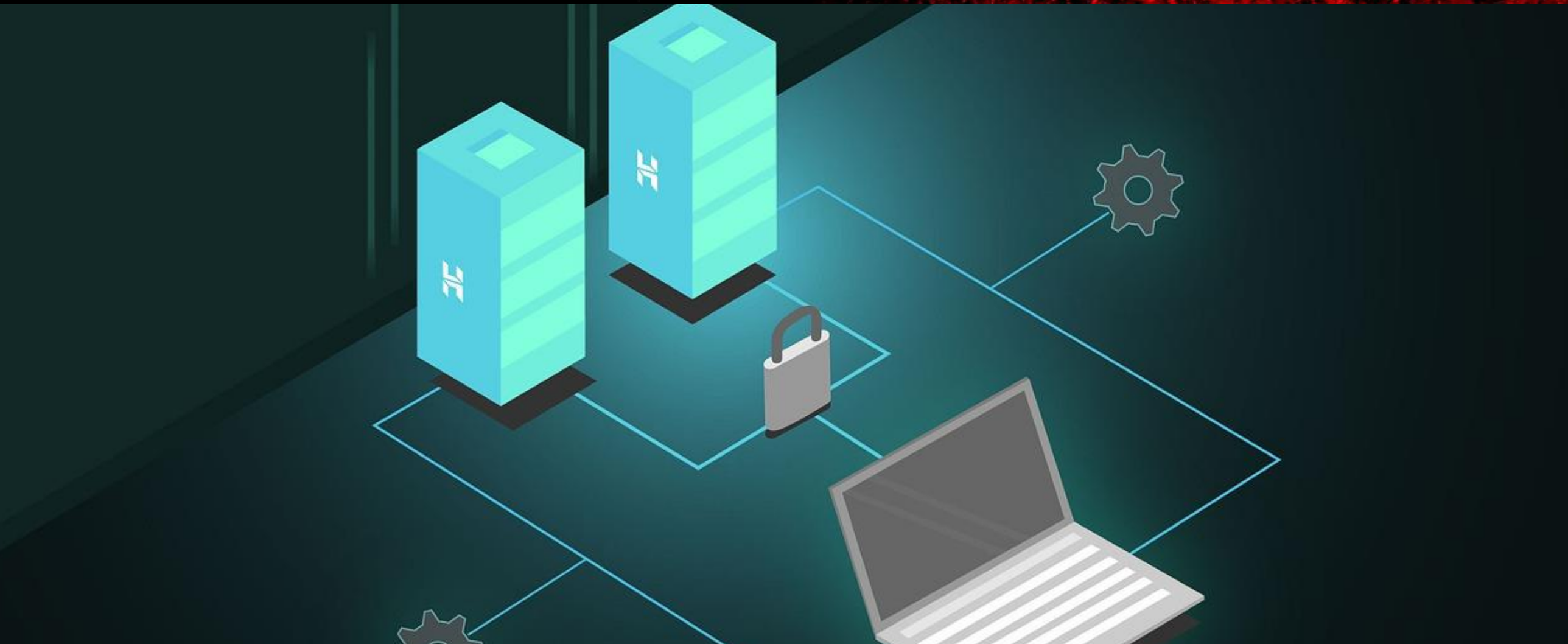
College Management System



Group Members

BT21CSE194

GYANBARDHAN

BT21CSE195

M AZEEM KHAN

BT21CSE198

HIMANSHU SINGH

BT21CSE202

YASH PATIDAR

Problem Statement

A college contains many departments. Each department can offer any number of courses. Many instructors can work in a department, but an instructor can work only in one department. For each department, there is a head, and an instructor can be head of only one department. Each instructor can take any number of courses, and a course can be taken by only one instructor. A student can enroll for any number of courses and each course can have any number of students. Requirements other than the above can be added.

Requirement Analysis

1 Admin

The admin has overall control and can perform all administrative tasks, including editing, deleting, and updating information across the entire system. This role is responsible for managing user accounts, overseeing departments, instructors, courses, students, and person details.

