Architecture du Projet

avec les outils informatiques : merise et uml.

1 La methode merise

1.1 la regle de gestion

- Class also means lecture
- The software will have students and teachers
- A subject can be taken across departments and a subject can belong to one and only one department
- A student can belong to only one department in the senoir secondary school (SSS)
- A subject can be broken down into **distinct disciplines** unique across all subjects
- A subject in a grade and across grades can be taught by multiple teachers
- A teacher can teach many subjects in a grade and across grades and the same applies to disciplines
- A Teacher teaching a subject in a particular grade in a particular department can have many classes. **For this reason, we identify the a unique class taught by this teacher with the lecture date** and the same applies to disciplines.
- A teacher can give a **remark** on a student and a student can receive a remark from many teachers.
- A teacher can be an administrator for this reason we register **their role** [HOD(Head of School)/ P(Principal)/ VP(Vice principal)]
- Once one is in a particular class through access, student can teach one another without necessarily being guided by a teacher. If a teacher is online, his role will be to guide students in their exercises e.t.c towards learning
- **Distraction Avoidance :** A student can only have access to a lecture note where there is a teacher only after the class
- Students info is recorded for security in order to deny access to unauthorised users/outsiders

- The director of the school will have authorisation to all online classes and all teachers will have the restricted access to online classes that is, they can access only the online classes where they are actively teaching

- An online class might not necessarily need a teacher! Just the list of exercises and educational resources and then assignments to be submitted

- **The restriction of the educational contents of the scheme of work for a particular week :** important !

- Students after lectures will only have access to their educational resources at a later period! Not immediately after the lectures!

- **Every educational resource for students will be provided ~~decentrally~~ centrally** : this means, educational resources e.g videos, audios and pdfs will be stored in a database. **The teacher creates a class, provides the educational resources for it** and then submit the class with these educational resources **for verification.** Once verified and accepted, the online class will become accessible to the students on the lecture date.

- Students are granted access to the resources (pdfs and videos) after a specific time after the online class.

- A student can either be a student or a senior student. **For senior students, we register their role as prefect.**

- Grades generally covers the juniors by default. At the Senior level(Sgrade) we have new attributes **[PR(project_required), MES(Maximum of elective subject)]**

- Online class identifiers :
  - date
  - Subject Topic and Aspect being taught
  - hours of the lecture completed

- Student identifiers :
  - middle name
  - surname
  - firstname
  - date of birth

- sexe
- phone number
- email
- disability

- **The scheme of work** of a particular subject for a particular grade contains weeks numbered from 1 – 12 (on a normal circumstance). **Each week** has one **topic** and each **topic** is divided into **aspects**.
- A subject taught in a grade has only one scheme of work

- There exists also a crucial element **Note of lesson** which is created for every grade in a particular subject and is a detailed guide for a teacher in helping him achieving the core objective for the scheme of work

- An aspects for a particular topic has many of lesson attached but one note of lesson belongs to one and only one aspect

- The note of lesson for each aspect has a unique **contact/interaction numbered from 1- N**

- Note of lesson characteristics
  - Date delivered
  - Topic to be taught
  - Aspect of the topic to be taught
  - Instructional material (what are the resources consulted to make this note of lesson)
  - Lesson Objective
  - Content
  - Methodology/Presentation : which method ?
  - Evaluation
  - Assignment

- **The attendance** for every class is a crucial element for statistical analysis and other necessities. Every attendance is gotten during a particular lecture

- Every student in a lecture is registered in an Attendance

1.2 Les Entites associees

a. Student(Junior / Senior)
b. Grade (Grade / Sgrade)
c. Subject
d. Discipline
e. Lecture
f. Department
g. Teacher (Teacher/ Admin)
h. Note of lesson
i. Video
j. Audio
k. Pdf
l. Scheme of work
m. Topic scheme
n. Aspect scheme
o. Attendance

