# S3 CSBS Database Management Systems Lab Mini Project

# Team 6

## Problem Statement:

Implement University Database Management System

## Team Members:

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## Theoretical Background:

### Entity relationship diagram:

An Entity Relationship Diagram is a diagram that represents relationships among entities in a database. It is commonly known as an ER Diagram. An ER Diagram in DBMS plays a crucial role in designing the database. Today's business world previews all the requirements demanded by the users in the form of an ER Diagram. Later, it's forwarded to the database administrators to design the database

### Relational Entity relationship diagram:

A relational schema is a set of relational tables and associated items that are related to one another. All of the base tables, views, indexes, domains, user roles, stored modules, and other items that a user creates to fulfill the data needs of a particular enterprise or set of applications belong to one schema. SQL provides a statement to define a relational schema

## MySQL:

MySQL is a relational database management system (RDBMS) developed by Oracle that is based on structured query language (SQL). A database is a structured collection of data. It may be anything from a simple shopping list to a picture gallery or a place to hold the vast amounts of information in a corporate network.

## MySQL – python connector:

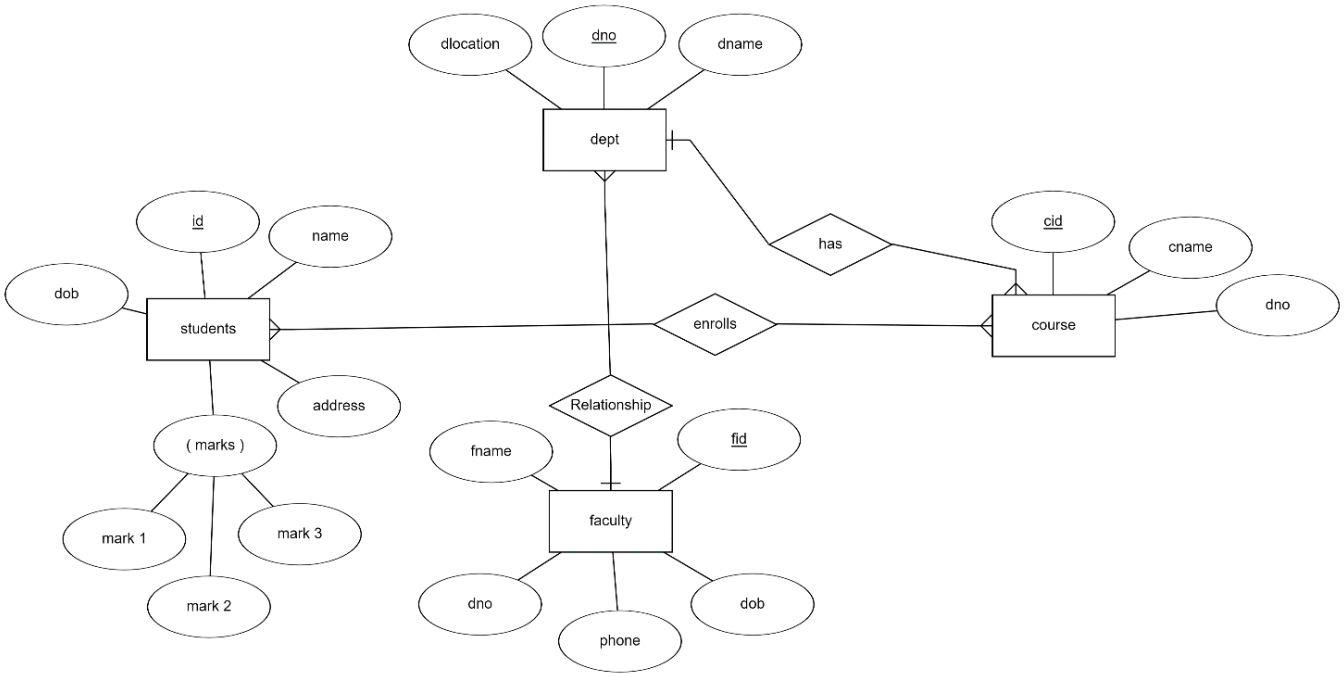
MySQL Connector/Python enables Python programs to access MySQL databases, using an API that is compliant with the Python Database API Specification v2.0

