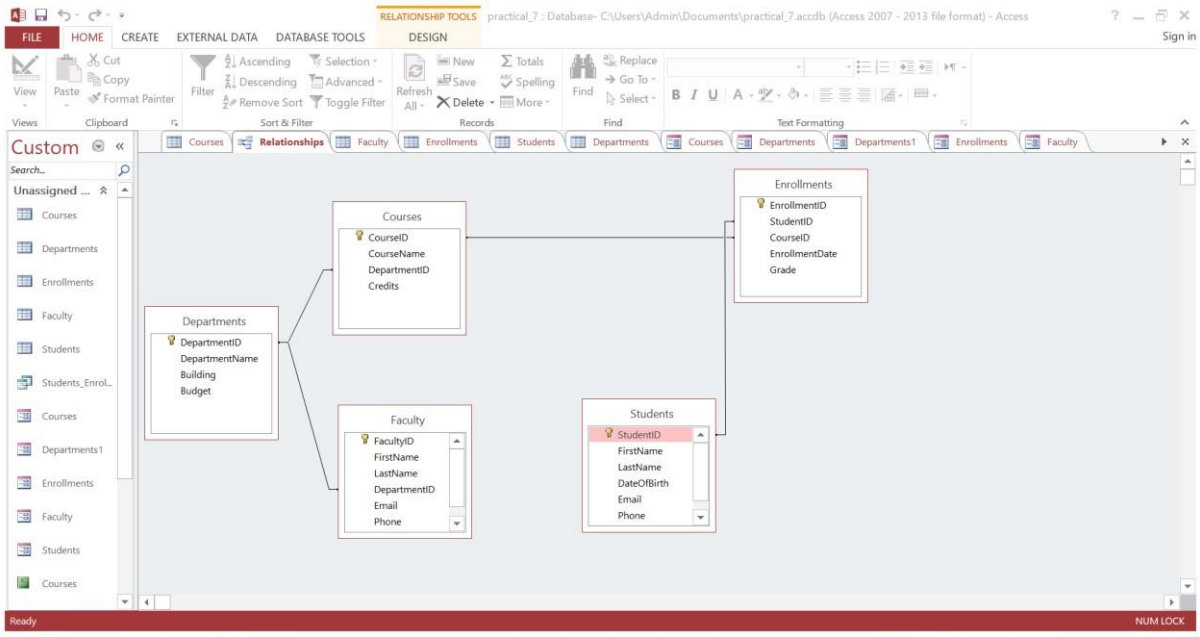
Practical-7

Aim: - University database design using Microsoft Access.



Tables Designing:

Courses | Departments | Enrollments | Faculty

Field Name	Data Type
CourseID	AutoNumber
CourseName	Short Text
DepartmentID	Number
Credits	Number

Courses | Departments | Enrollments | Faculty

Field Name	Data Type
DepartmentID	AutoNumber
DepartmentName	Short Text
Building	Short Text
Budget	Currency

Tables:

Courses | Departments | **Enrollments** | Faculty

Field Name	Data Type
EnrollmentID	AutoNumber
StudentID	Number
CourseID	Number
EnrollmentDate	Date/Time
Grade	Short Text

Courses | Departments | Enrollments | **Faculty**

Field Name	Data Type
FacultyID	AutoNumber
FirstName	Short Text
LastName	Short Text
DepartmentID	Number
Email	Short Text
Phone	Short Text
HireDate	Date/Time

Courses | Departments | Enrollments | Faculty

Field Name	Data Type
StudentID	AutoNumber
FirstName	Short Text
LastName	Short Text
DateOfBirth	Date/Time
Email	Short Text
Phone	Short Text
Address	Short Text

Courses

CourseID	CourseName	Department	Credits	Click to Add
1	Introduction to	3	3	
2	Calculus I	1	4	
3	World History	2	3	
(New)		0	0	

Courses | **Departments**

Department	Department	Building	Budget	Click to Add
1	Mathematics	Science Hall	₹ 60,000.00	
2	Computer Scier	Tech Hall	₹ 75,000.00	
3	History	Humanities Hal	₹ 45,000.00	
(New)			₹ 0.00	

