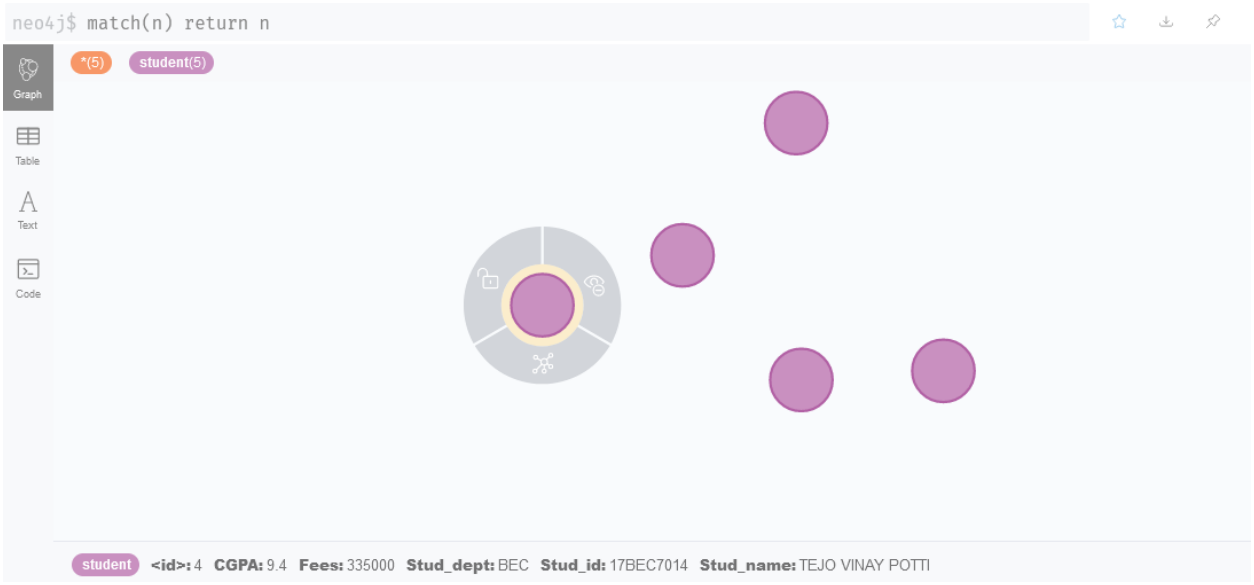
Working with Graph Database : Neo4j

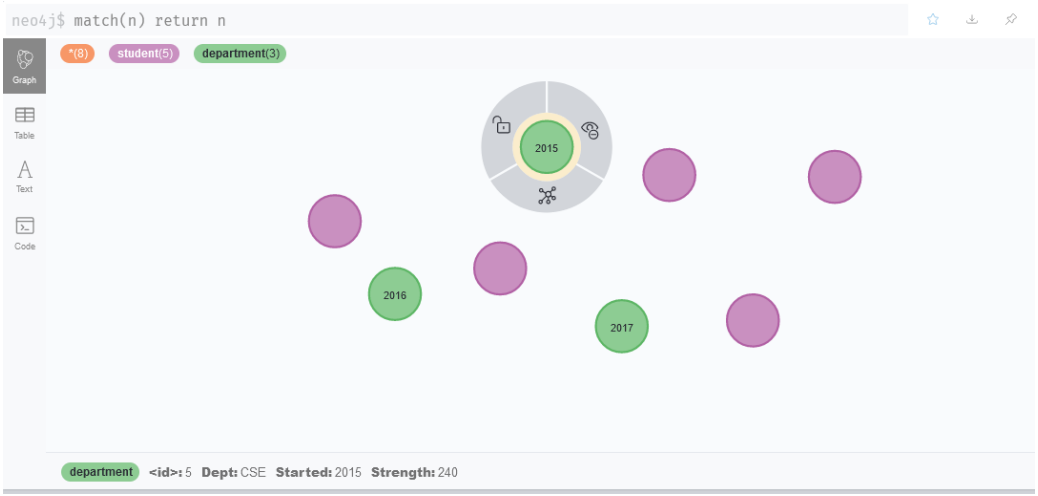
Inserting data of students

```
neo4j$ CREATE (Madhav:student {Stud_id: "17BCD7004", Stud_name: "POLISETTY SAI NAGA MADHAV", Stud_dept:
"BCD",  Fees: 315000, CGPA : 7.5}),(Praneeth:student {Stud_id: "17BCD7005", Stud_name: "KUCHIPUDI
NANDA PRANEETH", Stud_dept: "BCD",  Fees: 320000, CGPA : 7.6}),(Kalyan:student {Stud_id:
"17BCM7012", Stud_name: "JULURI KALYAN VARDHAN", Stud_dept: "BCM",  Fees: 330000, CGPA : 9.3}),
(Prabhat:student {Stud_id: "17BEC7011", Stud_name: "EDUPUGANTI PRABHAT", Stud_dept: "BEC",  Fees:
325000, CGPA : 7.7}),(Tejo:student {Stud_id: "17BEC7014", Stud_name: "TEJO VINAY POTTI",
Stud_dept: "BEC",  Fees: 335000, CGPA : 9.4})
```