MySQL Connector/Python includes support for:

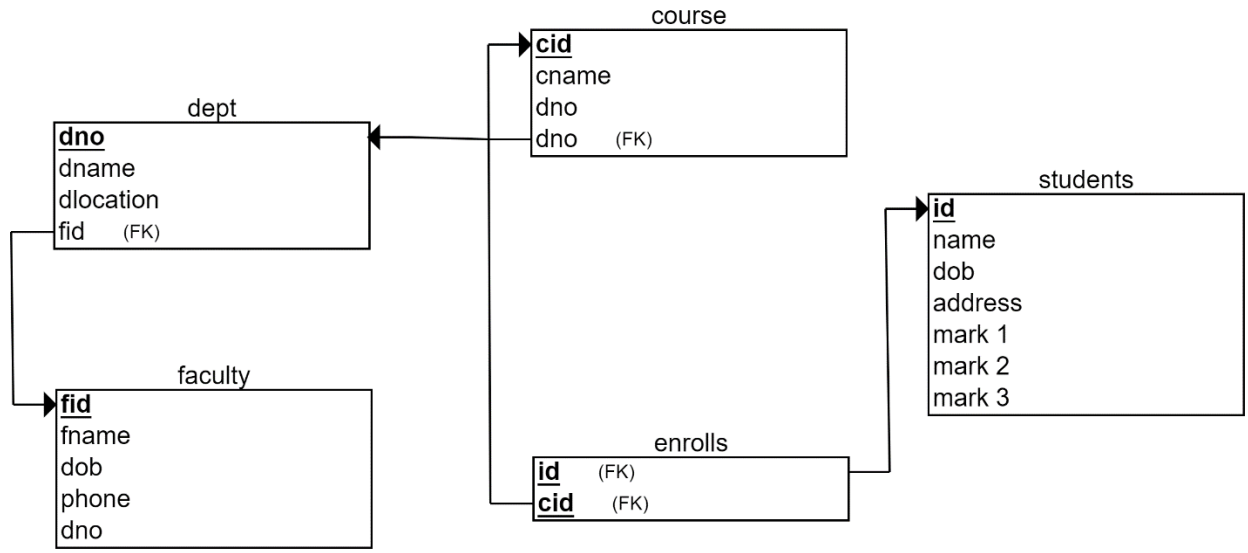
- Almost all features provided by MySQL Server up to and including MySQL Server version 8.0.

  Connector/Python 8.0 also supports X DevAPI. For documentation of the concepts and the usage of MySQL Connector/Python with X DevAPI, see X DevAPI User Guide.
- Converting parameter values back and forth between Python and MySQL data types, for example Python datetime and MySQL DATETIME. You can turn automatic conversion on for convenience, or off for optimal performance.
- All MySQL extensions to standard SQL syntax.
- Protocol compression, which enables compressing the data stream between the client and server.
- Connections using TCP/IP sockets and on Unix using Unix sockets.
- Secure TCP/IP connections using SSL.
- Self-contained driver. Connector/Python does not require the MySQL client library or any Python modules outside the standard library.

