

PRAKTIKUM 5

Mata Kuliah: Sistem basis data

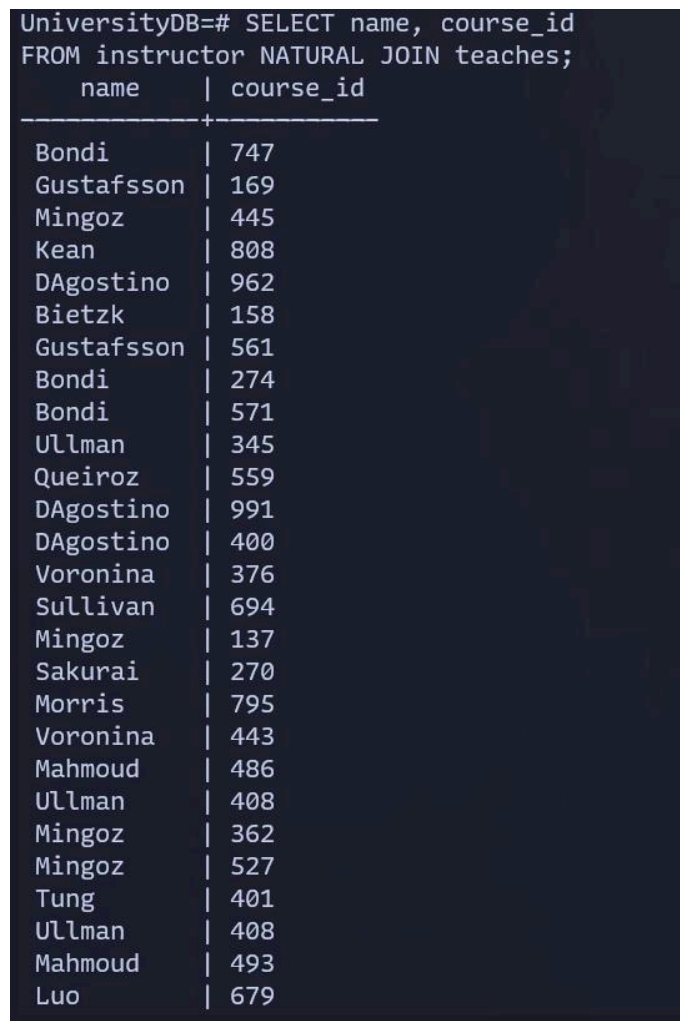
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NIM: 1222646

1. Cantumkan name dan course :id dari relasi instructor dan teaches. Gunakan Natural Join

```
SELECT name, course_id  
FROM instructor NATURAL JOIN teaches;
```



```
UniversityDB=# SELECT name, course_id  
FROM instructor NATURAL JOIN teaches;
```

name	course_id
Bondi	747
Gustafsson	169
Mingoz	445
Kean	808
DAgostino	962
Bietzk	158
Gustafsson	561
Bondi	274
Bondi	571
Ullman	345
Queiroz	559
DAgostino	991
DAgostino	400
Voronina	376
Sullivan	694
Mingoz	137
Sakurai	270
Morris	795
Voronina	443
Mahmoud	486
Ullman	408
Mingoz	362
Mingoz	527
Tung	401
Ullman	408
Mahmoud	493
Luo	679

Figure 1: Screenshot Hasil Query

2. Cantumkan name, course_id dan title dari relasi instructor, teaches dan course. Gunakan NATURAL JOIN.

```
SELECT name, course_id, title  
FROM instructor NATURAL JOIN teaches NATURAL JOIN course;
```

```
UniversityDB=# SELECT name, course_id, title
FROM instructor NATURAL JOIN teaches NATURAL JOIN course;
name      | course_id | title
```

Bondi	747	International Practicum
Gustafsson	169	Marine Mammals
Mingoz	445	Biostatistics
Kean	808	Organic Chemistry
DAgostino	962	Animal Behavior
Bietzk	158	Elastic Structures
Gustafsson	561	The Music of Donovan
Bondi	274	Corporate Law
Bondi	571	Plastics
Ullman	345	Race Car Driving
Queiroz	559	Martian History
DAgostino	991	Transaction Processing
DAgostino	400	Visual BASIC
Voronina	376	Cost Accounting
Mingoz	137	Manufacturing
Morris	795	Death and Taxes
Voronina	443	Journalism
Mahmoud	486	Accounting
Ullman	408	Bankruptcy
Mingoz	362	Embedded Systems
Mingoz	527	Graphics
Tung	401	Sanitary Engineering
Ullman	408	Bankruptcy
Mahmoud	493	Music of the 50s
Dale	237	Surfing
Jaekel	334	International Trade
Kean	366	Computational Biology
Wieland	581	Calculus
Voronina	959	Bacteriology
Tung	421	Aquatic Chemistry
Mingoz	426	Video Gaming
Mingoz	362	Embedded Systems