Courses | Departments | **Enrollments**

EnrollmentID	StudentID	CourseID	EnrollmentDate	Grade	Click to Add
1	1	1	01-09-2024	A	
2	2	2	02-09-2024	B	
3	3	3	03-09-2024	A	
(New)	0	0			

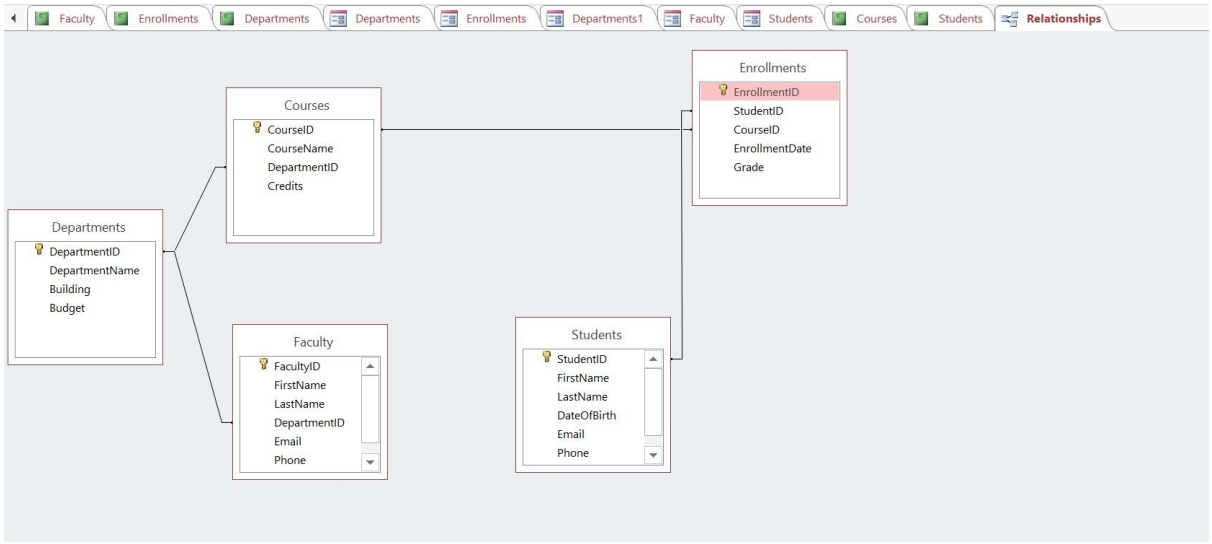
Courses | Departments | Enrollments | **Faculty**

FacultyID	FirstName	LastName	Department	Email	Phone	HireDate	Click to Add
1	Alice	Williams	1	alice.williams@	456-789-0123	15-03-2015	
2	Bob	Brown	2	bob.brown@e	567-890-1234	22-07-2018	
3	Carol	Davis	3	carol.davis@er	678-901-2345	10-01-2020	
(New)			0				

Courses | Departments | Enrollments | Faculty | **Students**

StudentID	FirstName	LastName	DateOfBirth	Email	Phone	Address	Click to Add
1	John	Doe	15-01-2000	john.doe@ema	123-456-7890	123 Main St.	
2	Jane	Smith	22-05-2001	jane.smith@en	234-567-8901	456 Elm St.	
3	Emily	Johnson	30-10-1999	emily.johnson(	345-678-9012	789 Oak St.	
(New)							

Tables Relationship:



Query:

SELECT Students.StudentID, Students.FirstName, Students.LastName, Courses.CourseName

