

CONSULTANCY MANAGEMENT SYSTEM

Advance Data Base Design

FAB5



Sacred Heart University

School of Computer Science & Engineering
The Jack Welch College of Business & Technology

Submitted To:

Dr. Reza Sadeghi

CS603-D

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1.1 NAME OF TEAM MEMBERS EMAIL ADDRESS

- | | |
|-----------------------|----------------------------------------------------------------------------------------------------|
| 1. MANISHA BANDI | bandim@mail.sacredheart.edu (Team Head) |
| 2. VISHWAPRASAD REDDY | pinreddyv@mail.sacredheart.edu (Team Member) |
| 3. SHASHANK REDDY | moddus@mail.sacredheart.edu (Team Member) |
| 4. VENKATA SUCHARITHA | raaviv@mail.sacredheart.edu (Team Member) |
| 5. TEJESWAR JULAKANTI | julakantit@mail.sacredheart.edu (Team Member) |

1.2 INTRODUCTION OF TEAM MEMBERS:

MANISHA BANDI:

I have completed my under graduation in the stream of Computer Science, and I had 2+ years of IT Experience as Systems Analyst in Sonata Software Limited. I have technical skills of Java, MSQl and I am interested to learn Python, Machine Learning. I want to work with the people who are technically strong and proactive which helps to build rapo between us.

VISHWAPRASAD REDDY:

I did my Bachelor of Engineering in the stream of Computer Science & Engineering. I worked in Amazon for 18 months as Transaction Risk Investigator, which deals with the online fraud happening on the customer's account which needs to be prevented. I have programming skills of Core Java, Java Database Connectivity and skilled on MySQL tool.

SHASHANK REDDY:

I did my under graduation in the field of computer science and engineering. I have technical skills in C, Python and Web designing and I am interested in Network security. I like to work people who are passionate and enjoy helping each other.

VENKATA SUCHARITHA:

I did my under graduation in bachelor of commerce in computer science. I hold an experience of 2+ years in accounts payable field in Accenture as a Transaction Processing Analyst where I have worked on tools like SAP ERP, Oracle. I am interested to learn new technologies further in this field and looking forward to interacting more with people which helps to gain good knowledge.

TEJESWAR JULAKANTI:

I did my under graduation in Information Technology from VR Siddhartha Engineering College. Later, I was recruited in TCS as RPA developer and had a work experience of 15 months. I have relevant technical knowledge in C++, Python, .net programming. I would love to work with people who has decision making skills and passion towards knowing new things which helps ourselves to gain good knowledge and experience.

CONSULTANCY MANAGEMENT SYSTEM

2.1 Objectives of CMS:

Consultancy management system (CMS) includes in enrolling the consultants and storing their details. It is easy to use and is designed to upgrade each consultant's skill with real time projects.

CMS basically uses every consultant's data where they are selected based on the client requirements. Details like Skills and certifications are compared with client's project requirements.

This project develops a software that helps each consultant connect with the various clients and offer good job role in their company.

The main features of the system are storing client details, job details, skills required, certifications completed. CMS specifies the database where it contains rows and columns in the form of tables. These databases contain various datatypes, and attributes. The database has tables which contains different fields which describe its contents. The database is further explained in-depth with all fields used data types, limitations available, Primary key, foreign key.

2.2 Merits of CMS:

- a. Establish a collaborative relationship with clients.
- b. Helps to get attention to developing the real time project and relationships.
- c. CMS is designed for skill development, to train on different technologies and different skill sets and assigning projects based on the client skill set, which helps for upgrading of skills.

2.3 GitHub Repository Address:

<https://github.com/ManishaReddyBandi?tab=repositories>

2.4.1 Entity Relationship Model (ER Model):

An Entity Relationship model (ER model) is design or a blueprint of a database. It illustrates how entities relate to each other within the system. ER diagrams are used most often used to design and debug the databases. They are a set of symbols, rectangles and ovals which are interconnected of entities and relationships and their attributes.

ER modeling is basically a database modeling method, produces type of conceptual schema (structure that represents the logical view of entire database). It also develops a very simple and easy design view of data.

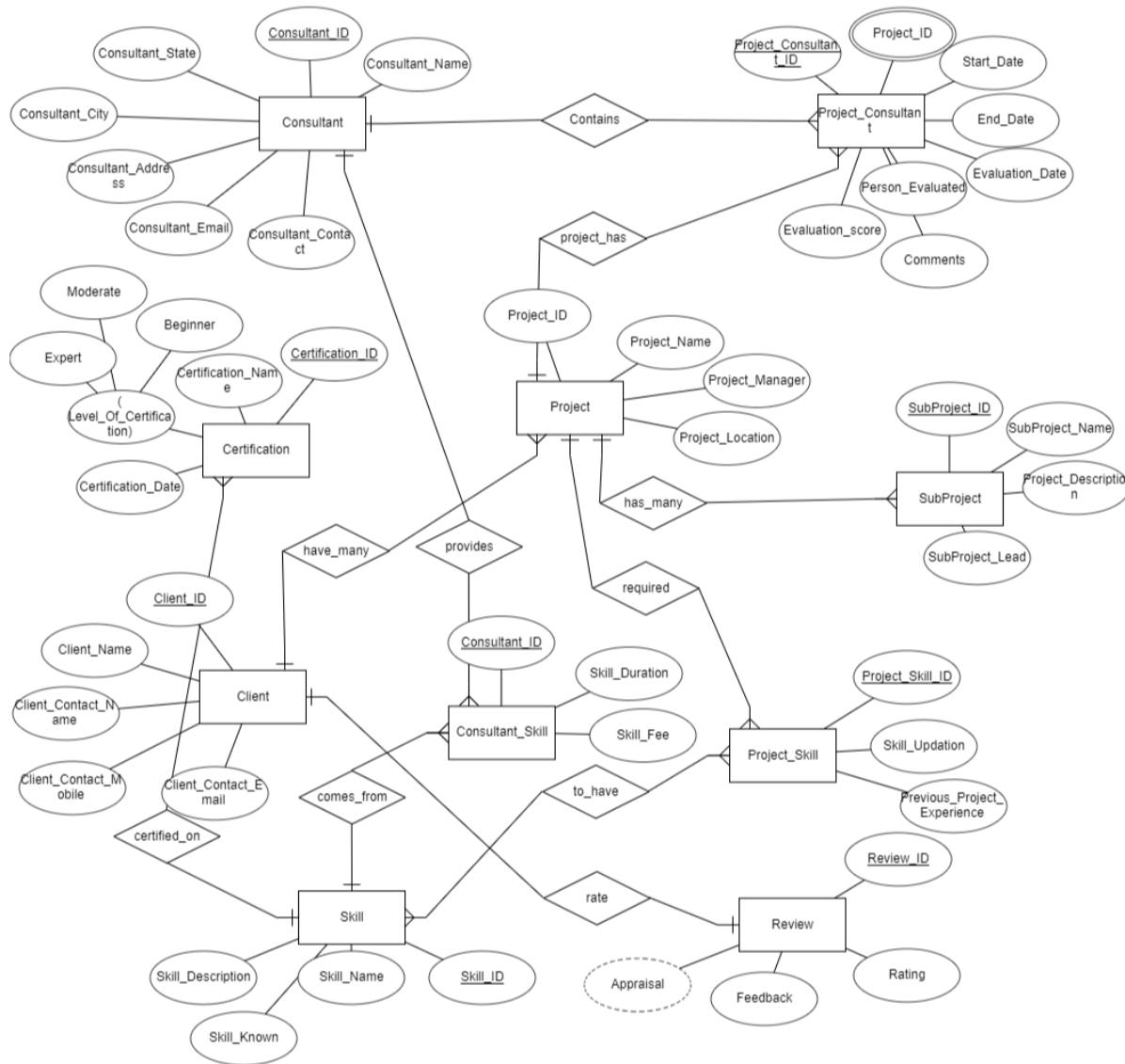
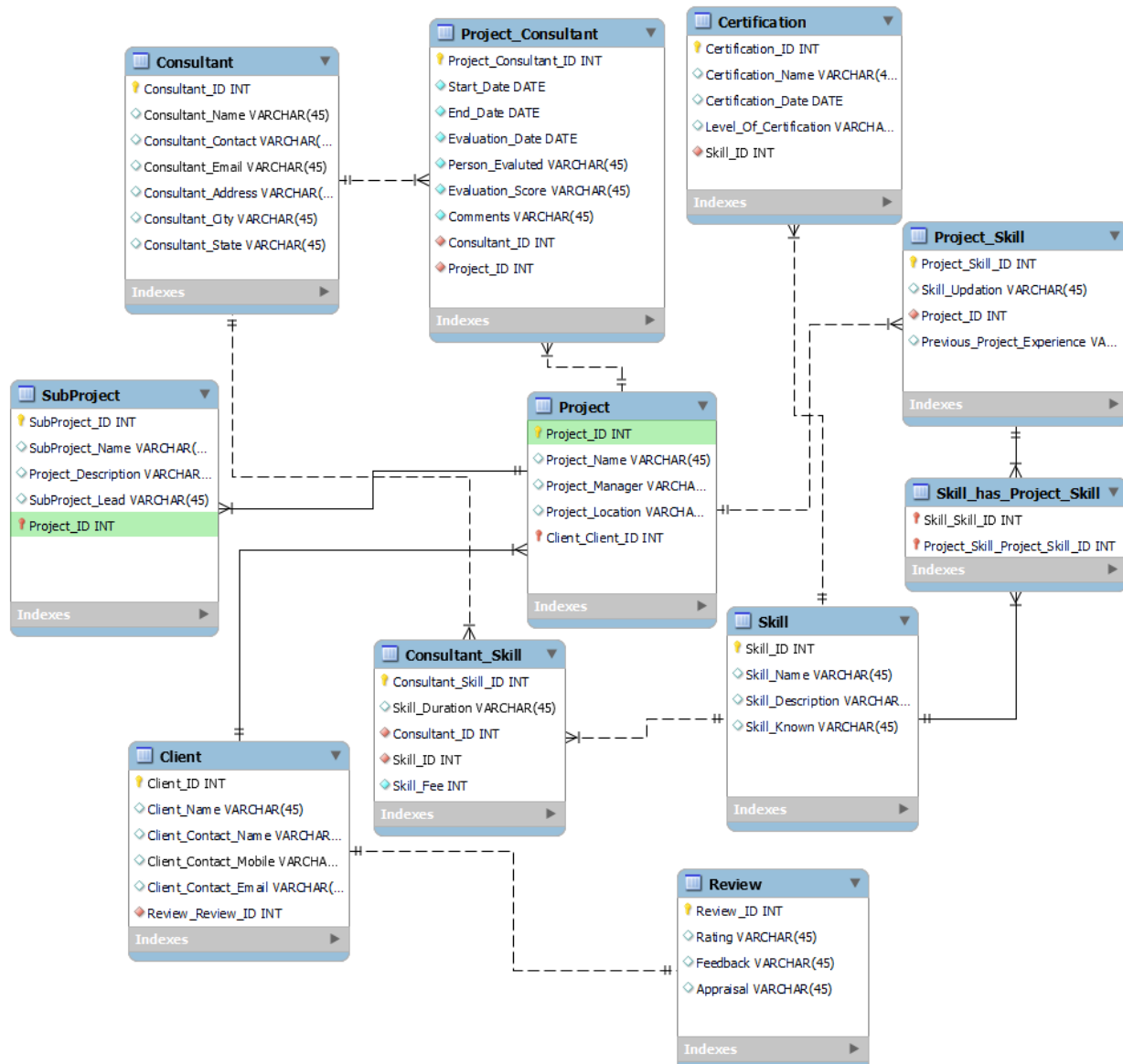


