Spring 2016, CS122A, UC Irvine, Quiz 9, Prof. Chen Li

Student ID:_____ Name:_____ Score (out of 19):_____

1. A brokerage firm StockTrade has the following relation for security trades in the year 2015:

   Trades(Stock_ID CHAR(3), Trade_Date DATE, Open_Price REAL, Close_Price REAL)

   The primary key is (Stock_ID, Trade_Date). For each of the following queries, identify:
   (a) a ***single column*** on which an index can make the query faster;
   (b) whether to use a B+ Tree or Hash Table for the index;
   (c) whether a clustered index could make the query faster than a non-clustered index;
   (d) if the query has an index-only plan.

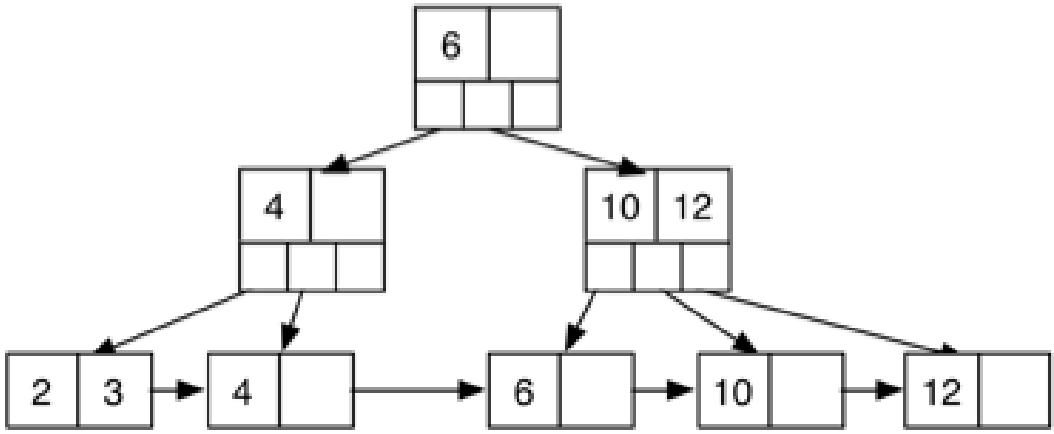
   I. SELECT * FROM Trades WHERE Stock_ID = 'A12';
      (a) _____
      (b) _____
      (c) _____
      (d) _____

   II. SELECT COUNT(*) FROM Trades WHERE Open_Price >10 AND Open_Price < 20;
      (a) _____
      (b) _____
      (c) _____
      (d) _____

   III. SELECT Stock_ID, COUNT(*) FROM Trades GROUP BY Stock_ID;
      (a) _____
      (b) _____
      (c) _____
      (d) _____

   IV. SELECT Stock_ID, AVG(Open_Price) FROM Trades GROUP BY Stock_ID;
      (a) _____
      (b) _____
      (c) _____
      (d) _____

2. Consider the following B+ tree on the primary key of a relation.



a. What is the height of the tree?

b. How many pages do we need to read for the range query [3, 10] (inclusive)?

c. How many pages do we need to read for the range query [3, 7] (inclusive)?