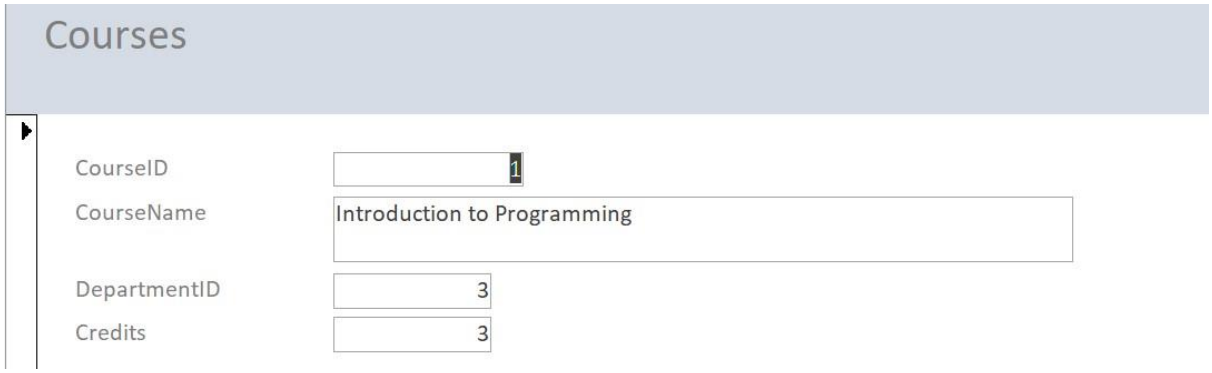
FROM Students INNER JOIN (Courses INNER JOIN Enrollments ON Courses.CourseID = Enrollments.CourseID) ON Students.StudentID = Enrollments.StudentID

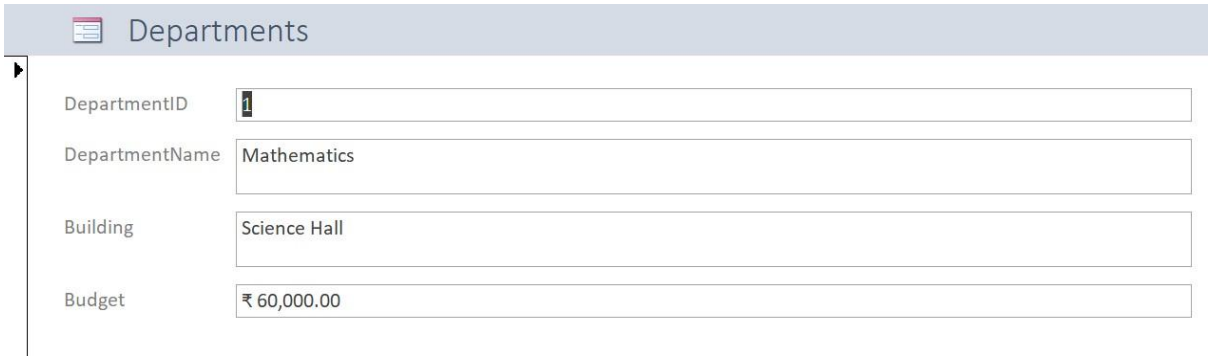
WHERE (((Courses.CourseName)="Introduction to Programming"));