Figure (1).[2] Entity Relationship Model

2.5 Enhanced Entity Relation (EER):

Enhanced ER models are helpful tools for designing databases with high-level models. This ER model represents the database that we use for the project. The tables represent the schema. Each rectangle in the table describes the attributes and constraints of that table in the schema. Connecting lines between the tables define the relationship with other table, each relation has a constraint that connect one with the other.



Figure(2). Enhanced Entity Relationship Diagram

2.5.1 Description of Entities in CMS:

(a) Consultant:

Consultant entity stores all the details related to Consultancy like Consultant ID, Name, Address, City, State, Contact, Mail. It has One to Many (1: N) relationship with Consultant_Skill and Project_Consultant entities by having a common attribute as Consultant_ID.

Consultant_ID: This attribute stores information of the unique ID of consultant.

Consultant_Name: This attribute stores the name of the consultant.

Consultant_Contact : This attribute stores information of the contact details.

Consultant_Email : This attribute stores email information of the consultant.

Consultant_Address: This attribute stores the address of the consultant.

Consultant_City: This attribute stores the city details of the consultant.

Consultant_State : This attribute stores the state details of the consultant.

(b) Consultant_Skill:

Consultant Skill entity stores the details of skill and Consultant like Consultant_Skill_ID, Skill_ID, Skill_Duration, Skill_Fee. It has Many to One (N:1) relationships with the Skill and consultant entities with Consultant_ID as Primary key.

Consultat_Skill_ID: It stores the Consultancy Skill ID. For each consultancy they have their own skill IDs.

Skill_Duration: This attribute stores the duration of the particular course.

Skill_Fee: This attribute stores fee structure details of Consultant_Skill entity.

(c) Skill:

Skill entity stores the skill details like Skill ID, Name, and short Description of each skill. It has One to Many (1: N) relationship with Project, Certification and Consultant_Skill entities. Skill_ID acts as a unique ID. Certification is given based on completion of each skill.

Skill_ID: For each skill a unique ID is set to identify.

Skill_Name: Stores the Name of the Skill

Skill_Description: Describes about the skill known and where to use them in the project

Skill_Known: Lists the skills known by the consultant

(d) Certification:

Certification refers to the confirmation of certain characteristics of an object, person or organization. Certification Entity stores all the details which displayed in Certificate after completion of training of each skill, it has attributes like Certification_ID, Certification_Name, Certification_Date, Skill_ID and Level_of_Certification. Certification can be given based on Level of skills learned.

Certification_ID: Each Certification is represented by its unique identification with Certification_ID.

Certification_Name: Represents the name of the Certification Certification_Date: Represents the start date and completion date.

Level_of_certification: represents the level of certification and their category of certification.

(e) Client:

Client entity stores the data related to Client like Client_ID, Name, Contact_Name, Contact_Number, Email Address. It has one to One (1: 1) relationship with Consultant and Project entities.

Client_ID: Stores the unique ID of the Client.

Client_Name: Stores the Name of the Client.

Contact_Name: Stores the Name of the person to contact that represents the client.

Contact_Number: Stores the number of the person to contact that represents the client.

Email Address: Stores the Email address of the person.

(f) Project Skill:

Project skills are a group of skills needed to initiate, plan, and execute a project. Project skill entity stores the data related to project and Skills like Project_ID, skill_ID, skill_Updation. It has Many to One(N:1) relationship with Project and Skill table. It has update skills option to update skills in future.

Project_Skill_ID: Stores the unique ID of the Project.

Skill_Updation: Adding a new skill or updating an existing one is been stored here.

Previous_Project_Experience: Every Consultant's who has the previous work experience is been listed here.

(g) Project Consultant:

Project Consultant allocates the project and it stores the details related ton project like Consultant_ID, Project_ID, Start_Date, End_Date, Evaluation_Date, Person_Evaluted, Evaluation_Score and comments. It has Many to One(N:1) relationship with Consultant and Project.

Project_Consultant_ID: This attribute uniquely identifies the Consultant ID from different consultancies in the Project_Consultant Entity.

Start_Date : This attribute provides the information about Project start date. End_Date :This attribute provides the information about Project end date.

Person_Evaluated :This attribute provides the information about the person who is evaluating the project. Evaluation_Score: This attribute provides the score of the project which is evaluated in the Project_Consultant Entity.

(h) Project:

Project entity stores the details of the project, Client and the manager who works on that project. It has attributes like Project_ID, Project_Manager, Client_ID, Project_Location, Project_Name.

It has One to Many (1:N) relationship with Subproject, Project_Consultant, Project_Skill and Many to One(N:1) relationship with client entity. Project is allocated if the skills in skill table matches with Project Skill table.

Project_Id: A project ID is a unique string used to differentiate your project from all others.

Project Manager: Project manager is responsible for the planning and execution and completion of a Project

Project name - project name used for representing the project

Project_Location: Represents the location of project, either its online or offline or physical address.

(i) Sub Project:

A subproject is a project that is a part of a larger project. Sub Project entity stores all Subproject details. Sub project is assigned after allocation of Project. It has attributes like Subproject_ID, Subproject_Name, Project_Id, Project_Description, SubProject_Lead. It has Many to One (N:1) relationship with Project Entity.

Subproject_ID: Contains the Project ID acts as unique key

SubProject_Lead: Represents the Lead name of project

Subproject_Name: Represents the Name of the Subproject

Project_Description: : Describes about the Project and its functions and where to use them.

(j)Review:

The return of information about the result of a performance. Review entity stores all the details of Client review like ClientID, Feedback, Rating, Appraisal. Client gives feedback, rating and Appraisal based on performance. It has Oneto One (1:1) relationship with Client.

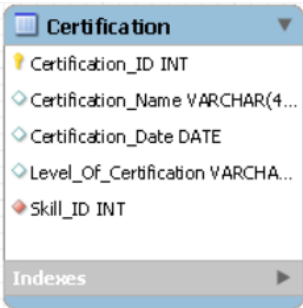
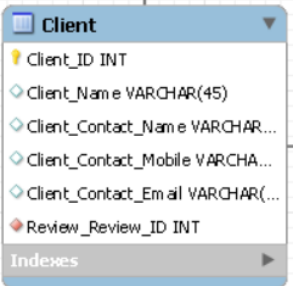
Review_ID: Each review given by the client to the consultant has been stored under unique ID

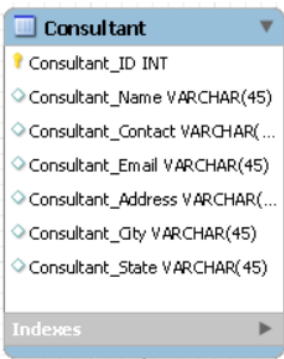
Feedback: Client's feedback for the consultant is been stored here.

