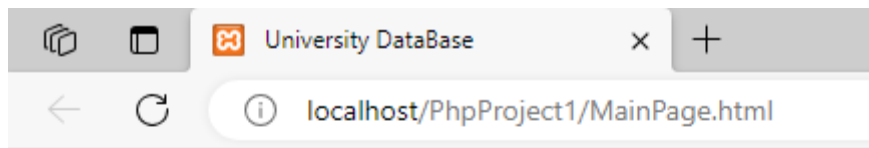# How is the GUI used?

In this Project there are some buttons, select boxes and links that user can interact. The first example is in the main page. There are 4 links(instructor,student,Project,department), user can click every of them and find related database.
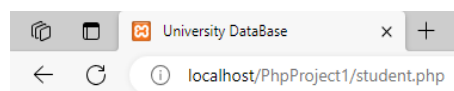

Then, if the user chooses instructor or student s/he goes to a page which s/he can select a social security number. After selecting a ssn user press the "Get ….. details" button to achieve related student/instructor informations. Also in this page there is a link that allow to user go back to main page.
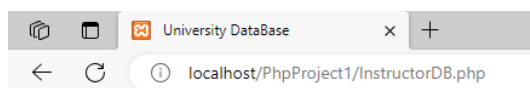
In the instructor information page there is a table which shows exam that instructor delivered. In last row of the table there is link that take the user to the exam point details page. Also there are links that takes user to main page or instructor selecting page. These links are also added the student information page.

Exams Emine Ekin Delivered

Exam Name	Course Code	Date	Year	Semester	Section	Grade of Students
Final	COMP2222	2023-06-12	2023	2	1	Go To Grade Details
Midterm1	COMP2222	2023-04-17	2023	2	1	Go To Grade Details
Midterm2	COMP2222	2023-06-05	2023	2	1	Go To Grade Details

Back to Instructor Page

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Scores of COMP2222 Midterm1 exam

Points Earned	Student SSN
43	s1
45	s2
52	s4

Back to Instructor Page

Back to Main Page

On the Project and department pages there are some buttons on the table which takes the user people list of related Project/department.

Department Name	Budget	Head Instructor	Building Name	List People In Department
Architecture		Elif Suyuk Makakli	dk	Architecture
Computer Engineering		Emine Ekin	amf	Computer
Economics		Ozlem Inanc	amf	Economics
Industrial Engineering		Caglar Aksezer	amf	Industrial
Software Engineering		Emine Ekin	amf	Software
Visual arts		Banu Inanc Uyan Dur	maslak	Visual

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List Of Instructors In Department Architecture

Name
Elif Suyuk Makakli
instructor8

List Of Students In Department Architecture

ID	Name	Advisor
st3	student3	Elif Suyuk Makakli

Back to Department List Page

Back to Main Page

Project List

Project Name	Subject	Budget	Start Date	End Date	Controlling Department	Controlling Instructor	List Of People Working On This Project
job1	about computers	50000	2019-06-01	2021-01-01	Computer Engineering	Emine Ekin	job1
project4	artificial intelligence	1000000	2022-08-25	2024-06-30	Computer Engineering	Emine Ekin	project4
job2	about life	1000	2018-02-02	2020-06-06	Computer Engineering	Olcay Yildiz	job2
job3	money talks	1000000	2018-01-01	2021-01-01	Economics	instructor7	job3

Back to Main Page

List of People job1

| Name |
|---|
| gradstcse1 |
| Ozlem Inanc |
| Olcay Yildiz |

Back to Project List Page

Back to Main Page

In both people information pages there are links that user can go back to Project list or main page.

Is the relational schema of your database in 2NF/3NF/BCNF?