Figure 2: Screenshot Hasil Query

3. Cantumkan semua data dari relasi instructor dan teaches termasuk juga instruktur yang tidak mengajar. Gunakan variasi LEFT JOIN.

```
SELECT *
FROM instructor LEFT JOIN teaches
ON instructor.ID = teaches.ID;
```

```
UniversityDB=# SELECT *
FROM instructor LEFT JOIN teaches
ON instructor.ID = teaches.ID;
```

id	name	dept_name	salary	id	course_id	sec_id	semester	year
34175	Bondi	Comp. Sci.	115469.11	34175	747	1	Spring	2004
3199	Gustafsson	Elec. Eng.	82534.37	3199	169	1	Spring	2007
6569	Mingoz	Finance	105311.38	6569	445	1	Spring	2001
28097	Kean	English	35023.18	28097	808	1	Fall	2003
22591	DAgostino	Psychology	59706.49	22591	962	1	Spring	2008
90376	Bietzk	Cybernetics	117836.50	90376	158	1	Fall	2008
3199	Gustafsson	Elec. Eng.	82534.37	3199	561	1	Fall	2006
34175	Bondi	Comp. Sci.	115469.11	34175	274	1	Fall	2002
34175	Bondi	Comp. Sci.	115469.11	34175	571	1	Spring	2004
79081	Ullman	Accounting	47307.10	79081	345	1	Spring	2008
80759	Queiroz	Biology	45538.32	80759	559	1	Fall	2002
22591	DAgostino	Psychology	59706.49	22591	991	1	Spring	2008
22591	DAgostino	Psychology	59706.49	22591	400	2	Fall	2003
74420	Voronina	Physics	121141.99	74420	376	1	Fall	2006
73623	Sullivan	Elec. Eng.	90838.09	73623	694	1	Fall	2002
6569	Mingoz	Finance	105311.38	6569	137	1	Spring	2002
95709	Sakurai	English	118143.98	95709	270	1	Spring	2010
36897	Morris	Marketing	43770.36	36897	795	1	Spring	2004
74420	Voronina	Physics	121141.99	74420	443	2	Spring	2002
77346	Mahmoud	Geology	99382.59	77346	408	1	Fall	2009
79081	Ullman	Accounting	47307.10	79081	408	1	Spring	2007
6569	Mingoz	Finance	105311.38	6569	362	3	Spring	2008
6569	Mingoz	Finance	105311.38	6569	527	1	Fall	2004
41930	Tung	Athletics	50482.03	41930	401	1	Fall	2003
79081	Ullman	Accounting	47307.10	79081	408	2	Spring	2003
77346	Mahmoud	Geology	99382.59	77346	493	1	Spring	2010
4233	Luo	English	80791.45	4233	679	1	Spring	2010
99052	Dale	Cybernetics	93348.83	99052	237	2	Fall	2009
95709	Sakurai	English	118143.98	95709	258	1	Fall	2007
63207	Jaekel	Athletics	183146.87	63207	334	1	Fall	2009
28097	Kean	English	35023.18	28097	366	1	Fall	2005
19368	Wieland	Pol. Sci.	124651.41	19368	581	1	Spring	2005

```
UniversityDB=#
```

99052	Dale	Cybernetics	93348.83	99052	927	1	Fall	2002
79081	Ullman	Accounting	47307.10	79081	974	1	Fall	2003
28400	Atanassov	Statistics	84982.92	28400	604	1	Spring	2009
6569	Mingoz	Finance	105311.38	6569	319	1	Spring	2003
97302	Bertolino	Mech. Eng.	51647.57					
50885	Konstantinides	Languages	32570.50					
63395	McKinnon	Cybernetics	94333.99					
96895	Mird	Marketing	119921.41					
74426	Kenje	Marketing	186554.73					
4034	Murata	Athletics	61307.56					
31955	Moreira	Accounting	71351.42					
59795	Desyl	Languages	48803.38					
35579	Soisalon-Soininen	Psychology	62579.61					
64071	Gutierrez	Statistics	45310.53					
79653	Levine	Elec. Eng.	89805.83					
52647	Bancilhon	Pol. Sci.	87958.01					
78699	Pingr	Statistics	59303.62					
37687	Arias	Statistics	104563.38					
72553	Vin	English	46397.59					
58558	Dusserre	Marketing	66143.25					
95030	Arinb	Statistics	54805.11					
16807	Yazdi	Athletics	98333.65					
57180	Hau	Accounting	43966.29					

(119 rows)