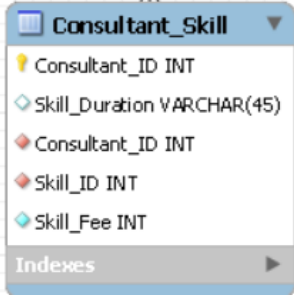
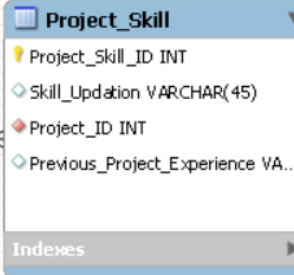
Rating: Based on the Rating provided by Client, it is easy to search for the consultant under the rating category.

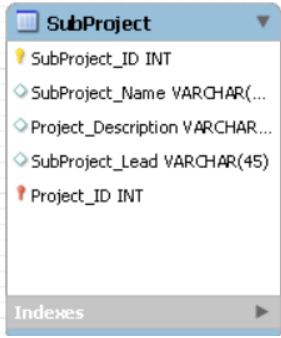
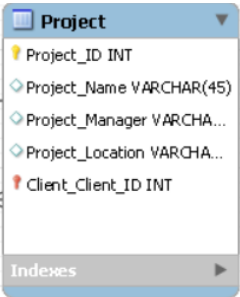
Appraisal: Based on the consultant performance, it is observed that a consultant must improve his/her skills.


2.6 SQL DATABASE DEVELOPMENT:


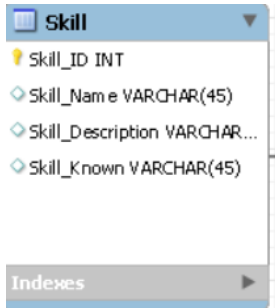
Table	Query	EER model for Table	Description	PKey	FK ey
Certification	<pre>CREATE TABLE `certification` (`Certification_ID` int NOT NULL, `Certification_Name` varchar(45) DEFAULT NULL, `Certification_Date` date DEFAULT NULL, `Level_Of_Certification` varchar(45) DEFAULT NULL, `Skill_ID` int NOT NULL, PRIMARY KEY (`Certification_ID`), KEY `fk_Certification_Skill1_idx` (`Skill_ID`), CONSTRAINT `fk_Certification_Skill1` FOREIGN KEY (`Skill_ID`) REFERENCES `skill` (`Skill_ID`))</pre>		<p>The certification table contains following attributes with the respective datatypes which are Certification_ID(int), Certification_Name(varchar), Certification_Date(Date), Level_Of_Certification(varchar) Certification entity stores all the details which displayed in certificate after completion of training of each skill. The primary key is Certification_ID and the foreign key is Skill_ID. Level_Of_Certification attribute is the derived attribute for this table. Certification table is related to Skill table with Many to One (N:1) relationship</p>	Yes	Yes
Client	<pre>CREATE TABLE `client` (`Client_ID` int NOT NULL, `Client_Name` varchar(45) DEFAULT NULL, `Client_Contact_Name` varchar(45) DEFAULT NULL, `Client_Contact_Mobile` varchar(45) DEFAULT NULL, `Client_Contact_Email` varchar(45) DEFAULT NULL, PRIMARY KEY (`Client_ID`));</pre>		<p>The certification table contains following attributes with the respective datatypes which are Client_ID(int), Client_Name(varchar), Client_Contact_Name(varchar), Client_Contact_Mobile(varchar), Client_Contact_Email(varchar) The purpose of this table is to store the client data. The primary key is Client_ID and it has no foreign key. The Client table has One to Many (1:N) relationship with Project and One to One (1:1) relationship with Review table.</p>	Yes	No

Consultant	<pre>CREATE TABLE `consultant` (`Consultant_ID` int NOT NULL, `Consultant_Name` varchar(45) DEFAULT NULL, `Consultant_Contact` varchar(45) DEFAULT NULL, `Consultant_Email` varchar(45) DEFAULT NULL, `Consultant_Address` varchar(45) DEFAULT NULL, `Consultant_City` varchar(45) DEFAULT NULL, `Consultant_State` varchar(45) DEFAULT NULL, PRIMARY KEY (`Consultant_ID`)) ENGINE=InnoDB DEFAULT CHARSET=utf8mb3;</pre>		<p>The certification table contains following attributes with the respective datatypes which are Consultant_ID(int), Consultant_Name(varchar), Consultant_Contact(varchar), Consultant_Email(varchar), Consultant_Address(varchar), Consultant_City(varchar), Consultant_State(varchar). Consultant entity stores all the details related to consultancy particulars. It has Consultant_ID attribute as primary key. It has One to Many(1:N) relationship with Project_Consultant and Consultant_Skill tables.</p>	Yes	No
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Consultant_Skill	<pre> CREATE TABLE `consultant_skill` (`Consultant_ID` int NOT NULL, `Skill_Duration` varchar(45) DEFAULT NULL, `Skill_ID` int NOT NULL, PRIMARY KEY (`Consultant_ID`), KEY `fk_Constantant_Skill_Constantant1_idx` (`Consultant_ID`), KEY `fk_Constantant_Skill_Skill1_idx` (`Skill_ID`), CONSTRAINT `fk_Constantant_Skill_Constantant1` FOREIGN KEY (`Consultant_ID`) REFERENCES `consultant` (`Consultant_ID`), CONSTRAINT `fk_Constantant_Skill_Skill1` FOREIGN KEY (`Skill_ID`) REFERENCES `skill` (`Skill_ID`)); </pre>		<p>The certification table contains following attributes with the respective datatypes which are Consultant_Skill_ID(int), Skill_duration(varchar), Skill_Fee(int)</p> <p>Consultant Skill entity stores the details of skill.</p> <p>Consultant_Skill_ID as primary key and Consultant_ID and Skill_ID are foreign keys. It has Many to One (N:1) relationships with the Skill and consultant entities with Consultant_ID as Primary key.</p>	Page 12 of 32	Yes	Yes
Project_Skill	<pre> CREATE TABLE `project_skill` (`Project_Skill_ID` int NOT NULL, `Skill_Updation` varchar(45) DEFAULT NULL, `Project_ID` int NOT NULL, `Skill_ID` int NOT NULL, PRIMARY KEY (`Project_Skill_ID`), KEY `fk_Project_Skill_Skill1_idx` (`Skill_ID`), KEY `fk_Project_Skill_Project1` (`Project_ID`), CONSTRAINT `fk_Project_Skill_Project1` FOREIGN KEY (`Project_ID`) REFERENCES `project` (`Project_ID`), CONSTRAINT `fk_Project_Skill_Skill1` FOREIGN KEY (`Skill_ID`) REFERENCES `skill` (`Skill_ID`)); </pre>		<p>The certification table contains following attributes with the respective datatypes which are Project_Skill_ID(int), Skill_Updation(varchar), Previous_Project_Experience(varchar)</p> <p>Project skills are a group of skills needed to initiate, plan, and execute a project. Project skill entity stores the data related to project. It has Project_Skill_ID as primary key and Projct_ID from Project entity as foreign key. It has Many to One(N:1) relationship with Project and Skill table. It has update skills option to update skills in future.</p>		Yes	Yes

Sub_Project	<pre>CREATE TABLE `subproject` (`SubProject_ID` int NOT NULL, `SubProject_Name` varchar(45) DEFAULT NULL, `Project_Description` varchar(45) DEFAULT NULL, `SubProject_Lead` varchar(45) DEFAULT NULL, `Project_ID` int NOT NULL, PRIMARY KEY (`SubProject_ID`,`Project_ID`), KEY `fk_SubProject_Project1_idx` (`Project_ID`), CONSTRAINT `fk_SubProject_Project1` FOREIGN KEY (`Project_ID`) REFERENCES `project` (`Project_ID`));</pre>		<p>The certification table contains following attributes with the respective datatypes which are SubProject_ID(int), SubProject_Name(varchar), Project_Description(varchar), SubProject_Lead(varchar)</p> <p>A subproject is a project that is a part of a larger project. Sub Project entity stores all Subproject details. Sub project is assigned after allocation of Project.</p> <p>Th has SubProject_ID as primary key and Project_ID from Project entity is the foreign key. It has Many to One (N:1) relationship with Project Entity.</p>	Yes	Yes
Project	<pre>CREATE TABLE `project` (`Project_ID` int NOT NULL, `Project_Name` varchar(45) DEFAULT NULL, `Project_Manager` varchar(45) DEFAULT NULL, `Project_Location` varchar(45) DEFAULT NULL, `Client_Client_ID` int NOT NULL, PRIMARY KEY (`Project_ID`,`Client_Client_ID`), KEY `fk_Project_Client1_idx` (`Client_Client_ID`), CONSTRAINT `fk_Project_Client1` FOREIGN KEY (`Client_Client_ID`) REFERENCES `client` (`Client_ID`));</pre>		<p>The certification table contains following attributes with the respective datatypes which are Project_ID(int), Project_Name(vachar), Project_Manager(varchar), Project_Location(varchar)</p> <p>Project entity stores the details of the project, Client and the manager who works on that project.</p> <p>Project_ID is the primary key and Client_ID is the foreign key from Client Entity. It has One to Many (1:N) relationship with Subproject, Project_Consultant, Project_Skill and Many to One(N:1) relationship with client entity. Project is allocated if the skills in skill table matches with Project Skill table.</p>	Yes	Yes