1.3 **Les Attributs possibles**

ID	Designation Claire
Stu_id	L'id de l'etudiant
Stu_name	Nom de letudiant
Role	Role de l'etudiant superieur
Grade_num	Numero de la classe d'un etudiant
Grade_name	Nom de la classe d'un etudiant
PR	Projet requis dans une classe superieure avant d'etre promu
MES	Nombre maximum des matieres a choisir dans une classe superieure
Dep_code	Code de la filiere
Dep_name	Nom de la filiere
Sub_code	Code de la matiere
Sub_name	Nom de la matiere
Disc_code	Code du discipline
Disc_name	Nom du discipline
T_id	L'id du professeur
T_name	Nom du professeur
Role	Role d'un professeur etant un administrateur

Lec_num	Numero du cours
Lec_date	Date du cours
Hours	Heures d’un cours a une date
Pdf_ref	Reference du pdf d’un cours
Pdf_name	Nom du pdf d’un cours
Vid_ref	Reference de la video d’un cours
Vid_name	Nom de la video d’un cours
Aud_ref	Reference de l’audio d’un cours
Aud_name	Nom de l’audio d’un cours
Att_id	L’id de la prescence des etudiants passant un cours
Status	L’etat sur l’etudiant
week	Semaine du plan du travail(Scheme of work)
topic	Sujet a traiter de la semaine
aspect	Partie/aspect du sujet a traiter
contact	Numero d’interaction d’une note de lecon d’un aspect
objective	objective de l’interaction d’une note de lecon d’un aspect
remark	Feedback d’un prof aux etudiants

1.4 La couverture minimale

Les DFEDs simples

Stu_id → Stu_name
Stu_id → (Junior)
Stu_id → Role, Department (Senior)

Grade_num → Grade_name
Grade_num →PR, MES (Sgrade)

Dep_code → Dep_name

Sub_code → Sub_name

Disc_code → Disc_name

T_id → T_name
T_id →Role (Admin)

Pdf_ref → Pdf_name
Vid_ref → Vid_name
Aud_ref → Aud_name

Les DFEDs a sources composees

Lec_num, Lec_date → Hours
Att_id, Stu_id → Status
T_id, Stu_id → remark

Sub_code, Grade_num, week → topic (entite faible)
Sub_code, Grade_num, aspect → topic (entite faible)

Disc_code, Grade_num, week → topic (entite faible)
Disc_code, Grade_num, aspect → topic (entite faible)
aspect, contact → objective

Les DFEDs des identifiant en source a un identifiant en but

Disc_code → Sub_code

Disc_code, Grade_num → T_id (Grade/Sgrade)
Sub_code, Grade_num → T_id (Grade/Sgrade)

Les DFEDs des identifiant en sources aux identifiants en but

Att_id → Lec_num, Lec_date

Stu_id → Att_id
Stu_id → Grade_num (Junior)
Stu_id → Dep_code, Grade_num (Senior, Sgrade)

Sub_code, Dep_code → T_id, Grade_num (Sgrade)

Disc_code, Dep_code → T_id, Grade_num (Sgrade)

Stu_id, Sub_code → T_id (Senior, Sgrade)

Stu_id, Disc_code → T_id(Senior, Sgrade)

Lec_num, Lec_date → T_id, Grade_num, Sub_code
Lec_num, Lec_date → T_id, Grade_num, Sub_code (Sgrade)

Lec_num, Lec_date → T_id, Grade_num, Disc_code
Lec_num, Lec_date → T_id, Grade_num, Disc_code (Sgrade)

Pdf_ref → Lec_num, Lec_date
Aud_ref →Lec_num, Lec_date
Vid_ref → Lec_num, Lec_date

Les DFEDs Completes

Stu_id → Stu_name, **Att_id**
Stu_id → **Grade_num** (Junior)
Stu_id → Role, **Dep_code**, **Grade_num** (Senior, Sgrade)

Grade_num → Grade_name
Grade_num → PR, MES (Sgrade)

