Assignment 4

Index Tuning – Selection

Database Tuning

New Group 8
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Notes

- Do not forget to run `ANALYZE tablename` after creating or changing a table.
- Use `EXPLAIN ANALYZE` for the query plans that you display in the report.

Experimental Setup

How do you send the queries to the database? How do you measure the execution time for a sequence of queries?

[Your answer goes here ...]

Clustering B$^+$ Tree Index

Point Query Repeat the following query multiple times with different conditions for `pubID`.

```
SELECT * FROM Publ WHERE pubID = ...
```

Which conditions did you use?

[Your answer goes here ...]

Show the runtime results and compute the throughput.

[Your answer goes here ...]

Query plan (for one of the queries):

```
[Your query plan goes here ...]
```

Multipoint Query vs. Multipoint Query IN-Predicate – Low Selectivity Repeat the following query multiple times with different conditions for `booktitle`.

```
SELECT * FROM Publ WHERE booktitle = ...
```

```
SELECT * FROM Publ WHERE pubID IN (...)
```

Which conditions did you use?

[Your answer goes here ...]

Show the runtime results and compute the throughput.

[Your answer goes here ...]

Query plan (for one of the queries):

```
[Your query plan goes here ...]
```

Multipoint Query – High Selectivity Repeat the following query multiple times with different conditions for `year`.

```
SELECT * FROM Publ WHERE year = ...
```

Which conditions did you use?

[Your answer goes here ...]

Show the runtime results and compute the throughput.

[Your answer goes here ...]

Query plan (for one of the queries):

```
[Your query plan goes here ...]
```

Non-Clustering B^+ Tree Index

Note: Make sure the data is not physically ordered by the indexed attributes due to the clustering index that you created before.

Point Query Repeat the following query multiple times with different conditions for `pubID`.

```
SELECT * FROM Publ WHERE pubID = ...
```

Which conditions did you use?

[Your answer goes here ...]

Show the runtime results and compute the throughput.

[Your answer goes here ...]

Query plan (for one of the queries):

```
[Your query plan goes here ...]
```

Multipoint Query vs. Multipoint Query IN-Predicate – Low Selectivity Repeat the following query multiple times with different conditions for `booktitle`.

```
SELECT * FROM Publ WHERE booktitle = ...
```

```
SELECT * FROM Publ WHERE pubID IN (...)
```

Which conditions did you use?

[Your answer goes here ...]

Show the runtime results and compute the throughput.

[Your answer goes here ...]

Query plan (for one of the queries):

```
[Your query plan goes here ...]
```

Multipoint Query – High Selectivity Repeat the following query multiple times with different conditions for `year`.

```
SELECT * FROM Publ WHERE year = ...
```

Which conditions did you use?

[Your answer goes here ...]

Show the runtime results and compute the throughput.

[Your answer goes here ...]

Query plan (for one of the queries):

```
[Your query plan goes here ...]
```

Non-Clustering Hash Index

Note: Make sure the data is not physically ordered by the indexed attributes due to the clustering index that you created before.

Point Query Repeat the following query multiple times with different conditions for `pubID`.

```
SELECT * FROM Publ WHERE pubID = ...
```

Which conditions did you use?

[Your answer goes here ...]

Show the runtime results and compute the throughput.

[Your answer goes here ...]

Query plan (for one of the queries):

```
[Your query plan goes here ...]
```

Multipoint Query vs. Multipoint Query IN-Predicate – Low Selectivity Repeat the following query multiple times with different conditions for `booktitle`.

```
SELECT * FROM Publ WHERE booktitle = ...
```

```
SELECT * FROM Publ WHERE pubID IN (...)
```

Which conditions did you use?

[Your answer goes here ...]

Show the runtime results and compute the throughput.

[Your answer goes here ...]

Query plan (for one of the queries):

```
[Your query plan goes here ...]
```

Multipoint Query – High Selectivity Repeat the following query multiple times with different conditions for `year`.

```
SELECT * FROM Publ WHERE year = ...
```

Which conditions did you use?

[Your answer goes here ...]

Show the runtime results and compute the throughput.

[Your answer goes here ...]

Query plan (for one of the queries):

```
[Your query plan goes here ...]
```

Table Scan

Note: Make sure the data is not physically ordered by the indexed attributes due to the clustering index that you created before.

Point Query Repeat the following query multiple times with different conditions for `pubID`.

```
SELECT * FROM Publ WHERE pubID = ...
```

```
SELECT * FROM Publ WHERE pubID IN (...)
```

Which conditions did you use?

[Your answer goes here ...]

Show the runtime results and compute the throughput.

[Your answer goes here ...]

Query plan (for one of the queries):

```
[Your query plan goes here ...]
```

Multipoint Query vs. Multipoint Query IN-Predicate – Low Selectivity Repeat the following query multiple times with different conditions for `booktitle`.

```
SELECT * FROM Publ WHERE booktitle = ...
```

```
SELECT * FROM Publ WHERE pubID IN (...)
```

Which conditions did you use?

[Your answer goes here ...]

Show the runtime results and compute the throughput.

[Your answer goes here ...]

Query plan (for one of the queries):

```
[Your query plan goes here ...]
```

Multipoint Query – High Selectivity Repeat the following query multiple times with different conditions for `year`.

```
SELECT * FROM Publ WHERE year = ...
```

Which conditions did you use?

[Your answer goes here ...]

Show the runtime results and compute the throughput.

[Your answer goes here ...]

Query plan (for one of the queries):

```
[Your query plan goes here ...]
```

Discussion

Give the throughput of the query types and index types in queries/second.

	clustering	non-clust. B^+ tree	non-clust. hash	table scan
point (`pubID`)	...	...	...	...
multipoint (`booktitle`)	...	...	...	...
multipoint-IN (`pubID`)	...	...	...	...
multipoint (`year`)	...	...	...	...

Discuss the runtime results for the different index types and the table scan. Are the results expected? Why (not)?

[Your answer goes here ...]

Time Spent on this Assignment

Time in hours per person: **XXX**

References

Important: Reference your information sources!
Remove this section if you use footnotes to reference your information sources.