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**Project 4 Report**

In this project I simulated a bank ATM using Discrete Event Simulation. As for inter arrival time and service time I used the same function I used in the last project.

def randomExp(lambd):

    nextArrival=random.expovariate(lambd/60)

    return nextArrival

This function seen above uses built in random library inside python. And to get the interarrival rates and service time in seconds I divided lambda and mean values that given by 60.

    snapshot=[]

    queTime=0

    servedCustomerCount=0

    allSnapshots=[]

    customerLeft=0

    serviceTime=0

    cumulCustomersinQue=0

    cumulCustomersinSystem=0

then I initialized the variables to store the statistics as can be seen above. Snapshot variable is for the snapshots to be printed as output and allSnapshots is for storing all snapshots this is for calculating statistics at the end of the simulation.

#initializing the system state

    customersinQue=0

    isServing=False

    time=0

    customersinSystem=0

this code above initializes the system states.

    #customer entity list

    customers=[]

I only use customers as entities and initialize the list to hold the customer information.

#as first event creating a arrival event

    randArrival=randomExp(lambd)

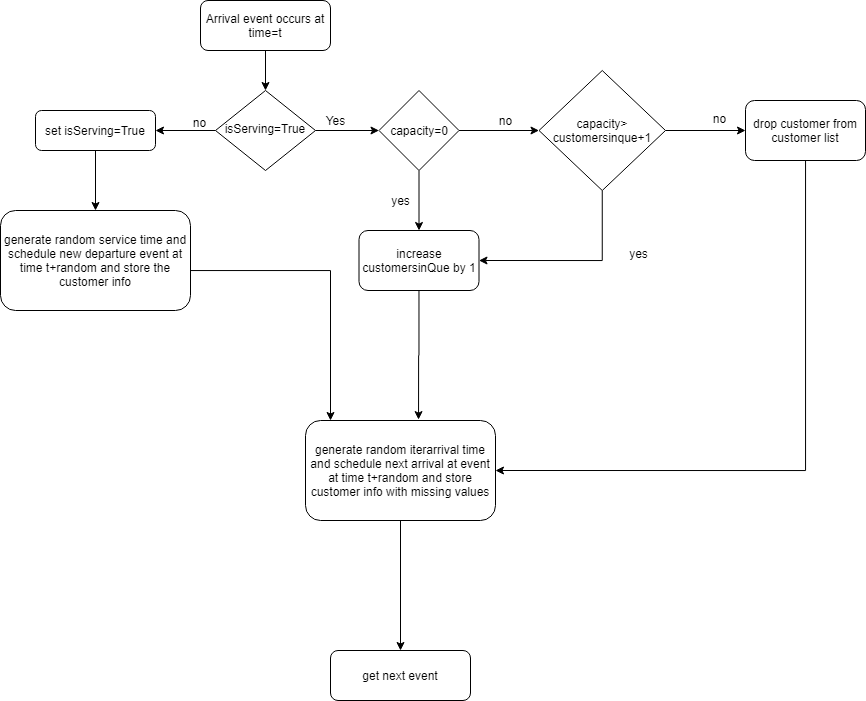
    customerNo=0

    #stores events as time, event flag and customer no

    events=[[time+randArrival,"Arrival",customerNo]]

After the initialization I create my first event and the event that I create is arrival event. Then store this event in the events list in this format seen above.

In this simulation I need only 2 events. Arrival event and Departure event. And I used almost the same flowcharts in the lecture slides.

Arrival Event Flowchart:

Departure Event Flowchart:

//Future event list handling

//arrival event code explanation

//departure event code explanation