Operations Research

Homework 9

Due in class Tuesday, November 28, 2017

1. An airplane manufacturer is contracted to produce a small number of a particular type of airplane during the coming years. The manufacturer will need to decide each year whether to set up a production run with a fixed set-up cost of EUR 1 000 000 per run. During each production run, the manufacturer can make at most 6 airplanes. If an airplane is not delivered during the year it is produced, it will incur a holding cost of EUR 100 000 per year. The number of airplanes required are $r_1 = 1$, $r_2 = 6$, $r_3 = 2$, and $r_4 = 3$ during each of the years.

   Which production schedule(s) minimize the total cost for setup and storage?

2. A chip manufacturer produces CPUs that are so complex that it is impossible to test every single function of the CPU in a production run, but it is possible to design a test that finds a defect with probability $p < 1$. Moreover, $\frac{9}{10}$ of all CPUs that are produced are defective. What value of p is needed to guarantee that 99% of all CPUs shipped work?