END3032 – SYSTEMS SIMULATION

THE NEWS DEALER'S PROBLEM

Laboratory Practice #2.2

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The News Dealer's Problem (Example 2.3)[1]

The newsstand buys the papers for 33 cents each and sells them for 50 cents each. Newspapers not sold at the end of the day are sold as scrap for 5 cents each. Newspapers can be purchased in bundles of 10. Thus, the newsstand can buy 40, 50, and so on. There are three types of newsdays: "good", "fair" and "poor''; they have the probabilities 0.35, 0.45 and 0.20, respectively as shown in Table 1. The distribution of newspapers demanded on each of these days is given, in Table 2. The problem is to compute the optimal number of papers the newsstand should purchase. This will be accomplished by simulating demands for 20 days and recording profits from sales each day.

Table 1. Distribution of Type of Newsdays

Type	Prob.	Cum. Prob.
Good	0.35	0.35
Fair	0.45	0.80
Poor	0.20	1.00

Table 2. Distribution of Newspapers Demanded per Day

Demand	Good		Fair		Poor	
	Prob.	Cum. Prob.	Prob.	Cum. Prob.	Prob.	Cum. Prob.
40	0.03	0.03	0.10	0.10	0.44	0.44
50	0.05	0.08	0.18	0.28	0.22	0.66
60	0.15	0.23	0.40	0.68	0.16	0.82
70	0.20	0.43	0.20	0.88	0.12	0.94
80	0.35	0.78	0.08	0.96	0.06	1.00
90	0.15	0.93	0.04	1.00	0.00	1.00
100	0.07	1.00	0.00	1.00	0.00	1.00

Please make sure that you use common random numbers for different amounts of purchase (i.e., 40,50, etc.)!

[1] Banks, J., Carson II, J.S., Nelson, B.L., Nicol, D.M. (2005). Discrete-event system simulation. Pearson Prentice Hall.