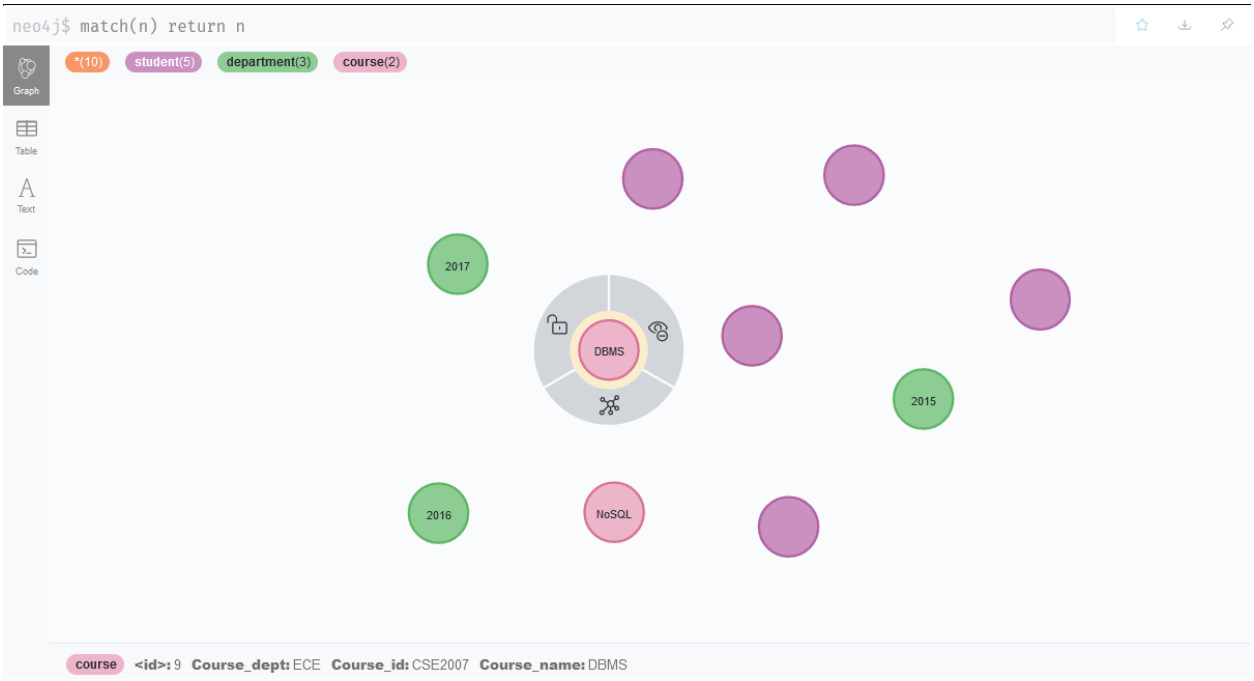
Inserting data of department

```
1
2 CREATE (CSE:department {Dept: "CSE", Strength: 240, Started: 2015}), (MECH:department {Dept: "MECH",
  Strength: 180, Started: 2017}), (ECE:department {Dept: "ECE", Strength: 240, Started: 2016})
```



