Student Registration

Database Management System

BY

Jon Yves Magpantay   **ID: 63070503401**

Punnawich Jitkarun   **ID: 63070503429**

Pornthep Sangthongkhamsuk   **ID: 63070503431**

Supawut Changwangprang   **ID: 63070503453**

Saruch Ubonkarn   **ID: 63070503454**

Table of Contents:

Scope of the Database

The database aims to provide that general information of student registration. The students can only register the subjects according to their faculty and departments. There are three roles in this Database: students, teacher and TAs. Each role has its own unique feature. Each member can either be students or TA's or both. However, each teacher can only have a teacher role. For the unique features of the student role. Students can have GPAX of null if they are the first year student and do not finish semester 1 yet. Students can also register any subjects that are available to them and not overlapping with other subjects. Some subjects require the student to finish the prerequisite first. For example, Calculus 3 requires the student to study Calculus 1 and Calculus 2 first. Some subjects required a degree program. Some subjects have the academic year set so that first year students cannot register for a subject for second year students but students who failed that subject that is in third or fourth year can register. Students cannot register less than 10 credits per semester. Some subjects require the room of the students for example room A or B. Each student can only have one advisor. Student's advisor is only a teacher from the department that the student is in. Students with less than 2.0 GPAX will have a probation status. Students with less than 1.5 GPAX will get retired immediately. When graduated students with more than 3.6 GPAX will get a first class honor, students with more than 3.25 GPAX will get a second class honor.

ER Diagram

subjectGrade
- Grade
- studentID(PK,FK)
- semesterID(PK)
- subjectID(PK)
- credit

semesterGrade
- GPA
- semesterID(PK)
- studentID(PK,FK)
- totalCredit

user
- personalID(PK)
- username
- password
- email

role
- personalID(PK,FK)
- role(PK)

Students
- studentID(PK)
- status
- personalID
- degreeProgram
- dateOfBirth(DOB)
- identificationNum or PassportNum
- faculty
- department
- academicYear
- room
- advisorID
- GPAX

personalInfo
- personalID(PK)
- firstName
- lastName
- email
- gender

TA
- TAID(PK)
- TADepartment
- TAFaculty
- personalD

TAassigned
- TAID(PK,FK)
- sectionID(PK,FK)
- semesterID

Teacher
- teacherID(PK)
- teacherDepartment
- teacherFaculty
- personalID
- advisorID

Teacherassigned
- teacherID(PK,FK)
- sectionID(PK,FK)
- semesterID

SubjectRegistration
- studentID(PK,FK)
- subjectID(PK,FK)
- semesterID
- sectionID

Subject
- subjectID(PK)
- sectionID(PK)
- subjectName
- credits
- yearRequirement
- degreeProgram(PK)
- room(PK)
- Seat

section
- sectionID(PK)
- subjectID(PK)
- semesterID(PK)

Rules:

1. Each student and teacher have their own ID.

2. Teachers can teach no more than 3 subjects.

3. Students can't register overlapping class schedules.

4. Some Subjects required a Degree program.

5. Some Subjects required an Academic year.

6. Some Subjects need to finish the subject requirement before register Ex.Calculus 2

   Student need to study Calculus 1 first

7. Students can't register a subject with less than 10 credits per semester.

8. Some subjects required Room of student Ex. A or B

9. Students can be TA.

10. One student can have one advisor from the teacher.

11. Teachers can only be advisors to a student in their own department.

Data Dictionary

Entity - personalInfo: Personal Information each individual			
Attributes	**Data Types**	**Constraints**	**Descriptions**
personalID	varchar(100)	NOT NULL	Personal identification code.
FirstName	varchar(100)	NOT NULL	First name of student, TA and teachers.
LastName	varchar(100)	NOT NULL	Last name of student, TA and teachers.
Email	varchar(100)	NOT NULL	Email of student, TA and Teacher.
Gender	varchar(100)	NOT NULL	Gender of person.

Entity - Role			
Attributes	**Data Types**	**Constraints**	**Descriptions**
personalID	varchar(100)	NOT NULL	Id of each member that the system collects. Including students, teachers and TAs.
role	varchar(100)	NOT NULL	The role of each member that the system collects. Including students, teachers and TAs.