## ER Diagram:




## Relational Schema:



## Program Code:

```
import mysql.connector as conn

mydb = conn.connect(
            host="localhost",
            user="root",
            password="12345",
            database="mathenndb"
       )

cur=mydb.cursor()

cur.execute("CREATE TABLE IF NOT EXISTS dept (dno INT AUTO_INCREMENT PRIMARY KEY, dname VARCHAR(255),
dlocation VARCHAR(20))")

cur.execute("CREATE TABLE IF NOT EXISTS course (cid INT AUTO_INCREMENT PRIMARY KEY, cname
VARCHAR(255), dno INT, FOREIGN KEY(dno) REFERENCES dept(dno))")

cur.execute("CREATE TABLE IF NOT EXISTS students (id INT AUTO_INCREMENT PRIMARY KEY, name
VARCHAR(255), dob DATE, address VARCHAR(255), mark1 INT, mark2 INT, mark3 INT, cid INT, FOREIGN
KEY(cid) REFERENCES course(cid))")

cur.execute("CREATE TABLE IF NOT EXISTS faculty (fid INT AUTO_INCREMENT PRIMARY KEY, fname
VARCHAR(255), dob DATE, phone INT, dno INT, FOREIGN KEY(dno) REFERENCES dept(dno))")
#*************************************************************************************************
******************
class dept:

    def get_dept(self):
        dno = input("Enter DEPT ID : ")
        dname = input("Enter DEPT name : ")
        dlocation = input("Enter location : ")
        sql = "INSERT INTO dept(dno, dname, dlocation) VALUES (%s, %s, %s)"
        val = (dno, dname, dlocation)
        cur.execute(sql, val)
        mydb.commit()
        print("Department added successfully!")
        print()

    def put_dept(self):
```

```
        cur.execute("SELECT * FROM dept")
        result = cur.fetchall()
        if result:
            for row in result:
                print()
                print("Department Number: " + str(row[0]))
                print("Department Name: " + row[1])
                print("Department location: " + str(row[2]))
                print()
        else:
            print("No departments available")


#*****************************************************************************************************
******************
class course:
    def get_course(self):
        cid=input("Enter couse id: ")
        cname=input("Enter course name: ")
        dno=input("Enter department id: ")
        sql = "INSERT INTO course(cid,cname,dno) VALUES (%s, %s, %s)"
        val = (cid,cname,dno)
        cur.execute(sql, val)
        mydb.commit()
        print("Course added successfully!")
        print()

    def view_course(self):
        cur.execute("SELECT * FROM course")
        result = cur.fetchall()
        if result:
            for row in result:
                print()
                print("Course ID: " + str(row[0]))
                print("Course Name: " + row[1])
                print("Department ID: " + str(row[2]))
                print()
        else:
            print("No courses available!")
```

```
#*****************************************************************************************************
******************
class students:
    def get_student(self):
        id = input("Enter id: ")
        name = input("Enter name: ")
        dob  = input("Enter dob(format:YYYY-MM-DD): ")
        address = input("Enter address: ")
        cid = input("Enter course id: ")
        mark1 = mark2 = mark3 = '0'
        sql = "INSERT INTO students (id, name, dob, address, mark1, mark2, mark3, cid) VALUES (%s, %s,
%s, %s, %s, %s, %s, %s)"
        val = (id, name, dob, address, mark1, mark2, mark3, cid)
        cur.execute(sql, val)
        mydb.commit()
        print("STUDENT ADDED SUCCESSFULLY!")
        print()

    def put_student(self):
        id = input("Enter id: ")
        sql = "SELECT * FROM students WHERE id = %s"
        val = (id,)
        cur.execute(sql, val)
        result = cur.fetchone()
        if result:
            print()
            print("ID: " + str(result[0]))
            print("Name: " + result[1])
            print("DOB: " + str(result[2]))
            print("Address: " + result[3])
            print("Course: " + str(result[7]))
            print("Maths mark: " + str(result[4]))
            print("Physics mark: " + str(result[5]))
            print("Chemistry mark: " + str(result[6]))
            print()
        else:
            print("Student not found!")

    def put_mark(self):
        id = input("Enter id: ")
        sql = "SELECT name, mark1, mark2, mark3 FROM students WHERE id = %s"
        val = (id,)
```

```
        cur.execute(sql, val)
        result = cur.fetchone()
        if result:
            print()
            print("Name: " + str(result[0]))
            print("Maths mark: " + str(result[1]))
            print("Physics mark: " + str(result[2]))
            print("Chemistry mark: " + str(result[3]))
            print()
        else:
            print("Student not found!")


#**************************************************************************************************
******************
class faculty:

    def get_faculty(self):
        fid = input("Enter Faculty ID: ")
        fname = input("Enter Faculty name: ")
        dob =  input("Enter date of birth: ")
        phone = input("Enter Phone number: ")
        dno = input("Enter Department number: ")
        sql = "INSERT INTO Faculty(fid, fname, dob, phone, dno) VALUES (%s, %s, %s, %s, %s)"
        val = (fid, fname, dob, phone, dno)
        cur.execute(sql, val)
        mydb.commit()
        print("Faculty added successfully!")
        print()

    def put_faculty(self):
        cur.execute("SELECT *, dname FROM Faculty, dept where Faculty.dno = dept.dno")
        result = cur.fetchall()
        if result:
            for row in result:
                print()
                print("FACULTY ID        : " + str(row[0]))
                print("NAME              : " + row[1])
                print("DOB               : " + str(row[2]))
                print("PHONE NUMBER      : " + str(row[3]))
                print("DEPARTMENT NUMBER : " + str(row[4]))
                print("DEPARTMENT NAME   : " + str(row[6]))
