CS579
Homework Assignment 6

Due: 11/21

Problem 1 (10 points). Answer the following questions.

(1). Can we build two primary indexes on a file? Why?
(2). Can we build two clustering indexes on a file? Why?
(3). Can we build two secondary indexes on a file? Why?

Here, a *file* refers to a data file that stores a relational table

Problem 2 (10 points). This problem is a small experiment that illustrates an effect of indexes on query performance. Before you start this problem, you must do a preparation described in the " *homework6-preparation.docx*" file.

(1). Start MySQL Workbench (or any other interface you are using) and enter the following query in the query window (do not execute it):

```
select *
from table_A
where b = 5000;
```

At the top of the query window, there is a horizontal bar with various icons, a part of which is shown below:

Click the icon highlighted in green (see above). This icon is usually referred to as "EXPLAIN plan icon or "EXPLAIN icon." Capture the screenshot of the visual execution plan and record the query cost, which is shown on top of the execution plan.

(2). Create an index on the column *b* of *table_A* with the following sql statement:

```
create unique index table_A_b_ix on table_A(b);
```

Enter the same query again and the click the EXPLAIN plan icon again. Capture the screenshot of the visual execution plan and record the query cost, which is shown on top of the execution plan.

(3). Compare the query cost from (1) and the query cost from (2). What conclusion can you draw?

(4). Enter the following query in the query window (do not execute it):

```
select *
from table_B
where y like 'abc%';
```

Click the EXPLAIN plan icon. Capture the screenshot of the visual execution plan and record the query cost, which is shown on top of the execution plan.

(5). Create an index on the column *y* of *table_B* with the following sql statement:

```
create index table_B_y_ix on table_B(y);
```

Enter the same query again and the click the EXPLAIN plan icon again. Capture the screenshot of the visual execution plan and record the query cost, which is shown on top of the execution plan.

(6). Compare the query cost from (4) and the query cost from (5). What conclusion can you draw?

Include all your answers in a single file and name it *LastName_FirstName_Hw4.doc* or *LastName_FirstName_Hw4.pdf*, and submit it on Blackboard.