Courses | Departments | Enrollments | Faculty | Stuc

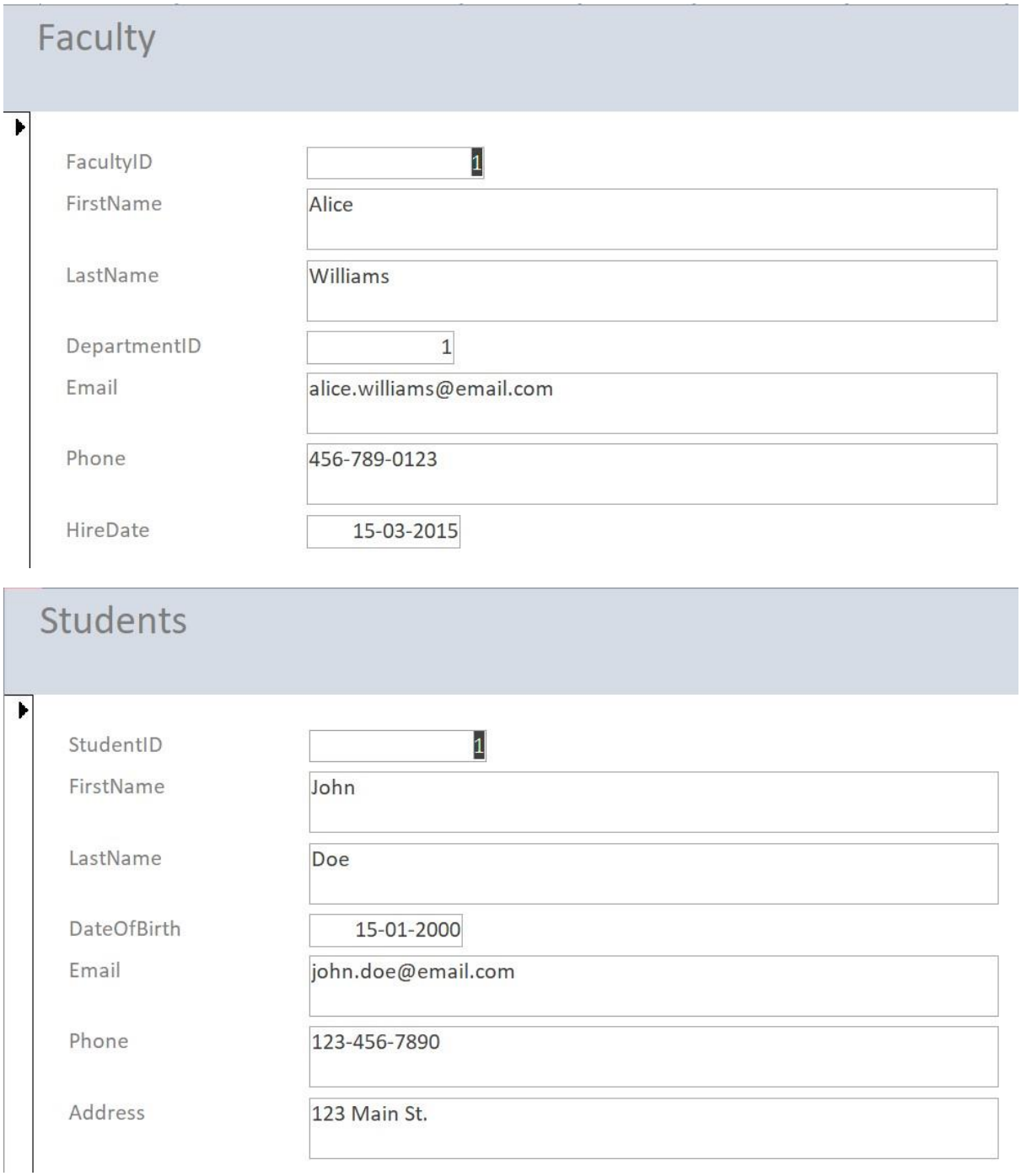
StudentID	FirstName	LastName	CourseName
1	John	Doe	Introduction to
(New)			

Forms:


Courses
CourseID
1
CourseName
Introduction to Programming
DepartmentID
3
Credits
3


Departments
DepartmentID
1
DepartmentName
Mathematics
Building
Science Hall
Budget
₹ 60,000.00


Enrollments
EnrollmentID
1
StudentID
1
CourseID
1
EnrollmentDate
01-09-2024
Grade
A


Faculty
FacultyID
1
FirstName
Alice
LastName
Williams
DepartmentID
1
Email
alice.williams@email.com
Phone
456-789-0123
HireDate
15-03-2015
Students
StudentID
1
FirstName
John
LastName
Doe
DateOfBirth
15-01-2000
Email
john.doe@email.com
Phone
123-456-7890
Address
123 Main St.

Reports:

Courses

CourseID	CourseName	DepartmentID	Credits
1	Introduction to Programming	3	3
2	Calculus I	1	4
3	World History	2	3

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Departments

partmentID	DepartmentName	Building	Budget
1	Mathematics	Science Hall	₹ 60,000.00
2	Computer Science	Tech Hall	₹ 75,000.00
3	History	Humanities Hall	₹ 45,000.00

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Enrollments

EnrollmentID	StudentID	CourseID	nrollmentDate	Grade
1	1	1	01-09-2024	A
2	2	2	02-09-2024	B
3	3	3	03-09-2024	A

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Faculty

cultyID	FirstName	LastName	entID	Email	Phone	ate
1	Alice	Williams	1	alice.williams@email.com	456-789-0123	###
2	Bob	Brown	2	bob.brown@email.com	567-890-1234	###
3	Carol	Davis	3	carol.davis@email.com	678-901-2345	###

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Students

entID	FirstName	LastName	Birth	Email	Phone	Address
1	John	Doe	####	john.doe@email.com	123-456-7890	123 Main St.
2	Jane	Smith	####	jane.smith@email.con	234-567-8901	456 Elm St.
3	Emily	Johnson	####	emily.johnson@email.	345-678-9012	789 Oak St.

