

CSCI 4230 – Assignment 1

1. Write regular expressions for the following. The alphabet in question consists of **a**, **b**, and **c**.
 - (a) Strings that start with **a** followed by zero or more occurrences of **b**.
 - (b) Strings that start with **a** followed by zero or more occurrences of either **b** or **c**.
 - (c) Strings that start with **a** followed by one or more occurrences of **b**.
 - (d) Strings that have an even number of characters.
 - (e) Strings that have an odd number of characters.
2. 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"`.
3. 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`.
4. 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`.