CONSULTANCY MANAGEMENT SYSTEM

Advance Data Base Design

FAB5

CS603-D

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

Submitted To:

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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 us 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.

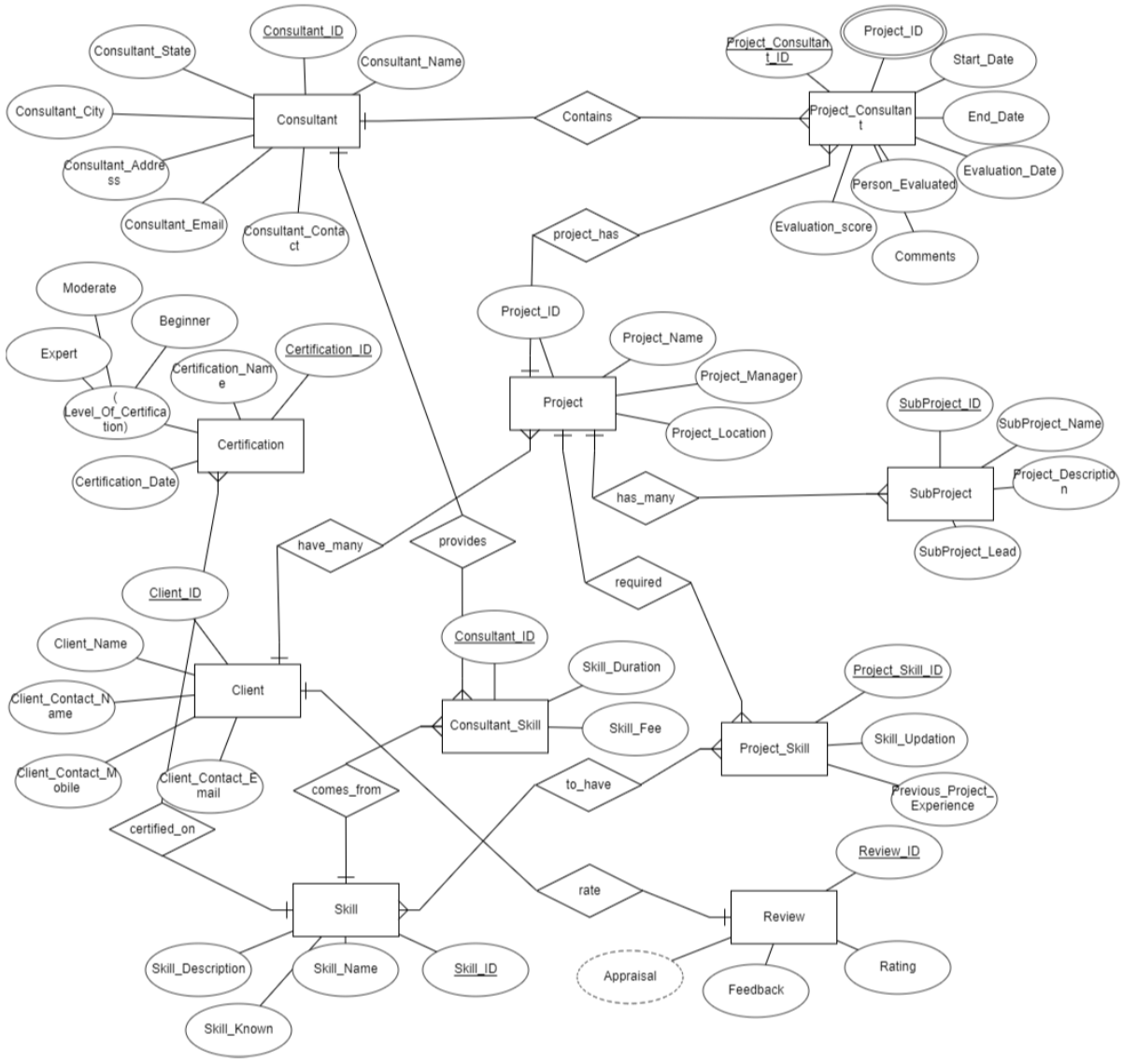


Figure (1) [2] Entity Relationship Model

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.