Dep_code → Dep_name

Sub_code → Sub_name
Disc_code → Disc_name, **Sub_code**

T_id → T_name
T_id → Role (Admin)
T_id, **Stu_id** → remark

Stu_id, **Sub_code** → **T_id**
Stu_id, **Disc_code** → **T_id**

Sub_code, **Dep_code** → **T_id**, **Grade_num** (Sgrade)
Disc_code, **Dep_code** → **T_id**, **Grade_num** (Sgrade)

Disc_code, **Grade_num** → **T_id** (Grade/Sgrade)
Sub_code, **Grade_num** → **T_id** (Grade/Sgrade)

Pdf_ref → Pdf_name, **Lec_num**, **Lec_date**
Aud_ref → Aud_name, **Lec_num**, **Lec_date**
Vid_ref → Vid_name, **Lec_num, Lec_date**

Att_id → Lec_num, Lec_date
Att_id, **Stu_id** → Status

aspect, **contact** → objective

Sub_code, **Grade_num**, **week** → topic (entite faible)
Sub_code, **Grade_num**, **aspect** → topic (entite faible)

Disc_code, **Grade_num**, **week** → topic (entite faible)
Disc_code, **Grade_num**, **aspect** → topic (entite faible)

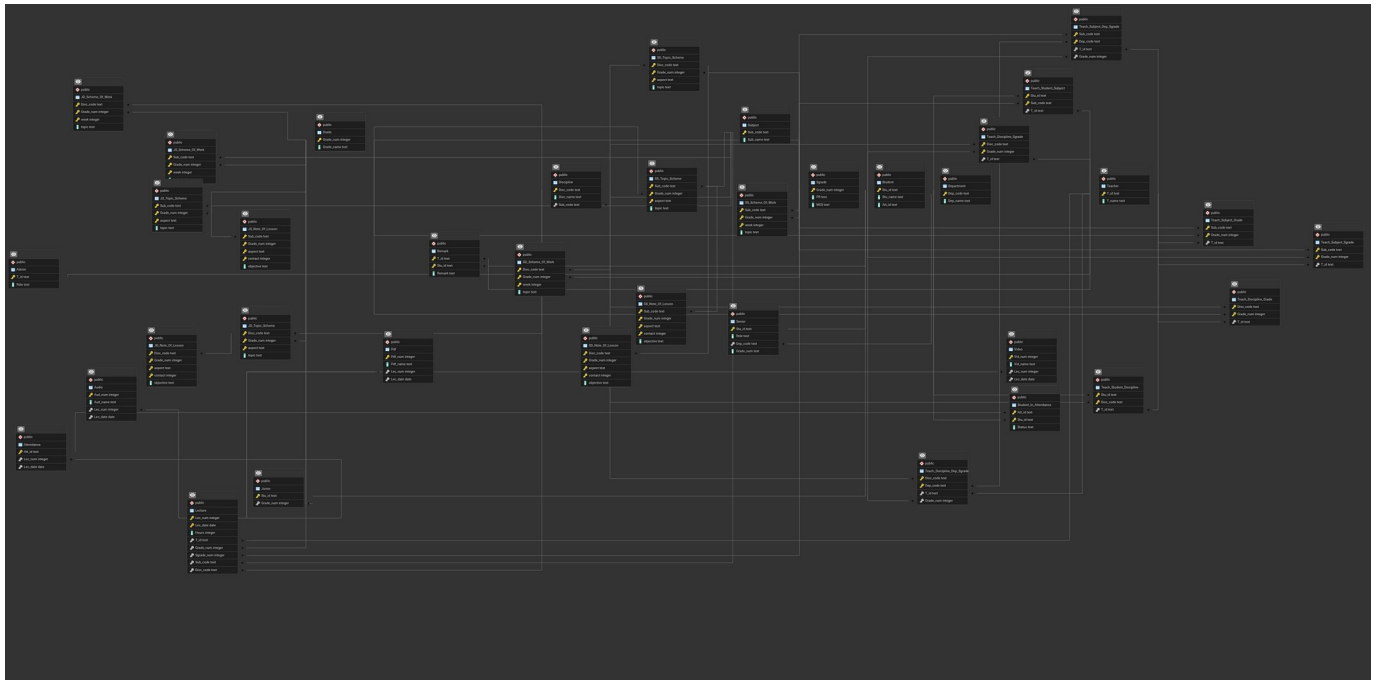
Lec_num, **Lec_date** → Hours, **T_id**, **Grade_num**, **Grade_num**, **Sub_code**, **Disc_code** (Grade/Sgrade)