```

```
            print()
        else:
            print("No available faculties!")

    def view_all_stud(self):
        cur.execute("SELECT * FROM students")
        result = cur.fetchall()

        for row in result:
            print()
            print("ID            : " + str(row[0]))
            print("Name          : " + (row[1]))
            print("DOB           : " + str(row[2]))
            print("Address       : " + (row[3]))
            print("Course        : " + str(row[7]))
            print("Maths mark    : " + str(row[4]))
            print("Physics mark  : " + str(row[5]))
            print("Chemistry mark: " + str(row[6]))
            print()

    def get_mark(self):
        id=input("Enter ID:")
        m1=input("Enter math marks:")
        m2=input("Enter physics marks:")
        m3=input("Enter chemistry marks:")
        sql="update students set mark1=%s, mark2=%s, mark3=%s where id=%s"
        val=(m1, m2, m3, id,)
        cur.execute(sql, val)
        mydb.commit()
        print("Mark Added!")
        print()

    def edit_mark(self):
        id = input("Enter id: ")
        while True:
            print("\n1. Maths")
            print("2. Physics")
            print("3. Chemistry")
            print("0. Go Back")
            ch1 = input("\nEnter choice: ")
            if ch1 == "1":
                m=input("Enter Maths marks:")
```

```
                sql="UPDATE students SET mark1=%s WHERE id=%s"
                val = (m,id)
                cur.execute(sql, val)
            elif ch1 == "2":
                m=input("Enter Physics marks:")
                sql="UPDATE students SET mark2=%s WHERE id=%s"
                val = (m,id)
                cur.execute(sql, val)
            elif ch1 == "3":
                m=input("Enter Chemistry marks:")
                sql = "UPDATE students SET mark3=%s WHERE id=%s"
                val = (m,id)
                cur.execute(sql, val)
            elif ch1 == "0":
                break
            else:
                print("\nInvalid choice.Please try again.")


#*************************************************************************************************
******************
dept1=dept()
stud1=students()
cr1=course()
fac1=faculty()

while True:
    print("\nUNIVERSITY DATABSE MANAGEMENT SYSTEM\n")
    print("1. STUDENT'S CORNER")
    print("2. FACULTY'S CORNER")
    print("3. ABOUT COURSES")
    print("4. ABOUT DEPARTMENTS")
    print("5. TRUNCATE(DELETE) ALL DATA")
    print("0. EXIT")
    ch = input("\nEnter your choice: ")

#************************************************************************
    if ch == "1":
        while True:
            print("\n1. Enter Student Details")
            print("2. Show Student Details")
            print("3. View marks")
```

```
            print("0. Go back")
            ch1 = input("\nEnter choice: ")
            if ch1 == "1":
                stud1.get_student()
            elif ch1 == "2":
                stud1.put_student()
            elif ch1 == "3":
                stud1.put_mark()
            elif ch1=="0":
                break
            else:
                print("\nInvalid choice. Please try again.")

#*************************************************************************
    elif ch == "2":
        while True:
            print("\n1. Enter Faculty Details")
            print("2. Show Faculty Details")
            print("3. View All Students")
            print("4. Enter Student Marks")
            print("5. Modify Student Marks")
            print("0. Go back")
            ch1 = input("\nEnter choice: ")
            if ch1 == "1":
                fac1.get_faculty()
            elif ch1 == "2":
                fac1.put_faculty()
            elif ch1 == "3":
                fac1.view_all_stud()
            elif ch1 == "4":
                fac1.get_mark()
            elif ch1 == "5":
                fac1.edit_mark()
            elif ch1=="0":
                break
            else:
                print("\nInvalid choice. Please try again.")

#*************************************************************************
    elif ch == "3":
        while True:
            print("\n1. Register Course")
```

```
            print("2. View available Courses")
            print("0. Go back")
            ch1 = input("\nEnter choice: ")
            if ch1 == "1":
                cr1.get_course()
            elif ch1 == "2":
                cr1.view_course()
            elif ch1=="0":
                break
            else:
                print("\nInvalid choice. Please try again.")

#*****************************************************************************
    elif ch == "4":
        while True:
            print("\n1. Add Department")
            print("2. View Department")
            print("0. Go back")
            ch1 = input("\nEnter choice: ")
            if ch1 == "1":
                dept1.get_dept()
            elif ch1 == "2":
                dept1.put_dept()
            elif ch1 == "0":
                break
            else:
                print("\nInvalid choice. Please try again.")

#*****************************************************************************
    elif ch == '5':
        def trun():
            print("Are You Sure to TRUNCATE All VALUES (Y/N)")
            x=input()
            if (x=="Y" or x=="y"):
                cur.execute("TRUNCATE table students")
                cur.execute("TRUNCATE table faculty")
                cur.execute("TRUNCATE table course")
                cur.execute("TRUNCATE table dept")
                mydb.commit()
                print("Tables Truncated")
            else:
                print("Revoked by User")
```

```
        trun()


#*************************************************************************
    elif ch == "0":
        print("\nHAVE A NICE DAY :)")
        break


    else:
        print("\nInvalid choice. Please try again.")
```

