CSC236 Fall 2016
More Practice 12

Let's number the four questions of the last tutorial, Examples 106 to 109.

- **Example 110.** By using the pumping lemma show that the language defined in Example 89, here, is not regular.

- **Example 111.** By using the pumping lemma show that the language defined in Example 91, here, is not regular.

- **Example 112.** Although NFA, DFA, and RE are equivalent, some regular languages can be defined by one means easier than by the other means. Here is an interesting example, stated by Prof. Heap. Drawing an NFA or DFA for the language over $\Sigma = \{a, b\}$ with odd length and an even number of a's is easy, but writing a regular expression for that is less obvious. You may want to give it a try.

- **Example 113 (programming project for your holidays).** Write a program to input a regular expression and outputs a corresponding pseudo code. The following figure may help.

> • Which one is correct, assume $\Sigma = \{0,1\}$
>
> **A)** 0^*+1^* is analogous to the following algorithm
>   **if** (you choose):
>   **while** (you wish): **print 0**
>   **else**: **while** (you wish): **print 1**
> **B)** $(0+1)^*$ is analogous to the following algorithm
>   **while** (you wish):
>   **if** (you choose): **print 0**
>   **else: print 1**
> **C)** both A and B
> **D)** everything B can generate, A can too

- **Example 114 (programming project for your holidays).** Phase 1) write a program to input a regular expression and outputs a corresponding NFA. Phase 2) the program should output a corresponding DFA.