Table de Renseignement

N.	**Identifiant**	**Object Renseigne**
1	Stu_id	Student
2	Stu_id	Junior
3	Stu_id	Senior
4	Grade_num	Grade
5	Grade_num	Sgrade
6	Sub_code	Subject
7	Disc_code	Discipline
8	T_id	Teacher
9	T_id	Admin

10	Lec_num	Lecture
11	Pdf_ref	Pdf
12	Aud_ref	Audio
13	Vid_ref	Video
14	week	Scheme_of_Work
15	topic	Topic_Scheme
16	aspect	Aspect_scheme
17	Att_id	Attendance
18	contact	Note_Of_Lesson

1.5 **Le MCD**



1.6 **Le MLD**

Student (Stu_id, Stu_name, #Att_id)
Junior(#Stu_id, #Grade_num)
Senior (#Stu_id, Role, #Dep_code, #Grade_num) (Sgrade)

Grade (Grade_num, Grade_name)
Sgrade (#Grade_num, PR, MES)

Department (Dep_code, Dep_name)

Subject (Sub_code, Sub_name)
Discipline (Disc_code, Disc_name, #Sub_code)

Teacher (T_id, T_name)
Admin (#T_id, role)

Remark(#T_id, #Stu_id, remark)

Teach_Student_Subject(Stu_id, Sub_code, #T_id)
Teach_Student_Discipline(Stu_id, Disc_code, #T_id)

Teach_Subject_Dep_Sgrade(Sub_code, Dep_code , #T_id, #Grade_num) (Sgrade)
Teach_Discipline_Dep_Sgrade(Disc_code, Dep_code , #T_id, #Grade_num) (Sgrade)

Teach_Discipline_Grade(Disc_code, Grade_num, #T_id) (Grade)
Teach_Discipline_Sgrade(Disc_code, Grade_num, #T_id) (Sgrade)

Teach_Subject_Grade (Sub_code, Grade_num, #T_id **)** (Grade)
Teach_Subject_Sgrade (Sub_code, Grade_num, #T_id **)** (Sgrade)

Pdf (Pdf_num, Pdf_name, #Lec_num, #Lec_date)
Audio (Aud_num, Aud_name, #Lec_num, #Lec_date)
Video (Vid_num, Vid_name, #Lec_num, #Lec_date)

Attendance (Att_id, #Lec_num, #Lec_date)

Student_In_Attendance(#Att_id, #Stu_id, Status)

JSScheme_Of_Work (#Sub_code, #Grade_num, week, topic) (Grade)
SSScheme_Of_Work (#Sub_code, #Grade_num, week, topic) (Sgrade)

JSTopic_Scheme (#Sub_code, #Grade_num, aspect, topic) (Grade)
SSTopic_Scheme (#Sub_code, #Grade_num, aspect, topic) (Sgrade)

JDScheme_Of_Work (#Disc_code, #Grade_num, week, topic) (Grade)
SDScheme_Of_Work (#Disc_code, #Grade_num, week, topic) (Sgrade)

JDTopic_Scheme (#Disc_code, #Grade_num, aspect, topic) (Grade)
SDTopic_Scheme (#Disc_code, #Grade_num, aspect, topic) (Sgrade)

Note_Of_Lesson (#aspect, contact, objective)

