Automating Student Employment Process

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Contents

Project Summary

The Payroll Office at Syracuse University is responsible for handling payroll related operations. To obtain employment at the University, a student must first apply for job positions online at the jobs portal. After applying, the student receives an email update on the availability of the position. On acquiring the position, the student receives an I-9 form from the University's HR Office. The I9 form must be handed over to the employer for verification. After the verification is complete, the employer provides an employment letter to the student.

The existing system at the Payroll Office keeps track of the records using a paper-based format. This is problematic since keeping track of paper-based records is an arduous task. Moreover, the student employees need to visit several places personally to complete the entire process which involves a lot of a manual labor. Hence, to automate this situation, I propose a database system that keeps track of the employment process of the student employees and excludes the need for manual labor.

Proposed Solution:

- Student applies for jobs via an online job portal to seek employment.
- Employers can approve or reject an application through the same job portal.
- Once accepted, the employer sends out approval notices to prospective student employees.
- The students can then send the employment approval email to the HR office to get the I9 from.
- The HR office sends the I9 form electronically to the students.
- The student provides his electronic signature and sends the form over to the designated employer.
- Employer will verify the form and provide his electronic signature on the I9 form and send an employment letter to the student via email.

Tables and Relationships

Entity Name: User_list	Field Type	Data of all the users using payroll system
User_ID	Integer	Primary Key: Each user has a unique user id
First_Name	Varchar	First Name of user
Last_Name	Varchar	Last name of user
Email_id	Varchar	Email id of the user
Password	Varchar	Password of account

Entity Name: Student	Field Type	Child entity of user list. Contains information about student applicants
SUID	Integer	Primary Key: Each student has a unique User_Id called SUID. Foreign Key: Associated with primary key of 'User_list' table
Course_Name	Varchar	Course of Student
Gender	Char	Gender of the student

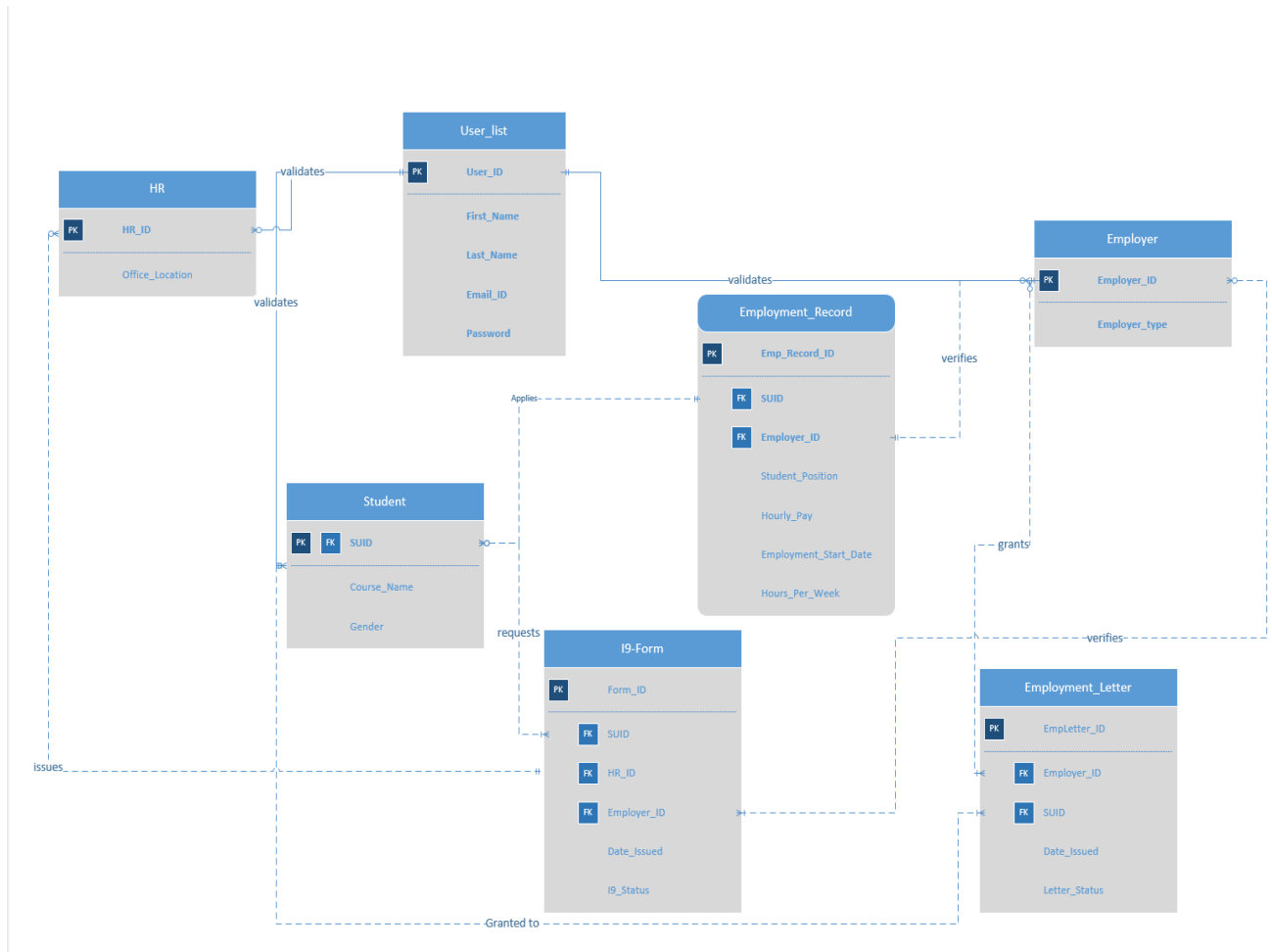| HRoffice_admin	Field Type	Child entity of user list. Contains information about the HR office representatives.
HR_ID	Integer	Primary Key: Each administrative has a unique User_ID called HR_ID Foreign Key: Associated with primary key of 'User_list' table.
Office_Location	Varchar	Location of the office

