NAME_____

ID_____

<u>**Question 1**</u> **(5 Points for grads, 15 points for undergrads)**

It is given that the following data is stored in the disk in **row-major** order. Assume every attribute takes 1 bytes.

| ColumnA | ColumnB | ColumnC | ColumnD |
|---------|---------|---------|---------|
| 14 | 100 | 2 | 1 |
| 23 | 9 | 3 | 1 |
| 38 | 54 | 4 | 1 |
| 47 | 22 | 5 | 1 |
| 54 | 56 | 6 | 1 |
| 63 | 0 | 7 | 1 |
| 77 | 7 | 8 | 1 |
| 82 | 27 | 9 | 1 |

1.1 Create a Dense index of ColumnB.

1.2 Create Sparse index on ColumnA where every 2nd key is stored.

1.3 Create Sparse index on ColumnB where every 2nd key is stored.

**Question 2** **(5 Points for grads, 15 points for undergrads)**

It is given that the following data is stored in the disk in **column-major** order. Assume every attribute takes 1 bytes.

| ColumnA | ColumnB | ColumnC | ColumnD |
|---------|---------|---------|---------|
| 14 | 100 | 2 | 1 |
| 23 | 9 | 3 | 1 |
| 38 | 54 | 4 | 1 |
| 47 | 22 | 5 | 1 |
| 54 | 56 | 6 | 1 |
| 63 | 0 | 7 | 1 |
| 77 | 7 | 8 | 1 |
| 82 | 27 | 9 | 1 |

2.1 Create a Dense index of ColumnB.

2.2 Create Sparse index on ColumnA where every 2nd key is stored.

2.3 Create Sparse index on ColumnB where every 2nd key is stored.