Entity - SemesterGrade			
Attributes	**Data Types**	**Constraints**	**Descriptions**
studentID	int(11)	NOT NULL	Semester of the subject taken.
semesterID	varchar(100)	NOT NULL	The id of each subject.
GPA	int(11)	NOT NULL	Teach identification code.
totalCredit	float	NOT NULL	The total credit of each semester

Entity - Students: Student Information			
Attribute	**Data type**	**Constraints**	**Descriptions**
StudentID	int(11)	NOT NULL	Id of each student, two students can not have the same id.
Status	varchar(100)	NOT NULL	The status of each student. Probation, Normal, Drop or retired.
personalId	varchar(100)	NOT NULL	Id of each member that the system collects. Including students, teachers and TAs.
DegreeProgram	varchar(100)	NOT NULL	The degree of each student.
DOB	varchar(100)	NOT NULL	The date of birth of each student.
IdentificationNum	varchar(100)	NOT NULL	The national id or passport id of each student.
Faculty	varchar(100)	NOT NULL	The faculty of each student.
Department	varchar(100)	NOT NULL	The department of each student.
AcadYear	int(11)	NOT NULL	The academic year of each

			students.
Room	varchar(100)	NOT NULL	The room that each student is assigned to.
AdvisorId	varchar(100)	NULL	The id of the student's advisor.
GPAX	float	NULL	The GPAX of each student. It can be null if the student is a freshy and does not have any GPAX yet.

Entity - SubjectGrade			
Attributes	**Data Types**	**Constraints**	**Descriptions**
studentID	int(11)	NOT NULL	The id of each student.
subjectID	varchar(100)	NOT NULL	The identification code of the subject
semesterID	varchar(100)	NOT NULL	The identification code of the semester.
credit	float	NOT NULL	The credit of the subject
Grade	float	NULL	The grade of the student.

Entity - SubjectRegistration: Information for Subject Registration			
Attributes	**Data Types**	**Constraints**	**Descriptions**
studentID	int(11)	NOT NULL	Personal student identification code.
subjectID	varchar(100)	NOT NULL	Identification code for a specific subject.
semesterID	varchar(100)	NOT NULL	Semester of the subject taken.

sectionID	varchar(100)	NOT NULL	Identification code of the section

Entity - Subjects: Subject Information			
Attributes	**Data Types**	**Constraints**	**Descriptions**
varchar(100)	varchar(100)	NOT NULL	Identification code for a specific subject.
subjectName	varchar(100)	NOT NULL	Specific name of a subject.
sectionID	varchar(100)	NOT NULL	Identification code of the section
semesterID	varchar(100)	NOT NULL	Semester of the subject taken.
credits	int(11)	NOT NULL	Value of credit of a specific subject.
yearRequirement	varchar(100)	NOT NULL	Required years to take.
degreeProgram	varchar(100)	NOT NULL	Program of which degree you are taking (BS, Masteral, or Doctorate).
room	varchar(100)	NOT NULL	Identification name of which classroom.
Seat	int(11)	NOT NULL	Seat number of the student registered.

Entity - TA: Information of Teaching Assistant (TA)			
Attributes	**Data Types**	**Constraints**	**Descriptions**
TAID	varchar(100)	NOT NULL	TAs identification code.
TADepartment	varchar(100)	NOT NULL	The department which TA belongs to.

TAFaculty	varchar(100)	NOT NULL	The faculty where TA belongs to.
personalID	varchar(100)	NOT NULL	Id of each member that the system collects. Including students, teachers and TAs.

Entity - TAassigned: Information where TA's are assigned			
Attributes	**Data Types**	**Constraints**	**Descriptions**
TAID	varchar(100)	NOT NULL	TA's identification code.
sectionID	varchar(100)	NOT NULL	Identification code for sections.
semesterID	varchar(100)	NOT NULL	Semester of the subject taken.

Entity - Teacher: Information of Teacher			
Attributes	**Data Types**	**Constraints**	**Descriptions**
teacherID	varchar(100)	NOT NULL	Teach identification code.
teacherDepartment	varchar(100)	NOT NULL	The department that the teacher belongs to.
teacherFaculty	varchar(100)	NOT NULL	The faculty that teacher belongs to.
personalID	varchar(100)	NOT NULL	Id of each member that the system collects. Including students, teachers and TAs.
advisorID	varchar(100)	NULL	The id of the student's advisor.

Entity - Teacherassigned: Information of where Teachers are assigned			
Attributes	**Data Types**	**Constraints**	**Descriptions**
teacherID	varchar(100)	NOT NULL	Teach identification code.
subjectID	varchar(100)	NOT NULL	The id of each subject.
semesterID	varchar(100)	NOT NULL	Semester of the subject taken.