Employer	Field Type	Child entity of User_list. Contains information about the Employers.
Employer_ID	Integer	Primary Key: Each employer has a unique User_ID called Employer_ID Foreign Key: Associated with primary key of 'User_list' table.
Employer_type	Varchar	Type of employer

Employment_record	Field Type	Associative entity that keeps track of the student job application details.
Emp_Record_ID	Integer	Primary Key: Auto incremented integer identifying each record.
SUID	Integer	Students unique id
Employer_ID	Integer	Employers unique id
Student_Position	Varchar	Position of student
Hourly_Pay	Decimal	Hourly income
Employment_Start_Date	Datetime	Start Date of Employment
Hours_Per_Week	Decimal	Number of hours worked

iNine_Form	Field Type	This entity is used to store critical information about the I9 form granted to a student after employment.
Form_ID	Integer	Primary Key: Form_id is an identification number that uniquely identifies a student's I9 information
SUID	Integer	Students unique id
HR_ID	Integer	HR's unique id
Employer_ID	Integer	Employer's unique id
I9_Status	Varchar	Location of the job
Date_issued	Datetime	Date of employment

Employment_letter	Field Type	Entity that is used to store information on employment letters.
Empletter_ID	Integer	Primary Key: Empletter_ID is a unique identification number for an employment letter.
Employer_ID	Integer	Employer's unique id
SUID	Integer	Student unique ID
Date_Issued	Datetime	Date of Letter Issued
Letter_Status	Varchar	Status of Letter

Entity Relationship Diagram

HR
PK	HR_ID
	Office_Location

User_list
PK	User_ID
	First_Name
	Last_Name
	Email_ID
	Password

Employer
PK	Employer_ID
	Employer_type

Employment_Record
PK	Emp_Record_ID
FK	SUID
FK	Employer_ID
	Student_Position
	Hourly_Pay
	Employment_Start_Date
	Hours_Per_Week

Student
PK FK	SUID
	Course_Name
	Gender

I9-Form
PK	Form_ID
FK	SUID
FK	HR_ID
FK	Employer_ID
	Date_Issued
	I9_Status

Employment_Letter
PK	EmpLetter_ID
FK	Employer_ID
FK	SUID
	Date_Issued
	Letter_Status

validates — validates — validates — verifies — Applies — grants — verifies — requests — issues — Granted to

