Exercises: Substring Search

> **Warning:** The hard deadline has passed. You can attempt it, but **you will not get credit for it**. You are welcome to try it as a learning exercise.

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To specify an array or sequence of values in an answer, you must separate the values by a single space character (with no punctuation
and with no leading or trailing whitespace). For example, if the question asks for the first ten powers of two (starting at 1), the o
nly accepted answer is:

1 2 4 8 16 32 64 128 256 512

If you wish to discuss a particular question and answer in the forums, please post the entire question and answer, including the seed
(which is used by the course staff to uniquely identify the question) and the explanation (which contains the correct answer).
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☐ **In accordance with the Coursera Honor Code, I (Atul Gupta) certify that the answers here are my own work.**

Question 1

```
(seed = 589387)
Consider the Knuth-Morris-Pratt DFA for the following string of length 8:

    A C A C A B A A

What is sequence of values in the row of the DFA corresponding to
the character 'C'? For reference, here is the partially-completed DFA:

      0  1  2  3  4  5  6  7
     ----------------------
   A  1  1  3  1  5  1  7  8
   B  0  0  0  0  0  6  0  0
   C  ?  ?  ?  ?  ?  ?  ?  ?
```

Question 2

```
(seed = 924172)
Suppose that you run the Boyer-Moore algorithm (using only the mismatched character heuristic)
to search for the pattern

        I T E L L Y O

in the text

        I T S M Y D U T Y T O T E L L Y O U A N D I T E L L Y O U T

What is the sequence of characters in the text that is compared with the
last character in the pattern?
```

Question 3

```
(seed = 91008)
What is the Rabin-Karp hash function of text[5..12] over the decimal alphabet with R = 10
and using the modulus Q = 71?

      j     0  1  2  3  4  5  6  7  8  9 10 11 12 13 14 15 16 17 18 19
   ----------------------------------------------------------------
   text[j]  9  9  8  5  1  4  8  ?  ?  ?  8  6  5  5  2  5  6  9  3  0

The digits labeled with a ? are suppressed. Assume that the hash function of text[4..11]
is 52 and that you have precomputed 10000000 (mod 71) = 5.
```

Submit Answers   Save Answers

You cannot submit your work until you agree to the Honor Code. Thanks!