Inserting data of course

```
CREATE (CSE3009:course {Course_id: "CSE3009", Course_name: "NoSQL", Course_dept: "CCE"}),
(CSE2007:course {Course_id: "CSE2007", Course_name: "DBMS", Course_dept: "ECE"})
```



Making relation of existing nodes Belongs_to

```
MATCH (a:student), (b:department) WHERE a.Stud_id = "17BCD7004" AND b.Dept = "CSE"
CREATE (a)-[r: Belongs_to {yop:2020}]→(b)
RETURN a,b
```

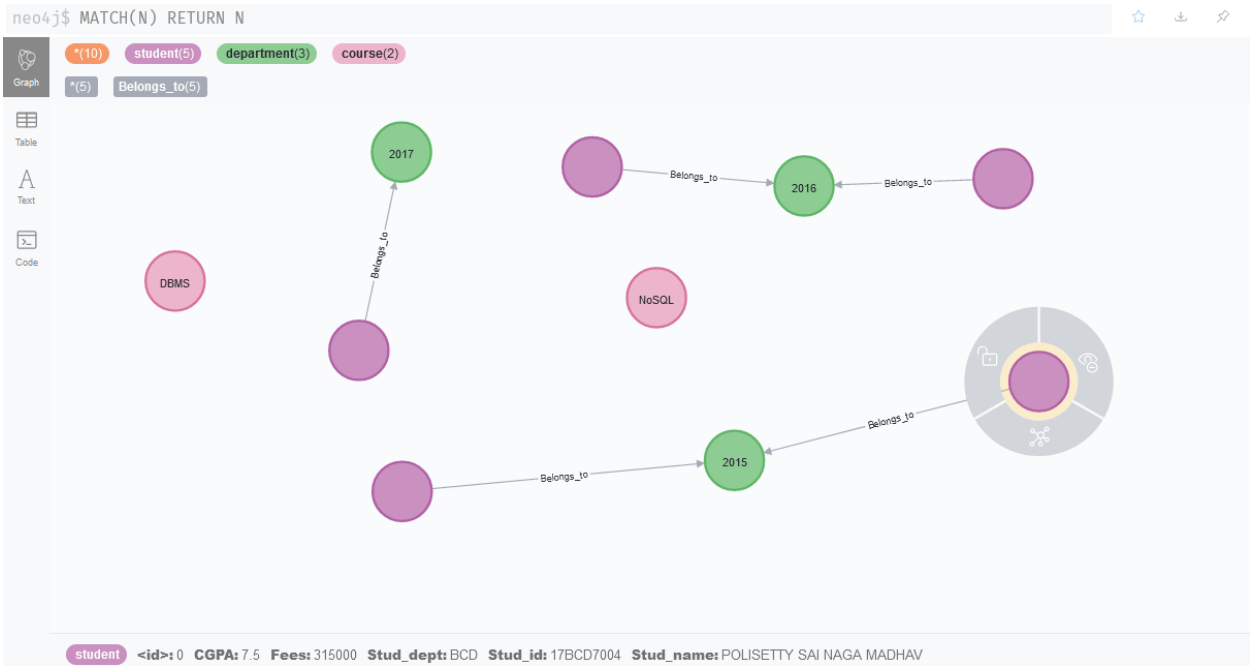
```

MATCH (a:student), (b:department) WHERE a.Stud_id = "17BCD7005" AND b.Dept = "CSE"
CREATE (a)-[r: Belongs_to {yop:2020}]→(b)
RETURN a,b
```

```
MATCH (a:student), (b:department) WHERE a.Stud_id = "17BEC7011" AND b.Dept = "ECE"
CREATE (a)-[r: Belongs_to {yop:2020}]→(b)
RETURN a,b
```

```
MATCH (a:student), (b:department) WHERE a.Stud_id = "17BEC7014" AND b.Dept = "ECE"
CREATE (a)-[r: Belongs_to {yop:2019}]→(b)
RETURN a,b
```

```
MATCH (a:student), (b:department) WHERE a.Stud_id = "17BCM7012" AND b.Dept = "MECH"
CREATE (a)-[r: Belongs_to {yop:2019}]→(b)
RETURN a,b
```