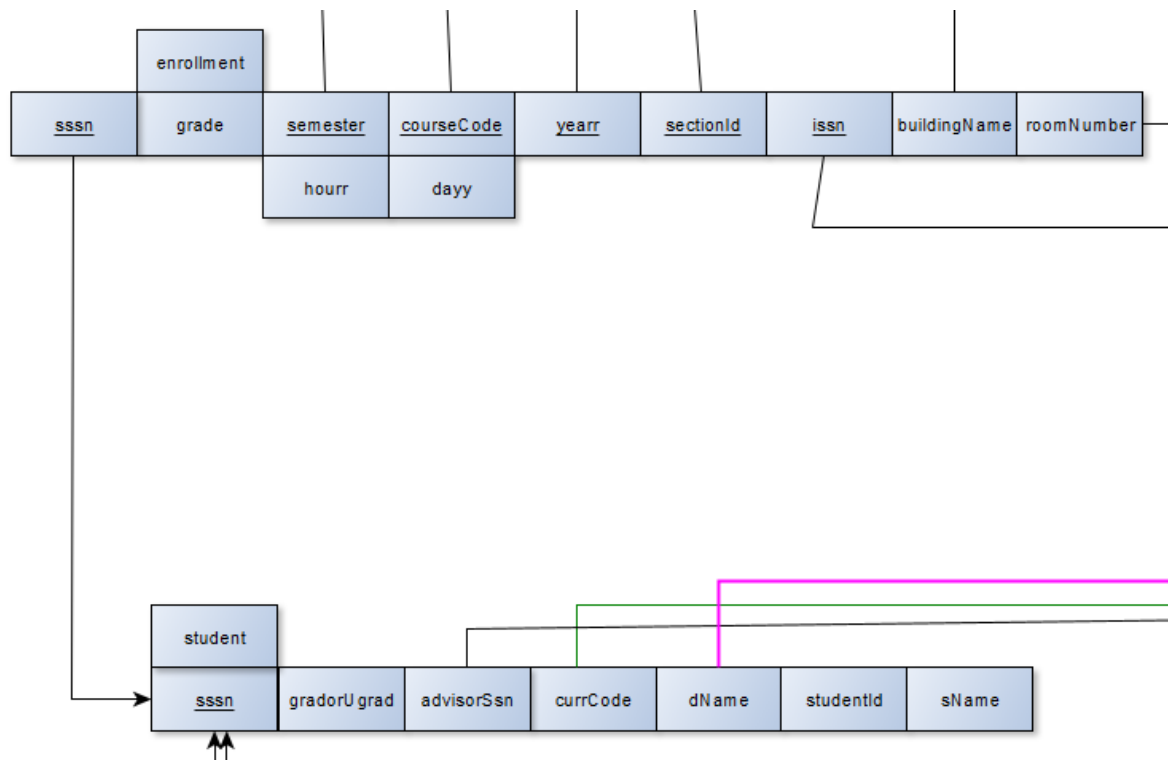Releational Schema is in 3NF format. Reason behind that is :

In the enrollment table, Primary key is (sssn,semester,courseCode,yearr,sectionId,issn).
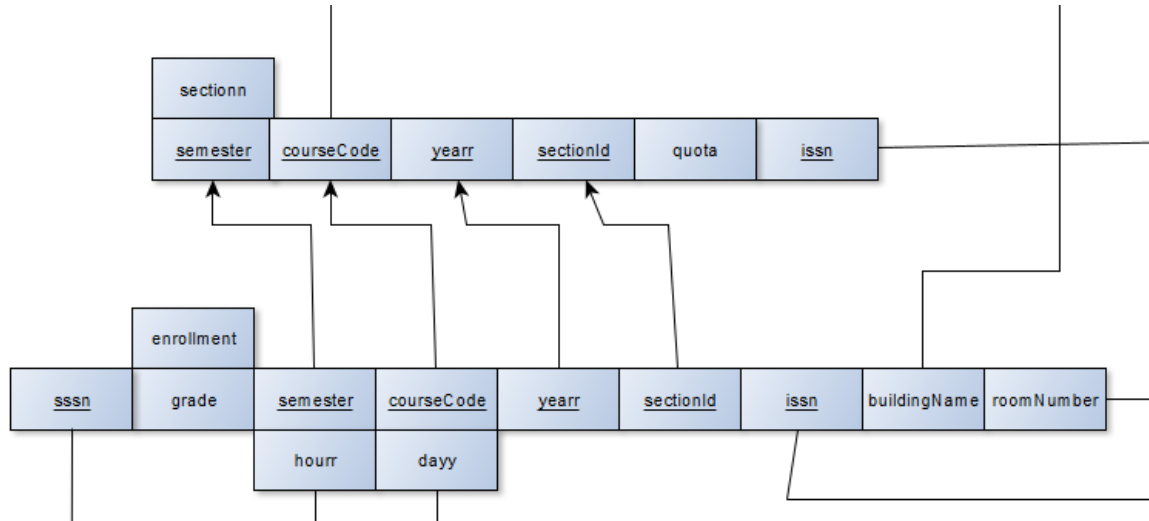
(enrollment) → (sectionn) **semester courseCode yearr sectionId.** Because there is no multivalued attribute it is 1NF. Because of the prime attribute on the RHS, 2NF and 3NF rules also valid. Because of the LHS does not have super key, BCNF rule is not valid.
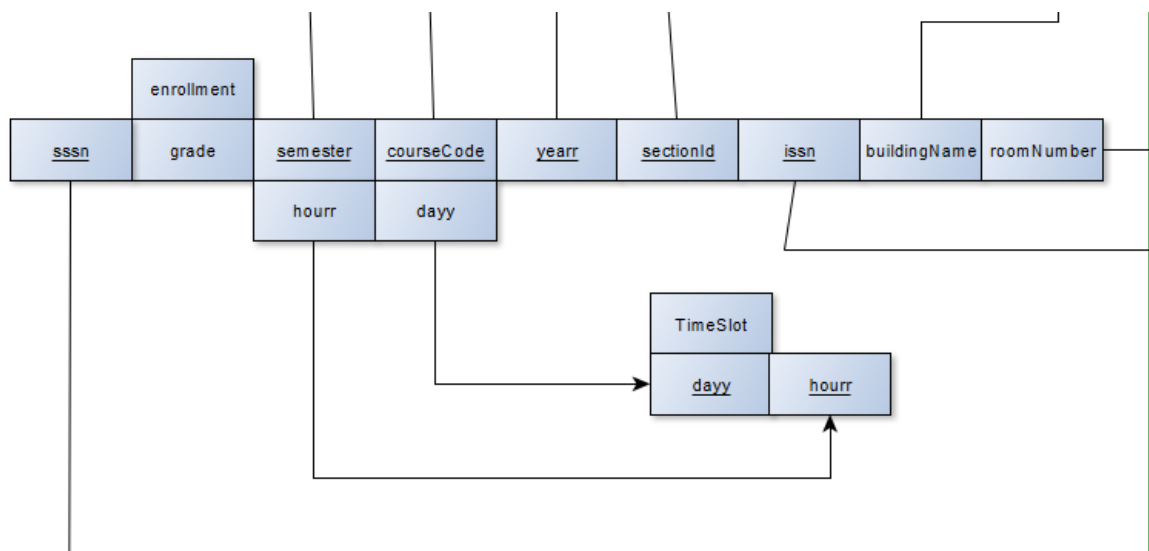
(enrollment) → (timeSlot) **day hourr**. Because there is no multivalued attribute it is 1NF. Because of the prime attribute on the RHS, 2NF and 3NF rules also valid. Because of the LHS does not have super key(key is: **ssn semester courseCode yearr sectionId issn**), BCNF rule is not valid.

