DBMS-Project

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CHAPTER OUTLINE:

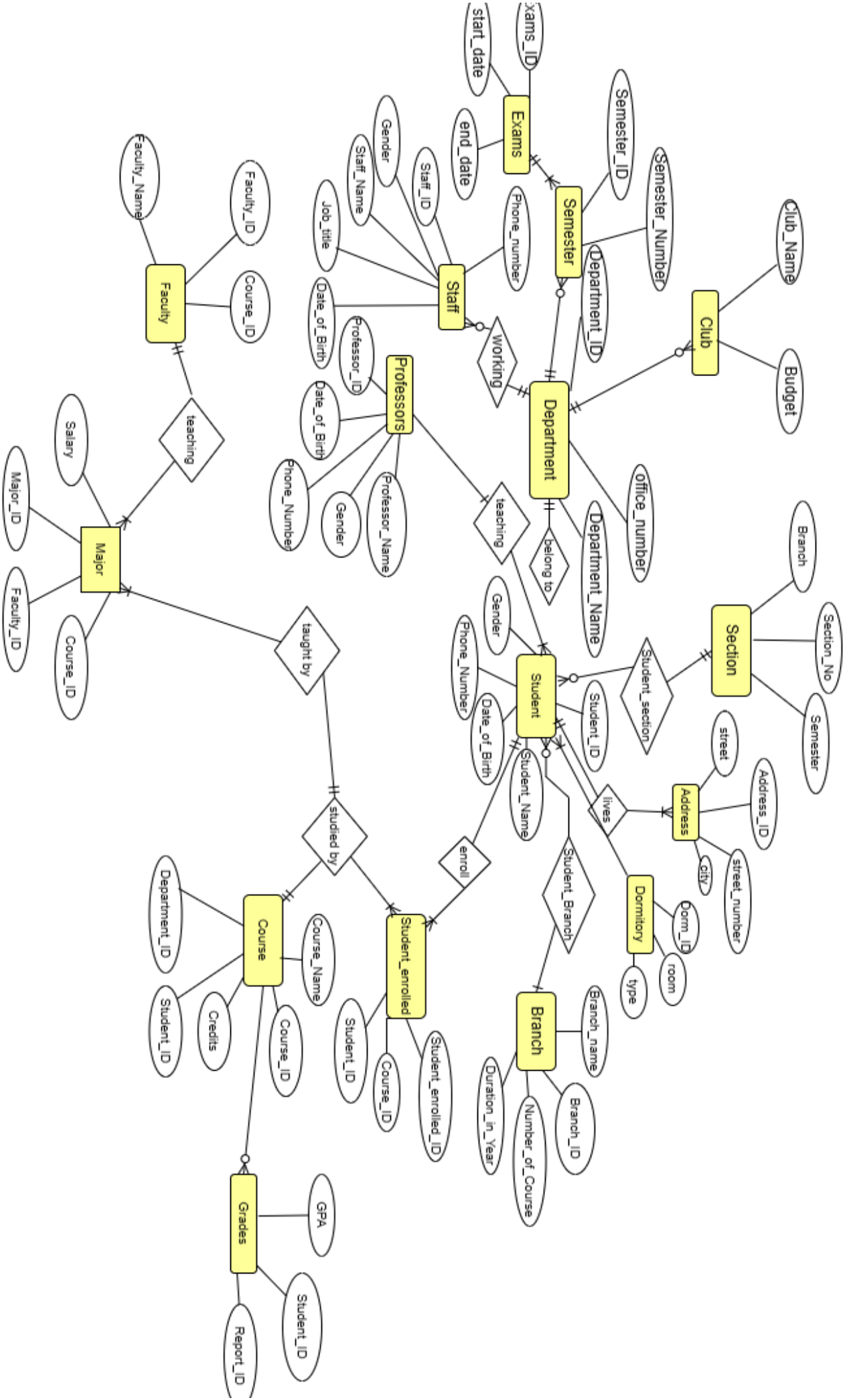
i) Introduction and database description.
ii) idea for project
iii)ER Diagram
iv)Normalization
v)Tables
vi) Fill data
vii)Query

I)A database is an organized collection of data, usually stored and accessed electronically from a computer system.

ii) Introduction and DataBase description

We chosed topic university, because almost all people go through this period. And not every person knows what the university database consists of. We will show and tell about it on our own experience. Which will be used by students, teachers and just guests. We chose this topic because it is closer to us than other topics.

iii)ER Diagram



iv)Normalization

Students x Grades 1NF(1)

student_id	gpa	first_name	last_name
1	1.8	Rozelle	Franchi
2	1.6	Elvin	Boraston
3	2.0	Melania	O' Ronan
4	3.5	Web	Dalyell
5	2.6	Edith	Ajam
6	2.0	Chen	Tunkin
7	1.0	Ronda	Loud
8	1.0	Tamera	Erskine Sandys
9	3.7	Allix	Clarridge
10	1.4	Julian	Roswarne
...	...	...	...