## Output:

```
UNIVERSITY DATABSE MANAGEMENT SYSTEM

1. STUDENT'S CORNER
2. FACULTY'S CORNER
3. ABOUT COURSES
4. ABOUT DEPARTMENTS
5. TRUNCATE(DELETE) ALL DATA
0. EXIT

Enter your choice: 1

1. Enter Student Details
2. Show Student Details
3. View marks
0. Go back

Enter choice: 2
Enter id: 1

ID: 1
Name: Noel
DOB: 2003-05-14
Address: Aluva
Course: 1
Maths mark: 80
Physics mark: 70
Chemistry mark: 80


1. Enter Student Details
2. Show Student Details
3. View marks
0. Go back

Enter choice: 2
Enter id: 2

ID: 2
Name: Allen
DOB: 2002-11-11
Address: Muvatupuzha
Course: 1
Maths mark: 80
Physics mark: 50
Chemistry mark: 100
```

```
1. Enter Student Details
2. Show Student Details
3. View marks
0. Go back

Enter choice: 2
Enter id: 3
Student not found!

1. Enter Student Details
2. Show Student Details
3. View marks
0. Go back

Enter choice: 1
Enter id: 3
Enter name: Roshni
Enter dob(format:YYYY-MM-DD): 1912-01-23
Enter address: Kakkanadu
Enter course id: 1
STUDENT ADDED SUCCESSFULLY!


1. Enter Student Details
2. Show Student Details
3. View marks
0. Go back

Enter choice: 2
Enter id: 3

ID: 3
Name: Roshni
DOB: 1912-01-23
Address: Kakkanadu
Course: 1
Maths mark: 0
Physics mark: 0
Chemistry mark: 0


1. Enter Student Details
2. Show Student Details
3. View marks
0. Go back
```

```
Enter choice: 0

UNIVERSITY DATABSE MANAGEMENT SYSTEM

1. STUDENT'S CORNER
2. FACULTY'S CORNER
3. ABOUT COURSES
4. ABOUT DEPARTMENTS
5. TRUNCATE(DELETE) ALL DATA
0. EXIT

Enter your choice: 2

1. Enter Faculty Details
2. Show Faculty Details
3. View All Students
4. Enter Student Marks
5. Modify Student Marks
0. Go back

Enter choice: 2

FACULTY ID        : 1
NAME              : Diana
DOB               : 1996-01-14
PHONE NUMBER      : 923558684
DEPARTMENT NUMBER : 1
DEPARTMENT NAME   : IT


FACULTY ID        : 2
NAME              : Jobin
DOB               : 1918-03-12
PHONE NUMBER      : 923859454
DEPARTMENT NUMBER : 2
DEPARTMENT NAME   : Mech


1. Enter Faculty Details
2. Show Faculty Details
3. View All Students
4. Enter Student Marks
5. Modify Student Marks
0. Go back
```

```
Enter choice: 3

ID            : 1
Name          : Noel
DOB           : 2003-05-14
Address       : Aluva
Course        : 1
Maths mark    : 80
Physics mark  : 70
Chemistry mark: 80


ID            : 2
Name          : Allen
DOB           : 2002-11-11
Address       : Muvatupuzha
Course        : 1
Maths mark    : 80
Physics mark  : 50
Chemistry mark: 100


ID            : 3
Name          : Roshni
DOB           : 1912-01-23
Address       : Kakkanadu
Course        : 1
Maths mark    : 0
Physics mark  : 0
Chemistry mark: 0


1. Enter Faculty Details
2. Show Faculty Details
3. View All Students
4. Enter Student Marks
5. Modify Student Marks
0. Go back

Enter choice: 1
Enter Faculty ID: 3
Enter Faculty name: Binu
Enter date of birth: 1998-01-04
Enter Phone number: 91387485
Enter Department number: 1
```

```
Faculty added successfully!


1. Enter Faculty Details