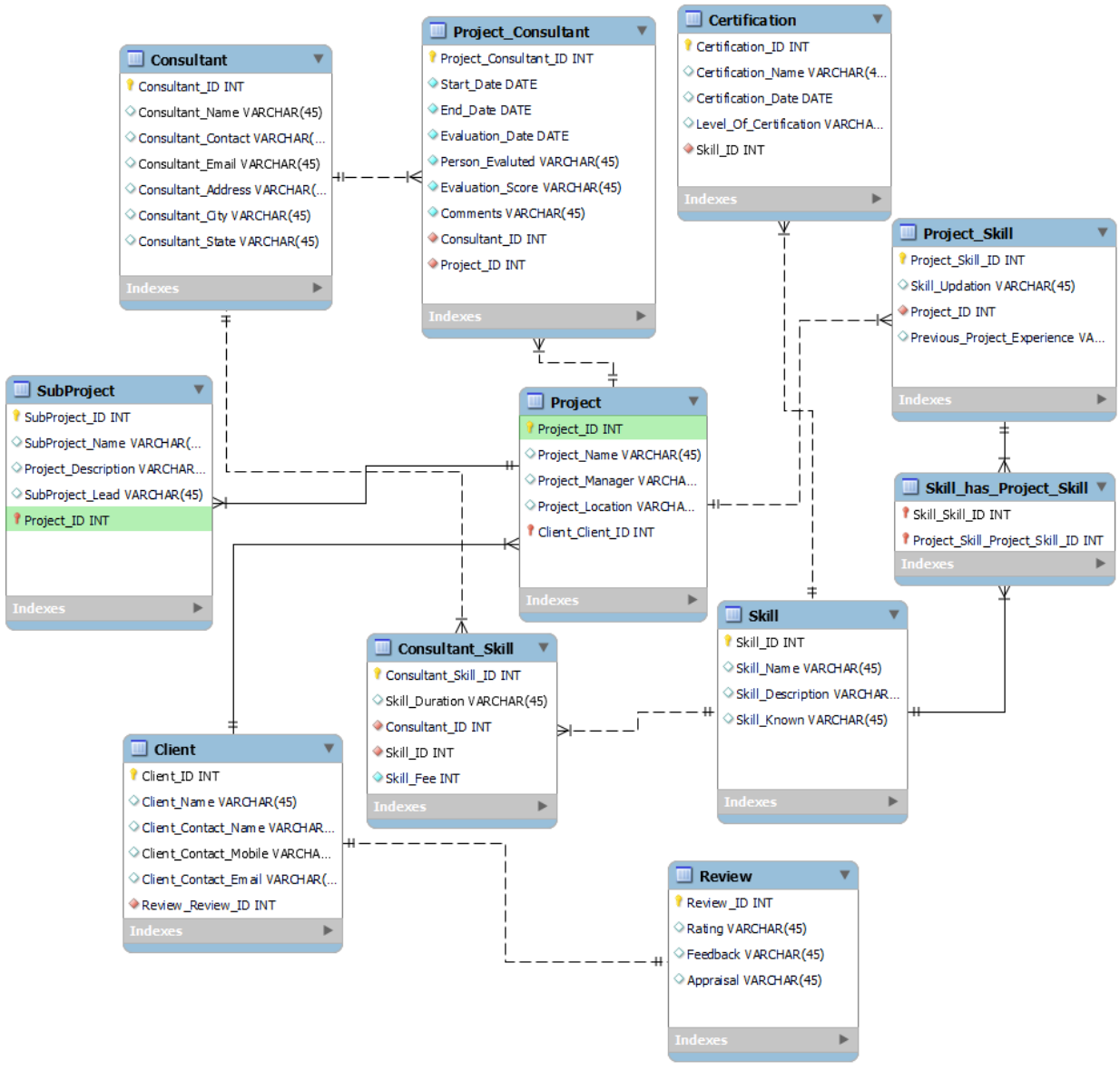


Figure (2) Enhanced Entity Relationship Diagram

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 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 know 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, Evalution_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.

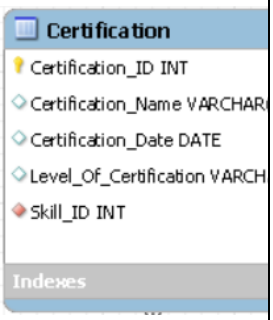
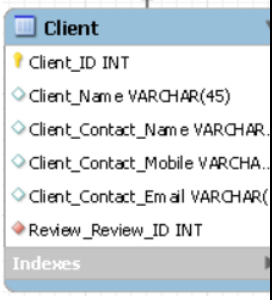
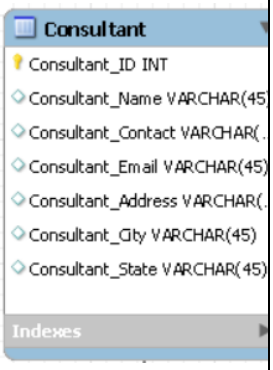
(i) Sub Project:

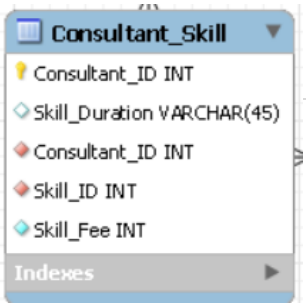
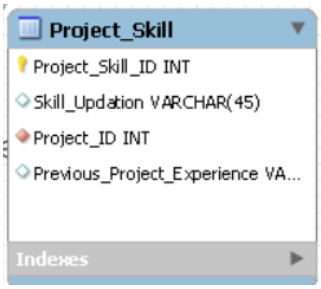
A subproject is a project that is a part of a larger project. Sub Project entity stores all Subproject details. Sub project is assigned after allocation of Project. It has attributes like Subproject_ID, Subproject_Name, Project_Id, Project_Description, SubProject_Lead. It has Many to One (N:1) relationship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