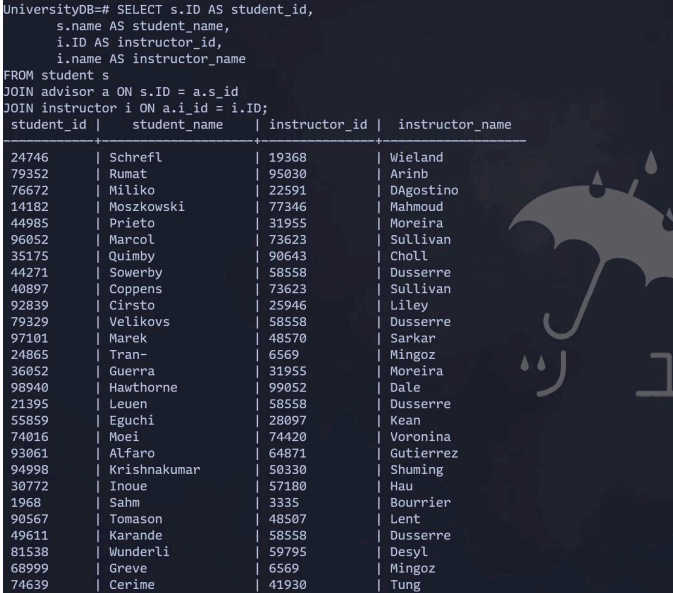
Figure 3: Hasil query

4. Cantumkan ID student, beserta nama student, dan ID instructor, beserta nama instructor untuk mengetahui mahasiswa beserta pembimbingnya.

```

SELECT s.ID AS student_id,
       s.name AS student_name,
       i.ID AS instructor_id,
       i.name AS instructor_name
FROM student s
JOIN advisor a ON s.ID = a.s_id
JOIN instructor i ON a.i_id = i.ID;

```



```

UniversityDB=# SELECT s.ID AS student_id,
       s.name AS student_name,
       i.ID AS instructor_id,
       i.name AS instructor_name
FROM student s
JOIN advisor a ON s.ID = a.s_id
JOIN instructor i ON a.i_id = i.ID;
 student_id | student_name | instructor_id | instructor_name
-----
24746      | Schrefl      | 19368         | Wieland
79352      | Rumat        | 95030         | Arinb
76672      | Miliko       | 22591         | DAgostino
14182      | Moszkowski   | 77346         | Mahmoud
44985      | Prieto       | 31955         | Moreira
96052      | Marcol       | 73623         | Sullivan
35175      | Quinby       | 90643         | Choll
44271      | Sowerby      | 58558         | Dusserre
40897      | Coppens      | 73623         | Sullivan
92839      | Cirsto       | 25946         | Liley
79329      | Velikovs     | 58558         | Dusserre
97101      | Marek        | 48570         | Sarkar
24865      | Tran-        | 6569          | Mingoz
36052      | Guerra       | 31955         | Moreira
98940      | Hawthorne    | 99052         | Dale
21395      | Leuen        | 58558         | Dusserre
55859      | Eguchi       | 28097         | Kean
74016      | Moel         | 74420         | Voronina
93061      | Alfaro       | 64871         | Gutierrez
94998      | Krishnakumar | 50330         | Shuming
30772      | Inoue        | 57180         | Hau
1968       | Sahm         | 3335          | Bourrier
90567      | Tomason      | 48507         | Lent
49611      | Karande      | 58558         | Dusserre
81538      | Wunderli     | 59795         | Desyl
68999      | Greve        | 6569          | Mingoz
74639      | Cerime       | 41930         | Tung

```

Figure 4: Screenshot Hasil Query

5. Cantumkan semua data dari relasi student, dan takes. Gunakan NATURAL JOIN, dan INNER JOIN. Cari perbedaannya.

Natural Join

perbedaannya Natural Join

- Otomatis mencocokkan semua kolom dengan nama yang sama
- tidak perlu menentukan kondisi JOIN secara eksplisit
- Lebih ringkas tetapi lebih beresiko jika ada kolom dengan nama sama yang seharusnya tidak di join

```

SELECT *
FROM student NATURAL JOIN takes;