Entity - User			
Attributes	**Data Types**	**Constraints**	**Descriptions**
username	varchar(100)	NOT NULL	Data for username
password	varchar(100)	NOT NULL	Data for password
email	varchar(100)	NOT NULL	Email Address of user
personalID	varchar(100)	NOT NULL	ID of each member that the system collects. Including students, teachers and TAs.
super	int(11)	NOT NULL	

Cross Reference

	Teacher	Student	TAs
View all students id	Yes	Yes	Yes
View all students status	Yes	No	Yes
View all students Date of Birth	Yes	No	No
View all students passport/ national id	Yes	No	No
View all students Faculty	Yes	Yes	Yes
View all students Department	Yes	Yes	Yes
View all student who join which each room	Yes	Yes	Yes
View all advisor name	Yes	Yes	Yes
View all students GPAX	Yes	No	Yes
View all students first name	Yes	Yes	Yes
View all students last name	Yes	Yes	Yes
View all Teachers id	Yes	No	No
View all Teachers First name	Yes	Yes	Yes
View all Teachers Last Name	Yes	Yes	Yes
View all students Email	Yes	Yes	Yes

View all students Gender	Yes	Yes	Yes
View all roles	Yes	Yes	Yes
Edit roles	Yes (Change student to TAs)	No	No
Edit Name	Yes	No(require Teacher permission)	No(require Teacher permission)
View all subjects name	Yes	No (only applicable subjects can be seen)`	Yes
Register subjects	No	Yes (Only applicable subjects)	No
Register to be TA's for the Subject	No	No	Yes
Register to be the teacher for the subject	Yes	No	No
Be advisor	Yes	No	No
View all time table	Yes	No (time table can only be seen for the applicable subject)	Yes
View students time table	Yes	Yes (only your time table can be seen)	Yes
Register as a new student	No	No (a current student cannot register yourself as a new student)	No
Register as a new teacher	No (a current teacher cannot register yourself as a new teacher)	No	No

Complex transaction

Figure 1: The student registers a subject

Related table: Students, PersonalInfo, SubjectRegistration, Subject, and TimeTable

      The student registers the subject on the website. The website then checks the personalId and student id then validates it. Faculty, department, degree, status, room, academic year, room and GPAX is displayed from the data in the student table. Advisor name is displayed by validating the advisorId from the teacher table then get the personalId to validate in the personalInfo table to display the name. Subjects are displayed by validating the studentid then check the year requirement and degreeProgram then display the name, section, semester and credit of the subject.

Figure 2: The system creates time table for the student

Related table: TimeTable, Subject, Teacher, Teacherassigned, SubjectRegistration, Student, and PersonalInfo

The system creates a timetable after the student finishes the registration. Timetable is created by validating the studentid then validating the subjectid to get the list of the subjects that the student registered. After that it gets the teacher name from the personalInfo table by getting personalId from the teacherid in the teacher table. Then it gets the day, startime, and endtime for each subject timetable from the TimeTable table by validating the subjectid. After it gets all the needed information it will display the full student timetable.

Figure 3: Student select the section for each subject

Related table: TimeTable, Subject, Teacher, SubjectRegistration, Student, and PersonalInfo

　　　Before the student selects the section. The system will validate the studentid and get the subjectid from the SubjectRegistration table and send the subjectid to the Subject table to validate and get the subjectName and section from the Subject table. Timetable table also validates the subjectid to get the startTime endTime and day of each section of each subject. PersonalInfo table also validates the personalid from the teacher table by getting and validating teacherid from the subject table.

Figure 4: Student search the subject

Related table: TimeTable, Subject, Teacher, SubjectRegistration, Student, and PersonalInfo