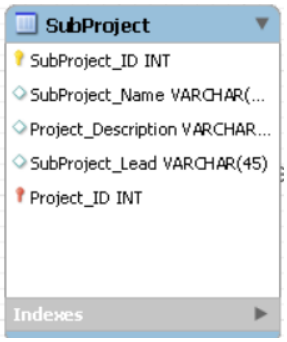
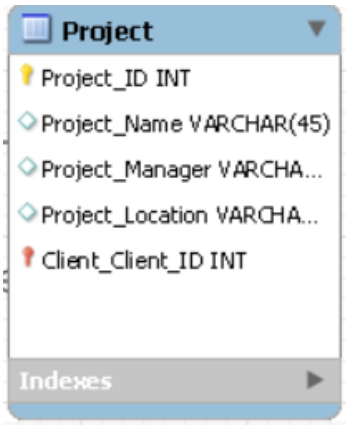
(j) Review:

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.

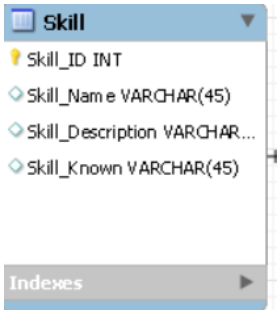
2.6 SQL DATABASE DEVELOPMENT:

Table	Query	EER model for Table	Description	PKey	FKey
Certification	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`))		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	Yes	Yes
Client	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`)) ;		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.	Yes	No
Consultant	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;		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.	Yes	No

Consultant_Skill	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_Consultant_Skill_Consultant1_idx` (`Consultant_ID`), KEY `fk_Consultant_Skill_Skill1_idx` (`Skill_ID`), CONSTRAINT `fk_Consultant_Skill_Consultant1` FOREIGN KEY (`Consultant_ID`) REFERENCES `consultant` (`Consultant_ID`), CONSTRAINT `fk_Consultant_Skill_Skill1` FOREIGN KEY (`Skill_ID`) REFERENCES `skill` (`Skill_ID`));		The certification table contains following attributes with the respective datatypes which are Consultant_Skill_ID(int), Skill_duration(varchar), Skill_Fee(int) Consultant Skill entity stores the details of skill. 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.	Yes	Yes
Project_Skill	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`));		The certification table contains following attributes with the respective datatypes which are Project_Skill_ID(int), Skill_Updation(varchar), Previous_Project_Experience(varchar) 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 Projrct_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.	Yes	Yes

Sub_Project	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`));		The certification table contains following attributes with the respective datatypes which are SubProject_ID(int), SubProject_Name(varchar), Projrct_Description(varchar), SubProject_Lead(varchar) 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. 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.	Yes	Yes
Project	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`)) ;		The certification table contains following attributes with the respective datatypes which are Project_ID(int), Project_Name(vachar), Project_Manager(varchar), Project_Location(varchar) Project entity stores the details of the project, Client and the manager who works on that project. 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.	Yes	Yes

Project_Consultant	CREATE TABLE `project_consultant` (`Project_Consultant_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_Consultant_ID`), KEY `fk_Project_Consultant_Consultant_idx` (`Consultant_ID`), KEY `fk_Project_Consultant_Project1_idx` (`Project_ID`), CONSTRAINT `fk_Project_Consultant_Consultant` FOREIGN KEY (`Consultant_ID`) REFERENCES `consultant` (`Consultant_ID`), CONSTRAINT `fk_Project_Consultant_Project1` FOREIGN KEY (`Project_ID`) REFERENCES `project` (`Project_ID`));		The certification table contains following attributes with the respective datatypes which are Project_Consultant_ID(int), Start_Date(date), End_Date(date), Evaluation_Date(date), Person_Evaluated(varchar), Evaluation_Score(varchar), Comments(varchar) Project Consultant allocates the project and it stores the details related to project. Project_Consultant_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.	Yes	Yes

Review	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`)) ;		The certification table contains following attributes with the respective datatypes which are Review_ID(int), Rating(varchar), Feedback(varchar), Appraisal(varchar) It returns of information about the result of a performance. Review_ID is the primary key for Review entity. It has One to One (1:1) relationship with Client.	Yes	No
Skill	CREATE TABLE `skill` (`Skill_ID` int NOT NULL, `Skill_Name` varchar(45) DEFAULT NULL, ‘Skill_Description` varchar(60) DEFAULT NULL, PRIMARY KEY (`Skill_ID`));		The certification table contains following attributes with the respective datatypes which are Skill_ID(int), Skill_Name(varchar), Skill_Description(varchar), Skill_Known(varchar) 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.	Yes	No

2.7 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

2.8 References:

[1] https://studentprojectguide.com/vb-net/job-consultancy-management-system/

[2] https://erdplus.com/edit-diagram/41e53d32-f35f-48dc-8238-d7189f1851f9