```

```
UniversityDB=# SELECT *
FROM student NATURAL JOIN takes;
```

id	name	dept_name	tot_cred	course_id	sec_id	semester	year	grade
65901	Shishkin	Accounting	120	401	1	Fall	2003	C-
24932	Segars	Civil Eng.	78	802	1	Spring	2003	B-
61332	Canon	Astronomy	8	200	1	Spring	2007	A-
73492	Huang	Mech. Eng.	23	760	1	Spring	2004	A
65715	Novak	Mech. Eng.	37	843	1	Fall	2010	B+
58300	Lum	Mech. Eng.	8	408	1	Spring	2007	B-
760	Liedm	Geology	100	571	1	Spring	2004	B
69730	Peip	English	12	313	1	Fall	2010	A
94836	Fuller	English	13	626	1	Fall	2006	C+
49391	Rammer	Marketing	15	603	1	Fall	2003	B-
48850	Wehen	Biology	14	457	1	Spring	2001	C-
68999	Greve	Psychology	113	169	1	Spring	2007	A+
53469	Fujii	Astronomy	43	169	1	Spring	2007	C
74016	Moel	Elec. Eng.	15	747	1	Spring	2004	A-
49073	Bonvin	English	74	496	1	Fall	2001	C-
52866	Loull	Math	30	795	1	Spring	2004	B
83314	Chow	Accounting	40	960	1	Fall	2009	A
70359	Lorinczi	Cybernetics	63	599	1	Spring	2003	A-
88993	Palaniswami	Math	51	313	1	Fall	2010	C+
97042	Bhargava	Pol. Sci.	68	192	1	Fall	2002	A-
33460	Leonard	Psychology	48	482	1	Fall	2005	C+
81207	Masri	Athletics	123	239	1	Fall	2006	A+
68010	Blecken	Pol. Sci.	43	972	1	Spring	2009	A+
15517	Anis	Geology	29	489	1	Fall	2007	A+
8957	Walker	Athletics	50	561	1	Fall	2006	C
8986	Maesf	Pol. Sci.	115	927	1	Fall	2002	A
7956	Brandsd	Statistics	110	692	1	Spring	2010	C
792	Hashimoto	Athletics	102	972	1	Spring	2009	A-
84189	Kuwadak	Statistics	119	791	1	Spring	2006	B-
92659	Mathias	Biology	98	527	1	Fall	2004	C

Figure 5: Screenshot Hasil Query

Inner Join

perbedaannya Inner Join

- Perlu menentukan kondisi JOIN secara eksplisit (ON clause)
- Lebih jelas dan terkontrol karena kita menentukan sendiri kolom mana yang akan dijadikan dasar penggabungan
- Lebih aman karena kita tahu persis bagaimana tabel digabungkan

SELECT *

FROM student s INNER JOIN takes t

ON s.ID = t.ID;

```
UniversityDB=# SELECT *
FROM student s INNER JOIN takes t
ON s.ID = t.ID;
```

id	name	dept_name	tot_cred	id	course_id	sec_id	semester	year	grade
65901	Shishkin	Accounting	120	65901	401	1	Fall	2003	C-
24932	Segars	Civil Eng.	78	24932	802	1	Spring	2003	B-
61332	Canon	Astronomy	8	61332	200	1	Spring	2007	A-
73492	Huang	Mech. Eng.	23	73492	760	1	Spring	2004	A
65715	Novak	Mech. Eng.	37	65715	843	1	Fall	2010	B+
58300	Lum	Mech. Eng.	8	58300	408	1	Spring	2007	B-
760	Liedm	Geology	100	760	571	1	Spring	2004	B
69730	Peip	English	12	69730	313	1	Fall	2010	A
94836	Fuller	English	13	94836	626	1	Fall	2006	C+
49391	Rammer	Marketing	15	49391	603	1	Fall	2003	B-
48850	Wehen	Biology	14	48850	457	1	Spring	2001	C-
68999	Greve	Psychology	113	68999	169	1	Spring	2007	A+
53469	Fujii	Astronomy	43	53469	169	1	Spring	2007	C
74016	Moel	Elec. Eng.	15	74016	747	1	Spring	2004	A-
49073	Bonvin	English	74	49073	496	1	Fall	2001	C-
52866	Loull	Math	30	52866	795	1	Spring	2004	B
83314	Chow	Accounting	40	83314	960	1	Fall	2009	A
70359	Lorinczi	Cybernetics	63	70359	599	1	Spring	2003	A-
88993	Palaniswami	Math	51	88993	313	1	Fall	2010	C+
97042	Bhargava	Pol. Sci.	68	97042	192	1	Fall	2002	A-
33460	Leonard	Psychology	48	33460	482	1	Fall	2005	C+
81207	Masri	Athletics	123	81207	239	1	Fall	2006	A+
68010	Blecken	Pol. Sci.	43	68010	972	1	Spring	2009	A+
15517	Anis	Geology	29	15517	489	1	Fall	2007	A+
8957	Walker	Athletics	50	8957	561	1	Fall	2006	C
8986	Maesf	Pol. Sci.	115	8986	927	1	Fall	2002	A
7956	Brandsd	Statistics	110	7956	692	1	Spring	2010	C
792	Hashimoto	Athletics	102	792	972	1	Spring	2009	A-
84189	Kuwadak	Statistics	119	84189	791	1	Spring	2006	B-
92659	Mathias	Biology	98	92659	527	1	Fall	2004	C
22198	Read	Languages	101	22198	612	1	Fall	2007	A-
8957	Walker	Athletics	50	8957	696	1	Spring	2002	B

Figure 6: Screenshot Hasil Query