2. Show Faculty Details
3. View All Students
4. Enter Student Marks
5. Modify Student Marks
0. Go back

Enter choice: 1
Enter Faculty ID: 4
Enter Faculty name: Biju
Enter date of birth: 1995-03-23
Enter Phone number: 743868546
Enter Department number: 3
Faculty added successfully!


1. Enter Faculty Details
2. Show Faculty Details
3. View All Students
4. Enter Student Marks
5. Modify Student Marks
0. Go back

Enter choice: 2

FACULTY ID        : 1
NAME              : Diana
DOB               : 1996-01-14
PHONE NUMBER      : 923558684
DEPARTMENT NUMBER : 1
DEPARTMENT NAME   : IT


FACULTY ID        : 3
NAME              : Binu
DOB               : 1998-01-04
PHONE NUMBER      : 91387485
DEPARTMENT NUMBER : 1
DEPARTMENT NAME   : IT
```

```
FACULTY ID        : 2
NAME              : Jobin
DOB               : 1918-03-12
PHONE NUMBER      : 923859454
DEPARTMENT NUMBER : 2
DEPARTMENT NAME   : Mech


FACULTY ID        : 4
NAME              : Biju
DOB               : 1995-03-23
PHONE NUMBER      : 743868546
DEPARTMENT NUMBER : 3
DEPARTMENT NAME   : CSE


1. Enter Faculty Details
2. Show Faculty Details
3. View All Students
4. Enter Student Marks
5. Modify Student Marks
0. Go back

Enter choice: 4
Enter ID:3
Enter math marks:90
Enter physics marks:50
Enter chemistry marks:85
Mark Added!


1. Enter Faculty Details
2. Show Faculty Details
3. View All Students
4. Enter Student Marks
5. Modify Student Marks
0. Go back

Enter choice: 3

ID            : 1
Name          : Noel
DOB           : 2003-05-14
Address       : Aluva
Course        : 1
```

```
Maths mark    : 80
Physics mark  : 70
Chemistry mark: 80


ID            : 2
Name          : Allen
DOB           : 2002-11-11
Address       : Muvatupuzha
Course        : 1
Maths mark    : 80
Physics mark  : 50
Chemistry mark: 100


ID            : 3
Name          : Roshni
DOB           : 1912-01-23
Address       : Kakkanadu
Course        : 1
Maths mark    : 90
Physics mark  : 50
Chemistry mark: 85


1. Enter Faculty Details
2. Show Faculty Details
3. View All Students
4. Enter Student Marks
5. Modify Student Marks
0. Go back

Enter choice: 5
Enter id: 3

1. Maths
2. Physics
3. Chemistry
0. Go Back

Enter choice: 1
Enter Maths marks:100
```

```
1. Maths
2. Physics
3. Chemistry
0. Go Back

Enter choice: 2
Enter Physics marks:20

1. Maths
2. Physics
3. Chemistry
0. Go Back

Enter choice: 3
Enter Chemistry marks:60

1. Maths
2. Physics
3. Chemistry
0. Go Back

Enter choice: 0

1. Enter Faculty Details
2. Show Faculty Details
3. View All Students
4. Enter Student Marks
5. Modify Student Marks
0. Go back

Enter choice: 3

ID            : 1
Name          : Noel
DOB           : 2003-05-14
Address       : Aluva
Course        : 1
Maths mark    : 80
Physics mark  : 70
Chemistry mark: 80
```

```
ID              : 2
Name            : Allen
DOB             : 2002-11-11
Address         : Muvatupuzha
Course          : 1
Maths mark      : 80
Physics mark    : 50
Chemistry mark: 100


ID              : 3