Project_Con sultant	<pre>CREATE TABLE `project_consultant` (`Project_Constant_ID` int NOT NULL, `Start_Date` date NOT NULL, `End_Date` date NOT NULL, `Evaluation_Date` date NOT NULL, `Person_Evaluted` varchar(45) NOT NULL, `Evaluation_Score` varchar(45) NOT NULL, `Comments` varchar(45) NOT NULL, `Consultant_ID` int NOT NULL, `Project_ID` int NOT NULL, PRIMARY KEY (`Project_Constant_ID`), KEY `fk_Project_Constant_Constant _idx` (`Consultant_ID`), KEY `fk_Project_Constant_Project1_id x` (`Project_ID`), CONSTRAINT `fk_Project_Constant_Constant` FOREIGN KEY (`Consultant_ID`) REFERENCES `consultant` (`Consultant_ID`), CONSTRAINT `fk_Project_Constant_Project1` FOREIGN KEY (`Project_ID`) REFERENCES `project` (`Project_ID`)));</pre>		<p>The certification table contains following attributes with the respective datatypes which are Project_Constant_ID(int), Start_Date(date), End_Date(date), Evaluation_Date(date), Person_Evaluted(varchar), Evaluation_Score(varchar), Comments(varchar)</p> <p>Project Consultant allocates the project and it stores the details related to project.</p> <p>Project_Constant_ID is primary key whereas Consultant_ID from Consultant entity and Project_ID from Project entity are the foreign keys. It has Many to One(N:1) relationship with Consultant and Project.</p>	Yes	Yes
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Review	<pre>CREATE TABLE `review` (`Review_ID` int NOT NULL, `Rating` varchar(45) DEFAULT NULL, `Feedback` varchar(45) DEFAULT NULL, `Appraisal` varchar(45) DEFAULT NULL, `Client_ID` int NOT NULL, PRIMARY KEY (`Review_ID`), KEY `fk_Review_Client1` (`Client_ID`), CONSTRAINT `fk_Review_Client1` FOREIGN KEY (`Client_ID`) REFERENCES `client` (`Client_ID`));</pre>		<p>The certification table contains following attributes with the respective datatypes which are Review_ID(int), Rating(varchar), Feedback(varchar), Appraisal(varchar)</p> <p>It returns of information about the result of a performance.</p> <p>Review_ID is the primary key for Review entity.</p> <p>It has One to One (1:1) relationship with Client.</p>	Yes	No
Skill	<pre>CREATE TABLE `skill` (`Skill_ID` int NOT NULL, `Skill_Name` varchar(45) DEFAULT NULL, `Skill_Description` varchar(60) DEFAULT NULL, PRIMARY KEY (`Skill_ID`));</pre>		<p>The certification table contains following attributes with the respective datatypes which are Skill_ID(int), Skill_Name(varchar), Skill_Description(varchar), Skill_Known(varchar)</p> <p>Skill entity stores the details of the skills that a person had or skills offered by the consultancy. Skill_ID is the primary key. It shares One to Many(1:N) relation with Consultant_Skill and Certification entities.</p>	Yes	No

3.0 Importing Data:

We can import data into Database by making using of INSERT query into a specific table.

Syntax to insert row/instance into a table:

```
INSERT INTO table_name (column1, column2, column3, ...)
VALUES
(value1, value2, value3, ...),
(value1, value2, value3, ...),
(value1, value2, value3, ...);
```

a. Consultant Table:

The screenshot shows a database management tool interface. On the left, the 'SCHEMAS' pane shows a tree view with 'elmasri_company' and 'mydb'. Under 'mydb', there are several tables listed, including 'consultant'. The 'consultant' table is selected, and its columns are listed: Consultant_ID, Consultant_Name, Consultant_Contact, Consultant_Email, Consultant_Address, Consultant_City, and Consultant_State.

The 'Query' window shows the following SQL query:

```
1 use mydb;
2 insert into consultant(Consultant_ID,Consultant_Name,Consultant_Contact,Consultant_Email,
3 Consultant_Address,Consultant_City,Consultant_State) values
4 (201,'jspider','12345','jspider@gmail.com','320 parkave','bridgeport','connecticut'),
5 (202,'talents','12333','talants@gmail.com','390 parkave','bridgeport','connecticut'),
6 (203,'codev','12222','codev@gmail.com','99 fairfield','bridgeport','connecticut'),
7 (204,'wecode','11111','wecode@yahoo.com','101 seastreet','orlando','florida'),
8 (205,'codex','22222','codex@gmail.com','220 myrtle','dallas','texas'),
9 (206,'umass','33333','umass@yahoo.com','111 saintave','amherst','massachusetts'),
10 (207,'umass','44444','umassboston@gmail.com','444 bostonroad','boston','massachusetts'),
11 (208,'talents','5555','talents2@gmail.com','77 chapelst','new haven','connecticut'),
12 (209,'ulearn','66666','ulearn@gmail.com','101 jacksonst','jacksonville','florida'),
13 (210,'learn code','77777','learncode@gmail.com','111 losavenue','los angels','california');
```

The 'Output' window shows the execution results:

#	Time	Action	Message
25	12:07:07	insert into client(Client_ID,Client_Name,Client_Contact,Client_Contact...	10 row(s) affected Records: 10 Duplicates: 0 Warnings: 0
26	12:08:48	use mydb	0 row(s) affected
27	12:08:48	select * from client LIMIT 0, 1000	10 row(s) returned
28	12:37:53	use mydb	0 row(s) affected
29	12:37:53	insert into consultant(Consultant_ID,Consultant_Name,Consultant_Contact...	10 row(s) affected Records: 10 Duplicates: 0 Warnings: 0

The screenshot shows the 'Result Grid' of the database management tool. The table contains 10 rows of data for the 'consultant' table.

Consultant_ID	Consultant_Name	Consultant_Contact	Consultant_Email	Consultant_Address	Consultant_City	Consultant_State
201	jspider	12345	jspider@gmail.com	320 parkave	bridgeport	connecticut
202	talents	12333	talants@gmail.com	390 parkave	bridgeport	connecticut
203	codev	12222	codev@gmail.com	99 fairfield	bridgeport	connecticut
204	wecode	11111	wecode@yahoo.com	101 seastreet	orlando	florida
205	codex	22222	codex@gmail.com	220 myrtle	dallas	texas
206	umass	33333	umass@yahoo.com	111 saintave	amherst	massachusetts
207	umass	44444	umassboston@gmail.com	444 bostonroad	boston	massachusetts
208	talents	5555	talents2@gmail.com	77 chapelst	new haven	connecticut
209	ulearn	66666	ulearn@gmail.com	101 jacksonst	jacksonville	florida
210	learn code	77777	learncode@gmail.com	111 losavenue	los angels	california

b. Consultant_skill Table:

SQL Editor:

```

1 • use mydb;
2 • insert into consultant_skill(consultantskill_ID, Skill_Duration,Consultant_ID, Skill_ID)
3 values
4 (701, '4 months', 201, 1),
5 (702, '5 months', 202, 1),
6 (703, '1 months', 206, 4),
7 (704, '5 months', 209, 2),
8 (705, '2 months', 202, 6),
9 (706, '3 months', 210, 10),
10 (707, '4 months', 203, 9),
11 (708, '4 months', 205, 5),
12 (709, '4 months', 208, 4),
13 (710, '2 months', 208, 9);
14

```

Action Output:

#	Time	Action	Message
37	03:07:24	insert into consultant_skill(ConsultantSkill_ID, Skill_Duration,Consultant_ID, Skill_ID)	Error Code: 1452. Cannot add or update a child row: a foreign key constraint fails (mydb.consultant_skill, CONSTRAINT fk_consultant_skill_skill, FOREIGN KEY (Skill_ID) REFERENCES skill (Skill_ID))
38	03:09:08	use mydb	0 row(s) affected
39	03:09:08	insert into consultant_skill(ConsultantSkill_ID, Skill_Duration,Consultant_ID, Skill_ID)	10 row(s) affected. Records: 10 Duplicates: 0 Warnings: 0

Result Grid:

Consultantskill_ID	Skill_Duration	Consultant_ID	Skill_ID
701	4 months	201	1
702	5 months	202	1
703	1 month	206	4
704	5 months	209	2
705	2 months	202	6
706	3 months	210	10
707	4 months	203	9
708	4 months	205	5
709	4 months	208	4
710	2 months	208	9
NULL	NULL	NULL	NULL