Creation of Tables

Creation of User_List, Employer and HR table

```sql
 8    CREATE TABLE User_List
 9    (
10
11    User_ID INTEGER PRIMARY KEY NOT NULL,
12    First_Name VARCHAR(30) NOT NULL ,
13    Last_Name VARCHAR(30) NOT NULL,
14    Email_ID VARCHAR(30) NOT NULL,
15    Pass VARCHAR(10) NOT NULL
16    )
17
18    CREATE TABLE Employer
19    (
20    Employer_ID INTEGER PRIMARY KEY NOT NULL,
21    Employer_Type VARCHAR(30) NOT NULL
22    CONSTRAINT Employer_FK_SUID FOREIGN KEY (Employer_ID) REFERENCES User_List(User_ID)
23    )
24
25    CREATE TABLE HR
26    (
27    HR_ID INTEGER PRIMARY KEY NOT NULL,
28    Office_Location VARCHAR(30) NOT NULL
29    CONSTRAINT HR_FK_SUID FOREIGN KEY (HR_ID) REFERENCES USER_List(User_ID)
30    )
31
32    CREATE TABLE Student
33    (
34    SUID INTEGER PRIMARY KEY NOT NULL,
35    Course_Name VARCHAR(50) NOT NULL,
36    Gender CHAR(1) NOT NULL CHECK (Gender IN ('M', 'F'))
37    CONSTRAINT Student_FK_SUID FOREIGN KEY (SUID) REFERENCES User_List(User_ID)
```

```
Messages
 Command(s) completed successfully.
```

Query executed successfully.   ist-s-students.syr.edu (12.... | AD\arsalian (62) | IST659_M004_arsalian | 00:00:00 | 0 rows

Creation of Student and Employment_Record

```sql
31
32    CREATE TABLE Student
33    (
34    SUID INTEGER PRIMARY KEY NOT NULL,
35    Course_Name VARCHAR(50) NOT NULL,
36    Gender CHAR(1) NOT NULL CHECK (Gender IN ('M', 'F'))
37    CONSTRAINT Student_FK_SUID FOREIGN KEY (SUID) REFERENCES User_List(User_ID)
38    )|
39
40    CREATE TABLE Employment_Record
41    (
42    Emp_Record_ID INTEGER PRIMARY KEY NOT NULL,
43    SUID INTEGER NOT NULL,
44    Employer_ID INTEGER NOT NULL,
45    Student_Position VARCHAR(50) NOT NULL,
46    Hourly_Pay DECIMAL NOT NULL,
47    Employment_Start_Date DATETIME NOT NULL,
48    Hours_Per_Week DECIMAL,
49    CONSTRAINT Employment_Record_FK_SUID FOREIGN KEY (SUID) REFERENCES Student(SUID),
50    CONSTRAINT Employment_Record_FK_Employer_ID FOREIGN KEY (Employer_ID) REFERENCES Employer(Employer_ID)
51    )
52
```

```
Messages
 Command(s) completed successfully.
```

Query executed successfully.   ist-s-students.syr.edu (12.... | AD\arsalian (62) | IST659_M004_arsalian | 00:00:00 | 0 rows

Creation of Employment_Letter and I9_Form

```
52
53    CREATE TABLE Employment_Letter
54    (
55    EmpLetter_ID INTEGER PRIMARY KEY NOT NULL,
56    Employer_ID INTEGER NOT NULL,
57    SUID INTEGER NOT NULL,
58    Date_Issued DATETIME,
59    Letter_Status VARCHAR(10) NOT NULL CHECK (Letter_Status IN ('Pending', 'Issued'))
60    CONSTRAINT Employment_Letter_FK_SUID FOREIGN KEY (SUID) REFERENCES Student(SUID),
61    CONSTRAINT Employment_Letter_FK_Employer_ID FOREIGN KEY (Employer_ID) REFERENCES Employer(Employer_ID)
62    )
63
64    CREATE TABLE I9_Form
65    (
66    Form_ID INTEGER PRIMARY KEY NOT NULL,
67    SUID INTEGER NOT NULL,
68    HR_ID INTEGER NOT NULL,
69    Employer_ID INTEGER NOT NULL,
70    Date_Issued DATETIME,
71    I9_Status VARCHAR(10) NOT NULL CHECK (I9_Status IN ('Pending','Issued'))
72    CONSTRAINT I9_Form_FK_SUID FOREIGN KEY (SUID) REFERENCES Student(SUID),
73    CONSTRAINT I9_Form_FK_Employer_ID FOREIGN KEY (Employer_ID) REFERENCES Employer(Employer_ID),
74    CONSTRAINT I9_Form_FK_HR_ID FOREIGN KEY (HR_ID) REFERENCES HR(HR_ID)
75    )
76
```

Messages

Command(s) completed successfully.