Making relation of existing nodes studies

```
MATCH (a:student), (b:course) WHERE a.Stud_id = "17BCD7004" AND b.Course_id = "CSE3009"
CREATE (a)-[r: studies]→(b)
RETURN a,b
```

```
MATCH (a:student), (b:course) WHERE a.Stud_id = "17BCD7005" AND b.Course_id = "CSE3009"
CREATE (a)-[r: studies]→(b)
RETURN a,b
```

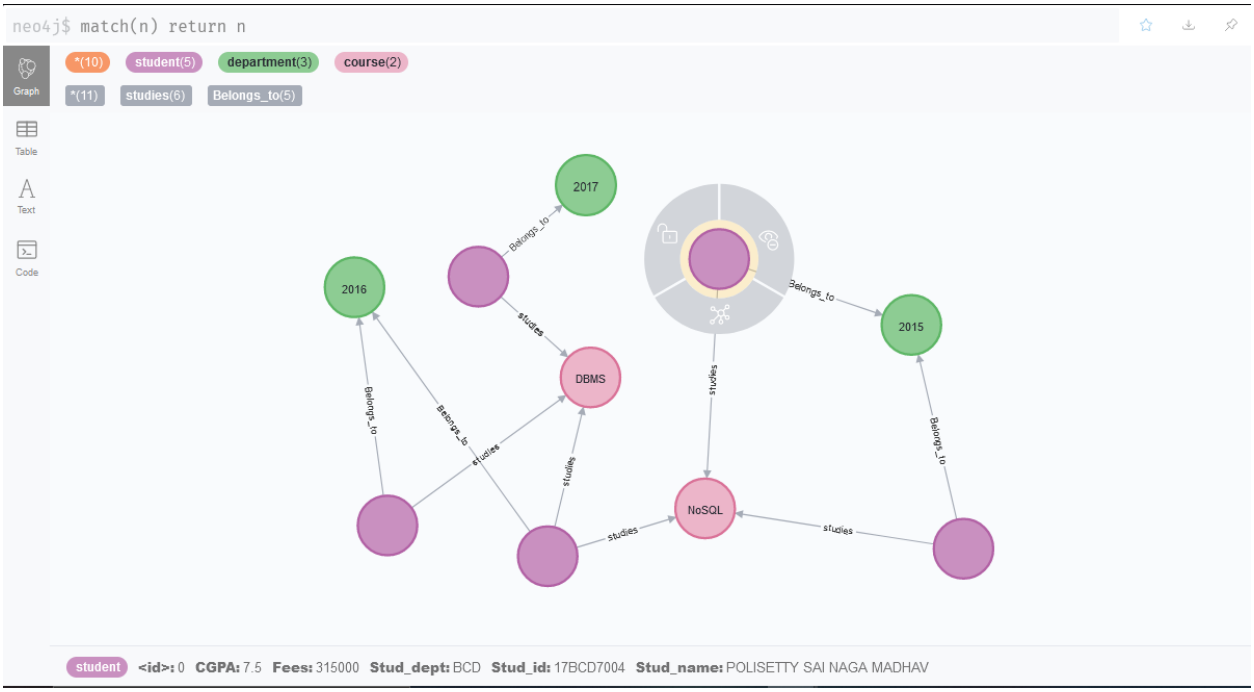
```
MATCH (a:student), (b:course) WHERE a.Stud_id = "17BEC7011" AND b.Course_id = "CSE3009"
CREATE (a)-[r: studies]→(b)
RETURN a,b
```

```
MATCH (a:student), (b:course) WHERE a.Stud_id = "17BEC7011" AND b.Course_id = "CSE2007"
CREATE (a)-[r: studies]→(b)
RETURN a,b
```

```
MATCH (a:student), (b:course) WHERE a.Stud_id = "17BEC7014" AND b.Course_id = "CSE2007"
CREATE (a)-[r: studies]→(b)
RETURN a,b
```

```
MATCH (a:student), (b:course) WHERE a.Stud_id = "17BCM7012" AND b.Course_id = "CSE2007"
CREATE (a)-[r: studies]→(b)
RETURN a,b
```