enrollment

sssn	grade	semester	courseCode	yearr	sectionId	issn	buildingName	roomNumber
		hourr	dayy					

student

sssn	gradorU grad	advisorSsn	currCode	dName	studentId	sName

(enrollment) → (student) **ssn**. Because there is no multivalued attribute it is 1NF. Because of the prime attribute on the RHS, 2NF and 3NF rules also valid. Because of the LHS does not have super key(key is: **ssn semester courseCode yearr sectionId issn**), BCNF rule is not valid.

Department

dName	budget	headSSn	buildingName

Instructor

ssn	iName	rankk	baseSalary	extraSalary	dName
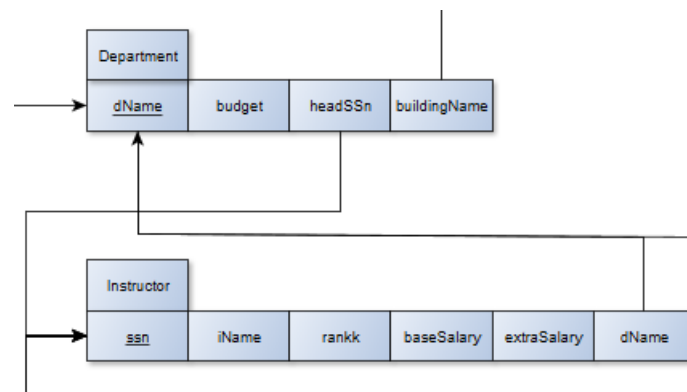
(Instructor) → (student) ssn. Because there is no multivalued attribute it is 1NF. Because of the prime attribute on the RHS, 2NF and 3NF rules also valid. Because of the LHS does not have super key(key is: **ssn**), BCNF rule is not valid.

In the other tables, there is no violation to 2NF and 3NF. Because in all FD's, right handside is prime attribute. It means our schema is in 3NF form.

How would you improve this database?

We can decompose out tables for to make our schema BCNF form. For example:

(enrollment) → (sectionn) **semester courseCode yearr sectionId.** We can modify this table as like this:

(enrollment) **semester courseCode yearr sectionId + issn sssn grade** → (sectionn) **semester courseCode yearr sectionId.**

In this way, our schema satisfy BCNF rule.

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