Assignment 01

Out: 03/08
Due: 03/22

Instructions

Collaboration:

Collaboration on solving the assignment is allowed, after you have thought about the problem sets on your own. It is also OK to get clarification (but not solutions) from online resources, again after you have thought about the problem sets on your own. There are two requirements:

- Cite your collaborators fully and completely (e.g., "XXX explained to me what is asked in problem set 3"). Or cite online resources (e.g., "I got inspired by reading XXX") that helped you.
- Write your scripts and report independently - the scripts and report must come from you only.

Late Submission:

Late submissions will not receive full credit. Half credit will be awarded to correct solutions submitted within 24 hours of the original deadline. Otherwise, no credit will be given.

Submitting your assignment:

Submit your scripts and report via mail (pudc2020@mail.sustech.edu.cn) .

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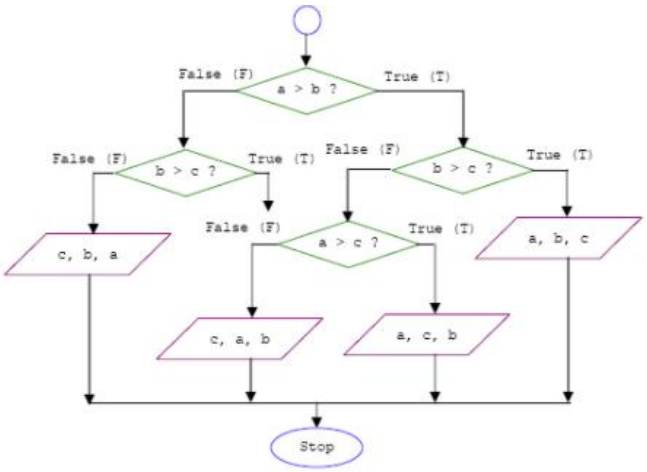
1. [10 points] [RS] *The Statistical Sleuth: A Course in Methods of Data Analysis*
   P23-24 1.7 EXERCISES 8.

2. [10 points] [RS] *The Statistical Sleuth: A Course in Methods of Data Analysis*
   P23-24 1.7 EXERCISES 17.

3. [10 points] [RS] *The Statistical Sleuth: A Course in Methods of Data Analysis*
   P23-24 1.7 EXERCISES 18.

4. [10 points] Write a function Print_values with arguments a, b, and c to reflect the following flowchart 1. Here the red-ish parallelogram operator is to print values in the given order. Report your output with some random a, b, and c values.



5. [20 points] Matrix multiplication

(1)Make two matrices M1 (5 rows and 10 columns) and M2 (10 rows and 5 columns); both are filled with random integers from 0 and 50.

(2) Write a function Matrix_multip to do matrix multiplication, i.e., M1 * M2. Here you are only allowed to use for loop, * operator, and + operator. Verify your result with the built-in %*% operator.

6. [20 points] r has many own data sets. For example, airquality data sets. It contains the daily air quality of New York from May to September 1973.

(1)Check the head (first 6 lines) and the end of (last 6 lines) the dataset. Then,do some simple statistical checks with airquality$Wind (Min,Max, Range, mean, summary);

(2)Plot the time series of temperature(Temp), wind speed(Wind) and ozone concentration(Ozone);

(3)Explore the relationship between temperature, wind speed and ozone concentration.

(4)Compute the monthly mean of temperature, wind speed and ozone concentration.

7. [20 points] Explore a data set

Please select another data set in R (https://www.jianshu.com/p/6cf05fb4e60d), design 3 questions and give answers.