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How to create table:-

1. Create a new, blank database.
2. In the Database window, click Tables under Objects, and then click New.
3. In the New Table dialog box, double-click Table Wizard.
4. Follow the directions in the Table Wizard pages.

How to make relationship between tables.

1. Click the Microsoft Office Button , and then click Open
2. In the Open dialog box, select and open the database.
3. On the Database Tools tab, in the Show/Hide group, click Relationships.
4. If you have not yet defined any relationships, the Show Table dialog box automatically appears. If it does not appear, on the Design tab, in the Relationships group, click Show Table.
5. The Show Table dialog box displays all of the tables and queries in the database. To see only tables, click Tables. To see only queries, click Queries. To see both, click both.
6. Select one or more tables or queries and then click Add. After you have finished adding tables and queries to the Relationships document tab, click Close.
7. Drag a field (typically the primary key) from one table to the common field (the foreign key) in the other table. To drag multiple fields, press the CTRL key, click each field, and then drag them.
8. Click Create.

To create a one-to-many or a one-to-one relationship, follow these steps:

1. Close all tables. You cannot create or change relationships between open tables.
2. In Access 2002 or Access 2003, follow these steps:
3. Press F11 to switch to the Database window.
4. On the Tools menu, click Relationships.
5. In Access 2007, Access 2010, or Access 2013, click Relationships in the Show/Hide group on the Database Tools tab.

If you have not yet defined any relationships in your database, the Show Table dialog box is automatically displayed. If you want to add the tables that you want to relate but the Show Table dialog box does not appear, click Show Table on the Relationships menu.

Double-click the names of the tables that you want to relate, and then close the Show Table dialog box. To create a relationship between a table and itself, add that table two times.

Drag the field that you want to relate from one table to the related field in the other table. To drag multiple fields, press Ctrl, click each field, and then drag them.

In most cases, you drag the primary key field (this field is displayed in bold text) from one table to a similar field (this field frequently has the same name) that is called the foreign key in the other table.

The Edit Relationships dialog box appears. Make sure that the field names that are displayed in the two columns are correct. You can change the names if it is necessary.

Set the relationship options if it is necessary. If you have to have information about a specific item in the Edit Relationships dialog box, click the question mark button, and then click the item.

(These options will be explained in detail later in this article.)

Click Create to create the relationship.

Repeat steps 4 through 7 for each pair of tables that you want to relate.

When you close the Edit Relationships dialog box, Access asks whether you want to save the layout. Whether you save the layout or do not save the layout, the relationships that you create are saved in the database.

Enforce Referential Integrity

Referential integrity between tables is enforced by default when you create a relationshipin your database diagram. An enforced relationship ensures each value entered in a foreignkey column matches an existing value in the related primary key column.

Cascading updates and deletes

For relationships in which referential integrity is enforced, you can specify whether you want

Access to automatically cascade update or cascade delete related records. When you delete records or change primary key values in a primary table, Access makes the necessary changes to related tables to preserve referential integrity.

If you click to select the Cascade Update Related Fields check box when you define a relationship, any time that you change the primary key of a record in the primary table, Microsoft Access automatically updates the primary key to the new value in all related records.

Note: If the primary key in the primary table is an AutoNumber field, selecting the Cascade

Update Related Fields check box has no effect because you cannot change the value in an AutoNumber field.

If you select the Cascade Delete Related Records check box when you define a relationship, any time that you delete records in the primary table, Access automatically deletes related records in the related table.

Primary Key

A primary key is a field in a table which uniquely identifies each row/record in a database table.

Primary keys must contain unique values. A primary key column cannot have NULL values.

A table can have only one primary key, which may consist of single or multiple fields. When multiple fields are used as a primary key, they are called a composite key.

If a table has a primary key defined on any field(s), then you can not have two records having the same value of that field(s).

What makes a good primary key?

A good candidate for a primary key has several characteristics

It uniquely identifies each row

It is never empty or null — it always contains a value

The values it contains rarely (ideally, never) change

Examples of poor primary keys

Any field that is missing one or more of the characteristics of a good candidate key is a poor choice for a primary key. Here are a few examples of fields that would make poor primary keys for a Contacts table, along with reasons why they would be poor choices.