STAT2005 Programming Languages for Statistics
Exercise for Chapter 10

1. For each of the following expressions, determine the order of operations and the results.

(a) `2 ** 5 >< 3 <> 4 * 6`

(b) `2 = ^1 | 3 | 4 & 5 >< 6`

(c) `3 ** 3 * 3 * 3 ** 3 ** 3 + 3 * 3 | 3`

(d) `1 < 2 + 3 > 4 - 5 < 6`

(e) `^^3 * 4 / 2 = ^^4 * 3 / 2`

2. Write SAS statement(s) for each of the following tasks:

(a) Using IF-THEN-ELSE statements, set A to be the number of days in `MONTH`, a numeric variable for month, e.g., If `MONTH = 1`, `A = 31`. Assume that February always has 28 days. Note that `MONTH` is an integer between 1 to 12, inclusive.

(b) Using SELECT statements, set B to be the number of days in `MONTH`, a numeric variable for month, e.g., If `MONTH = 1`, `B = 31`. Assume that February always has 28 days. Note that `MONTH` is an integer between 1 to 12, inclusive.

3. Consider the text file `ex10_strings.txt`.

A string is a sequence of characters. In the file, each line consists of a string containing only capital letters (`'A'` to `'Z'`) and/or digits (`'0'` to `'9'`). The length of the string is between 1 to 50. Write SAS statement(s) to store the strings into a dataset called `q3`, read strings into a variable called S and modify it according to the conditions below:

- if $6 \leq \text{length of } S \leq 10$, set S to first five characters in S;
- if $\text{length of } S > 10$ and there exists digits (`'0'` to `'9'`) in S, remove the digit one by one beginning from the left hand side of the string until $\text{length of } S \leq 10$ or there is no more digits in S;
- otherwise, do nothing on S.

For example, if S $=$`'SYL3RN2IO4KYG46C0I'`, S becomes `'SYLRNIOKYGCI'` after the modification.