Final graph structure



Queries

1. Display all student details.

```
neo4j$ MATCH (a:student) RETURN a
```

Graph | Table | Text | Code

"a"
{"CGPA":7.5,"Stud_dept":"BCD","Fees":315000,"Stud_id":"17BCD7004","Stud_name":"POLISETTY SAI NAGA MADHAV"}
{"CGPA":7.6,"Stud_dept":"BCD","Fees":320000,"Stud_id":"17BCD7005","Stud_name":"KUCHIPUDI NANDA PRANEETH"}
{"CGPA":9.3,"Stud_dept":"BCM","Fees":330000,"Stud_id":"17BCM7012","Stud_name":"JULURI KALYAN VARDHAN"}
{"CGPA":7.7,"Stud_dept":"BEC","Fees":325000,"Stud_id":"17BEC7011","Stud_name":"EDUPUGANTI PRABHAT"}
{"CGPA":9.4,"Stud_dept":"BEC","Fees":335000,"Stud_id":"17BEC7014","Stud_name":"TEJO VINAY POTTI"}

MAX COLUMN WIDTH:

2. Display all students who belong to ECE department

```
neo4j$ MATCH (a:student)-[:Belongs_to]-(b:department {Dept:"ECE"}) RETURN a
```

Graph | Table | Text | Code

"a"
{"CGPA":9.4,"Stud_dept":"BEC","Fees":335000,"Stud_id":"17BEC7014","Stud_name":"TEJO VINAY POTTI"}
{"CGPA":7.7,"Stud_dept":"BEC","Fees":325000,"Stud_id":"17BEC7011","Stud_name":"EDUPUGANTI PRABHAT"}

MAX COLUMN WIDTH:

3. Display the all the department names

```
neo4j$ MATCH (p:department) RETURN p.Dept
```

Table | Text | Code

"p.Dept"
"CSE"
"MECH"
"ECE"

MAX COLUMN WIDTH:

4. Display the student's id who are all studying NoSQL course

```
neo4j$ MATCH (a:student)-[:studies]-(b:course {Course_name:"NoSQL"}) RETURN a.Stud_id
```

"a.Stud_id"
"17BEC7011"
"17BCD7005"
"17BCD7004"

MAX COLUMN WIDTH:

5. Find the courses of student id 17BEC7011

```
neo4j$ MATCH (a:student {Stud_id:"17BEC7011"})-[:studies]-(b:course) RETURN b
```

"b"
{"Course_name":"DBMS","Course_dept":"ECE","Course_id":"CSE2007"}
{"Course_name":"NoSQL","Course_dept":"CCE","Course_id":"CSE3009"}

MAX COLUMN WIDTH:

6. Update the fees 10% increment for the students of CSE department

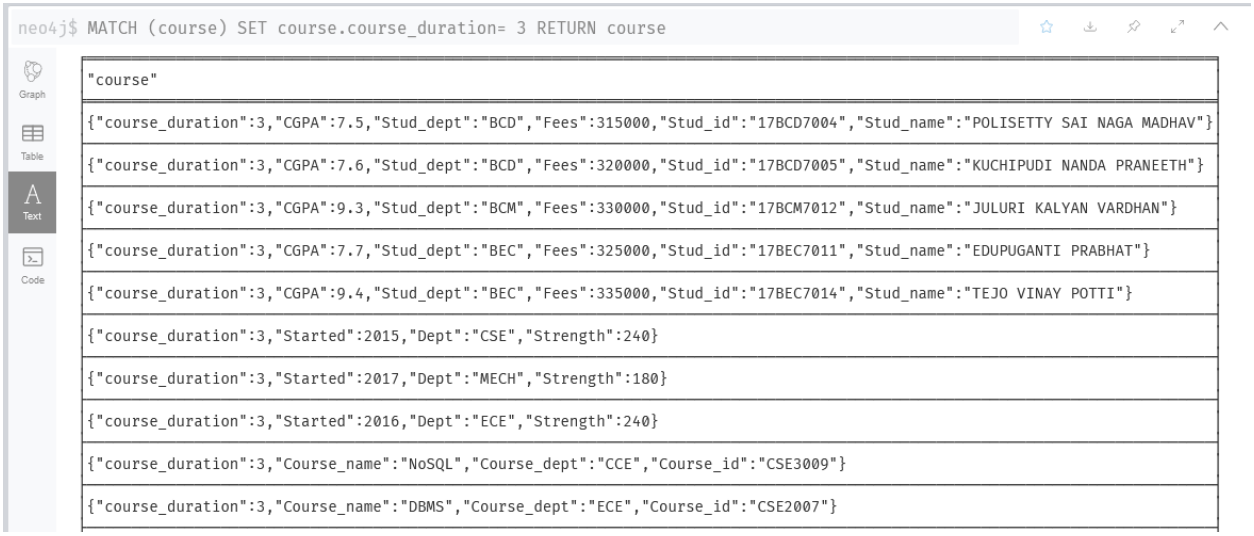
```
1 MATCH (a:student)-[:Belongs_to]-(b:department {Dept:"CSE"})
2 SET a.Fees = a.Fees+(0.1)*a.Fees
3 RETURN a
```

```
neo4j$ MATCH (a:student)-[:Belongs_to]-(b:department {Dept:"CSE"})  SET a.Fees = a.Fees+(0.1)*a.Fee…
```

"a"
{"course_duration":3,"CGPA":7.6,"Stud_dept":"BCD","Fees":352000.0,"Stu d_id":"17BCD7005","Stud_name":"KUCHIPUDI NANDA PRANEETH"}
{"course_duration":3,"CGPA":7.5,"Stud_dept":"BCD","Fees":346500.0,"Stu d_id":"17BCD7004","Stud_name":"POLISETTY SAI NAGA MADHAV"}

MAX COLUMN WIDTH:

7. Add new property to all the course as “course_duration” and assign default value as 3

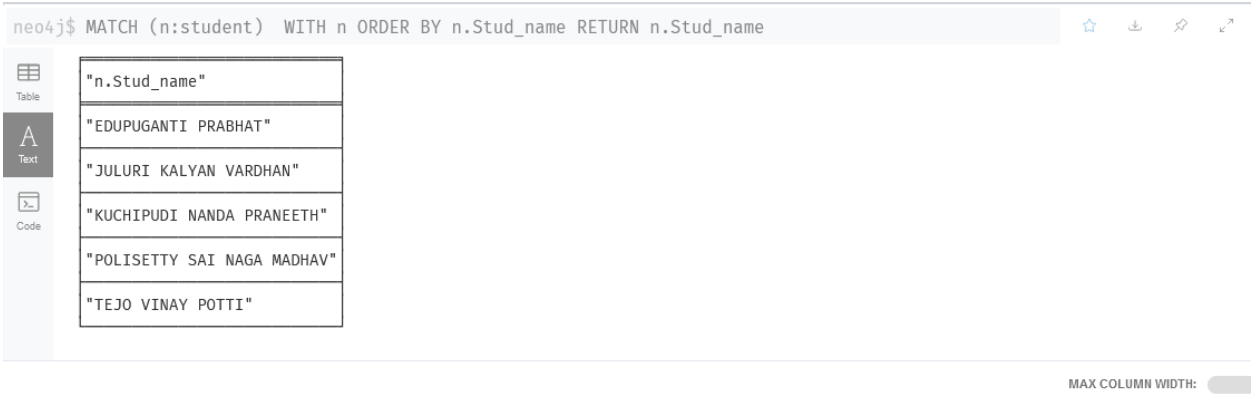


```
neo4j$ MATCH (course) SET course.course_duration= 3 RETURN course
```

