CS618: Assignment 6

Total Marks: 100

Due on: 11th April, 2015, 11:30pm

This assignment is to help understand the basics of *VA-file*.

Implement a d-dimensional *VA-file*. The space is $[0, 1]^d$.

Enable it to handle point queries, range queries and kNN queries. (Insertions and deletions may be ignored.)

The configuration for the VA-file must be read from `vafile.config`.
The first line contains a single value which is the number of bits per dimension. The second line mentions the dimensionality of the space. The third line denotes the disk page size in *bytes* while the fourth line indicates the amount of main memory available for the program in *GB*.

Use the files `assgn6_data_dist.txt` to inject the points where *dist* is either *unif* or *exp*.

Use the file `assgn6_querysample_dist.txt` to read the queries. The queries have the following formats:

Operation	Code	Details	
Point query	1	Query point	
Range query	2	Query center	Range
kNN query	3	Query center	Number of nearest neighbors

Ensure that the implementation is truly disk-based and *not* simulated.

Enable the program to output timing results string from the reading of a query to solving it. Do *not* include the time to print it.

Report the following times for both the structures and for each type of operation: (i) minimum, (ii) maximum, (iii) average, (iv) standard deviation.

Compare the implementation with a flat linear array.
Report the times for the linear array as well.

What do you conclude?

Submit the program and the answers through the submission portal only. You must name your submission `studentno_assgn6.zip`. The student numbers (which are *not* the roll numbers) are 2-digit codes and are available from the course website.

We will evaluate the program by running a query file with the same format as the sample one. Marks will be deducted for wrong answers.