Query executed successfully.   ist-s-students.syr.edu (12... AD\arsalian (62) IST659_M004_arsalian 00:00:00 0 rows

Populating tables with values

Populating User_List table with values

```
78    --Populating User_list table with values
79    INSERT INTO User_list VALUES ('660000001','Akshit','Salian','arsalian@syr.edu','akshitsal');
80    INSERT INTO User_list VALUES ('660000002','Ammen','Singh','asingh@syr.edu','amm0192');
81    INSERT INTO User_list VALUES ('660000003','Zaid','Khan','zkhan@syr.edu','zk23312');
82    INSERT INTO User_list VALUES ('660000004','Sadaf','Sheikh','ssheikh@syr.edu','ssheikh11');
83    INSERT INTO User_list VALUES ('550000001','Radhika','Bhange','rbhange@syr.edu','rb0394');
84    INSERT INTO User_list VALUES ('770000001','Vera','Gibbs','vgibbs@syr.edu','fs0191');
85    INSERT INTO User_list VALUES ('770000002','Karen','Busse','kbusse@syr.edu','rsa2124');
86    select * from User_List
87
```

Results   Messages

	User_ID	First_Na...	Last_Na...	Email_ID	Pass
1	550000001	Radhika	Bhange	rbhange@syr.edu	rb0394
2	660000001	Akshit	Salian	arsalian@syr.edu	akshitsal
3	660000002	Ammen	Singh	asingh@syr.edu	amm0192
4	660000003	Zaid	Khan	zkhan@syr.edu	zk23312
5	660000004	Sadaf	Sheikh	ssheikh@syr.edu	ssheikh11
6	770000001	Vera	Gibbs	vgibbs@syr.edu	fs0191

Query executed successfully.   ist-s-students.syr.edu (12... AD\arsalian (62) IST659_M004_arsalian 00:00:00 7 rows

Populating Student table with values

```
89   --Populating Student table with values
90   INSERT INTO Student VALUES ('660000001','Information Management','M');
91   INSERT INTO Student VALUES ('660000002','Information Management','M');
92   INSERT INTO Student VALUES ('660000003','Computer Science','M');
93   INSERT INTO Student VALUES ('660000004','Bio Engineering','F');
94   select * from Student;
95
```

	SUID	Course_Name	Gen...
1	660000001	Information Management	M
2	660000002	Information Management	M
3	660000003	Computer Science	M
4	660000004	Bio Engineering	F

Query executed successfully.   ist-s-students.syr.edu (12....   AD\arsalian (62)   IST659_M004_arsalian   00:00:00   4 rows

Populating HR table with values

```
96
97   --Populating Student table with values
98   INSERT INTO HR VALUES ('550000001','Steele Hall');
99   select * from HR;
100
101
```

	HR_ID	Office_Locati...
	550000001	Steele Hall

Query executed successfully.   ist-s-students.syr.edu (12....   AD\arsalian (62)   IST659_M004_arsalian   00:00:00   1 rows

Populating Employer Table with values

```
101
102   --Populating Employer table with values
103   INSERT INTO Employer VALUES ('770000001','Food Services');
104   INSERT INTO Employer VALUES ('770000002','RSA');
105   select * from Employer;
106
107
```

	Employer_...	Employer_Ty...
	770000001	Food Services
	770000002	RSA

Query executed successfully.   ist-s-students.syr.edu (12....   AD\arsalian (62)   IST659_M004_arsalian   00:00:00   2 rows

Populating Employment_record table with values

```sql
107    --Populating Employment_record table with values
108    INSERT INTO Employment_Record VALUES ('1','660000001','770000001','Supervisor','10.75','01/15/2018','18');
109    INSERT INTO Employment_Record VALUES ('2','660000002','770000002','General','10.4','01/18/2018','10');
110    INSERT INTO Employment_Record VALUES ('3','660000002','770000001','Supervisor','12.5','01/15/2018','8');
111    INSERT INTO Employment_Record VALUES ('4','660000003','770000001','General','10.75','01/15/2018','9');
112    INSERT INTO Employment_Record VALUES ('5','660000003','770000002','Supervisor','12','01/18/2018','9');
113    INSERT INTO Employment_Record VALUES ('6','660000004','770000001','General','10.75','01/15/2018','20');
114    select * from Employment_Record;
115
```

	Emp_Record...	SUID	Employer...	Student_Posit...	Hourly_P...	Employment_Start_Date	Hours_Per_W...
1	1	660000001	770000001	Supervisor	11	2018-01-15 00:00:00.000	18
2	2	660000002	770000002	General	10	2018-01-18 00:00:00.000	10
3	3	660000002	770000001	Supervisor	13	2018-01-15 00:00:00.000	8
4	4	660000003	770000001	General	11	2018-01-15 00:00:00.000	9
5	5	660000003	770000002	Supervisor	12	2018-01-18 00:00:00.000	9
6	6	660000004	770000001	General	11	2018-01-15 00:00:00.000	20

Query executed successfully.   ist-s-students.syr.edu (12.... AD\arsalian (62) IST659_M004_arsalian 00:00:00 6 rows

Populating I9_Form table with values

```sql
116
117    --Populating I9_Form table with values
118    INSERT INTO I9_Form VALUES ('1001','660000001','550000001','770000001','01/10/2018','Issued');
119    INSERT INTO I9_Form VALUES ('1002','660000002','550000001','770000002',NULL,'Pending');
120    INSERT INTO I9_Form VALUES ('1003','660000002','550000001','770000001','01/10/2018','Issued');
121    INSERT INTO I9_Form VALUES ('1004','660000003','550000001','770000001',' 01/12/2018','Issued');
122    INSERT INTO I9_Form VALUES ('1005','660000003','550000001','770000002',' 01/12/2018','Issued');
123    INSERT INTO I9_Form VALUES ('1006','660000004','550000001','770000001',NULL,'Pending');
124    select * from I9_Form;
```

	Form_ID	SUID	HR_ID	Employer...	Date_Issued	I9_Stat...
	1001	660000001	550000001	770000001	2018-01-10 00:00:00.000	Issued
	1002	660000002	550000001	770000002	NULL	Pending
	1003	660000002	550000001	770000001	2018-01-10 00:00:00.000	Issued
	1004	660000003	550000001	770000001	2018-01-12 00:00:00.000	Issued
	1005	660000003	550000001	770000002	2018-01-12 00:00:00.000	Issued
	1006	660000004	550000001	770000001	NULL	Pending

Query executed successfully.   ist-s-students.syr.edu (12.... AD\arsalian (62) IST659_M004_arsalian 00:00:00 6 rows

Populating Employment_Letter with values

```sql
126
127    --Populating Employment_Letter with values
128    INSERT INTO Employment_Letter VALUES ('6001', '770000001','660000001','01/05/2018','Issued');
129    INSERT INTO Employment_Letter VALUES ('6002', '770000002','660000002','01/07/2018','Issued');
130    INSERT INTO Employment_Letter VALUES ('6003', '770000001','660000002','01/09/2018','Issued');
131    INSERT INTO Employment_Letter VALUES ('6004', '770000001','660000003','01/06/2018','Issued');
132    INSERT INTO Employment_Letter VALUES ('6005', '770000002','660000003','01/03/2018','Issued');
133    INSERT INTO Employment_Letter VALUES ('6006', '770000001','660000004','01/05/2018','Pending');
134    select * from Employment_Letter
135
```

	EmpLetter...	Employer...	SUID	Date_Issued	Letter_Sta...
	6001	770000001	660000001	2018-01-05 00:00:00.000	Issued
	6002	770000002	660000002	2018-01-07 00:00:00.000	Issued
	6003	770000001	660000002	2018-01-09 00:00:00.000	Issued
	6004	770000001	660000003	2018-01-06 00:00:00.000	Issued
	6005	770000002	660000003	2018-01-03 00:00:00.000	Issued
	6006	770000001	660000004	2018-01-05 00:00:00.000	Pending

Query executed successfully.   ist-s-students.syr.edu (12.... AD\arsalian (62) IST659_M004_arsalian 00:00:00 6 rows

Major Data Questions

1) Number of Students working for each Employer

```
144
145  select count(s.SUID) as count_of_students, er.Employer_ID
146  from Student s inner join Employment_Record er
147  on s.SUID=er.SUID
148  group by er.Employer_ID;
149
150
```

Results | Messages

count_of_stude...	Employer_...
4	770000001
2	770000002

Query executed successfully.   ist-s-students.syr.edu (12.... AD\arsalian (62) IST659_M004_arsalian 00:00:00 2 rows

2) Weekly income per student

```
150
151  select s.SUID,sum(er.Hourly_Pay*er.Hours_Per_Week) as income
152  from Employment_Record er inner join Student s
153  on er.SUID= s.SUID
154  group by s.SUID;
155
156
```

