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First, we selected Person, DOCTOR\_WORKS\_IN, Patient, and Hospital as tables. Then we populated with over 1,000,000 users to each of them. Furthermore, after populating each of them we wrote our queries which can be seen below. At first, we run the queries without indexing and take a screenshot of the benchmark results. Moreover, we inserted indexing, which created a faster way to implement our queries that uses an indexing system to find the wanted data, into our queries and ran it again. Lastly, we took the screenshots of the benchmark results.

98  
99 • `SELECT COUnt(*) from deneme.Person;`  
00% 30:99

Result Grid Filter Rows: Search Export:

COUnt(*)
1050000

100 • `SELEct count(*) from deneme.Patient;`  
100% 37:100

Result Grid Filter Rows: Search Export:

count(*)
1050000

101 • `select count(*) from deneme.Hospital;`  
100% 38:101

Result Grid Filter Rows: Search Export:

count(*)
1022270

102 • `select count(*) from deneme.Doctor_WORKS_IN;`  
100% 45:102

Result Grid Filter Rows: Search Export:

count(*)
1038518

[illegible]

[illegible]

## After Indexing

```
CREATE INDEX name_ind ON Person(name);
CREATE INDEX age_ind ON Person(age);
Drop INDEX age_ind on Person;

SET profiling = 1;
SELECT *
FROM deneme.Person
JOIN deneme.Patient ON deneme.Person.SSN = deneme.Patient.Patient_SSN
WHERE deneme.Person.age > 35
LIMIT 1000000;
SHOW PROFILE;
```

	Status	Duration	
	starting	0.000049	
	Executing hook on transaction	0.000002	
	starting	0.000002	
	checking permissions	0.000002	
	checking permissions	0.000001	
	Opening tables	0.000073	
	init	0.000002	
	System lock	0.000014	
	optimizing	0.000012	
	statistics	0.000039	
	preparing	0.000024	
	executing	2.662487	
	end	0.000013	
	query end	0.000002	
	waiting for handler commit	0.000013	
	closing tables	0.000015	
	freeing items	0.000017	
	cleaning up	0.000015	

```
CREATE INDEX h_ssn_ind ON Doctor_WORKS_IN(Doctor_SSN);
CREATE INDEX h_name_ind ON Doctor_WORKS_IN(hospitalName);
Drop INDEX h_ssn_ind ON Doctor_WORKS_IN;
```

```
SET profiling = 1;
SELECT *
FROM deneme.Doctor_WORKS_IN
JOIN deneme.Hospital ON deneme.Doctor_WORKS_IN.hospitalName =
deneme.Hospital.hospitalName
WHERE deneme.Hospital.location <> 'Nicolefurt'
LIMIT 1000000;
SHOW PROFILE;
```

	Status	Duration	
	starting	0.000040	
	Executing hook on transaction	0.000001	
	starting	0.000003	
	checking permissions	0.000002	
	checking permissions	0.000001	
	Opening tables	0.000085	
	init	0.000002	
	System lock	0.000005	
	optimizing	0.000007	
	statistics	0.000034	
	preparing	0.000016	
	executing	6.128182	
	end	0.000011	
	query end	0.000002	
	waiting for handler commit	0.000008	
	closing tables	0.000005	
	freeing items	0.000021	
	cleaning up	0.000019	