

DBT ASSIGNMENT-1

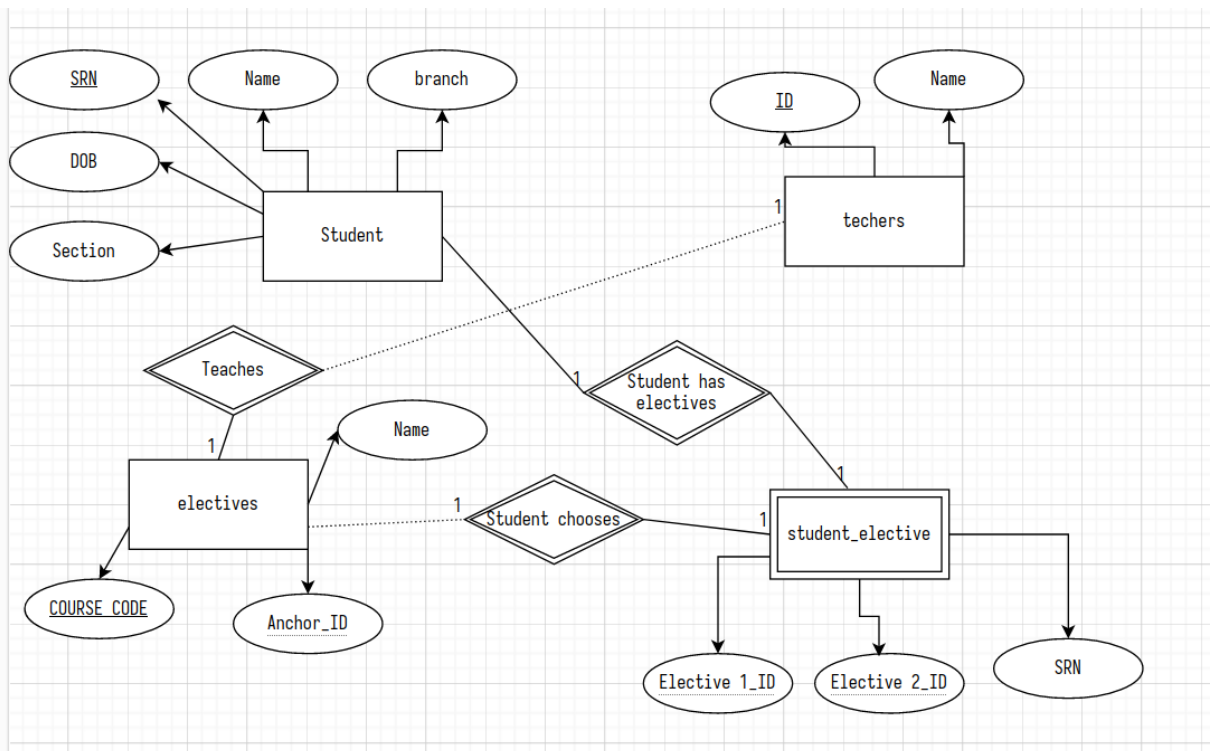
Details :



- Name : P K Navin Shrinivas
- Section : D
- SRN : PES2UG20CSS237

Section A : Creating ERD, Tables and inserting data.

- ERD :



- 4 entities are created, with 100 records each [except electives].
- 8 schemas for 4 entities are created, 4 without index and 4 with.
- CURD selecting number of lines in 2 of those tables :

```
select * from student_electives;
select * from student_electives_no_index;
```

```
645
646 select * from student_electives;
647 select * from student_electives_no_index;
648
649
650 -- Query on tables with no index
```

Results **Messages**

	SRN	first_elective	second_elective
90	PES2UG20CS133	UE20CS496	UE20CS694
91	PES2UG20CS609	UE20CS968	UE20CS694
92	PES1UG20CS335	UE20CS968	UE20CS694
93	PES1UG20CS174	UE20CS496	UE20CS759
94	PES1UG20CS659	UE20CS496	UE20CS694
95	PES2UG20CS998	UE20CS968	UE20CS759
96	PES1UG20CS592	UE20CS496	UE20CS694
97	PES2UG20CS998	UE20CS968	UE20CS759
98	PES2UG20CS458	UE20CS968	UE20CS694
99	PES1UG20CS988	UE20CS496	UE20CS694
100	PES1UG20CS592	UE20CS496	UE20CS694
	SRN	first_elective	second_elective
90	PES2UG20CS133	UE20CS496	UE20CS694
91	PES2UG20CS609	UE20CS968	UE20CS694
92	PES1UG20CS335	UE20CS968	UE20CS694
93	PES1UG20CS174	UE20CS496	UE20CS759
94	PES1UG20CS659	UE20CS496	UE20CS694
95	PES2UG20CS998	UE20CS968	UE20CS759
96	PES1UG20CS592	UE20CS496	UE20CS694
97	PES2UG20CS998	UE20CS968	UE20CS759
98	PES2UG20CS458	UE20CS968	UE20CS694
99	PES1UG20CS988	UE20CS496	UE20CS694
100	PES1UG20CS592	UE20CS496	UE20CS694

- More selecting data :

```
select * from teachers;
select * from electives;
```

040

649 `select * from teachers;`

650 `select * from electives;`

651

Results

Messages

	ID	teacher_name
90	PES89238140	George
91	PES89422355	Eleanora
92	PES90115102	Leola
93	PES92063080	Camila
94	PES93785828	Ann-marie
95	PES94730263	Henrieta
96	PES94977757	Daryle
97	PES95200546	Kathleen
98	PES95521581	Brett
99	PES98202001	Bruno
100	PES98646032	Brena

	elective_name	course_code	anchor_ID
1	DBT	UE20CS496	PES43921564
2	TDL	UE20CS694	PES58752624
3	AIWR	UE20CS759	PES58752624
4	BD	UE20CS968	PES54139359

Section B : Scan Queries on tables with (All scans will be observed)

- For comparison (table scan) :

```

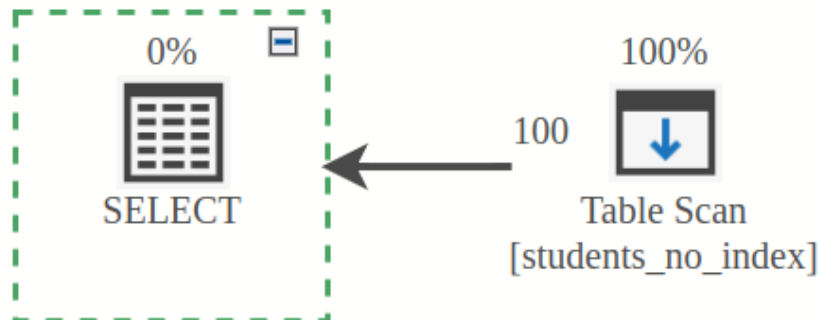
654 -- SELECT * FROM students_no_index AS s,student_electives_no_index AS se where s.
655 SELECT * FROM students_no_index;
656 -- Index scans
657 -- SELECT * FROM students;
658
659 -- C)
660
661 -- Query on tables with index
662 -- SELECT * FROM students AS s,student_electives AS se where s.SRN like 'PES2%' A
663

```

Results Messages **Query Plan** Plan Tree Top Operations

Query 1: Query cost (relative to the script): 100.00%

-- CREATE DATABASE Electives; -- USE Electives; -- DROP TABLE IF EXISTS student_electives



- IO Cost : 0.0001885 | CPU Cost : 0.0032035

- Clustered Index scan (on tables with index) :

```

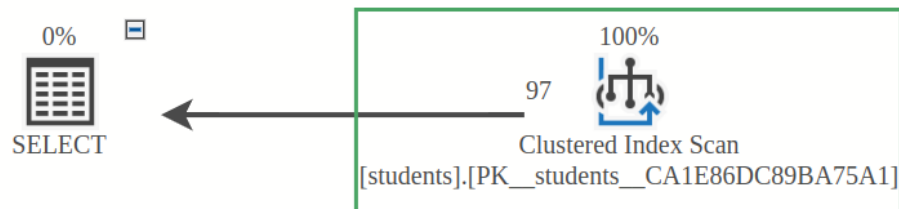
651
652 -- B)
653 -- Query on tables with no index
654 -- SELECT * FROM students_no_index AS s,student_electives_no_index AS se where s.SRN like 'PES2%' AND se.SRN=s.SRN;
655 -- Index scans
656 SELECT * FROM students;
657
658 -- C)
659
660 -- Query on tables with index
661 -- SELECT * FROM students AS s,student_electives AS se where s.SRN like 'PES2%' AND se.SRN=s.SRN;
662

```

Results Messages **Query Plan** Plan Tree Top Operations

Query 1: Query cost (relative to the script): 100.00%

-- CREATE DATABASE Electives; -- USE Electives; -- DROP TABLE IF EXISTS student_electives; -- DROP TABLE IF EXISTS electives; -- D



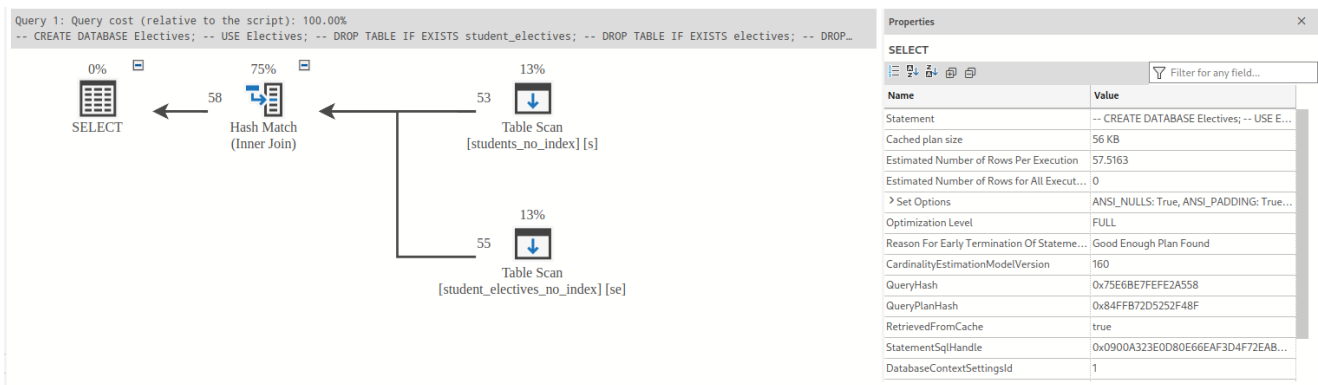
- IO cost : 0.0002637 | CPU cost : 0.003125

- The difference between the two scan are negligible as order of index doesn't help with scan!

Section C : Same Queries with index and without (Seeks can be seen here)

- A join select between two tables with no index :

```
SELECT * FROM students_no_index AS s, student_electives_no_index AS se where s.SRN \
like 'PES2%' AND se.SRN=s.SRN;
```

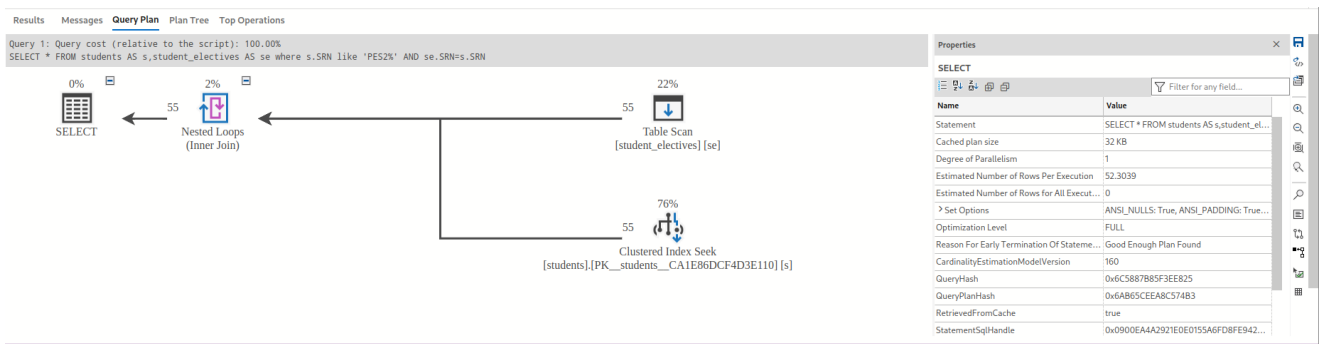


- Cost of query :

SELECT * FROM students_no_index AS s, student_electives_no_index AS se where s.SRN like 'PES2%' AND se.SRN=s.SRN								
ws	Actual Rows	Average Row Size	Actual Executions	Estimated Executi...	Estimated CPU Cost	Actual CPU Cost	Estimated IO Cost	Estimated Data Size
60	77	1	1		0.0199186	0	0	4428.7551

- CPU Cost : 0.0199186
- Query :

```
SELECT * FROM students AS s, student_electives\
AS se where s.SRN like 'PES2%' AND se.SRN=s.SRN;
```



- Cost :

Results	Messages	Query Plan	Plan Tree	Top Operations				
SELECT * FROM students AS s, student_electives AS se where s.SRN like 'PES2%' AND se.SRN=s.SRN								
Actual Rows	Average Row Size	Actual Executions	Estimated Executi...	Estimated CPU Cost	Actual CPU Cost	Estimated IO Cost	Estimated Data Size	Actual Data Siz
77		1	1	0.0002299	0	0	4027.4003	4235

- CPU Cost : 0.0002299
- We can observe that Cost of JOIN selects with Indexs are much faster than without index.