CSCI 4230 – Assignment 1

1. Write regular expressions for the following. The alphabet in question consists of **a**, **b**, and **c**.
2. Strings that start with **a** followed by zero or more occurrences of **b**.

Answer: “^ab\*”

// side note: I was wondering if something like this would also work? “^a(b)\*$”

1. Strings that start with **a** followed by zero or more occurrences of either **b** or **c**.

Answer: “^a(b|c)\*”

1. Strings that start with **a** followed by one or more occurrences of **b**.

Answer: “^ab+”

// side note: would this work? “^a(b)+$”

1. Strings that have an even number of characters.

Answer: “^\d\*[02468]$”

1. Strings that have an odd number of characters.

Answer: “^\d\*[13579]$”

1. Write a regular expression for a string literal defined as follows:

* Starts with a “.
* Ends with a “.
* Between these two characters a string literal may contain any number of characters that are not a “ or a \. You can represent such a character with the symbol **normal\_char**, which you do not have to define separately.
* In addition, a string literal can contain any of the following escape codes: \n, \”, and \\.
* Examples include “”, “Hello”, and “, Hello, World! \n”.

Answer: “(normal\_char|\n|\|\\)\*”

1. Write a regular expression for an identifier defined as follows:

* Must start with a letter or a \_.
* After the first character, there may be any number of digits, letters, or underscores.
* Use [0-9] to represent a single digit and [a-zA-Z] to represent a single letter.
* Examples include x, MyVar, my\_var, and my\_var3.

Answer: “[\_a-zA-Z][\_a-zA-Z0-9]”

1. Write a regular expression for a floating-point number defined as follows:

* A sequence of digits followed by a . followed by a sequence of digits.
* The sequence before the . may be empty and can only start with 0 if it is the only digit in the sequence.
* The sequence after the . must contain at least one digit.
* Examples include 0.5, 3.141592, 256.0, and .142857.

Answer: “[+-]?([0-9]\*[.])?[0-9]+”