C. Skill Table:

SQL Editor:

```

1 • use mydb;
2 • select * from skill;

```

Schemas:

- elmasri_company
 - mydb
 - certification
 - client
 - consultant
 - consultant_skill
 - project
 - project_consultant
 - project_skill
 - review
 - skill
 - subproject

Table: skill

Columns:

Column Name	Data Type	Primary Key
Skill_ID	int	PK
Skill_Name	varchar(45)	
Skill_Description	varchar(60)	

Result Grid:

Skill_ID	Skill_Name	Skill_Description
1	Java	It mainly deals with oops concept
2	Python	It is an interpreted, highlevel programming lang...
3	C	It is a general purpose programming language
4	Database	It is an organized collection of structured informa...
5	Sap	It is widely used for resource planning software
6	Visual basic	It is an event-driven programming language
7	Php	It is server side scripting language
8	Htm1	It is a formatting system for displaying material
9	C#	It is a type-safe programming language
10	Cloud computing	It has the computing services like storage,netw...
NULL	NULL	NULL

C. Certificate Table:

The screenshot shows a database management interface. On the left, a tree view lists tables: certification, client, consultant, consultant_skill, project, project_consultant, project_skill, review, skill, and subproject. The 'certification' table is selected, and its columns are listed: Certification_ID (int PK), Certification_Name (varchar(45)), Certification_Date (date), Level_Of_Certification (varchar(45)), and Skill_ID (int). In the center, an SQL script is shown with an insert statement for the 'certification' table. On the right, an 'Output' pane shows the execution results of the SQL script.

Table: certification

Columns:

- Certification_ID** int PK
- Certification_Name** varchar(45)
- Certification_Date** date
- Level_Of_Certification** varchar(45)
- Skill_ID** int

```

1 • use mydb;
2 • insert into certification(Certification_ID, Certification_Name, Certification_Date,
3   Level_Of_Certification, Skill_ID)
4   values
5   (10,'python','2022-01-28','Beginner',002),
6   (11,'database','2022-02-10','Mediator',004),
7   (12,'html','2021-05-20','Proficient',008),
8   (13,'cloudComputing','2021-03-20','Beginner',010),
9   (14,'sap','2021-04-20','Mediator',005),
10  (15,'database','2022-04-01','Beginner',004),
11  (16,'html','2021-06-20','Proficient',008),
12  (17,'php','2022-01-01','Mediator',007),
13  (18,'c','2022-05-04','Proficient',003),
14  (19,'python','2022-04-05','Mediator',002);
15

```

Output

#	Time	Action	Message
56	00:37:16	select * from subproject LIMIT 0, 1000	10 row(s) returned
57	00:48:59	use mydb	0 row(s) affected
58	00:48:59	insert into certification(Certification_ID, Certification_Name, Certificatio...	10 row(s) affected Records: 10 Duplicates: 0 Warnings: 0

```

1 • use mydb;
2 • select * from certification;
3
4

```

Result Grid | Filter Rows: | Edit: | Export/Import: | Wrap

	Certification_ID	Certification_Name	Certification_Date	Level_Of_Certification	Skill_ID
▶	10	python	2022-01-28	Beginner	2
	11	database	2022-02-10	Mediator	4
	12	html	2021-05-20	Proficient	8
	13	cloudComputing	2021-03-20	Beginner	10
	14	sap	2021-04-20	Mediator	5
	15	database	2022-04-01	Beginner	4
	16	html	2021-06-20	Proficient	8
	17	php	2022-01-01	Mediator	7
	18	c	2022-05-04	Proficient	3
	19	python	2022-04-05	Mediator	2
▲	NULL	NULL	NULL	NULL	NULL

E. Client Table:

Limit to 1000 rows

```

1 • use mydb;
2 • insert into client(Client_ID,Client_Name,Client_Contact_Name,Client_Contact_Mobile,
3 Client_Contact_Email) values
4 (111, 'value org', 'abraham', '9999999999', 'abraham@value.org'),
5 (222, 'trump corp', 'trump', '9999988888', 'trumpd@trump.corp'),
6 (333, 'mta org', 'micheal', '9999977777', 'micheal@mta.org'),
7 (444, 'tcs', 'ratan', '9998887777', 'ratan@tcs.org'),
8 (555, 'microsoft', 'michelle', '9898989898', 'michelle@microsoft.services'),
9 (666, 'amazon', 'vishwa', '9000000001', 'vishwa@amazon.com'),
10 (777, 'sonata', 'bunty', '9199999999', 'bunty@sonata.org.in'),
11 (888, 'infosys', 'sunny', '7897897899', 'sunny@infosys.co.in'),
12 (999, 'landt', 'yankee', '9879879877', 'yankee@landt.corp'),
13 (990, 'amdocs', 'raj', '8978978978', 'raj@amdocs.co.com');

```

Automatically disabled manual current toggle

Context Help

Output:

Action Output

#	Time	Action	Message
24	12:07:07	use mydb	0 row(s) affected
25	12:07:07	insert into client(Client_ID,Client_Name,Client_Contact_Name,Client_Cont...	10 row(s) affected Records: 10 Duplicates: 0 Warnings: 0

Limit to 1000 rows

```

1 • use mydb;
2 • select * from client;

```

Result Grid

Client_ID	Client_Name	Client_Contact_Name	Client_Contact_Mobile	Client_Contact_Email
111	value org	abraham	9999999999	abraham@value.org
222	trump corp	trump	9999988888	trumpd@trump.corp
333	mta org	micheal	9999977777	micheal@mta.org
444	tcs	ratan	9998887777	ratan@tcs.org
555	microsoft	michelle	9898989898	michelle@microsoft.services
666	amazon	vishwa	9000000001	vishwa@amazon.com
777	sonata	bunty	9199999999	bunty@sonata.org.in
888	infosys	sunny	7897897899	sunny@infosys.co.in
990	amdocs	raj	8978978978	raj@amdocs.co.com
999	landt	yankee	9879879877	yankee@landt.corp

Table: client

Columns:

- Client_ID
- Client_Name
- Client_Contact_Name
- Client_Contact_Mobile
- Client_Contact_Email

Output:

Action Output

#	Time	Action	Message
26	12:08:48	use mydb	0 row(s) affected
27	12:08:48	select * from client LIMIT 0, 1000	10 row(s) returned

F. Project skill Table:

```

1 • use mydb;
2 • insert into project_skill(Project_Skill_ID,Skill_Updation,Project_ID,Skill_ID) values
3   (7001,'Yes',1332,005),
4   (7002,'No',1335,006),
5   (7003,'Yes',1336,007),
6   (7005,'Yes',1337,008),
7   (7006,'Yes',1338,009),
8   (7007,'No',1332,005),
9   (7008,'Yes',1335,007),
10  (7009,'No',1339,008),
11  (7010,'Yew',1335,006);
12

```

Input

#	Time	Action	Message
7	02:13:27	use mydb	0 row(s) affected
8	02:13:27	insert into project_consultant(Project_Consultant_ID,Start_Date,End_Date,Evaluati...	10 row(s) affected Records: 10 Duplicates: 0 Warnings: 0
9	02:17:13	use mydb	0 row(s) affected
10	02:17:13	select * from project_consultant LIMIT 0, 1000	10 row(s) returned
11	02:32:25	use mydb	0 row(s) affected
12	02:32:25	insert into project_skill(Project_Skill_ID,Skill_Updation,Project_ID,Skill_ID) values (...)	9 row(s) affected Records: 9 Duplicates: 0 Warnings: 0

```

1 • use mydb;
2 • select * from project_skill;
3
4
5
6

```

Result Grid

Project_Skill_ID	Skill_Updation	Project_ID	Skill_ID
7001	Yes	1332	5
7002	No	1335	6
7003	Yes	1336	7
7004	No	1333	1
7005	Yes	1337	8
7006	Yes	1338	9
7007	No	1332	5
7008	Yes	1335	7
7009	No	1339	8
7010	Yew	1335	6
NULL	NULL	NULL	NULL

object_skill 3 x

G. Project consultant Table:

The screenshot shows a database management interface. On the left, the 'SCHEMAS' pane displays a tree view with 'mydb' selected, showing tables like 'certification', 'client', 'consultant', 'consultant_skill', 'project', 'project_consultant', 'project_skill', 'review', and 'skill'. The 'project_consultant' table is highlighted, and its columns are listed: Project_Constantant_ID, Start_Date, End_Date, Evaluation_Date, Person_Evaluted, Evaluation_Score, Comments, Consultant_ID, and Project_ID. The main pane shows an SQL script with an insert statement for the 'project_consultant' table. The 'Output' pane shows the execution results, indicating that 10 rows were affected.

```

1 • use mydb;
2 • insert into project_consultant(Project_Constantant_ID,Start_Date,End_Date,Evaluation_Date,Person_Evaluted,
3   Evaluation_Score,Comments,Consultant_ID,Project_ID)
4   values
5   (501,'2022-02-12','2022-05-15','2022-05-20','Joe',80,'best',201,1331),
6   (502,'2021-10-10','2022-01-10','2022-02-15','Henry',60,'good',202,1332),
7   (503,'2021-11-08','2022-01-15','2022-02-25','Hussain',70,'good',203,1333),
8   (504,'2021-11-10','2022-02-10','2022-02-15','Levin',90,'best',204,1334),
9   (505,'2022-01-10','2022-04-10','2022-04-15','Sam',90,'best',205,1335),
10  (506,'2022-01-10','2022-05-12','2022-05-20','Joe',80,'best',206,1336),
11  (507,'2022-02-18','2022-04-16','2022-04-20','Havin',70,'better',207,1337),
12  (508,'2022-03-20','2022-05-18','2022-05-20','Ram',80,'best',208,1338),
13  (509,'2022-01-10','2022-03-10','2022-03-25','Nova',75,'better',209,1339),
14  (510,'2022-01-15','2022-04-15','2022-05-05','Tyson',95,'best',210,1340);
15
16