2 College Departments

The college consists of multiple departments, each with a unique department number and name.

3 Instructors and Courses

Instructors work in a single department and can offer multiple courses within their department.

4 Students and Courses

Students can enroll in multiple courses, and each course can have multiple students.

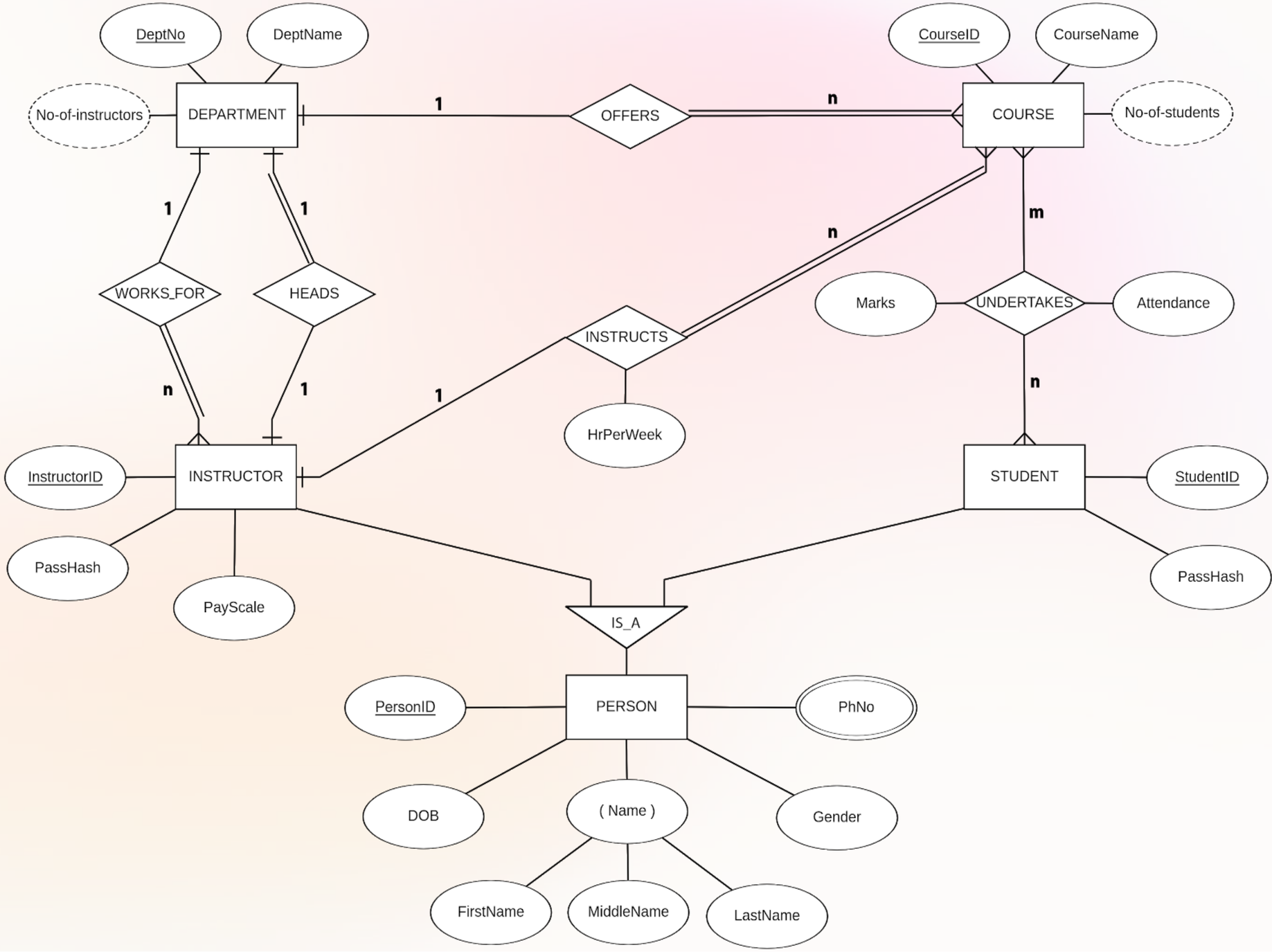
5 Person Details

Each person has a first name, last name, date of birth, and gender.