Table scheme: {student_id, gpa, first_name, last_name}

FD: {student_id} -> {gpa}

{student_id} -> {first_name}

{student_id} -> {last_name}

1NF(2)

email	gpa	student_id
rfranchi0@issuu.com	1.8	1
eboraston1@yelp.com	1.6	2
moronan2@freewebs.com	2.0	3
wdalyell3@sciencedirect.com	3.5	4
eajam4@bloomberg.com	2.6	5
ctunkin5@exblog.jp	2.0	6
rloud6@godaddy.com	1.0	7
terskinesandys7@alexa.com	1.0	8
aclarridge8@weather.com	3.7	9
jroswarne9@123-reg.co.uk	1.4	10
...	...	...

Table scheme: {email, gpa, student_id }

FD: {email} -> {student_id}

{student_id} -> {gpa}

2NF(1)

first_name	student_id	gpa
Rozelle	1	1.8
Elvin	2	1.6
Melania	3	2.0
Web	4	3.5
Edith	5	2.6
Chen	6	2.0
Ronda	7	1.0
Tamera	8	1.0
Allix	9	3.7
Julian	10	1.4

Schema:{first_name, student_id, gpa}

FD: {student_id} -> {first_name}

{student_id} -> {gpa}

2NF(2)

student_id	gpa
1	1.8
2	1.6
3	2.0
4	3.5
5	2.6
6	2.0
7	1.0
8	1.0
9	3.7
10	1.4
...	...

Schema: {student_id, gpa}
FD: {student_id} -> {gpa}

3NF

{first_name} -> {gpa}

BCNF
{first_name} -> {last_name}
{gender} -> {phone_number} etc.

Students x Student_enrolled

1NF(1)

student_enroll_id	student_id	first_name	last_name	email
1	1	Rozelle	Franchi	rfranchi0@issuu.com
2	2	Elvin	Boraston	eboraston1@yelp.com
3	3	Melania	O' Ronan	moronan2@freewebs.com
4	4	Web	Dalyell	wdalyell3@sciencedirect.com
5	5	Edith	Ajam	eajam4@bloomberg.com
6	6	Chen	Tunkin	ctunkin5@exblog.jp
7	7	Ronda	Loud	rloud6@godaddy.com
8	8	Tamera	Erskine Sandys	terskinesandys7@alexa.com
9	9	Allix	Clarridge	aclarridge8@weather.com
10	10	Julian	Roswarne	jroswarne9@123-reg.co.uk
...	...	...	...	...

Table scheme: {student_enroll_id, student_id, first_name, last_name, email}
FD: {student_id} -> {email}
{student_id} -> {first_name}
{student_id} -> {last_name}
{student_enroll_id} -> {student_id}
{student_enroll_id} -> {email} ect.

1NF(2)

student_enroll_id	first_name	last_name	phone_number
1	Rozelle	Franchi	304-884-7232
2	Elvin	Boraston	519-347-4537
3	Melania	O' Ronan	862-222-2866
4	Web	Dalyell	124-588-1006
5	Edith	Ajam	327-962-7840
6	Chen	Tunkin	508-743-0427
7	Ronda	Loud	641-212-4074
8	Tamera	Erskine Sandys	684-195-0970
9	Allix	Clarridge	267-289-3154
10	Julian	Roswarne	541-659-4905
...	...	...	...

Table scheme: {student_enroll_id,first_name, last_name, phone_number}

FD: {student_enroll_id} -> {first_name}

{student_enroll_id} -> {last_namel}

{student_enroll_id} -> {phone_number} ect.

2NF

student_enroll_id	student_id	email
1	1	rfranchi0@issuu.com
2	2	eboraston1@yelp.com
3	3	moronan2@freewebs.com
4	4	wdalyell3@sciencedirect.com
5	5	eajam4@bloomberg.com
6	6	ctunkin5@exblog.jp
7	7	rloud6@godaddy.com
8	8	terskinesandys7@alexa.com
9	9	aclarridge8@weather.com
10	10	jroswarne9@123-reg.co.uk
...	...	...

Schema: {student_enroll_id, student_id, email}
FD: {student_id} -> {student_enroll_id}
{student_enroll_id} -> {email}

3NF
{first_name} -> {phone_number}

BCNF
{first_name} -> {last_name}
{birth_date} -> {phone_number} etc.

Faculty x Course
1NF(1)

course_id	course_name	Faculty_name
1	Social Worker	Engineering
2	Senior Developer	Law
3	Director of Sales	TFL
4	Automation Specialist IV	Pedagogical
5	Chemical Engineer	Medical
6	Research Assistant II	Polytechnic
7	Financial Analyst	Economy
8	Data Coordiator	center of multidisciplinary education
9	Pharmacist	continuing education center
10	Paralegal	education and methodical center
...	...	...

