



SYRACUSE UNIVERSITY STUDENT EMPLOYMENT SYSTEM

Submitted by: Megha Jakhotia
Yash Kapadia

IST 659: Data Administration Concepts and
Database Management



Contents

Project Summary	2
Entity and Attribute Glossary	3
Relational Data Model	5
Business Rules	5
Database System Infrastructure:	6
SQL Script for Creating Tables	6
SQL Script for Inserting Sample Data	10
SQL Statements for Answering Major Data Questions	14
Interfaces	20
VBA Scripts for Validation and Error Handling	28
Reports	29

Project Summary

The project focuses on designing a database for the Syracuse University Student Employment System. It is for the Syracuse University to simplify the process of gaining an Employer Verification form (I-9) for international students. A student who plans to work for an on-campus job needs to have an I-9 work authorization form from a potential employer. The potential employers could be one of the food services or Schools providing Faculty Assistantship and various other funded projects.

The current process requires student to go from office to office and work on hard copies. For this we have designed a centralized database management system to not have student travel to various offices as well as not carry original & sensitive documents everywhere for verification. The soft copies can easily replace hard one without any loss in any functionality. This system will make things easier for students as well as will simplify the process for the offices to keep track of the employment of each student and from each employer. This database system will also help the employment services to find out answers to various questions like which employer is giving out the most employment, total amount spent in international student employment, etc.

This database system will store the data from the start of the application of employment to the time when the I-9 form is received by the student. This database has a list of users that can be either students, employers or the offices involved in the employment process. To obtain employment at the University, students apply for various jobs posted on the online portal SUJobopps. On being accepted for a job, they receive an email from the employer which has an employment letter and the mention of the link to upload the documents required. This is a unique link for a student and can be used for multiple employments since the documents are the same. Only after receiving an employment letter and the student accepting it, a student's employment record is created. This record has the various details of the job like the pay, allowed hours to work and the job position. Along with this, the I9 form is issued by the employer to the student and this form is then used in generating the SSN by verifying the employer's signature by the Slutzker center. This center is then used to confirm the original documents with the ones uploaded.

The report consists of the design and implementation of the proposed system in the form of entity relationship diagram, function of every entity and corresponding attributes, SQL Queries for creation, insertion and answering major data questions. It also has forms and reports for better visibility. The report also states business rules of this database management system. Various users may require different kind of information and this report shows some of the major queries that a user can ask to get information.

Entity and Attribute Glossary

Attached Excel For Entities:



1. User_List: This entity has data of all the users using the system and involved in the employment process. This list can have many students, employers and offices but have unique entry i.e. there won't be 2 entries of the same student.

Attribute Name	Field Type	Required	Description
UserID	NUMERIC(10)	Yes	Primary Key: Each user has a unique user ID
User_FName	VARCHAR(50)	Yes	First Name of the user
User_LName	VARCHAR(50)	No	Last Name of the user
User_Email	VARCHAR(50)	Yes	Email ID of the user
User_Phone	VARCHAR(12)	Yes	Phone number of the user
User_Password	VARCHAR(50)	Yes	Password of the account

2. Student: The entity has data of all the international students in more detail.

Attribute Name	Field Type	Required	Description
SUID	NUMERIC(10)	Yes	Primary Key: Each student has a unique ID
S_Major	VARCHAR(50)	Yes	Program in which student is majoring e.g. Information Management
S_Degree	VARCHAR(50)	Yes	Degree pursued by the student e.g. Masters, PHD
S_Gender	VARCHAR(50)	No	Possible Options: 'Female', 'Male', 'Prefer Not To Answer'
S_DocumentLink	VARCHAR(2048)	No	Hyperlink to a location having user's documents

3. Office: The entity has data of the Offices involved in the process.

Attribute Name	Field Type	Required	Description
Office_ID	NUMERIC(10)	Yes	Primary Key: Each office has a unique office ID
Office_Location	VARCHAR(100)	Yes	Location of the office

4. Employer: Employer's details that provide employment to on-campus students.

Attribute Name	Field Type	Required	Description
Employer_ID	NUMERIC(10)	Yes	Primary Key: Each employee has a unique user ID
Employer_Type	VARCHAR(50)	Yes	Type of Organization: Food Services, School, etc.

5. Employment_Record: The entity has entries of all the records of employment given by an organization to a student that was accepted by the student.

Attribute Name	Field Type	Required	Description
Record_ID	NUMERIC(10)	Yes	Primary Key: Each employment record entry has a unique record ID
SUID	NUMERIC(10)	Yes	Foreign Key: Unique student ID
Employer_ID	NUMERIC(10)	Yes	Foreign Key: Unique employer ID
Student_Position	VARCHAR(50)	Yes	Position a student holds in the organization
Hourly_Pay	DECIMAL(10)	Yes	Payment per hour for the employment
Overtime_Pay	DECIMAL(10)	No	Payment when student works beyond the assigned hours
Hours_Per_Week	NUMERIC(10)	Yes	Permitted hours to work

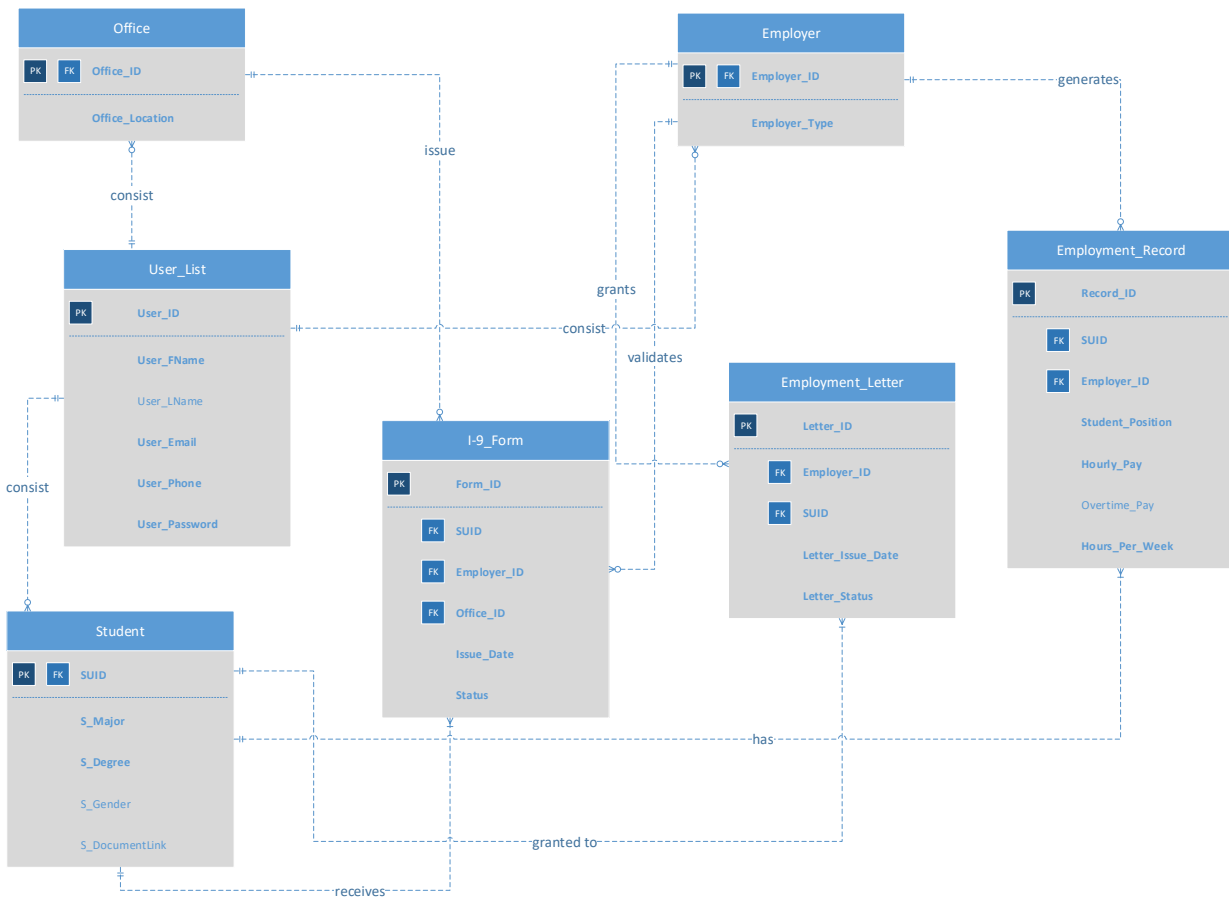
6. Employment_Letter: Intermediate between Employer and Student to indicate confirmation of employment from the employer side.

Attribute Name	Field Type	Required	Description
Letter_ID	NUMERIC(10)	Yes	Primary Key: Each employment letter has unique letter ID
Employer_ID	NUMERIC(10)	Yes	Foreign Key: Unique employer ID
SUID	NUMERIC(10)	Yes	Foreign Key: Unique student ID
Letter_Issue_Date	DATETIME	Yes	Date of Issuance
Letter_Status	VARCHAR(50)	Yes	Status of letter: 'Accepted', 'Issued', 'Denied'

7. I-9_Form: Consists of all the I-9 form information and their status.

Attribute Name	Field Type	Required	Description
Form_ID	NUMERIC(10)	Yes	Primary Key: Each form has a unique form id
SUID	NUMERIC(10)	Yes	Foreign Key: Unique student ID
Employer_ID	NUMERIC(10)	Yes	Foreign Key: Unique employer ID
Office_ID	NUMERIC(10)	Yes	Foreign Key: Unique office ID
Issue_Date	DATETIME	Yes	Date of Issuance
Form_Status	VARCHAR(50)	Yes	Status of the form: 'Pending', 'Complete'

Relational Data Model



Business Rules

1. All users must have the valid credentials to access the system.
2. International students must have a valid passport, visa and I-20 form.
3. A student must be full-time matriculated in the Syracuse University.
4. The Slutzker office must provide confirmation of I-9 form completion to the student.
5. The employer must be an on-campus registered organization.
6. Possible values of a degree are master, undergraduate and PHD/Doctoral.
7. International students are allowed to work only for 20 hours per week.
8. A student can have multiple employments and employers.
9. Students must successfully upload the required documents and information in order to start the processing of I-9 form.

Database System Infrastructure:

- Database Engine: SQL Server (Here Tables, Joins and Trigger are created)
- Interface Design Tool: Microsoft Access (Here Forms and Reports are created)
- Entity-Relationship Diagram: Microsoft Visio
- System Validation and Error Handling: Visual Basic (VBA)

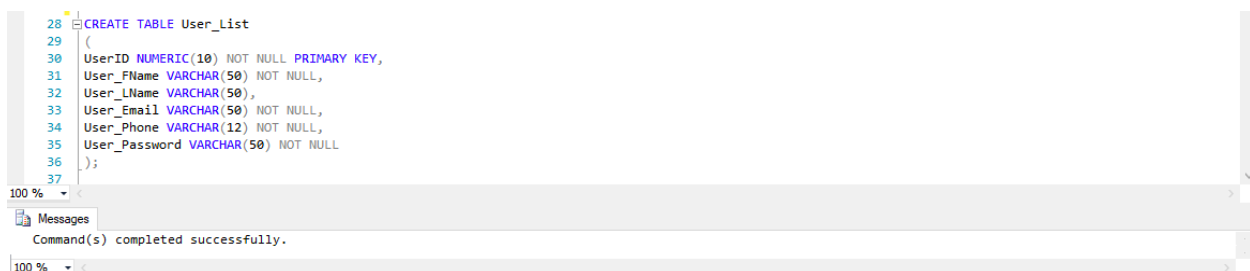
SQL Script for Creating Tables

SQL File:



1. User List Table

```
CREATE TABLE User_List
(
UserID NUMERIC(10) NOT NULL PRIMARY KEY,
User_FName VARCHAR(50) NOT NULL,
User_LName VARCHAR(50),
User_Email VARCHAR(50) NOT NULL,
User_Phone VARCHAR(12) NOT NULL,
User_Password VARCHAR(50) NOT NULL
);
```



2. Employer Table

```
CREATE TABLE Employer
(
Employer_ID NUMERIC(10) NOT NULL PRIMARY KEY,
Employer_Type VARCHAR(50) NOT NULL,
```

```

CONSTRAINT Employer_ID_FK FOREIGN KEY (Employer_ID) REFERENCES
User_List(UserID)
);

```

```

38 CREATE TABLE Employer
39 (
40   Employer_ID NUMERIC(10) NOT NULL PRIMARY KEY,
41   Employer_Type VARCHAR(50) NOT NULL,
42   CONSTRAINT Employer_ID_FK FOREIGN KEY (Employer_ID) REFERENCES User_List(UserID)
43 );
44

```

Messages
Command(s) completed successfully.

Query executed successfully.

3. Student Table

```

CREATE TABLE Student
(
  SUID NUMERIC(10) NOT NULL PRIMARY KEY,
  S_Major VARCHAR(50) NOT NULL,
  S_Degree VARCHAR(50) NOT NULL,
  S_Gender VARCHAR(50) CHECK (S_Gender IN ('Female','Male','Prefer Not To Answer')),
  S_DocumentLink VARCHAR(2048),
  CONSTRAINT SUID_FK FOREIGN KEY(SUID) REFERENCES User_List(UserID)
);

```

```

46 CREATE TABLE Student
47 (
48   SUID NUMERIC(10) NOT NULL PRIMARY KEY,
49   S_Major VARCHAR(50) NOT NULL,
50   S_Degree VARCHAR(50) NOT NULL,
51   S_Gender VARCHAR(50) CHECK (S_Gender IN ('Female','Male','Prefer Not To Answer')),
52   S_DocumentLink VARCHAR(2048),
53   CONSTRAINT SUID_FK FOREIGN KEY(SUID) REFERENCES User_List(UserID)
54 );
55

```

Messages
Command(s) completed successfully.

Query executed successfully.

4. Office Table

```

CREATE TABLE Office
(
  Office_ID NUMERIC(10) NOT NULL PRIMARY KEY,
  Office_Location VARCHAR(100) NOT NULL,
  CONSTRAINT Office_ID_FK FOREIGN KEY (Office_ID) REFERENCES User_List(UserID)
);

```



```

57 CREATE TABLE Office
58 (
59   Office_ID NUMERIC(10) NOT NULL PRIMARY KEY,
60   Office_Location VARCHAR(100) NOT NULL,
61
62   CONSTRAINT Office_ID_FK FOREIGN KEY (Office_ID) REFERENCES User_List(UserID)
63 );
64

```

100 %

Messages

Command(s) completed successfully.

100 %

Query executed successfully. | ist-s-students.syr.edu (12.... | AD/mjakhoti (120) | IST659_M005_mjakhoti | 00:00:00 | 0 rows

5. I-9 Form Table

CREATE TABLE I9_Form

```

(
Form_ID Numeric(10) NOT NULL PRIMARY KEY,
SUID NUMERIC(10) NOT NULL,
Employer_ID NUMERIC(10) NOT NULL,
Office_ID NUMERIC(10) NOT NULL,
Issue_Date DateTime NOT NULL,
Form_Status VARCHAR(50) CHECK(Form_Status IN ('Pending','Complete')),

```

```

CONSTRAINT SUID1_FK FOREIGN KEY(SUID) REFERENCES Student(SUID),
CONSTRAINT Employer_ID1_FK FOREIGN KEY(Employer_ID) REFERENCES
Employer(Employer_ID),
CONSTRAINT Office_ID1_FK FOREIGN KEY(Office_ID) REFERENCES Office(Office_ID)
);

```

```

65 CREATE TABLE I9_Form
66 (
67   Form_ID Numeric(10) NOT NULL PRIMARY KEY,
68   SUID NUMERIC(10) NOT NULL,
69   Employer_ID NUMERIC(10) NOT NULL,
70   Office_ID NUMERIC(10) NOT NULL,
71   Issue_Date DateTime NOT NULL,
72   Form_Status VARCHAR(50) CHECK(Form_Status IN ('Pending','Complete')),
73
74   CONSTRAINT SUID1_FK FOREIGN KEY(SUID) REFERENCES Student(SUID),
75   CONSTRAINT Employer_ID1_FK FOREIGN KEY(Employer_ID) REFERENCES Employer(Employer_ID),
76   CONSTRAINT Office_ID1_FK FOREIGN KEY(Office_ID) REFERENCES Office(Office_ID)
77 );
78

```

100 %

Messages

Command(s) completed successfully.

100 %

6. Employment Letter

CREATE TABLE Employment_Letter

```

(
Letter_ID NUMERIC(10) NOT NULL PRIMARY KEY,
SUID NUMERIC(10) NOT NULL,
Employer_ID NUMERIC(10) NOT NULL,
Letter_Issue_Date DATETIME NOT NULL,
Letter_Status VARCHAR(50) CHECK(Letter_Status IN ('Accepted','Issued','Denied')),

```

```

CONSTRAINT SUID2_FK FOREIGN KEY(SUID) REFERENCES Student(SUID),
CONSTRAINT Employer_ID2_FK FOREIGN KEY(Employer_ID) REFERENCES
Employer(Employer_ID)
);

```

The screenshot shows a SQL query window with the following code:

```

79 CREATE TABLE Employment_Letter
80 (
81 Letter_ID NUMERIC(10) NOT NULL PRIMARY KEY,
82 SUID NUMERIC(10) NOT NULL,
83 Employer_ID NUMERIC(10) NOT NULL,
84 Letter_Issue_Date DATETIME NOT NULL,
85 Letter_Status VARCHAR(50) CHECK(Letter_Status IN ('Accepted', 'Issued', 'Denied')),
86
87 CONSTRAINT SUID2_FK FOREIGN KEY(SUID) REFERENCES Student(SUID),
88 CONSTRAINT Employer_ID2_FK FOREIGN KEY(Employer_ID) REFERENCES Employer(Employer_ID)
89 );

```

Below the code, the Messages pane shows: "Command(s) completed successfully."

The status bar at the bottom indicates: "Query executed successfully." and "ist-s-students.syr.edu (12.... AD\mjakhoti (120) IST659_M005_mjakhoti 00:00:00 0 rows".

7. Employment Record

```

CREATE TABLE Employment_Record
(
Record_ID NUMERIC(10) NOT NULL PRIMARY KEY,
SUID NUMERIC(10) NOT NULL,
Employer_ID NUMERIC(10) NOT NULL,
Student_Position VARCHAR(50) NOT NULL,
Hourly_Pay DECIMAL(10) NOT NULL,
Overtime_Pay DECIMAL(10),
Hours_Per_Week NUMERIC(10) NOT NULL,

CONSTRAINT SUID3_FK FOREIGN KEY(SUID) REFERENCES Student(SUID),
CONSTRAINT Employer_ID3_FK FOREIGN KEY(Employer_ID) REFERENCES
Employer(Employer_ID)
);

```

The screenshot shows a SQL query window with the following code:

```

91 CREATE TABLE Employment_Record
92 (
93 Record_ID NUMERIC(10) NOT NULL PRIMARY KEY,
94 SUID NUMERIC(10) NOT NULL,
95 Employer_ID NUMERIC(10) NOT NULL,
96 Student_Position VARCHAR(50) NOT NULL,
97 Hourly_Pay DECIMAL(10) NOT NULL,
98 Overtime_Pay DECIMAL(10),
99 Hours_Per_Week NUMERIC(10) NOT NULL,
100
101 CONSTRAINT SUID3_FK FOREIGN KEY(SUID) REFERENCES Student(SUID),
102 CONSTRAINT Employer_ID3_FK FOREIGN KEY(Employer_ID) REFERENCES Employer(Employer_ID)
103 );
104

```

Below the code, the Messages pane shows: "Command(s) completed successfully."

The status bar at the bottom indicates: "Query executed successfully." and "ist-s-students.syr.edu (12.... AD\mjakhoti (120) IST659_M005_mjakhoti 00:00:00 0 rows".

SQL Script for Inserting Sample Data

1. Inserting sample data into User List Table

```
INSERT INTO User_List (UserID, User_FName, User_Email, User_Phone, User_Password)
VALUES
(499876987, 'Schine Cafe', 'schine@syr.edu', '315-987-7659', 'Schine');
```

```
INSERT INTO User_List VALUES
(234987778, 'Jack', 'Ryan', 'jryan@syr.edu', '315-987-9877', 'JRyan@123'),
(123456789, 'Oliver', 'Queen', 'oqueen@syr.edu', '345-987-7898', 'Felicity@123'),
(987654321, 'Felicity', 'Smoke', 'fsmoke@syr.edu', '324-234-9876', 'Oliver@123'),
(123456788, 'William', 'Queen', 'wqueen@syr.edu', '234-567-8976', 'dude@987'),
(315989989, 'Jon', 'Snow', 'snow@syr.edu', '315-679-7777', 'snow@123');
```

```
INSERT INTO User_List (UserID, User_FName, User_Email, User_Phone, User_Password)
VALUES
(234567098, 'Human Resource-Student Employment', 'hr@syr.edu', '324-456-8765',
'Syr@543');
```

```
INSERT INTO User_List (UserID, User_FName, User_Email, User_Phone, User_Password)
VALUES
(123432345, 'Human Resource', 'hr@syr.edu', '324-456-8766', 'Syr@54323');
```

```
INSERT INTO User_List (UserID, User_FName, User_Email, User_Phone, User_Password)
VALUES
(123654321, 'Graham', 'graham@syr.edu', '324-456-8760', 'graham@345');
```

```
INSERT INTO User_List (UserID, User_FName, User_Email, User_Phone, User_Password)
VALUES
(109876678, 'School of Information Studies', 'ischool@syr.edu', '324-456-8763',
'ischool098');
```

```
INSERT INTO User_List (UserID, User_FName, User_Email, User_Phone, User_Password)
VALUES
(234543567, 'Dome Concessions', 'Dome@syr.edu', '324-456-8762', 'dome#234');
```

```
INSERT INTO User_List (UserID, User_FName, User_Email, User_Phone, User_Password)
VALUES
(234543561, 'Slutzker Center', 'slcen@syr.edu', '324-456-8721', 'int#123');
```

```

105 INSERT INTO User_List (UserID, User_FName, User_Email, User_Phone, User_Password) VALUES
106 (499876987,'Schine Cafe','schine@syr.edu','315-987-7659','Schine');
107
108 INSERT INTO User_List VALUES
109 (234987778,'Jack','Ryan','jryan@syr.edu','315-987-9877','JRyan@123'),
110 (123456789,'Oliver','Queen','oqueen@syr.edu','345-987-7898','Felicity@123'),
111 (987654321,'Felicity','Smoke','fsmoke@syr.edu','324-234-9876','Oliver@123'),
112 (123456788,'William','Queen','wqueen@syr.edu','234-567-8976','dude@987'),
113 (315989989,'Jon','Snow','snow@syr.edu','315-679-7777','snow@123');
114
115 INSERT INTO User_List (UserID, User_FName, User_Email, User_Phone, User_Password) VALUES
116 (234567098,'Human Resource-Student Employment','hr@syr.edu','324-456-8765','Syr@543');
117 INSERT INTO User_List (UserID, User_FName, User_Email, User_Phone, User_Password) VALUES
118 (123432345,'Human Resource','hr@syr.edu','324-456-8766','Syr@54323');
119 INSERT INTO User_List (UserID, User_FName, User_Email, User_Phone, User_Password) VALUES
120 (123654321,'Graham','graham@syr.edu','324-456-8760','graham@345');
121 INSERT INTO User_List (UserID, User_FName, User_Email, User_Phone, User_Password) VALUES
122 (109876678,'School of Information Studies','ischool@syr.edu','324-456-8763','ischool@98');
123 INSERT INTO User_List (UserID, User_FName, User_Email, User_Phone, User_Password) VALUES
124 (234543567,'Dome Concessions','Dome@syr.edu','324-456-8762','dome#234');
125 INSERT INTO User_List (UserID, User_FName, User_Email, User_Phone, User_Password) VALUES
126 (234543561,'Slutzker Center','slcen@syr.edu','324-456-8721','int#123');
127 SELECT * FROM User_List

```

UserID	User_FName	User_LName	User_Email	User_Phone	User_Password
109876678	School of Information Studies	NULL	ischool@syr.edu	324-456-8763	ischool@98
123432345	Human Resource	NULL	hr@syr.edu	324-456-8766	Syr@54323
123456788	William	Queen	wqueen@syr.edu	234-567-8976	dude@987
123456789	Oliver	Queen	oqueen@syr.edu	345-987-7898	Felicity@123
123654321	Graham	NULL	graham@syr.edu	324-456-8760	graham@345
234543561	Slutzker Center	NULL	slcen@syr.edu	324-456-8721	int#123
234543567	Dome Concessions	NULL	Dome@syr.edu	324-456-8762	dome#234
234567098	Human Resource-Student ...	NULL	hr@syr.edu	324-456-8765	Syr@543
234987778	Jack	Ryan	jryan@syr.edu	315-987-9877	JRyan@123
315989989	Jon	Snow	snow@syr.edu	315-679-7777	snow@123
499876987	Schine Cafe	NULL	schine@syr.edu	315-987-7659	Schine
987654321	Felicity	Smoke	fsmoke@syr.edu	324-234-9876	Oliver@123

Query executed successfully. | ist-s-students.syr.edu (12.... | AD\mjakhotti (120) | IST659_M005_mjakhotti | 00:00:00 | 12 rows

2. Inserting sample data into Employer table

INSERT INTO Employer VALUES

(499876987,'Food Services'), (123654321,'Food Services'), (109876678,'School'),
(234543567,'Food Services');

```

129 INSERT INTO Employer VALUES
130 (499876987,'Food Services'), (123654321,'Food Services'),(109876678,'School'),(234543567,'Food Services');
131
132 SELECT * FROM Employer;

```

Employer_ID	Employer_Type
109876678	School
123654321	Food Services
234543567	Food Services
499876987	Food Services

Query executed successfully. | ist-s-students.syr.edu (12.... | AD\mjakhotti (120) | IST659_M005_mjakhotti | 00:00:00 | 4 rows

3. Inserting sample data into Students table

INSERT INTO Student VALUES

(234987778,'Information Management','Masters','Male',''),
(123456788,'Applied Data Science','Masters','Male',''),
(987654321,'Computer Engineering','Under-graduate','Female',''),
(123456789,'Information Management','PHD','Male',''),
(315989989,'Information Management','Masters','Male','');

```

134 INSERT INTO Student VALUES
135 (234987778, 'Information Management', 'Masters', 'Male', ''),
136 (123456788, 'Applied Data Science', 'Masters', 'Male', ''),
137 (987654321, 'Computer Engineering', 'Under-graduate', 'Female', ''),
138 (123456789, 'Information Management', 'PHD', 'Male', ''),
139 (315989989, 'Information Management', 'Masters', 'Male', '');
140
141 SELECT * FROM Student;

```

SUID	S_Major	S_Degree	S_Gender	S_DocumentLink
1	123456788	Applied Data Science	Masters	Male
2	123456789	Information Management	PHD	Male
3	234987778	Information Management	Masters	Male
4	315989989	Information Management	Masters	Male
5	987654321	Computer Engineering	Under-graduate	Female

Query executed successfully. | ist-s-students.syr.edu (12.... | AD\mjakhoti (120) | IST659_M005_mjakhoti | 00:00:00 | 5 rows

4. Inserting sample data into Office Table

INSERT INTO Office VALUES

(234567098, 'Bowne Hall'), (123432345, 'South Campus'), (234543561, 'Waverly Avenue');

```

143 INSERT INTO Office VALUES
144 (234567098, 'Bowne Hall'), (123432345, 'South Campus'), (234543561, 'Waverly Avenue');
145
146 SELECT * FROM Office;

```

Office_ID	Office_Location
1	123432345
2	234543561
3	234567098

Query executed successfully. | ist-s-students.syr.edu (12.... | AD\mjakhoti (120) | IST659_M005_mjakhoti | 00:00:00 | 3 rows

5. Inserting sample data into I-9 Form Table

INSERT INTO I9_Form VALUES

(1,234987778,109876678,234543561, '2018-07-27 00:00:00.000', 'Complete'),
 (2,987654321,499876987,234567098, '2018-09-14 00:00:00.000', 'Pending'),
 (3,123456789, 499876987,234567098, '2018-09-2 00:00:00.000', 'Pending'),
 (4,315989989, 109876678,234543561, '2018-09-2 00:00:00.000', 'Pending');

```

148 INSERT INTO I9_Form VALUES
149 (1,234987778,109876678,234543561, '2018-07-27 00:00:00.000', 'Complete'),
150 (2,987654321,499876987,234567098, '2018-09-14 00:00:00.000', 'Pending'),
151 (3,123456789, 499876987,234567098, '2018-09-2 00:00:00.000', 'Pending'),
152 (4,315989989, 109876678,234543561, '2018-09-2 00:00:00.000', 'Pending');
153
154 SELECT * FROM I9_Form;

```

Form_ID	SUID	Employer_ID	Office_ID	Issue_Date	Form_Status
1	234987778	109876678	234543561	2018-07-27 00:00:00.000	Complete
2	987654321	499876987	234567098	2018-09-14 00:00:00.000	Pending
3	123456789	499876987	234567098	2018-09-02 00:00:00.000	Pending
4	315989989	109876678	234543561	2018-09-02 00:00:00.000	Pending

Query executed successfully. | ist-s-students.syr.edu (12.... | AD\mjakhoti (120) | IST659_M005_mjakhoti | 00:00:00 | 4 rows

6. Inserting sample data into Employment Letter Table

INSERT INTO Employment_Letter VALUES

```
(1,234987778,109876678,'2018-06-29 00:00:00.000','Accepted'),
(2,987654321,499876987,'2018-09-11 00:00:00.000','Accepted'),
(3,987654321,499876987,'2018-03-27 00:00:00.000','Issued'),
(4,123456789,499876987,'2018-09-02 00:00:00.000','Accepted'),
(5,315989989,109876678,'2018-09-01 00:00:00.000','Accepted'),
(6,123456788,109876678,'2018-10-10 00:00:00.000','Denied');
```

```
156 INSERT INTO Employment_Letter VALUES
157 (1,234987778,109876678,'2018-06-29 00:00:00.000','Accepted'),
158 (2,987654321,499876987,'2018-09-11 00:00:00.000','Accepted'),
159 (3,987654321,499876987,'2018-03-27 00:00:00.000','Issued'),
160 (4,123456789,499876987,'2018-09-02 00:00:00.000','Accepted'),
161 (5,315989989,109876678,'2018-09-01 00:00:00.000','Accepted'),
162 (6,123456788,109876678,'2018-10-10 00:00:00.000','Denied');
163
164 SELECT * FROM Employment_Letter;
```

Letter_ID	SUID	Employer_ID	Letter_Issue_Date	Letter_Status
1	234987778	109876678	2018-06-29 00:00:00.000	Accepted
2	987654321	499876987	2018-09-11 00:00:00.000	Accepted
3	987654321	499876987	2018-03-27 00:00:00.000	Issued
4	123456789	499876987	2018-09-02 00:00:00.000	Accepted
5	315989989	109876678	2018-09-01 00:00:00.000	Accepted
6	123456788	109876678	2018-10-10 00:00:00.000	Denied

Query executed successfully. | ist-s-students.syr.edu (12.... | AD\mjakhoti (120) | IST659_M005_mjakhoti | 00:00:00 | 6 rows

7. Inserting sample data into Employment Record Table

```
INSERT INTO Employment_Record VALUES
```

```
(1,234987778,109876678,'Faculty Assistant',12,18.125,10),
(2,987654321,499876987,'Student Employee',10.75,16.125,20),
(3,123456789,499876987,'Student Supervisor',11.5,17,15),
(4,315989989,109876678,'Research Assistant',11,15,10);
```

```
166 INSERT INTO Employment_Record VALUES
167 (1,234987778,109876678,'Faculty Assistant',12,18.125,10),
168 (2,987654321,499876987,'Student Employee',10.75,16.125,20),
169 (3,123456789,499876987,'Student Supervisor',11.5,17,15),
170 (4,315989989,109876678,'Research Assistant',11,15,10);
171
172 SELECT * FROM Employment_Record;
```

Record_ID	SUID	Employer_ID	Student_Position	Hourly_Pay	Overtime_Pay	Hours_Per_Week
1	234987778	109876678	Faculty Assistant	12	18	10
2	987654321	499876987	Student Employee	11	16	20
3	123456789	499876987	Student Supervisor	12	17	15
4	315989989	109876678	Research Assistant	11	15	10

Query executed successfully. | ist-s-students.syr.edu (12.... | AD\mjakhoti (120) | IST659_M005_mjakhoti | 00:00:00 | 4 rows

SQL Statements for Answering Major Data Questions

1. Which employing organization is spending the most in student employment?

--1--Employment Organization spending the most in student employment

```
CREATE VIEW most_spending_organization AS (
SELECT UL.User_FName AS 'Organization', SUM(ER.Hourly_Pay * ER.Hours_Per_Week) AS
'Amount'
FROM Employment_Record AS ER
INNER JOIN User_List AS UL ON ER.Employer_ID=UL.UserID
WHERE UL.User_FName IN (
SELECT t1.User_FName
FROM (
SELECT UL.User_FName, SUM(ER.Hourly_Pay * ER.Hours_Per_Week) AS 'Amount'
FROM Employment_Record AS ER
INNER JOIN User_List AS UL ON ER.Employer_ID=UL.UserID
GROUP BY UL.User_FName) t1
WHERE t1.Amount IN (
SELECT MAX(t2.Amount)
FROM
( SELECT UL.User_FName, SUM(ER.Hourly_Pay * ER.Hours_Per_Week) AS 'Amount'
FROM Employment_Record AS ER
INNER JOIN User_List AS UL ON ER.Employer_ID=UL.UserID
GROUP BY UL.User_FName) t2
)) GROUP BY UL.User_FName
);

SELECT * FROM most_spending_organization;
```

```

182  /* Data Questions */
183
184  --1--Employment Organisation spending the most in student employment
185
186  CREATE VIEW most_spending_organization AS (
187  SELECT UL.User_FName AS 'Organization', SUM(ER.Hourly_Pay * ER.Hours_Per_Week) AS 'Amount'
188  FROM Employment_Record AS ER
189  INNER JOIN User_List AS UL ON ER.Employer_ID=UL.UserID
190  WHERE UL.User_FName IN (
191  SELECT t1.User_FName
192  FROM (
193  SELECT UL.User_FName, SUM(ER.Hourly_Pay * ER.Hours_Per_Week) AS 'Amount'
194  FROM Employment_Record AS ER
195  INNER JOIN User_List AS UL ON ER.Employer_ID=UL.UserID
196  GROUP BY UL.User_FName) t1
197  WHERE t1.Amount IN (
198  SELECT MAX(t2.Amount)
199  FROM
200  ( SELECT UL.User_FName, SUM(ER.Hourly_Pay * ER.Hours_Per_Week) AS 'Amount'
201  FROM Employment_Record AS ER
202  INNER JOIN User_List AS UL ON ER.Employer_ID=UL.UserID
203  GROUP BY UL.User_FName) t2
204  )) GROUP BY UL.User_FName
205  );
206
207  SELECT * FROM most_spending_organization;
208

```

100 %

Organization	Amount
1 Schine Cafe	400

Query executed successfully. | ist-s-students.syr.edu (12.... | AD\mjakhoti (120) | IST659_M005_mjakhoti | 00:00:00 | 1 rows

2. How many students are working for more than one employer?

--2-- No of Students working for more than one employer

```

SELECT SUID, NumberOfEmployers
FROM
(SELECT SUID, Count(DISTINCT Employer_ID) AS NumberOfEmployers FROM
Employment_Record GROUP BY SUID) Employment_Record1
GROUP BY SUID, NumberOfEmployers
HAVING NumberOfEmployers > 1;

```

```

209  --2-- No of Students working for more than one employer
210  SELECT SUID, NumberOfEmployers
211  FROM
212  (SELECT SUID, Count(DISTINCT Employer_ID) AS NumberOfEmployers FROM Employment_Record GROUP BY SUID)
213  Employment_Record1
214  GROUP BY SUID, NumberOfEmployers
215  HAVING NumberOfEmployers > 1;

```

100 %

SUID	NumberOfEmployers
1 987654321	2

Query executed successfully. | ist-s-students.syr.edu (12.... | AD\mjakhoti (109) | IST659_M005_mjakhoti | 00:00:00 | 1 rows

3. What is the total number of employees working for an employer?

--3--Total number of employees working for an employer

```

SELECT ER.Employer_ID, UL.User_FName AS Name, Employer_Type, Count(SUID) AS
NumberOfEmployees
FROM Employment_Record AS ER
INNER JOIN User_List AS UL ON ER.Employer_ID=UL.UserID
INNER JOIN Employer AS E ON ER.Employer_ID=E.Employer_ID
GROUP BY ER.Employer_ID, Employer_Type, UL.User_FName;

```


218

--3--Total number of employees working for an employer

219

SELECT ER.Employer_ID, UL.User_FName AS Name, Employer_Type, Count(SUID) AS NumberOfEmployees

220

FROM Employment_Record AS ER

221

INNER JOIN User_List AS UL ON ER.Employer_ID=UL.UserID

222

INNER JOIN Employer AS E ON ER.Employer_ID=E.Employer_ID

223

GROUP BY ER.Employer_ID, Employer_Type, UL.User_FName;

224

100 %

ResultsMessages

Employer_ID	Name	Employer_Type	NumberOfEmployees
1	109876678	School of Information Studies	School2
2	499876987	Schine Cafe	Food Services2

Query executed successfully.

ist-s-students.syr.edu (12....AD\mjakhoti (120)IST659_M005_mjakhoti00:00:002 rows

4. How many employment letters are in issued state for each employer?

--4

```

SELECT EL.Employer_ID, COUNT(EL.Employer_ID) AS 'Count'
FROM Employment_Letter AS EL
INNER JOIN Employer AS E ON EL.Employer_ID=E.Employer_ID
WHERE EL.Letter_Status ='Issued'
GROUP BY EL.Employer_ID;

```

```

226 SELECT EL.Employer_ID, COUNT(EL.Employer_ID) AS 'Count'
227 FROM Employment_Letter AS EL
228 INNER JOIN Employer AS E ON EL.Employer_ID=E.Employer_ID
229 WHERE EL.Letter_Status ='Issued'
230 GROUP BY EL.Employer_ID;
231

```

100 %

Results Messages

	Employer_ID	Count
1	499876987	1

Query executed successfully.

ist-s-students.syr.edu (12... AD\mjakhoti (120) IST659_M005_mjakhoti 00:00:00 1 rows

5. What is the total number of pending I-9 form in each office?

--5-- Total number of pending I-9 forms in each office

```

SELECT COUNT(I.Form_ID) AS NOofPendingForms, I.Office_ID, Office_Location,
User_FName
FROM I9_Form As I
INNER JOIN Office AS O ON I.Office_ID=O.Office_ID
INNER JOIN User_List AS UL ON I.Office_ID=UL.UserID
WHERE Form_Status = 'Pending'
GROUP BY I.Office_ID, O.Office_Location,UL.User_FName;

```

```

232 --5-- Total number of pending I-9 forms in each office
233 SELECT COUNT(I.Form_ID) AS NOofPendingForms, I.Office_ID, Office_Location, User_FName
234 FROM I9_Form AS I
235 INNER JOIN Office AS O ON I.Office_ID=O.Office_ID
236 INNER JOIN User_List AS UL ON I.Office_ID=UL.UserID
237 WHERE Form_Status = 'Pending'
238 GROUP BY I.Office_ID, O.Office_Location, UL.User_FName;
239

```

	NOofPendingForms	Office_ID	Office_Location	User_FName
1	1	234543561	Waverly Avenue	Slutzker Center
2	2	234567098	Bowne Hall	Human Resource-Student Employment

Query executed successfully. | ist-s-students.syr.edu (12.... | AD\mjakhoti (120) | IST659_M005_mjakhoti | 00:00:00 | 2 rows

6. List of the students whose I-9 forms are pending

--6-- students whose I-9 forms pending

```

SELECT S.SUID, UL.User_FName, UL.User_LName
FROM Student AS S
INNER JOIN User_List AS UL
ON UL.UserID = S.SUID
INNER JOIN I9_Form AS I9
ON I9.SUID=S.SUID
WHERE I9.Form_Status='Pending';

```

```

240 --6-- students whose I-9 forms pending
241 SELECT S.SUID, UL.User_FName, UL.User_LName
242 FROM Student AS S
243 INNER JOIN User_List AS UL
244 ON UL.UserID = S.SUID
245 INNER JOIN I9_Form AS I9
246 ON I9.SUID=S.SUID
247 WHERE I9.Form_Status='Pending';
248

```

	SUID	User_FName	User_LName
1	987654321	Felicity	Smoke
2	123456789	Oliver	Queen
3	315989989	Jon	Snow

Query executed successfully. | ist-s-students.syr.edu (12.... | AD\mjakhoti (120) | IST659_M005_mjakhoti | 00:00:00 | 3 rows

7. Check if a student is exceeding 20-hours per week

--7--Student exceeding 20 hours per week

```

SELECT S.SUID, UL.User_FName
FROM Student AS S
INNER JOIN User_List AS UL ON S.SUID = UL.UserID
WHERE S.SUID IN (
SELECT t1.SUID
FROM (
SELECT S.SUID, SUM(ER.Hours_Per_Week) AS 'Hours'
FROM Employment_Record AS ER
INNER JOIN Student AS S ON ER.SUID=S.SUID
GROUP BY S.SUID) t1
WHERE t1.Hours>20);

```

```

249 --7--Student exceeding 20 hours per week
250 SELECT S.SUID, UL.User_FName
251 FROM Student AS S
252 INNER JOIN User_List AS UL ON S.SUID = UL.UserID
253 WHERE S.SUID IN (
254 SELECT t1.SUID
255 FROM (
256 SELECT S.SUID, SUM(ER.Hours_Per_Week) AS 'Hours'
257 FROM Employment_Record AS ER
258 INNER JOIN Student AS S ON ER.SUID=S.SUID
259 GROUP BY S.SUID) t1
260 WHERE t1.Hours>20);

```

Results

	SUID	User_FName
1	987654321	Felicity

Query executed successfully. | ist-s-students.syr.edu (12.... | AD\mjakhoti (109) | IST659_M005_mjakhoti | 00:00:00 | 1 rows

8. What is the total amount spent by an organization on each employee?

--8--Total amount spent by an organization on each employee

```

SELECT ER.Employer_ID, ER.SUID, SUM(ER.Hours_Per_Week *ER.Hourly_Pay) AS 'Total
Amount Spent'
FROM Employment_Record AS ER
INNER JOIN Employer AS E ON E.Employer_ID=ER.Employer_ID
INNER JOIN Student AS S ON S.SUID = ER.SUID
GROUP BY ER.Employer_ID, ER.SUID;

```

```

262 --8--Total amount spent by an organization on each employee
263 SELECT ER.Employer_ID, ER.SUID, SUM(ER.Hours_Per_Week *ER.Hourly_Pay) AS 'Total Amount Spent'
264 FROM Employment_Record AS ER
265 INNER JOIN Employer AS E ON E.Employer_ID=ER.Employer_ID
266 INNER JOIN Student AS S ON S.SUID = ER.SUID
267 GROUP BY ER.Employer_ID, ER.SUID;
268

```

Results

	Employer_ID	SUID	Total Amount Spent
1	499876987	123456789	180
2	109876678	234987778	120
3	109876678	315989989	110
4	499876987	987654321	220

Query executed successfully. | ist-s-students.syr.edu (12.... | AD\mjakhoti (120) | IST659_M005_mjakhoti | 00:00:00 | 4 rows

9. Which major has the maximum number of students working?

--9-- Which major has maximum number of students working

```

CREATE VIEW maximum_students_from_major AS (
SELECT S.S_Major, COUNT(SUID) AS 'Number Of Students'
FROM Student AS S
WHERE S.S_Major IN (
SELECT t2.S_Major
FROM(
SELECT S.S_Major, COUNT(ER.SUID) AS NoofStudents
FROM Employment_Record AS ER
INNER JOIN Student AS S ON ER.SUID=S.SUID
GROUP BY S.S_Major) t2
WHERE t2.NoofStudents IN
( SELECT MAX(t3.NoofStudents)

```

```

FROM(
    SELECT S.S_Major, COUNT(ER.SUID) AS NoofStudents
FROM Employment_Record AS ER
INNER JOIN Student AS S ON ER.SUID=S.SUID
GROUP BY S.S_Major) t3
))
GROUP BY S.S_Major);

SELECT * FROM maximum_students_from_major;

```

```

269 --9-- Which course has maximum number of students working
270 CREATE VIEW maximum_students_from_major AS (
271     SELECT S.S_Major, COUNT(SUID) AS 'Number Of Students'
272     FROM Student AS S
273     WHERE S.S_Major IN (
274         SELECT t2.S_Major
275         FROM(
276             SELECT S.S_Major, COUNT(ER.SUID) AS NoofStudents
277             FROM Employment_Record AS ER
278             INNER JOIN Student AS S ON ER.SUID=S.SUID
279             GROUP BY S.S_Major) t2
280         WHERE t2.NoofStudents IN
281             ( SELECT MAX(t3.NoofStudents)
282               FROM(
283                 SELECT S.S_Major, COUNT(ER.SUID) AS NoofStudents
284                 FROM Employment_Record AS ER
285                 INNER JOIN Student AS S ON ER.SUID=S.SUID
286                 GROUP BY S.S_Major) t3
287             ))
288         GROUP BY S.S_Major);
289
290 SELECT * FROM maximum_students_from_major
291

```

S_Major	Number Of Students
1 Information Management	3

Query executed successfully. ist-s-students.syr.edu (12....) AD/mjakhoti (120) IST659_M005_mjakhoti 00:00:00 1 rows

10. What is student's average weekly income?

```

--10--student's estimated average weekly income
SELECT S.SUID, UL.User_FName, UL.User_LName,
AVG(ER.Hourly_Pay*ER.Hours_Per_Week) AS 'Average Weekly Income'
FROM Student AS S
INNER JOIN User_List AS UL
ON UL.UserID = S.SUID
INNER JOIN Employment_Record AS ER
ON ER.SUID=S.SUID
GROUP BY S.SUID, UL.User_FName, UL.User_LName;

```

```
--10--student's estimated average weekly income
292
293 SELECT S.SUID, UL.User_FName, UL.User_LName, AVG(ER.Hourly_Pay*ER.Hours_Per_Week) AS 'Average Weekly Income'
294 FROM Student AS S
295 INNER JOIN User_List AS UL
296 ON UL.UserID = S.SUID
297 INNER JOIN Employment_Record AS ER
298 ON ER.SUID=S.SUID
299 GROUP BY S.SUID, UL.User_FName, UL.User_LName;
300
301
```

100 %

Results Messages

	SUID	User_FName	User_LName	Average Weekly Income
1	123456789	Oliver	Queen	180.000000
2	234987778	Jack	Ryan	120.000000
3	315989989	Jon	Snow	110.000000
4	987654321	Felcity	Smoke	220.000000

Query executed successfully. | ist-s-students.syr.edu (12.... | AD\mjakhoti (120) | IST659_M005_mjakhoti | 00:00:00 | 4 rows