```

Output:

#	Time	Action	Message
6	02:09:35	insert into project_consultant(Project_Constantant_ID,Start_Date,End_Date,Evaluation...	Error Code: 1452. Cannot add or update a child row: a foreign key co
7	02:13:27	use mydb	0 row(s) affected
8	02:13:27	insert into project_consultant(Project_Constantant_ID,Start_Date,End_Date,Evaluation...	10 row(s) affected Records: 10 Duplicates: 0 Warnings: 0

```

1 • use mydb;
2 • select * from project_consultant;
3
4
5

```

Project_Constantant_ID	Start_Date	End_Date	Evaluation_Date	Person_Evaluted	Evaluation_Score	Comments	Consultant_ID
501	2022-02-12	2022-05-15	2022-05-20	Joe	80	best	201
502	2021-10-10	2022-01-10	2022-02-15	Henry	60	good	202
503	2021-11-08	2022-01-15	2022-02-25	Hussain	70	good	203
504	2021-11-10	2022-02-10	2022-02-15	Levin	90	best	204
505	2022-01-10	2022-04-10	2022-04-15	Sam	90	best	205
506	2022-01-10	2022-05-12	2022-05-20	Joe	80	best	206
507	2022-02-18	2022-04-16	2022-04-20	Havin	70	better	207
508	2022-03-20	2022-05-18	2022-05-20	Ram	80	best	208
509	2022-01-10	2022-03-10	2022-03-25	Nova	75	better	209
510	2022-01-15	2022-04-15	2022-05-05	Tyson	95	best	210

H. Project Table:

SCHEMAS

Filter objects

- elmasri_company
 - mydb
 - certification
 - client
 - consultant
 - consultant_skill
 - project
 - project_consultant
 - project_skill
 - review
 - skill

Administration Schemas

Information

Table: client

Columns:

Client_ID	int PK
Client_Name	varchar(45)
Client_Contact_Name	varchar(45)
Client_Contact_Mobile	varchar(45)
Client_Contact_Email	varchar(45)

Chart Info

```

1 • use mydb;
2 • select * from project;
3
4
  
```

Limit to 1000 rows

```

1 • use mydb;
2 • insert into project(Project_ID, Project_Name, Project_Manager, Project_Location,
3   Client_ID) values
4   (1331,'CBRE','Joe','Texas',222),
5   (1332,'Microsoft','Jim','Texas',999),
6   (1333,'Glass Enterprise Edition','Mary','California',777),
7   (1334,'Waymo','Sara','California',777),
8   (1335,'Chronicle','Alia','Washington DC',333),
9   (1336,'Makani','Jack','Texas',111),
10  (1337,'Verily','Paul','North Carolina',111),
11  (1338,'Signa','Don','Texas',999),
12  (1339,'Scotia','Jhon','Texas',999),
13  (1340,'Jhonson','Tim','Texas',888);
14
15
  
```

Output

#	Time	Action	Message
48	23:15:13	Apply changes to project	Changes applied
49	23:40:55	use mydb	0 row(s) affected
50	23:40:55	insert into project(Project_ID, Project_Name, Project_Manager, Proje...	10 row(s) affected Records: 10 Duplicates: 0 Warnings: 0

Result Grid | Filter Rows: | Edit: | Export/Import:

Project_ID	Project_Name	Project_Manager	Project_Location	Client_ID
1331	CBRE	Joe	Texas	222
1332	Microsoft	Jim	Texas	999
1333	Glass Enterprise Edition	Mary	California	777
1334	Waymo	Sara	California	777
1335	Chronicle	Alia	Washington DC	333
1336	Makani	Jack	Texas	111
1337	Verily	Paul	North Carolina	111
1338	Signa	Don	Texas	999
1339	Scotia	Jhon	Texas	999
1340	Jhonson	Tim	Texas	888
NULL	NULL	NULL	NULL	NULL

I.Sub project Table:

SCHEMAS

Filter objects

- client
 - consultant
 - consultant_skill
 - project
 - project_consultant
 - project_skill
 - review
 - skill
 - subproject**
- Views
- Stored Procedures
- Functions

Administration Schemas

Information

```

1 use mydb;
2
3 insert into subproject(SubProject_ID, SubProject_Name, Project_Description,
4 SubProject_Lead, Project_ID) values
5 (13311, 'diglon', 'It deals with moblie technologies', 'dillon', 1331),
6 (13322, 'space digital', 'It deals with satellite technology', 'peter', 1332),
7 (13344, 'techme', 'It deals with automotive software', 'brooke', 1335),
8 (13355, 'dev AI', 'It deals with AI tech sw', 'kenny', 1337),
9 (13366, 'programmable', 'It deals with technology used inplanes', 'katy', 1339),
10 (13377, 'systemic', 'It deals with system softwares', 'zee', 1339),
11 (13388, 'transio', 'It deals with technology of trains', 'steve', 1333),
12 (13399, 'minify', 'It deals with technology of wifi', 'chris', 1339),
13 (13400, 'grammio', 'It deals with softwares used in banking', 'tony', 1336);
14
            
```

Output

Action Output

#	Time	Action	Message
51	23:44:27	use mydb	0 row(s) affected
52	23:44:27	select * from project LIMIT 0, 1000	10 row(s) returned
53	00:34:53	use mydb	0 row(s) affected
54	00:34:53	insert into subproject(SubProject_ID, SubProject_Name, Project_Des...	10 row(s) affected Records: 10 Duplicates: 0 Warnings: 0

```
1 • use mydb;
2 • select * from subproject;
3
4
```

Result Grid					
Filter Rows:		Edit:		Export/Import:	
SubProject_ID	SubProject_Name	Project_Description	SubProject_Lead	Project_ID	
13311	digion	It deals with moblie technologies	dillon	1331	
13322	space digital	It deals with satellite technology	peter	1332	
13333	webio	It deals web technolgy	sunny	1332	
13344	techme	It deals with automotive software	brooke	1335	
13355	dev AI	It deals with AI tech sw	kenny	1337	
13366	programmable	It deals with technology used inplanes	katy	1339	
13377	systemic	It deals with system softwares	zee	1339	
13388	transio	It deals with technology of trains	steve	1333	
13399	minify	It deals with technology of wifi	chris	1339	
13400	grammio	It deals with softwares used in banking	tony	1336	
NULL	NULL	NULL	NULL	NULL	

J. Review Table:

The screenshot shows a database management interface. On the left, the 'SCHEMAS' pane displays a tree view of database objects, including 'review'. Below it, the 'Table: review' section lists the columns: Review_ID (int PK), Rating (varchar(45)), Feedback (varchar(45)), Appraisal (varchar(45)), and Client_ID (int). The main editor displays an SQL script:

```
1 use mydb;
2 insert into review (Review_ID, Rating, Feedback, Appraisal, Client_ID) values
3 (30, '3', 'good', 'yes', 111),
4 (31, '2', 'poor', 'no', 111),
5 (32, '5', 'excellent', 'yes', 666),
6 (33, '4', 'better', 'yes', 555),
7 (34, '4', 'better', 'yes', 222),
8 (35, '4', 'better', 'yes', 111),
9 (36, '5', 'excellent', 'yes', 888),
10 (37, '1', 'poor', 'no', 666),
11 (38, '3', 'good', 'yes', 990),
12 (39, '2', 'poor', 'no', 999);
13
14
```

The 'Output' pane at the bottom shows the execution results:

#	Time	Action	Message
32	15:55:47	use mydb	0 row(s) affected
33	15:55:47	insert into certification (Certification_ID, Certification_Name, Certification_D...	Error Code: 1364. Field 'Skill_ID' doesn't have a default
34	22:57:42	use mydb	0 row(s) affected
35	22:57:42	insert into review (Review_ID, Rating, Feedback, Appraisal, Client_ID) val...	10 row(s) affected Records: 10 Duplicates: 0 Warning

```
1 use mydb;
2 select * from review;
3
4
```

