Supplements to Homework 1

1. In controlled prefix expansion with variable stride, what is the minimum number of trie nodes we need so that no more than two memory accesses are needed to perform an IP lookup (i.e., longest prefix match) against the rule set below. Please show some dynamic programming steps if you would like to receive partial credits.

```
P1 = 0000*
P2 = 0001*
P3 = 0010*
P4 = 001*
P5 = 01*
P6 = 1*
P7 = 110*
P8 = 111*
```

2. Please draw the grid of tries (destination trie first and with switch pointers) that correspond to the two-dimensional packet classification rule set shown in Table 1.

3. Given the rule set shown in Fig. 12.3 (on page 275 of the textbook), in the equivalenced cross-producting scheme for packet classification, how many equivalent classes are formed from the partial cross product of source IP and source port? Please show steps for partial credits.

Rule	Destination	Source
R_1	01*	0*
R_2	01*	11*
R_3	10*	1*
R_4	0*	01*
R_5	0*	10*
R_6	*	00*
R_7	*	11*

Table 1: A rule set with seven destination-source rules