Assignment

Deadline: 1st November 11.59pm

Instructions:

- You may use any programming language.
- Copying code from others (or from the internet) is strictly prohibited. If found copying, all those involved in copying will be awarded 0 mark. (and possibly a one level reduction in final grade)
- Submissions after the deadline will not be accepted.
- The code should take inputs from a file in the given format described below

Problem

Arrays can be used to simulate the physical data stored in disk. Consider a table shown below stored as an array of structures:

	0	1	2	…	…	n
id	14	23	1	…	…	2
Name	Alice	Jerry	Bob			Tom

Note that the *id* and *Name* are the two attributes of the table. The physical address of a data record is given by the array index. For Example, the address of the person with id=1 is 2.

The input to the program is given in a text file. The first line is the order of the (B/B+) Tree. Next lines are the data as id and name in each row. An example input file is given here.
(http://cslab.org/static/dbms/data.txt)

Q1. Implement a B Tree as an index over the *id* field. It should read the given input file, create the array and then create the appropriate B Tree based on that array. Your program should support the following operations:

a. Query for the name of a person with a given id. if found, print the name as well as the nodes visited in order. Otherwise print 'Not found'. (This input can be taken at runtime)
b. Insert a new record ({id, name} pair) to the end of the array. (make sure the id is unique). Update the index appropriately. Print the search path for the newly inserted id as in (a)
c. Delete a record from the B Tree given the id. (You need not have to change the array. Just the storage space for that record is unused now).

Q2. Implement a B+ Tree with the same operations as (a) to (c). Additionally you should support

d. Range Queries. Eg. Print the names of all students with 3<= id <= 10. You should take the lower range and upper range as input at runtime and print all the names of people with ids in that range.