

ASSIGNMENT 1

ABHAY SHANKAR K: CS21BTECH11001

EXERCISE 1

Output for :

- department

```
Enter choice.
Enter table name.
Enter k.
You chose: 1 -> department
```

dept_name	building	budget
Civil Eng.	Chandler	255041.46
Biology	Candlestick	647610.55
History	Taylor	699140.86
Physics	Wrigley	942162.76
Marketing	Lambeau	210627.58
Pol. Sci.	Whitman	573745.09
English	Palmer	611042.66
Accounting	Saucon	441840.92
Comp. Sci.	Lamberton	106378.69
Languages	Linderman	601283.60

- section

```
Enter choice.
Enter table name.
Enter k.
You chose: 1 -> section
```

course_id	sec_id	semester	year	building	room_number	time_slot_id
313	1	Fall	2010	Chandler	804	N
747	1	Spring	2004	Gates	314	K
443	1	Spring	2010	Whitman	434	O
893	1	Fall	2007	Fairchild	145	B
663	1	Spring	2005	Fairchild	145	D
457	1	Spring	2001	Saucon	844	D
445	1	Spring	2001	Alumni	547	J
559	1	Fall	2002	Lamberton	134	J
239	1	Fall	2006	Taylor	183	C
802	1	Spring	2003	Saucon	113	J

- takes

```

Enter choice.
Enter table name.
Enter k.
You chose: 1 -> takes

```

id	course_id	sec_id	semester	year	grade
65901	401	1	Fall	2003	C-
24932	802	1	Spring	2003	B-
61332	200	1	Spring	2007	A-
73492	760	1	Spring	2004	A
65715	843	1	Fall	2010	B+
58300	408	1	Spring	2007	B-
760	571	1	Spring	2004	B
69730	313	1	Fall	2010	A
94836	626	1	Fall	2006	C+
49391	603	1	Fall	2003	B-

EXERCISE 2

Output the course id and title of all the prerequisites for the following courses: 276, 647, 496

```

Enter choice.
Enter course id
You chose 2 -> 276

```

Prerequisite ID	Prerequisite course titles
403	Immunology
352	Compiler Design
345	Race Car Driving

```

Enter choice.
Enter course id
You chose 2 -> 647

```

Prerequisite ID	Prerequisite course titles
792	Image Processing
814	Compiler Design

```

Enter choice.
Enter course id
You chose 2 -> 496

```

Prerequisite ID	Prerequisite course titles
489	Journalism
416	Data Mining
443	Journalism
852	World History
133	Antidisestablishmentarianism in Modern America
267	Hydraulics

EXERCISE 3

Write any 5 varied test cases that you created to test the trigger. They should test different aspects of whether the trigger is working or not.

```

Enter choice.
You entered: 3.

Testing insert into section that shouldn't work: insert into section values ('313', '2', 'Fall', 2010, 'Chandler', '804', 'N');
org.postgresql.util.PSQLException: ERROR: Degeneracy pressure.
Where: PL/pgSQL function q3_section() line 1 at RAISE
Trigger worked.

Testing insert into section that should work: insert into section values ('313', '1', 'Spring', 2010, 'Chandler', '804', 'N')
Worked.

Testing insert into teaches that shouldn't work: insert into teaches values ('36897', '313', '3', 'Fall', 2010);
org.postgresql.util.PSQLException: ERROR: Spatial delocalisation.
Where: PL/pgSQL function q3_teaches() line 1 at RAISE
Trigger worked.

Testing insert into teaches that should work: insert into teaches values ('36897', '313', '1', 'Spring', 2010);
Worked.

Testing update that should work: update section set time_slot_id = 'A' where course_id = '581';
Worked.

Testing update that shouldn't work: update section set time_slot_id = 'F' where course_id = '581';
org.postgresql.util.PSQLException: ERROR: Bad time slot.
Where: PL/pgSQL function q3_section_time() line 1 at RAISE
Trigger worked.

```

Here, the six test cases involve three tuples that would result in inconsistencies, two in section and one in teaches, each violating one trigger. Their outputs are shown, after an exception is raised by their respective triggers. The other three work, showing that each trigger allows insertion of valid tuples.

EXERCISE 4

Print the CGPA for the following roll numbers: 76672, 90567, 4582, 81258

```

Enter choice.
Enter student id.
You chose 4 -> 76672
The CGPA is: 5.081081081081081

Enter choice.
Enter student id.
You chose 4 -> 90567
The CGPA is: 5.841269841269841

Enter choice.
Enter student id.
You chose 4 -> 4582
The CGPA is: 5.361111111111111

Enter choice.
Enter student id.
You chose 4 -> 81258
The CGPA is: 6.476190476190476

```

EXERCISE 5

Subquestion 1: Print the top-5 students in terms of CGPA

```
Enter choice.
Enter subquestion (1, 2 or 3).
Enter k.
You chose 5 -> 1
```

Rank	ID	Name	CGPA	Department
1	19362	Linden	8.268293	Finance
2	81207	Masri	8.200000	Athletics
3	78637	Beeu	8.171429	Physics
4	98619	Nagaraj	8.033333	Civil Eng.
5	18286	Pang	8.000000	Finance

Subquestion 2: Print the top-5 students with highest CGPA for departments: Psychology, Elec. Eng., and Civil Eng.

```
Enter choice.
Enter subquestion (1, 2 or 3).
Enter k.
Enter department name.
You chose 5 -> 2 -> Psychology
```

Rank	ID	Name	CGPA
1	17676	Michel	7.564103
2	40116	Joshi	7.500000
3	32886	Damas	7.428571
4	26494	Heers	7.368421
5	51093	Syng	7.150000

```
Enter choice.
Enter subquestion (1, 2 or 3).
Enter k.
Enter department name.
You chose 5 -> 2 -> Elec. Eng.
```

Rank	ID	Name	CGPA
1	29140	Reuver	7.764706
2	64401	Larion	7.627907
3	52057	Garg	7.490909
4	59517	Harrison	7.382353
5	38712	Kreutz	6.864407

```
Enter choice.
Enter subquestion (1, 2 or 3).
Enter k.
Enter department name.
You chose 5 -> 2 -> Civil Eng.
```

Rank	ID	Name	CGPA
1	98619	Nagaraj	8.033333
2	13753	Hoshi	7.735294
3	40677	Ponnambalam	7.707317
4	99660	OMalley	7.641509
5	32419	Sahani	7.461538

Subquestion 3: Print the top-5 students with highest CGPA for course ids: 237, 349, 735

```

Enter choice.
Enter subquestion (1, 2 or 3).
Enter k.
Enter course id.
You chose 5 -> 3 -> 237

```

Rank	ID	Name	CGPA
1	78637	Beeu	8.171429
2	66469	Komori	7.943396
3	64196	Rioul	7.941176
4	77898	Yap	7.911111
5	99289	Morales	7.894737

```

Enter choice.
Enter subquestion (1, 2 or 3).
Enter k.
Enter course id.
You chose 5 -> 3 -> 349

```

Rank	ID	Name	CGPA
1	23506	Åström	7.658537
2	40116	Joshi	7.500000
3	16311	Liao	7.488372
4	70021	Aydin	7.428571
5	14094	Miao	7.400000

```

Enter choice.
Enter subquestion (1, 2 or 3).
Enter k.
Enter course id.
You chose 5 -> 3 -> 735

```

Rank	ID	Name	CGPA
1	18286	Pang	8.000000
2	77898	Yap	7.911111
3	52707	Arena	7.842105
4	11441	Betho	7.823529
5	39901	Dellwo	7.558824