

Problem set -1

Q1

Consider the following continuously operating job shop. Interarrival times of jobs are distributed as follows:

Time Between Arrivals (minutes)	Probability
0	0.23
20	0.37
40	0.28
60	0.12

Processing times for jobs are normally distributed, with mean 50 minutes and standard deviation 8 minutes. Construct a simulation table and perform a simulation for 10 new customers. Assume that, when the simulation begins, there is one job being processed (scheduled to be completed in 25 minutes) and there is one job with a 50-minute processing time in the queue.

- (a) What was the average time in the queue for the 10 new jobs?
- (b) What was the average processing time of the 10 new jobs?
- (c) What was the maximum time in the system for the 10 new jobs?

Q2

Please use “upload.zip” in this problem which you can find in the material of problem-set. If you run the “example.m” file you will generate N=1000 fibers which are randomly distributed in a cube. To understand how you generate these fibers you can check the “Generate_Fiber.m”.

- a) What are the variables (i.e. the attributes of the object/fiber) in this simulation?
- b) What is the main purpose of this simulation considering the variables?
- c) Which type of system is simulated?
- d) How can you define a distribution for 3D positioning of fiber?