Interfaces

Access File:



Project.accdb

1. Initial Page

SYRACUSE UNIVERSITY STUDENT EMPLOYMENT SYSTEM

LOG IN

SIGN UP

2. Sign Up Pop Up

Sign Up

SIGN UP

UserID*

First Name*

Last Name

Email*

Phone*

Password*

[Sign Up](#)

Cancel

3. Different Kinds of Users

Choose your User Type

Employer Sign Up

Student Sign Up

Office Sign Up

4. Signing Up as an Employer:

Enter the Information

Employer ID*

Employer Type*

[Submit and Go To Login](#)

5. Signing Up as an Office:

Enter the Information

Office ID*

Office Location*

[Submit and Go to Login](#)

6. Signing Up as a Student

Enter the Information

SUID*	<input type="text"/>
Major*	<input type="text"/>
Degree*	<input type="text"/>
Gender*	<input type="text"/>
DocumentLink	<input type="text"/>

[Submit and Go To Login](#)

7. Log in Pop Up

Log In

LOGIN

UserID*

Password*

[Employer Log In](#)

[Office Log In](#)

[Student Log In](#)

8. Confirming the User Type

Confirm Your UserID

UserID*

[Get Your Information](#)

9. Employer Information

Your Information:

Employer ID	109876678
Name	School of Information Studies
Email	ischool@syr.edu
Type	School
Phone	324-456-8763
Password	ischool098

See More Information:

Employment Letter

Employment Record

I9 form

10. Office Information

Your Information:

User ID	123432345
Office Name	Human Resource
Office Extension	
Email	hr@syr.edu
Phone	324-456-8766
Password	Syr@54323
Location	South Campus

See More Information:

I9 Forms

11. Student Information

Your Information:

SUID	123098123
Student First Name	Christy
Student Last Name	Flunket
Email Address	christy@syr.edu
Contact	123-987-1223
Password	christy@123
Major	Computer Engineering
Degree	Masters
Gender	Female
DocumentLink	

See More Information:

[Employment Letters](#)[Employment Records](#)[I-9 form](#)

12. Employment Letters Information

Employment Letters Information:

Letter ID	
SUID	234987778
Employer ID	109876678
Issue Date	6/29/2018
Status	Accepted



13. Employment Records Information

Employment Records Information:

Record ID	<input type="text" value="1"/>
SUID	<input type="text" value="234987778"/>
Employer ID	<input type="text" value="109876678"/>
Student Position	<input type="text" value="Faculty Assistant"/>
Hourly Pay	<input type="text" value="12"/>
Overtime Pay	<input type="text" value="18"/>
Hours Per Week	<input type="text" value="10"/>



14. I-9 forms Information

I-9 Forms Information:

Form ID	<input type="text" value="1"/>
SUID	<input type="text" value="234987778"/>
Employer ID	<input type="text" value="109876678"/>
Office ID	<input type="text" value="234543561"/>
Issue Date	<input type="text" value="7/27/2018"/>
Status	<input type="text" value="Complete"/>



VBA Scripts for Validation and Error Handling

Script for Student Log in Credentials:

```
Private Sub StudentLogIn_Click()

If IsNull(Me.UserID) Or Me.UserID = "" Then
    MsgBox "You must enter a user ID", vbOKOnly, "Required Data"
    Me.UserID.SetFocus
    Exit Sub
End If

If IsNull(Me.password) Or Me.password = "" Then
    MsgBox "You must enter a password", vbOKOnly, "Required Data"
    Me.password.SetFocus
    Exit Sub
End If

If Me.password.Value = DLookup("User_Password", "dbo_User_List", "[UserID] =" & Me.UserID.Value) Then
    MyUserID = Me.UserID.Value

    DoCmd.Close acForm, "Log in", acSaveNo
    DoCmd.OpenForm "Student Intermediate Form"

Else
    MsgBox "Password Invalid. Please Try Again", vbCritical + vbOKOnly, "Invalid Entry"
    Me.password.SetFocus
End If

End Sub
```

Script for Sign Up Validation:


```
Private Sub Command13_Click()
On Error GoTo ErrHandlers:
If IsNull(UserID) Then
    MsgBox "You have not entered any information", , "No Info"
ElseIf IsNull(User_FName) Or IsNull(User_Email) Or IsNull(User_Phone) Or IsNull(User_Password) Then
    MsgBox " the User Name, Email, Phone Or Password are Required", , "Required Fields"
Else
    msg = "Do you want to submit your information"
    Style = vbYesNo + vbCritical
    Title = "Sign Up Confirmed"
    response = MsgBox(msg, Style, Title)
    If response = vbYes Then
        DoCmd.Close
        Exit Sub
    End If
    If response = vbNo Then
        Me.Undo
        DoCmd.Close
        Exit Sub
    End If
End If
Exit ErrHandlers:
Exit Sub
ErrHandlers:
MsgBox Err.Description, vbCritical
Err.Clear

End Sub
```

(Check the Access file for more scripts)


Reports

1. Records of all the Employment_Letters

 Employment_Letter Monday, December 3, 2018 4:14:49 PM				
Letter_ID	SUID	Employer_ID	Letter_Issue_Date	Letter_Status
1	234987778	109876678	6/29/2018	Accepted
2	987654321	499876987	9/11/2018	Accepted
3	987654321	499876987	3/27/2018	Issued
4	123456789	499876987	9/2/2018	Accepted
5	315989989	109876678	9/1/2018	Accepted
6	123456788	109876678	10/10/2018	Denied
6				

Page 1 of 1

2. Records of all the I-9 Forms

 I9_Form Monday, December 3, 2018 4:15:04 PM					
Form_ID	SUID	Employer_ID	Office_ID	Issue_Date	Form_Status
1	234987778	109876678	234543561	7/27/2018	Complete
2	987654321	499876987	234567098	9/14/2018	Pending
3	123456789	499876987	234567098	9/2/2018	Pending
4	315989989	109876678	234543561	9/2/2018	Pending
4					

Page 1 of 1

3. Records of all the Employment_Record

Employment_Record				Monday, December 3, 2018 4:14:58 PM		
Record_ID	SUID	Employer_ID	Student_Position	Hourly_Pay	Overtime_Pay	Hours_Per_Week
1	234987778	109876678	Faculty Assistant	12	18	10
2	987654321	499876987	Student Employee	11	16	20
3	123456789	499876987	Student Supervisor	12	17	15
4	315989989	109876678	Research Assistant	11	15	10
5	987654321	109876678	Research Assistant	12	17	5
5						

Page 1 of 1

4. Report for Data Query 2:

DQ2

SUID	CountOfEmployer
987654321	2

Monday, December 3, 2018

Page 1 of 1

5. Report for Data Query 3:

DQ#3			
Employer_ID	User_FName	Employer_Type	CountOfEmployees
109876678	School of Information Studies	School	3
499876987	Schine Cafe	Food Services	2

Monday, December 3, 2018

Page 1 of 1