The system gathers the input from the student to search up for the subject in the form of Subject name and to the subject table to get the subjectid, section, room, yearRequirement and degreeProgram. Then, the system will validate the studentid. Subject table will send the teacherId to the teacher table and send the personalId to personalInfo table to get the firstName and Lastname of the teacher. The subject table also sends subjectid to get the day, startTime,endTime of each section and each subject from the TimeTable table by validating the subjectid from the subject table. Then, all of the information will be displayed.
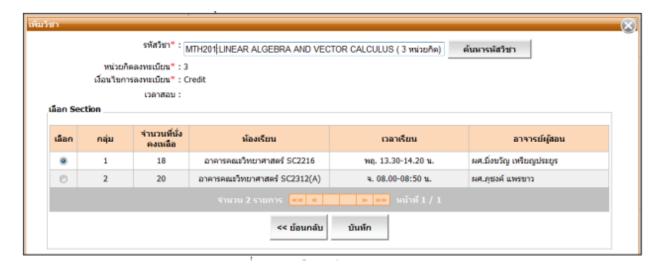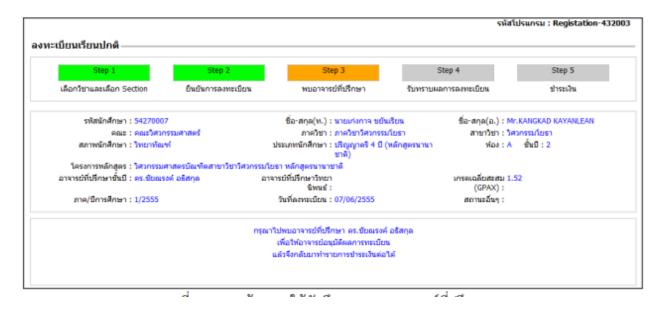
Figure 5: Student meet with the advisor

Related table: Subject, Teacher, Students, and PersonalInfo

Some subjects require advisor permission before registration. The subjectid is sent to subjectRegistration table and the studentid is sent to Students table. Then, the system gets an advisorid from the Students table and sends it to the teacher table to get the personalid to get the firstName and LastName of advisor teacher in the personalInfo table. Then when the system gathers all the information, it displays the information on the screen.

Analysis Report

Analysis 1: Table showing students information

Student ID	Status	Personal ID	Degree Program	Date Of Birth
3101	Normal	S3101	normal	01/02/2000
3102	Normal	S3102	inter	22/02/2000
3103	Normal	S3103	inter	11/01/2001

*Continuation of student information table

National ID	Faculty	Department	Academic Year	Room
9999988874985	Engineering	Chemical	2	B
8875488005697	Engineering	Chemical	2	A
5988045617702	Engineering	Chemical	2	B

*Continuation of student information table

Advisor ID	GPAX
T123456	NULL
T123456	NULL
T123456	NULL

Analysis 2 : Table showing personal information each individual

Personal ID	First Name	Last Name	Email	Gender
S3101	Jirasak	Chao	ismail@gmail.com	Male
S3102	Sarawut	Kunchai	ewaters@gmail.com	Male
S3103	Sukanda	Souvanatong	donev@gmail.com	Female

Analysis 3: Table showing subject registered by student. This data shows the student registered subjects.

Student ID	Subject ID	Semester ID	Section ID
3101	CPE213	2022/1	CPE213/1i
3999	CPE213	2022/1	CPE213/1i
3999	CPE231	2022/1	CPE231/1i

Analysis 4: The table lists information about the subjects that students can register for.

Subject ID	Subject name	SectionID	SemesterID	Credits
CPE213	Data model	CPE213/1i	2022/1	3
CPE213	Data model	CPE213/1n	2022/1	3
CPE231	Database	CPE213/1i	2022/1	3

*Continuation of student information table

Year requirement	Degree program	Room	Seat
1	Bachelor	A	37
1	Bachelor	A	40
1	Bachelor	B	40

Analysis 5: Table showing Teacher information.

Teacher ID	Teacher Department	Teacher Faculty	Personal ID	Advisor ID
1001	Computer	Engineering	T1001	AD1001
1002	Computer	Engineering	T1002	AD1002
1011	Chemical	Engineering	T1011	AD1011

Analysis 6: Table showing Teacher Assigned information.

Teacher ID	Subject ID	Semester
9999	CPE213/1i	2022/1
9999	CPE213/1n	2022/1
9999	CPE231/1i	2022/1

Analysis 7: Table showing TA information.

TA ID	TA Department	TA Faculty	Personal ID
TA3101	Chemical	Engineering	S3101

Analysis 8: Table showing TA Assigned information.

TA ID	Subject ID	Semester
TA1048	CPE213/1i	2022/1
TA1048	CPE213/1n	2022/1
TA3999	CPE213/1i	2022/1

Analysis 9: The table shows the role for each personal id.

Personal ID	Role
S3101	Student
S3102	Student
S3103	Student

Analysis 10: The table shows the user information.

Username	Password	Email	personalID	super
1048	*******	jiew@gmail.com	1111	0