Result Grid					
	Review_ID	Rating	Feedback	Appraisal	Client_ID
▶	30	3	good	yes	111
	31	2	poor	no	111
	32	5	excellent	yes	666
	33	4	better	yes	555
	34	4	better	yes	222
	35	4	better	yes	111
	36	5	excellent	yes	888
	37	1	poor	no	666
	38	3	good	yes	990
	39	2	poor	no	999
▲	NULL	NULL	NULL	NULL	NULL

b. Insertion error due to Foreign key constraints:

We are getting: **Error :Cannot update a child row a foreign key constraint** because we are trying to insert data which is not available in the Foreign key referencing table(i.e Client Table)

The screenshot shows a SQL IDE with the following SQL code:

```
1 use mydb;
2 insert into review (Review_ID, Rating, Feedback, Appraisal, Client_ID) values
3 (42, '4', 'better', 'yes', 118);
4
```

The output window shows the following log:

#	Time	Action	Message	Dura
57	04:02:15	select * from skill LIMIT 0, 1000	10 row(s) returned	0.00X
58	04:06:31	use mydb	0 row(s) affected	0.00X
59	04:06:31	insert into client(Client_ID, Client_Name, Client_Contact_Name, Clie...	Error Code: 1062. Duplicate entry '333' for key 'client.PRIMARY'	0.00X
60	04:10:48	use mydb	0 row(s) affected	0.00X
61	04:10:48	insert into review (Review_ID, Rating, Feedback, Appraisal, Client_...	Error Code: 1062. Duplicate entry '30' for key 'review.PRIMARY'	0.01H
62	04:12:09	use mydb	0 row(s) affected	0.00X
63	04:12:09	insert into review (Review_ID, Rating, Feedback, Appraisal, Client_...	Error Code: 1452 Cannot add or update a child row: a foreign key ...	0.00X

Client table:

The screenshot shows a SQL IDE with the following SQL code:

```
1 use mydb;
2 select * from client;
```

The result grid shows the following data:

Client_ID	Client_Name	Client_Contact_Name	Client_Contact_Mobile	Client_Contact_Email
111	value org	abraham	9999999999	abraham@value.org
222	trump corp	trump	9999988888	trumpd@trump.corp
333	mta org	micheal	9999977777	micheal@mta.org
444	tcs	ratan	9998887777	ratan@tcs.org
555	microsoft	michelle	9898989898	michelle@microsoft.services
666	amazon	vishwa	9000000001	vishwa@amazon.com
777	sonata	bunty	9199999999	bunty@sonata.org.in
888	infosys	sunny	7897897899	sunny@infosys.co.in
990	amdocs	raj	8978978978	raj@amdocs.co.com
999	landt	yankee	9879879877	yankee@landt.corp

The output window shows the following log:

#	Time	Action	Message
26	12:08:48	use mydb	0 row(s) affected
27	12:08:48	select * from client LIMIT 0, 1000	10 row(s) returned

We can resolve this issue by inserting data which is available in the Foreign key referencing table.

c.Foreign key inconsistency:

```
SET @OLD_UNIQUE_CHECKS=@@UNIQUE_CHECKS, UNIQUE_CHECKS=0;
```

```
SET @OLD_FOREIGN_KEY_CHECKS=@@FOREIGN_KEY_CHECKS, FOREIGN_KEY_CHECKS=0;
```

```
SET @OLD_SQL_MODE=@@SQL_MODE,
SQL_MODE='ONLY_FULL_GROUP_BY,STRICT_TRANS_TABLES,NO_ZERO_IN_DATE,NO_ZERO_DATE,ERROR_FOR_DIVISION_BY_ZERO,NO_ENGINE_SUBSTITUTION';
```

d.Examing rational constraints:

examples that shows how your constrains (i.e., Primary Key, Foreign Key, Unique key, data types) protect your database from insertion of invalid instances.

Primary Key:

```
1 use mydb;
2 insert into client(Client_ID, Client_Name, Client_Contact_Name, Client_Contact_Mobile,
3 Client_Contact_Email) values
4 (333, 'genpact', 'tej', 9000000009, 'tej@genpact.org');
```

#	Time	Action	Message
53	04:00:53	alter table skill	0 row(s) affected
54	04:01:11	use mydb	0 row(s) affected
55	04:01:11	drop table skill	Error Code: 3730. Cannot drop table 'skill' referenced by a foreign key c
56	04:02:15	use mydb	0 row(s) affected
57	04:02:15	select * from skill LIMIT 0, 1000	10 row(s) returned
58	04:06:31	use mydb	0 row(s) affected
59	04:06:31	insert into client(Client_ID, Client_Name, Client_Contact_Name, Client_Con...	Error Code: 1062. Duplicate entry '333' for key 'client.PRIMARY'

Foreign Key:

```
1 use mydb;
2 insert into review (Review_ID, Rating, Feedback, Appraisal, Client_ID) values
3 (42, '4', 'better', 'yes', 110);
4
```

#	Time	Action	Message	Dura
57	04:02:15	select * from skill LIMIT 0, 1000	10 row(s) returned	0.000
58	04:06:31	use mydb	0 row(s) affected	0.000
59	04:06:31	insert into client(Client_ID, Client_Name, Client_Contact_Name, Cle...	Error Code: 1062. Duplicate entry '333' for key 'client.PRIMARY'	0.000
60	04:10:48	use mydb	0 row(s) affected	0.000
61	04:10:48	insert into review (Review_ID, Rating, Feedback, Appraisal, Client_...	Error Code: 1062. Duplicate entry '30' for key 'review.PRIMARY'	0.011
62	04:12:09	use mydb	0 row(s) affected	0.000
63	04:12:09	insert into review (Review_ID, Rating, Feedback, Appraisal, Client_...	Error Code: 1452. Cannot add or update a child row: a foreign key	0.000

Data Types:

Error while Inserting a Varchar value for Integer data type.

```

1 • use mydb;
2 • insert into certification(Certification_ID, Certification_Name, Certification_Date,
3   Level_Of_Certification, Skill_ID)
4   values
5   ('abc','python','2022-01-28','Beginner',002);

```

Output

#	Time	Action	Message
1	05:51:55	use mydb	0 row(s) affected
2	05:51:55	insert into certification(Certification_ID, Certification_Name, Certification_Date, Le...	Error Code: 1366. Incorrect integer value: 'abc' for column 'Certification_ID' at row 1

4.0 Manipulating Data:

It perform operations on the database and also use it to create a database. SQL uses specific commands like Create, Drop, Insert, etc.,

Alter command:

Altering Client_Contact_Mobile to Client_Contact_Phone in Client table.

Before:

```

1 • use mydb;
2 • select * from client;

```

Client_ID	Client_Name	Client_Contact_Name	Client_Contact_Phone	Client_Contact_Email
111	value org	abraham	9999999999	abraham@value.org
222	trump corp	trump	9999988888	trump@trump.corp
333	mta org	micheal	9999977777	micheal@mta.org
444	tcs	ratan	9998887777	ratan@tcs.org
555	microsoft	michele	9898989898	michele@microsoft.services
666	amazon	vishwa	9000000001	vishwa@amazon.com
777	sonata	bunty	9199999999	bunty@sonata.org.in
888	infosys	sunny	7897897899	sunny@infosys.co.in
990	andocs	raj	8978978978	raj@andocs.co.com
999	landt	yankiee	9879879877	yankiee@landt.corp

ALTER RENAME SS (mobile to phone)

After executing ALTER query:

use mydb;

alter table client

rename column Client_Contact_Mobile to Client_Contact_Phone;

```

1 • use mydb;
2 • select * from client;

```

Client_ID	Client_Name	Client_Contact_Name	Client_Contact_Phone	Client_Contact_Email
111	value org	abraham	9999999999	abraham@value.org
222	trump corp	trump	9999988888	trump@trump.corp
333	mta org	micheal	9999977777	micheal@mta.org
444	tcs	ratan	9998887777	ratan@tcs.org
555	microsoft	michele	9898989898	michele@microsoft.services
666	amazon	vishwa	9000000001	vishwa@amazon.com
777	sonata	bunty	9199999999	bunty@sonata.org.in
888	infosys	sunny	7897897899	sunny@infosys.co.in
990	andocs	raj	8978978978	raj@andocs.co.com
999	landt	yankiee	9879879877	yankiee@landt.corp

CHANGE ORDER OF COLUMN :

use mydb;
 alter table project_consultant
 modify column Evaluation_Score varchar(45) after Evaluation_Date;
Before:

```
1 • use mydb;
2 • select * from project_consultant;
3
4
5
```

Project_Consultant_ID	Start_Date	End_Date	Evaluation_Date	Person_Evaluated	Evaluation_Score	Comments	Consultant_ID
501	2022-02-12	2022-05-15	2022-05-20	Joe	80	best	201
502	2021-10-10	2022-01-10	2022-02-15	Henry	60	good	202
503	2021-11-08	2022-01-15	2022-02-25	Hussain	70	good	203
504	2021-11-10	2022-02-10	2022-02-15	Levin	90	best	204
505	2022-01-10	2022-04-10	2022-04-15	Sam	90	best	205
506	2022-01-10	2022-05-12	2022-05-20	Joe	80	best	206
507	2022-02-18	2022-04-16	2022-04-20	Havin	70	better	207
508	2022-03-20	2022-05-18	2022-05-20	Ram	80	best	208
509	2022-01-10	2022-03-10	2022-03-25	Nova	75	better	209
510	2022-01-15	2022-04-15	2022-05-05	Tyson	95	best	210

After:

```
1 • use mydb;
2 • select * from project_consultant;
```

Project_Consultant_ID	Start_Date	End_Date	Evaluation_Date	Evaluation_Score	Person_Evaluated	Comments	Cons
501	2022-02-12	2022-05-15	2022-05-20	80	Joe	best	201
502	2021-10-10	2022-01-10	2022-02-15	60	Henry	good	202
503	2021-11-08	2022-01-15	2022-02-25	70	Hussain	good	203
504	2021-11-10	2022-02-10	2022-02-15	90	Levin	best	204
505	2022-01-10	2022-04-10	2022-04-15	90	Sam	best	205
506	2022-01-10	2022-05-12	2022-05-20	80	Joe	best	206
507	2022-02-18	2022-04-16	2022-04-20	70	Havin	better	207
508	2022-03-20	2022-05-18	2022-05-20	80	Ram	best	208
509	2022-01-10	2022-03-10	2022-03-25	75	Nova	better	209
510	2022-01-15	2022-04-15	2022-05-05	95	Tyson	best	210

UPDATE NUMERICAL VALUE:

Before updation:

```
1 • use mydb;
2 • select * from consultant;
```

Consultant_ID	Consultant_Name	Consultant_Email	Consultant_Contact	Consultant_Address	Consultant_City	Consultant_State
201	jspider	jspider@gmail.com	12345	320 parkave	bridgeport	connecticut
202	talents	talents@gmail.com	12333	390 parkave	bridgeport	connecticut
203	codev	codev@gmail.com	12222	99 fairfield	bridgeport	connecticut
204	wecode	wecode@yahoo.com	11111	101 seastreet	orlando	florida
205	codex	codex@gmail.com	22222	220 myrile	dallas	tennes
206	umass	umass@yahoo.com	33333	111 santave	amherst	massachusetts
207	umass	umassboston@gmail.com	44444	444 bostonroad	boston	massachusetts
208	talents	talents2@gmail.com	5555	77 chapelst	new haven	connecticut
209	ulearn	ulearn@gmail.com	66666	101 jacksonst	jacksonville	florida
210	learn code	learncode@gmail.com	77777	111 losavenue	los angeles	california

After executing update numerical value query:

use mydb;
 update consultant
 set Consultant_Contact = '00000'
 where Consultant_ID = 201;

```

1 • use mydb;
2 • select * from consultant;

```

Consultant_ID	Consultant_Name	Consultant_Email	Consultant_Contact	Consultant_Address	Consultant_City	Consultant_State
201	jspider	jspider@gmail.com	00000	320 parkave	bridgeport	connecticut
202	talents	talants@gmail.com	12333	390 parkave	bridgeport	connecticut
203	codev	codev@gmail.com	12222	99 fairfield	bridgeport	connecticut
204	wecode	wecode@yahoo.com	11111	101 seastreet	orlando	florida
205	codex	codex@gmail.com	22222	220 myrtle	dallas	texas
206	umass	umass@yahoo.com	33333	111 saintave	amherst	massachusetts
207	umass	umassboston@gmail.com	44444	444 bostonroad	boston	massachusetts
208	talents	talents2@gmail.com	55555	77 chapelst	new haven	connecticut
209	ulearn	ulearn@gmail.com	66666	101 jacksonst	jacksonville	florida
210	learn code	learncode@gmail.com	77777	111 losavenue	los angels	california

Update:

Used to modify/update particular data in a table.

Before updation:

```

1 • use mydb;
2 • select * from project;
3
4

```

Project_ID	Project_Name	Project_Manager	Project_Location	Client_ID
1331	CBRE	Joe	Texas	222
1332	Microsoft	Jim	Texas	999
1333	Glass Enterprise Edition	Mary	California	777
1334	Waymo	Sara	California	777
1335	Chronicle	Alia	Washington DC	333
1336	Makani	Jack	Texas	111
1337	Verily	Paul	North Carolina	111
1338	Signa	Don	Texas	999
1339	Scotia	Jhon	Texas	999
1340	Jhonson	Tim	Texas	888

After executing updating string values of several records:

```
use mydb;
```

```
update project
```

```
set Project_Name = 'hyde', Project_Manager = 'Zeus', Project_Location = 'Abu Dhabi'
where Project_ID = 1333;
```

Project_ID	Project_Name	Project_Manager	Project_Location	Client_ID
1331	CBRE	Joe	Texas	222
1332	Microsoft	Jim	Texas	999
1333	hyde	Zeus	Abu Dhabi	777
1334	Waymo	Sara	California	777
1335	Chronicle	Alia	Washington DC	333
1336	Makani	Jack	Texas	111
1337	Verily	Paul	North Carolina	111
1338	Signa	Don	Texas	999
1339	Scotia	Jhon	Texas	999
1340	Jhonson	Tim	Texas	888
1344	CBRE	Joe	8787	222

5.0 Optimizing Database:

Select Query:

Select query is used to retrieve all data or specific data from a table.

Select * query on certification table, displays all the data from Certification table.

```

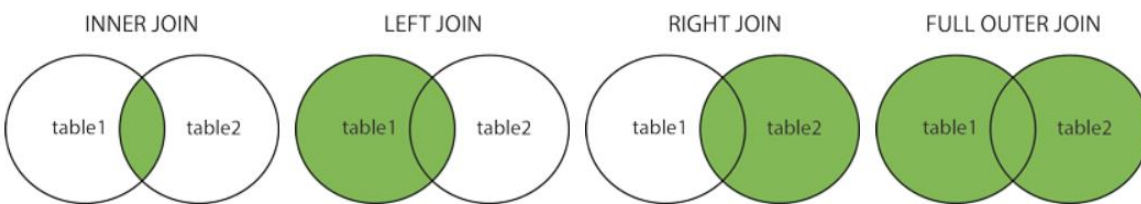
1 • use mydb;
2 • select * from certification;
3
4

```

Certification_ID	Certification_Name	Certification_Date	Level_Of_Certification	Skill_ID
10	python	2022-01-28	Beginner	2
11	database	2022-02-10	Mediator	4
12	html	2021-05-20	Proficient	8
13	cloudComputing	2021-03-20	Beginner	10
14	sap	2021-04-20	Mediator	5
15	database	2022-04-01	Beginner	4
16	html	2021-06-20	Proficient	8
17	php	2022-01-01	Mediator	7
18	c	2022-05-04	Proficient	3
19	python	2022-04-05	Mediator	2
NULL	NULL	NULL	NULL	NULL

Joins:

A JOIN [3] clause is used to combine rows from two or more tables based on a related column between them.



Inner Join:

It returns records that have matching values in both tables.

```
1 • use mydb;
2 • SELECT skill.skill_id,skill.skill_name,certification.certification_name
3 FROM skill
4 INNER JOIN certification ON skill.skill_id=certification.certification_id;
```

Result Grid	Filter Rows:	Export:	Wrap Cell Content:
skill_id	skill_name	certification_name	
10	Cloud computing	python	

Left join:

It Returns all records from the left table, and the matched records from the right table.

```
1 • use mydb;
2 • SELECT skill.skill_id,skill.skill_name
3 FROM skill
4 LEFT JOIN certification ON skill.skill_id=certification.certification_id;
```

Result Grid	Filter Rows:	Export:	Wrap Cell Content:
skill_id	skill_name		
1	Java		
2	Python		
3	C		
4	Database		
5	Sap		
6	Visual basic		
7	Php		
8	Html		
9	C#		
10	Cloud computing		

Right join:

It Returns all records from the right table, and the matched records from the left table.

```
1 • use mydb;
2 • SELECT skill.skill_id,skill.skill_name
3 FROM skill
4 LEFT JOIN certification ON skill.skill_id=certification.certification_id;
```

Result Grid	Filter Rows:	Export:	Wrap Cell Content:
skill_id	skill_name		
1	Java		
2	Python		
3	C		
4	Database		
5	Sap		
6	Visual basic		
7	Php		
8	Html		
9	C#		
10	Cloud computing		

6.0 Project Overview:

The main features of the system are storing client details, job details, skills required, certifications completed. CMS specifies the database where it contains rows and columns in the form of tables. These databases contain various datatypes, and attributes. The database has tables which contains different fields which describe its contents. The database is further explained in-depth with all fields used data types, limitations available, Primary key, foreign key.

This project develops a software that helps each consultant connect with the various clients and offer good job role in their company

7.0 References:

- [1] <https://studentprojectguide.com/vb-net/job-consultancy-management-system/>
- [2] <https://erdplus.com/edit-diagram/41e53d32-f35f-48dc-8238-d7189f1851f9>
- [3] https://www.w3schools.com/sql/sql_join.asp