Ogha Research LLP

Instructions:

1. Provide complete code for all of these questions. Please explain your algorithm with the help of examples values/comments.
2. Create makefile and/or instructions to compile and run the solutions.
3. State clearly in your solution if you have taken any assumptions.
4. You can send your query to eval@ogha-research.com if any of the problem statement is not clear.
5. Please send your source code files with Makefiles and/or instructions to eval@ogha-research.com
6. When you start the test please send an email with the subject “Started” to eval@ogha-research.com.

1. You are given a list of integers and must find the nearest pair that sum to a given target. For instance, given the list (1 5 3 6 4 2), if the target is 7, there are three pairs with the required sum, (1 6), (5 2) and (3 4), but pair (1 6) has two intervening numbers, pair (5 2) has three intervening numbers, and pair (3 4) has only one intervening number, so (3 4) is the nearest pair.

2. Consider a text file that has millions of records and has the following properties:

   *) Each line has one record on it.

   *) Each record has comma separated values in the following format :-
   Type,symbol,price,quantity,expirydate,strikeprice,amendtime,id,parentid

   *) A record in the file can be uniquely identified by the "id".

   *) The type field can have two values T and P, where T represents the parent and P represents the child respectively.

   *) A record R1 is the child of another record R2, if the type of R1 is P and the parentid of R1 equals the id of R2.

Sample file:

T,ICICIBANK,1000,100,20121210,120,20121209103030,1234,0
T,AXISBANK,1000,100,20121210,120,20121209103031,1235,0
T,SBIBANK,1000,100,20121210,120,20121209103032,1236,0
P,ICICIBANK,1100,100,20121210,120,20121209103030,1237,1234
P,AXISBANK,1000,100,20121210,120,20121209103031,1238,1235
T,ICICIBANK,1000,100,20121210,120,20121209103035,1239,0
T,.CITIBANK,1000,101,20121210,120,20121209103036,1240,0
P,ICICIBANK,1100,100,20121210,120,20121209103030,1241,1234
P,ICICIBANK,1100,100,20121210,120,20121209103035,1242,1239

Write an algorithm that takes a file path and an integer X as arguments and splits the file into multiple files such that each smaller file contains a minimum of X number of records such that all the children of a record will be in the same file as the parent record.
eg:
Sample file above is split into files containing minimum two rows each,
then records -
T,ICICIBANK,1000,100,20121210,120,20121209103030,1234,0
P,ICICIBANK,1100,100,20121210,120,20121209103030,1237,1234
P,ICICIBANK,1100,100,20121210,120,20121209103030,1241,1234
should be in one file

3. Design and implement a Version-Queue. A Version-Queue maintains a version number along with normal Queue functionality. Every operation[Enqueue/Dequeue] on the Queue increments its version.
   Implement the following functions:
   1. Enqueue - appends an element at the end of the queue.
   2. Dequeue - returns the front element of the queue.
   3. Print - it takes a version number as input and prints the elements of the queue of the given version. The version number input can also be an old/historical version number. E.g. if the current version number of the queue is 7 and the input to this function is 5, then it should print the elements of the queue when its version number was 5.

   Assume the elements of the queue as int for simplicity purpose.
   You should not use any STL containers or algorithms for building this solution.