COS126 Regular Expressions, DFAs (Booksie §7.2, 7.3)

See also the online chapter in the lecture page Reading column.

Part 1
Consider the regular expression 
\[((C|D|M|N|P|T)A)\]*


- What two country names can be generated?

Part 2 — RElay Race
Write regular expressions for the following languages.

1. all binary strings
2. all non-empty binary strings
3. all binary strings beginning and ending with 1
4. all binary strings ending with 00 (divisible by 4)
5. all binary strings with at least three 1s

Part 3
What does \((0*10*10*)*\) generate? (Describe this set of strings in English)

Bonus
Hard bonus: can we generate set of all binary integers divisible by 3?
Part 4

Is 01101 accepted by this DFA? Is 11?

What is an English description for the set of all strings it accepts?

(Optional) What is a Regular Expression description for the set of all strings it accepts?

Part 5

Write 5 DFAs that accept the 5 languages from Part 2:

1. all binary strings

2. all non-empty binary strings

3. all binary strings beginning and ending with 1

4. all binary strings ending with 00 (divisible by 4)

5. all binary strings with at least three 1s

Bonus

Write a DFA that accepts the set of all Java double literals. Use the RE

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