Results | Messages

SUID	income
660000001	198
660000002	204
660000003	207
660000004	220

Query executed successfully.   ist-s-students.syr.edu (12.... AD\arsalian (62) IST659_M004_arsalian 00:00:00 4 rows

3) Number of Pending Employment and I9 forms

```
156
157
158  select s.SUID,el.EmpLetter_ID,el.Letter_Status,i9.Form_ID,I9_Status
159  from Employment_Letter el inner join Student s
160  on s.SUID=el.SUID
161  inner join I9_Form i9
162  on i9.SUID=s.SUID
163  where i9.I9_Status='pending' or el.Letter_Status='pending';
164
165
```

Results | Messages

SUID	EmpLetter...	Letter_Sta...	Form_ID	I9_Stat...
660000002	6002	Issued	1002	Pending
660000002	6003	Issued	1002	Pending
660000004	6006	Pending	1006	Pending

4) Total Employee Expense for each Employer

```
165
166
167  select e.Employer_ID,sum(er.Hourly_Pay*er.Hours_Per_Week)
168  from Employment_Record er inner join Employer e
169  on er.Employer_ID= e.Employer_ID
170  group by e.Employer_ID;
171
172
173
174
```

0 %

Results | Messages

Employer_...	(No column na...
770000001	621
770000002	208

Query executed successfully.

ist-s-students.syr.edu (12.... AD\arsalian (62) IST659_M004_arsalian 00:00:00 2 rows

Forms

This is the navigation page of the system

System Users	**System Users**
Employee Details	
Enter Student Details	
Enter HR Details	

User_ID 563746

First_Name agdagd

Last_Name adg

Email_ID adfa@syr.eu

Pass sgs

Click on user type to sign up and go to the next page

| Student | Employee | HR |

After navigating, when the student goes to the next page by clicking the student button, the User_ID is carried forward using the macrobuilder with a drop down for Gender and a sub form displaying the various Employement letter and I9 forms available. Since it is a new user, it is not available.

Enter Student Details

SUID 123456789

Course_Name

Gender

Save Details

View Employment Details | View Employment Letter | View I9 Form

Subfrm_EmployementRecords

Emp_Record ▾	SUID ▾	Employer_ID ▾	Student_Position ▾

Record: ◄ ◄ ▶ ▶ ▶*   No Filter   Search ◄ ▶

The Employee Details tab displays the following page.

The 'Save Details' button is used to save the details.

Enter Student Details is used to display the records of students and various Employment Letter and I9 Forms available

HR details is used to enter HR details and is able to view all the different I9 issued by the HR

Reports

Total Expense per Employer

Employer_ID	Employer_Type	SUID	Hourly_Pay	Hours_Per_Week	Total Expense
770000001	Food Services				
		660000001	Text13		198
			11	18	
		660000002	Text13		302
			13	8	
		660000003	Text13		401
			11	9	
		660000004	Text13		621
			11	20	
770000002	RSA				
		660000002	Text13		100
			10	10	
		660000003	Text13		208
			12	9	

Count of students

Employer_ID	Employer_Type	SUID	Course_Name	Gender
770000001	Food Services	Count	4	
		660000004	Bio Engineering	F
		660000003	Computer Science	M
		660000002	Information Management	M
		660000001	Information Management	M
770000002	RSA	Count	2	
		660000003	Computer Science	M
		660000002	Information Management	M

6

Status of documents

SUID	EmpLetter_ID	Letter_Status	Form_ID	I9_Status
660000001				
	6001	Issued	1001	Issued
660000002				
	6002	Issued	1002	Pending
	6002	Issued	1003	Issued
	6003	Issued	1002	Pending
	6003	Issued	1003	Issued
660000003				
	6004	Issued	1004	Issued
	6004	Issued	1005	Issued
	6005	Issued	1004	Issued
	6005	Issued	1005	Issued
660000004				
	6006	Pending	1006	Pending

Total Expense per Employer

Employer_ID	Employer_Type	SUID	Hourly_Pay	Hours_Per_Week	Total Expense
770000001	Food Services				
		660000001		Text13	198
			11	18	
		660000002		Text13	302
			13	8	
		660000003		Text13	401
			11	9	
		660000004		Text13	621
			11	20	
770000002	RSA				
		660000002		Text13	100
			10	10	
		660000003		Text13	208
			12	9	