CSE 411

Group One

Chapter-1 [excluding 1.7, 1.8]

The first part of this chapter has some basic definitions and basic way of running a simulation. Next, there are two systems: (1.4) single-server queueing system and (1.5) Inventory system We have not studied chapter two, but there are things here closely related to topics studied in chapter one. You should also study a third system: (2.7) Job-shop system.

Group Two

Chapter-1 [Only 1.7, 1.8]

Chapter-5 [Only 5.1]

Chapter-7 [Only 7.1]

Chpter-11 [Only 11.1, 11.3 (central idea and mathematical basis)]

Group Three

Chapter-4 [all 4.1 to 4.7]

Chapter-6 [6.1, 6.2.1, 6.2.2, 6.2.3, 6.2.4, 6.3, 6.4.1, 6.4.2, 6.4.3, 6.5, 6.6.2]

Chapter-8 [8.1, 8.2.1 (Inverse Transform method, general method in continuous, discrete and mixed cases, mathematical validity, intuitive appeal and general advantages and disadvantages for all three cases), 8.2.2, 8.2.3, 8.2.4, 8.2.6, 8.3 (uniform, exponential, m-erlang, Normal, Lognormal, triangular, Bernoulli, Discrete Uniform, Arbitrary Discrete, Binomial, Geometric, Negative Bionomial, Poisson)]

The following are worth noting:

(1) The Group Three is the most important group. It is possible to answer the full exam or six questions by studying only this group.

(2) From the feedback and survey conducted in the last week, it appears to me that many students find chapter-8 difficult to study. The correct way to think or approach this chapter is to consider there are a few general or generic methods of generating random variates. At first, we should learn these general methods. Then, we are applying them in specific cases to derive algorithms for a certain probability distribution. Our focus should be on learning general methods (and how to get specific methods by putting these general methods to application). In contrast, our focus in chapter six was on learning a number of probability distributions and properties.

(3) This is also related to feedback and survey. Many students like chapter-1 because they notice how it helps us to run a simulation. In contrast, the topics of chapter 4, 6, 8 do not seem to be connected to the idea of running a simulation. Actually, generating random values or variates is like running a simulation.

For example, let us consider that we are modeling a real world case of water level in a river or a lake on a certain calendar date (or number of vehicles in a road crossing on a certain hour). We use a random variable X to represent the water level (chapter-4) and then select a probability distribution Y for it (chapter-6). So, Now we have X ~ Y (X is distributed as Y). Finally, we derive or obtain an algorithm to generate random variates from Y (chapter-8). In this way, we are generating artificial values of X, or we are simulating X.