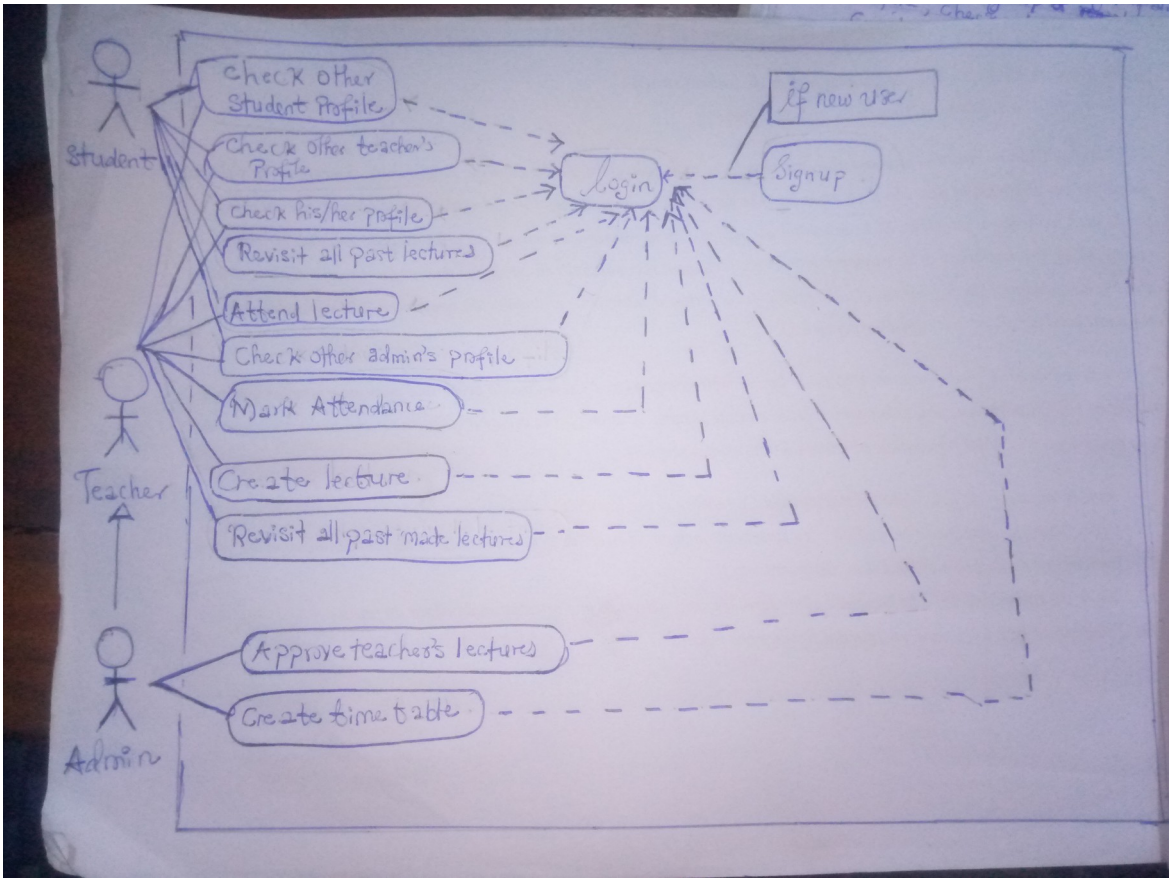
Lecture (Lec_num, Lec_date, Hours, #T_id, #Grade_num, #Grade_num, #Sub_code, #Disc_code)

2 UML

2.1 **Use Case**

- A student sign up or login if already signed up, check his/her profile, check time table, attend lectures, revisit all past lectures in his desk, check others profile

- A teacher sign up or login if already signed up, check his/her profile, check timetable, mark attendance, create lectures, revisit all past lectures, check others profile
- An admin logs in, approve teacher’s lectures, do what teacher does, create timetable based on time period


Student
Teacher
Admin
Check other Student Profile
Check other teacher's Profile
Check his/her profile
Revisit all past lectures
Attend lecture
Check other admin's profile
Mark Attendance
Create lecture
Revisit all past made lectures
Approve teacher's lectures
Create time table
Login
If new user
Signup