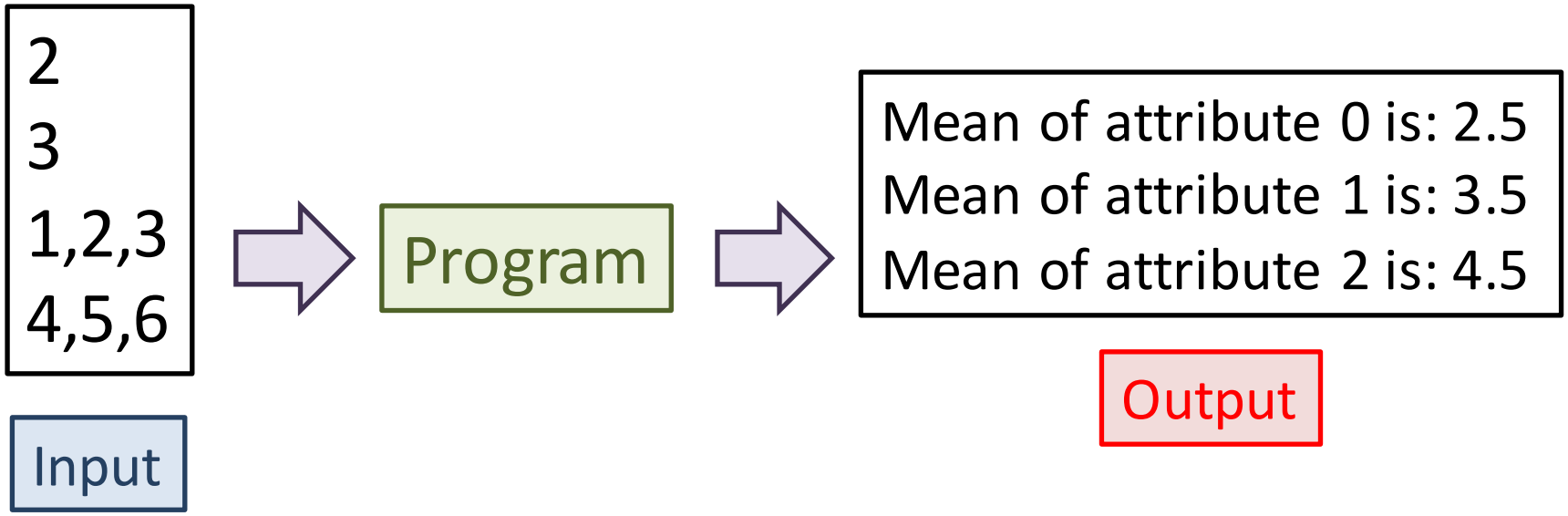
CSCI4430 Data Communication and Computer Networks

Tutorial 3 – Hand on Lab on Multi-Thread Programming

Complete a Multi-Thread Program

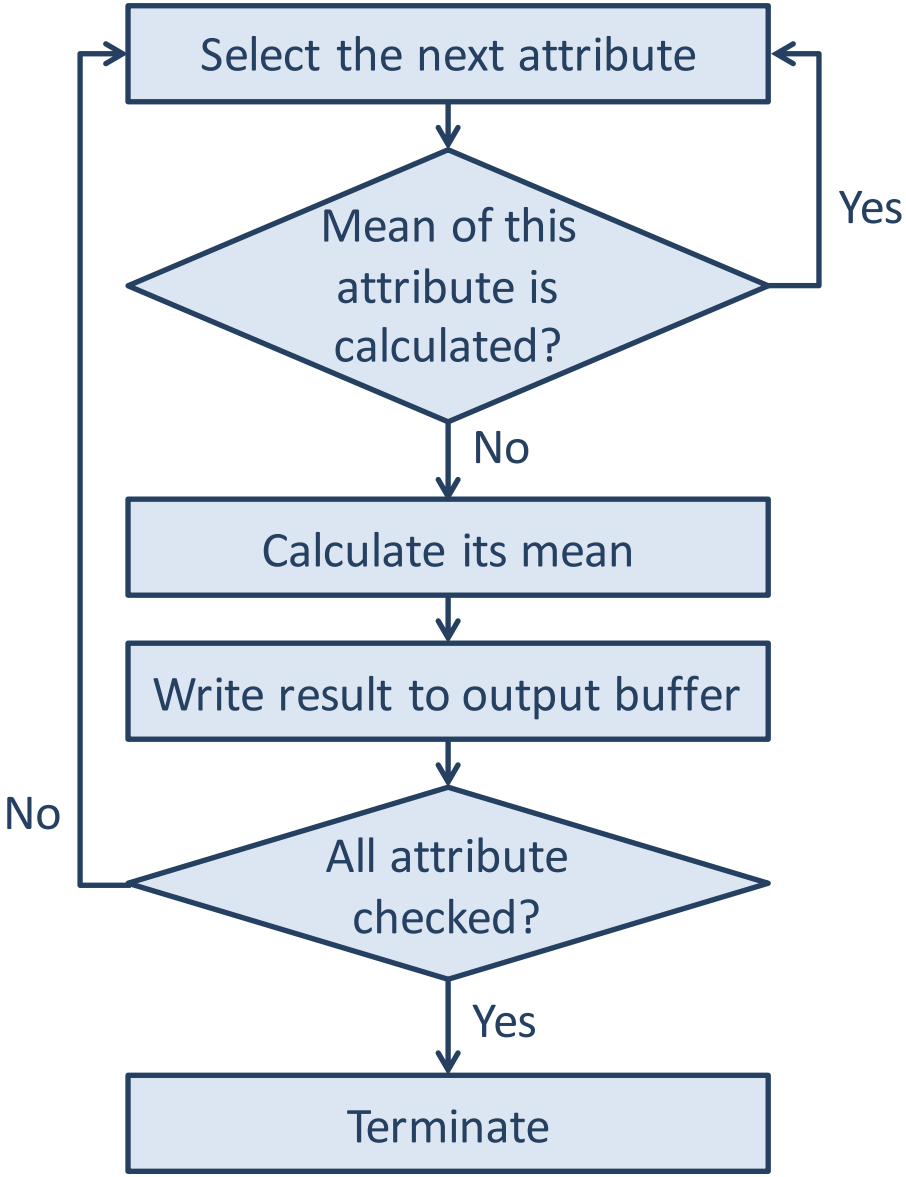
- Program Definition:
- Input: A dataset.
  - 1st Row: Number of sample
  - 2nd Row: Number of attributes
  - 3rd Row and so on: Each row represents a sample, the value of every attribute is delimited by a comma ","
- Output:
  - The mean of every attribute over every sample

Complete a Multi-Thread Program



Complete a Multi-Thread Program

Execution Flow on thread



Note: The thread must be joined to ensure that the mean every attribute is properly calculated

Complete a Multi-Thread Program

Variable	Meaning
sample_num	Number of samples
attribute_num	Number of attributes
data	It stores the dataset. 1st Index: The ID of sample. 2nd Index: The ID of attribute. e.g.: data[i][j] is referring to jth attribute of ith sample
evaluated	• It stores whether the mean of the attribute is already calculated. (Acting as a Boolean variable) • It acts as a mean of thread communication
result	Output buffer of the mean of every attributes

Complete a Multi-Thread Program

To-do task:

1. Add a pthread mutex lock for variable “evaluated”
2. Finish the definition of the thread argument struct
3. Complete the thread function
4. Add statement for creating the threads
5. Add statement to join threads in the main thread, to ensure that every thread is terminated before printing the results