Table scheme: {course_id,course_name, faculty_name}
FD: {course_id} -> {course name}
{coursel_id} -> {faculty_namel}
{course_name} -> {faculty_name}

1NF(2)

course_name	credits	Faculty_name	Faculty_id
Social Worker	3	Engineering	103
Senior Developer	5	Law	104
Director of Sales	2	TFL	105
Automation Speci	2	Pedagogical	106
Chemical Enginee	1	Medical	107
Research Assista	1	Polytechnic	108
Financial Analyst	1	Economy	109
Data Coordiator	2	center of multidisciplinary education	110
Pharmacist	5	continuing education center	111
Paralegal	3	education and methodical center	112
...	...	...	...

Table scheme: {course_name,credits, faculty_name,faculty_id}

FD: {course_name} -> {credits}

{facultyl_id} -> {faculty_namel}

{faculty_name} -> {course_name}

3NF

{course_id} ->{credits} etc.

BCNF

null

v)Tables

link will be in github

vi)Fill data will be in github

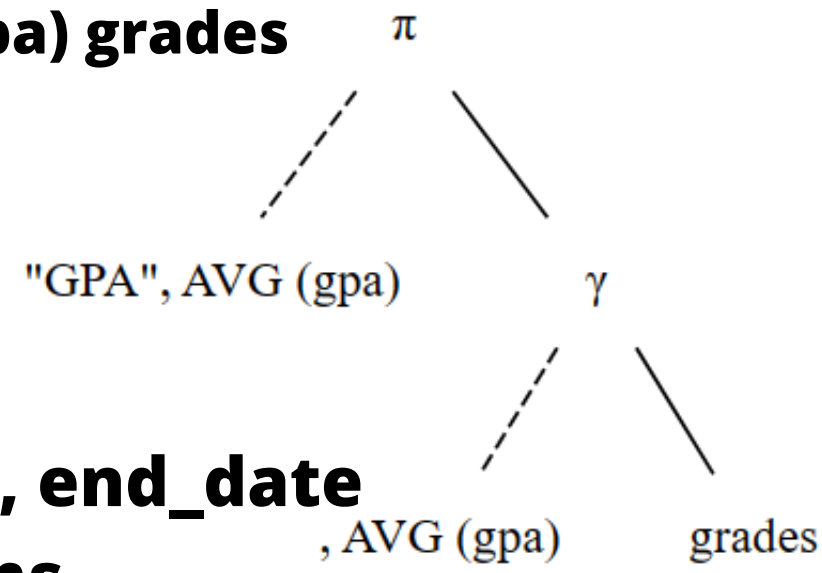
vii)Query link will be in github

vIII) Relational Algebra

1) select 'GPA', Avg(GPA) from GRADES

π "GPA", AVG (gpa)

γ AVG (gpa) grades



2)SELECT start_date, end_date

FROM exams

GROUP BY start_date, end_date

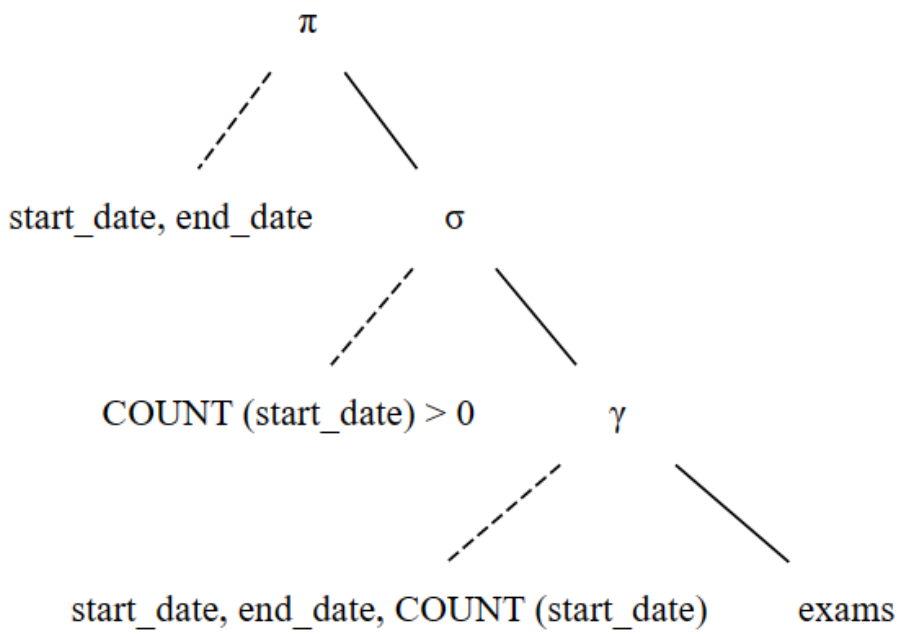
HAVING (COUNT(start_date) > 0)

π start_date, end_date

σ COUNT (start_date) > 0

γ start_date, end_date, COUNT

(start_date) exams



SELECT PROFESSORS_ID, MAX(salary) as max_salary
FROM PROFESSORS
GROUP BY PROFESSORS_ID

π professors_id, MAX (salary) → max_salary
γ professors_id, MAX (salary) professors