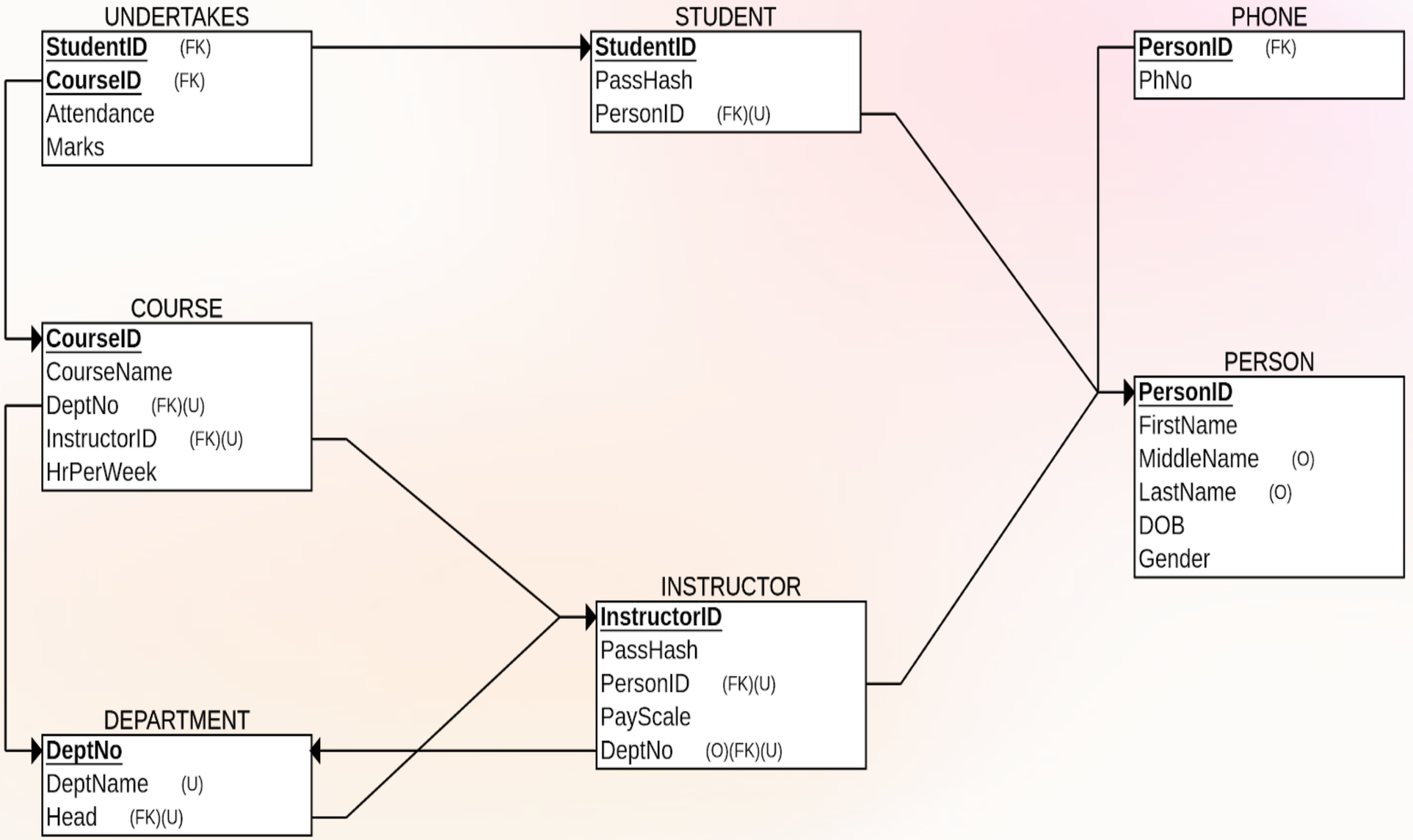
Assumptions

- Every department has a unique Department Number and Department Name.
- Every course has a globally unique Course ID and Course Name.
- A person in general (instructor or student) has a First Name, Middle Name (optional), Last Name (optional), Date of Birth, and Gender.
- A person may have one or more Phone Numbers.
- Every instructor, in addition, has a unique Instructor ID and Pay Scale.
- Every student, in addition, has a unique Student ID.
- Both instructors and students have a saved Password Hash required for login.
- Every course has a count of the Hours per Week it is taken by its instructor.
- Every course associated with a student has a record of the Attendance and Marks obtained by the student in that course.

ER Diagram


DeptNo
DeptName
No-of-instructors
DEPARTMENT
1
OFFERS
n
CourseID
CourseName
COURSE
No-of-students
1
1
WORKS_FOR
HEADS
n
m
n
Marks
UNDERTAKES
Attendance
INSTRUCTS
n
1
1
HrPerWeek
InstructorID
INSTRUCTOR
STUDENT
StudentID
PassHash
PayScale
IS_A
PassHash
PersonID
PERSON
PhNo
DOB
(Name)
Gender
FirstName
MiddleName
LastName

Relational Schema Diagram



College Management System

Login

Exam Schedule Academic Calender

Notice

- Notice of Implementation of Y Break Protocol and Installation of Namaste Yoga App
