),end='')
        initial = eventual
    shipment = mx-eventual
    if lead_random[week-1] == 0:
        duration = len(lead)
    else:
        duration = [x[0] for x in lead if lead_random[week-1] in range(*x
[3])][0]
    print("{:<12}{:<14}{:<14}".format(shipment,lead_random[week-1],duratio
n))
    if week != weeks: print("-"*126)

print("="*126)
print("Shortage:",counter,"days")
print("Average End Inventory:",average/(weeks*days))
```

Shipment Cycle / Shortage	Day / Quantity (Random Digit)	Start Inventory / (Lead Time) (Days Until)	Random Digit (Demand) / Next Shipment	Demand	End Inventory	S
1	1	3	24	1	2	0
1						
	2	2	35	1	1	0
0						
	3	9	65	2	7	0
	4	7	81	3	4	0
	5	4	54	2	2	0
9	5	1				
2	1	2	3	1	1	0
0						
	2	10	87	3	7	0
	3	7	27	1	6	0
	4	6	73	3	3	0
	5	3	70	2	1	0
10	0	3				
3	1	1	47	2	0	1
2						
	2	0	45	3	0	3
1						
	3	0	48	5	0	5
0						
	4	10	17	6	4	0
	5	4	9	1	3	0
8	3	1				
4	1	3	42	2	1	0
0						
	2	9	87	3	6	0
	3	6	26	1	5	0
	4	5	36	2	3	0
	5	3	40	2	1	0
10	4	1				
5	1	1	7	1	0	0
0						
	2	10	63	2	8	0
	3	8	19	1	7	0
	4	7	88	3	4	0
	5	4	94	4	0	0
11	8	2				

Shortage: 3 days
Average End Inventory: 3.04