Name            : Roshni
DOB             : 1912-01-23
Address         : Kakkanadu
Course          : 1
Maths mark      : 100
Physics mark    : 20
Chemistry mark: 60


1. Enter Faculty Details
2. Show Faculty Details
3. View All Students
4. Enter Student Marks
5. Modify Student Marks
0. Go back

Enter choice: 0

UNIVERSITY DATABSE MANAGEMENT SYSTEM

1. STUDENT'S CORNER
2. FACULTY'S CORNER
3. ABOUT COURSES
4. ABOUT DEPARTMENTS
5. TRUNCATE(DELETE) ALL DATA
0. EXIT

Enter your choice: 3

1. Register Course
2. View available Courses
0. Go back
```

```
Enter choice: 2

Course ID: 1
Course Name: csbs
Department ID: 1


Course ID: 2
Course Name: IT
Department ID: 1


Course ID: 3
Course Name: AIDS
Department ID: 1


Course ID: 4
Course Name: Mech Alhpa
Department ID: 2


Course ID: 5
Course Name: Mech Beta
Department ID: 2


1. Register Course
2. View available Courses
0. Go back

Enter choice: 1
Enter couse id: 6
Enter course name: CSE Alpha
Enter department id: 3
Course added successfully!


1. Register Course
2. View available Courses
0. Go back

Enter choice: 2

Course ID: 1
```

```
Course ID: 1
Course Name: csbs
Department ID: 1


Course ID: 2
Course Name: IT
Department ID: 1


Course ID: 3
Course Name: AIDS
Department ID: 1


Course ID: 4
Course Name: Mech Alhpa
Department ID: 2


Course ID: 5
Course Name: Mech Beta
Department ID: 2


Course ID: 6
Course Name: CSE Alpha
Department ID: 3


1. Register Course
2. View available Courses
0. Go back

Enter choice: 0

UNIVERSITY DATABSE MANAGEMENT SYSTEM

1. STUDENT'S CORNER
2. FACULTY'S CORNER
3. ABOUT COURSES
4. ABOUT DEPARTMENTS
5. TRUNCATE(DELETE) ALL DATA
0. EXIT
```

```
Enter your choice: 4

1. Add Department
2. View Department
0. Go back

Enter choice: 2

Department Number: 1
Department Name: IT
Department location: KE


Department Number: 2
Department Name: Mech
Department location: Main Block


Department Number: 3
Department Name: CSE
Department location: Main Block


1. Add Department
2. View Department
0. Go back

Enter choice: 1
Enter DEPT ID : 4
Enter DEPT name : CIVIL
Enter location : KE
Department added successfully!


1. Add Department
2. View Department
0. Go back

Enter choice: 2

Department Number: 1
Department Name: IT
Department location: KE
```

```
Department Number: 2
Department Name: Mech
Department location: Main Block


Department Number: 3
Department Name: CSE
Department location: Main Block


Department Number: 4
Department Name: CIVIL
Department location: KE


1. Add Department
2. View Department
0. Go back

Enter choice: 0

UNIVERSITY DATABSE MANAGEMENT SYSTEM

1. STUDENT'S CORNER
2. FACULTY'S CORNER
3. ABOUT COURSES
4. ABOUT DEPARTMENTS
5. TRUNCATE(DELETE) ALL DATA
0. EXIT

Enter your choice: 8

Invalid choice. Please try again.
```

```
UNIVERSITY DATABSE MANAGEMENT SYSTEM

1. STUDENT'S CORNER
2. FACULTY'S CORNER
3. ABOUT COURSES
4. ABOUT DEPARTMENTS
5. TRUNCATE(DELETE) ALL DATA
0. EXIT

Enter your choice: 0

HAVE A NICE DAY :)
```