- NOTICE FOR WRITTEN TEST FOR NON-TEACHING POSITIONS (Ref: Advt. No.: IIITN/ADMIN/NTSR/2023-24/Rec-01 dated 15/04/2023)
- Chandrayaan-3 Maha Quiz
- 3rd CONVOCATION NOTICE
- Circular of Har Ghar Tiranga
- Report on NIRMAN Youth Program
- Short Video Competition on Implementation of NEP 2020
- 'YUVA PRATIBHA - Singing and Painting Talent Hunt'

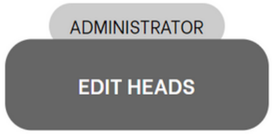
College Management System

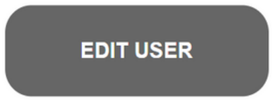
USER ID

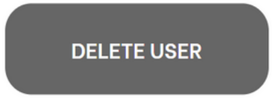
PASSWORD

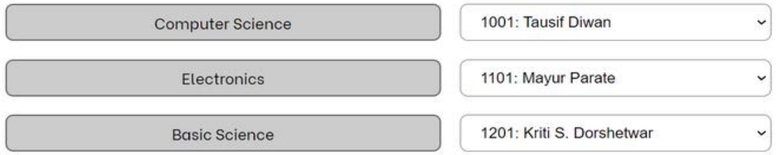
LOGIN

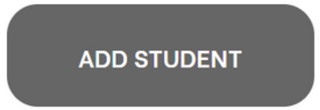
Remember Me

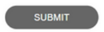








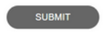




STUDENT

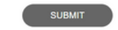
2001

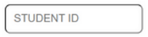
PHONE:



PHONE:

DEPARTMENT:





PHONE:

INSTRUCTOR

Computer Science

EDIT DEPARTMENT COURSES

Tausif Diwan

1001

CS103	Data Structures with Applications	**5** students	**25** classes

HEAD

Computer Science

SUBMIT

CS101	IT Workshop-I	1010
CS102	Application Programming	1002
CS103	Data Structures with Applications	1001
CS104	Object Oriented Programming	1005
CS105	Computer System Organisation	1008
CS106	Design and Analysis of Algorithms	1007
CS107	Software Engineering	1006
CS108	Operating Systems	1003
CS109	Design Principles of Programming	1010

STUDENT

LOGOUT

Gyanbardhan

2001

Computer Science	CS101	IT Workshop-I

Total Classes: 25 Classes Attended: 24 Attendance: 96%

Internal Marks: 25 Paper Marks: 68 Total: 93 Grade Point: 10

Computer Science	CS103	Data Structures with Applications

Total Classes: 25 Classes Attended: 14 Attendance: 56%

Internal Marks: 24 Paper Marks: 65 Total: 89 Grade Point: 9

Computer Science	CS104	Object Oriented Programming

Total Classes: 25 Classes Attended: 24 Attendance: 96%

Internal Marks: 30 Paper Marks: 60 Total: 90 Grade Point: 10

INSTRUCTOR

LOGOUT

Computer Science

Mayuri A. Digalwar

1005

CS104	Object Oriented Programming	**5** students	**25** classes
CS110	Database Management Systems	**5** students	**25** classes

INSTRUCTOR

BACK

Computer Science

SUBMIT

CS104	Object Oriented Programming	-	**25** classes	+

		Classes	Paper	Internal
2001	Gyanbardhan	24	60	30
2002	Azeem Khan	22	55	26
2003	Himanshu Singh	23	50	20
2004	Yash Patidar	12	60	22
2005	Abhishek Kumar Rana	16	65	24

Normalization

FIRST NORMAL FORM

In all tables, every attribute is atomic and takes only one value from its domain. Hence all are in their First Normal Form (1NF).

SECOND NORMAL FORM

Table	Super Key
DEPARTMENT	DeptNo
PERSON	PersonID
PHONE	PersonID
INSTRUCTOR	InstructorID
COURSE	CourseID
STUDENT	StudentID
UNDERTAKES	StudentID, CourseID

In all but the last table, there is only one attribute forming the super key. Hence, in all such tables, the super key is the candidate key. Therefore, the relations are in their Second Normal Form (2NF).

In table *UNDERTAKES*, the functional dependencies are:

(*StudentID*, *CourseID*) $\longrightarrow$ *Attendance*

(*StudentID*, *CourseID*) $\longrightarrow$ *Marks*

Removing either StudentID or CourseID cannot identify the Attendance and Marks uniquely. Hence, the super key is the candidate key. Therefore, the relation is in its Second Normal Form (2NF).

Third Normal Form

DEPARTMENT:

DeptNo →DeptNo

DeptNo → DeptName

DeptNo → Head

DeptName → Head

We can remove the transitive dependency

DeptNo →DeptName → Head.

Hence, new FDs are:

DeptNo → DeptNo

DeptNo →DeptName

DeptNo → Head

PERSON:

PersonID →PersonID

PersonID → FirstName

PersonID → MiddleName

PersonID → LastName

PersonID → DOB

PersonID → Gender

There are no transitive dependencies; relation is in its Third Normal Form (3NF).

PHONE:

PersonID →PersonID

PersonID → PhNo

There are no transitive dependencies; relation is in its Third Normal Form (3NF).

Third Normal Form

INSTRUCTOR:
InstructorID →InstructorID
InstructorID → PassHash
InstructorID → PersonID
InstructorID → PayScale
InstructorID → DeptNo
There are no transitive dependencies; relation is in its Third Normal Form (3NF).

COURSE:
CourseID →CourseID
CourseID → CourseName
CourseID → DeptNo
CourseID → InstructorID
CourseID → HrPerWeek
There are no transitive dependencies; relation is in its Third Normal Form (3NF).

STUDENT:
StudentID →StudentID
StudentID → PassHash
StudentID → PersonID
There are no transitive dependencies; relation is in its Third Normal Form (3NF).

UNDERTAKES:
(StudentID, CourseID)→StudentID, CourseID
(StudentID, CourseID)→ Attendance
(StudentID, CourseID)→ Marks
There are no transitive dependencies; relation is in its Third Normal Form (3NF).