CSC 226
Lab 10
Summer 2019

1. Draw the KMP DFA for the following pattern strings.

   a. AACAAAB
   b. ABABABAB

```
dfa[pat.charAt(0)][0] = 1;
for (int X = 0, j = 1; j < M; j++)
{  // Compute dfa[][j].
   for (int c = 0; c < R; c++)
      dfa[c][j] = dfa[c][X];
   dfa[pat.charAt(j)][j] = j+1;

   X = dfa[pat.charAt(j)][X];
}
```

Figure 1: Constructing the DFA for KMP substring search

2.

   A) In the Java code above, what are the possible values of M and R for the two substrings of Question 1.
   B) What are the values of **dfa[c][0]** where **c** !=**pat.charAt(0)**.

3. Write a Java program to verify that your answers for Question 1 are correct. (Use the above Java code.)

4. Write a Java program to find the first occurrences of the above patterns in the files test1.txt and test2.txt.