Graph | Table | Text | Code

"course"
{"course_duration":3,"CGPA":7.5,"Stud_dept":"BCD","Fees":315000,"Stud_id":"17BCD7004","Stud_name":"POLISETTY SAI NAGA MADHAV"}
{"course_duration":3,"CGPA":7.6,"Stud_dept":"BCD","Fees":320000,"Stud_id":"17BCD7005","Stud_name":"KUCHIPUDI NANDA PRANEETH"}
{"course_duration":3,"CGPA":9.3,"Stud_dept":"BCM","Fees":330000,"Stud_id":"17BCM7012","Stud_name":"JULURI KALYAN VARDHAN"}
{"course_duration":3,"CGPA":7.7,"Stud_dept":"BEC","Fees":325000,"Stud_id":"17BEC7011","Stud_name":"EDUPUGANTI PRABHAT"}
{"course_duration":3,"CGPA":9.4,"Stud_dept":"BEC","Fees":335000,"Stud_id":"17BEC7014","Stud_name":"TEJO VINAY POTTI"}
{"course_duration":3,"Started":2015,"Dept":"CSE","Strength":240}
{"course_duration":3,"Started":2017,"Dept":"MECH","Strength":180}
{"course_duration":3,"Started":2016,"Dept":"ECE","Strength":240}
{"course_duration":3,"Course_name":"NoSQL","Course_dept":"CCE","Course_id":"CSE3009"}
{"course_duration":3,"Course_name":"DBMS","Course_dept":"ECE","Course_id":"CSE2007"}

8. Display all the nodes names in the graph in ascending order



```
neo4j$ MATCH (n:student)  WITH n ORDER BY n.Stud_name RETURN n.Stud_name
```

Table | Text | Code

"n.Stud_name"
"EDUPUGANTI PRABHAT"
"JULURI KALYAN VARDHAN"
"KUCHIPUDI NANDA PRANEETH"
"POLISETTY SAI NAGA MADHAV"
"TEJO VINAY POTTI"

MAX COLUMN WIDTH:

9. Display all the students of CSE and ECE

```
neo4j$ MATCH (a:student)-[:Belongs_to]-(b:department) WHERE b.Dept="CSE" OR b.Dept="ECE" RETURN a
```

Graph Table Text Code

"a"
{"course_duration":3,"CGPA":7.6,"Stud_dept":"BCD","Fees":352000.0,"Stud_id":"17BCD7005","Stud_name":"KUCHIPUDI NANDA PRANEETH"}
{"course_duration":3,"CGPA":7.5,"Stud_dept":"BCD","Fees":346500.0,"Stud_id":"17BCD7004","Stud_name":"POLISETTY SAI NAGA MADHAV"}
{"course_duration":3,"CGPA":9.4,"Stud_dept":"BEC","Fees":335000,"Stud_id":"17BEC7014","Stud_name":"TEJO VINAY POTTI"}
{"course_duration":3,"CGPA":7.7,"Stud_dept":"BEC","Fees":325000,"Stud_id":"17BEC7011","Stud_name":"EDUPUGANTI PRABHAT"}

MAX COLUMN WIDTH:

10.Display all the courses id and name.

```
neo4j$ match(course) WHERE course.Course_id IS NOT NULL return course.Course_id,course.Course_name
```

Table Text Code

"course.Course_id"	"course.Course_name"
"CSE3009"	"NoSQL"
"CSE2007"	"DBMS"

MAX COLUMN WIDTH: