IST 659 Lab 5
SQL II using MS SQL Server

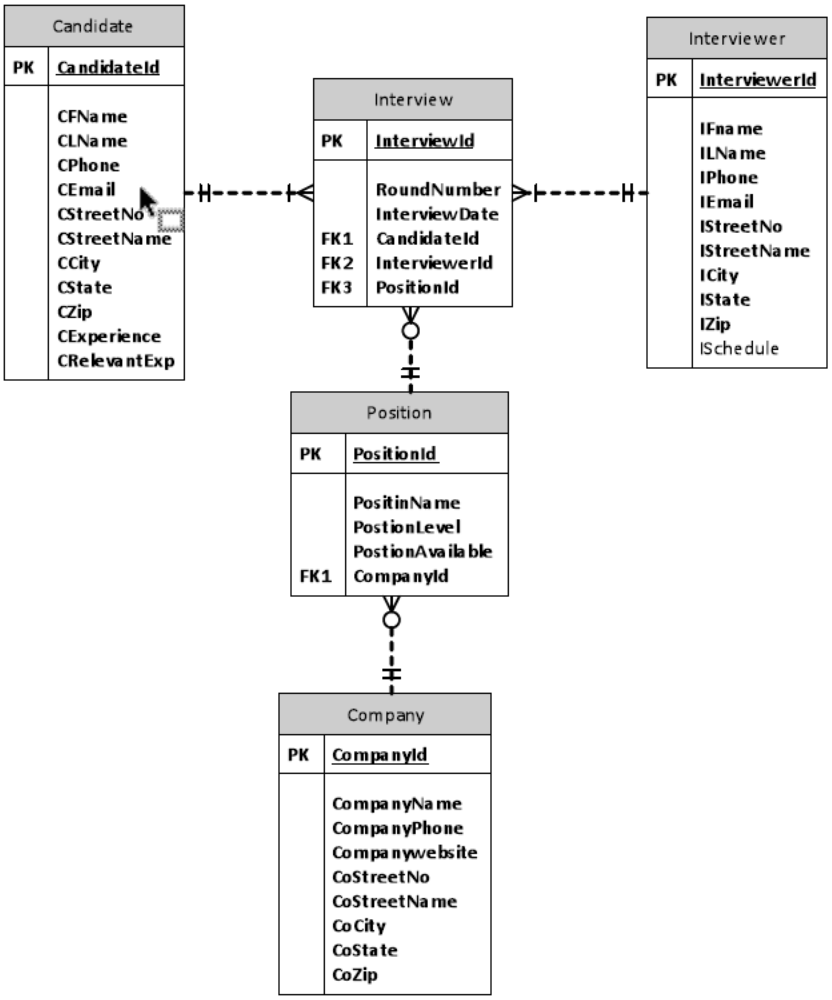
Problem Description
For this lab you are required to work in SQL Server and create the appropriate tables, columns, and constraints for the following model.

Business Case (same as Lab 4)
Syracuse University Career Services wants to keep track of all interviews that take place. In addition to this information they would like to track the positions, candidates, companies, and interviewers. Sometimes Career Services will need to contact the companies for verification or other inquiries.

We need to build a database that would assist the Career Services in recording this information. In this database system, each company and candidate will have their own profiles which include their names and contact information such as phone numbers and postal addresses. Candidates would need to provide information about their primary experience domain, and relevant experience.
Interviewers may or may not provide their office hour information. The schedule or office hour information should be a text describing when the interviewer's office is open, e.g. 9am-5pm Monday – Thursday.

An interviewer can conduct one or multiple interviews of candidates. A candidate can have one or more interviews. Each interview must have an interview date and round number along with information about the Candidate and Interviewer. The database should also maintain information about the positions a company is looking to hire for. Details about the Position include position level, position name, and whether or not the position is still available.

In this lab we have already created the ERD model for the career services database (see below).



Lab 5 Instructions

Imagine you are hired to design a new database to support this platform. In lab 4 you have created and populated the tables. Now you need to make a few changes to the table structure. You also need to write queries to answer some data questions. Please write SQL statements to finish the following tasks:

1. Alter Candidate and Interviewer tables to add a column for the Candidate and Interviewer's middle initial. This column is optic

```
ALTER TABLE Candidates ADD MiddleInitial VARCHAR(5) DEFAULT'NA';
ALTER TABLE Interviewers ADD MiddleInitial VARCHAR(5) DEFAULT'NA';
```

Results Messages

	CandidateID	CFName	CLName	CPhone	CEmail	CStreetNo	CStreetName	CCity	CState	CZip	CExperience	CRelevantExp	MiddleInitial
1	1	Nathan	Kerr	315-555-5555	nathan@syr.edu	112	Lafayette Rd	Syracuse	New York	13205	Database, Business Analysis	Databse	NULL
2	2	Sebatian	Chapman	315-555-6666	17	sebatian@syr.edu	James St	Syracuse	New York	13210	Consultant, Business Analysis	Consultant	NULL
3	3	Heather	Cameron	315-555-7777	410	heather@syr.edu	Comatock Ave	Syracuse	New York	13210	Developer, Business Analysis	Developer	NULL
4	4	Olivia	Walace	315-555-8888	4248	olivia@syr.edu	Nottingham Rd	Syracuse	New York	13244	Database, Business Analysis	Databse	NULL
5	5	Lily	Tumer	315-555-9999	3	lily@syr.edu	Ostrom Ave	Syracuse	New York	13225	Database, Business Analysis, Developer, Analyst	Databse	NULL

	InterviewerID	IFName	ILName	IPhone	IEmail	IStreetNo	IStreetName	ICity	IState	IZip	ISchedule	MiddleInitial
1	1	Dorothy	Paige	-366	dorothy.paige@syr.edu	137	Summer Ave	Syracuse	New York	13210	9am-5pm Monday-Friday	NULL
2	2	Amy	May	-5240	amy.may@syr.edu	777	Ackeman Ave	Syracuse	New York	13210	NULL	NULL
3	3	Charles	Duncan	-5684	charles.duncan@syr....	345	Lancaster A...	Syracuse	New York	13210	8am-6pm Monday-Sat...	NULL
4	4	Vctor	Miller	-5583	vctor.miller@syr.edu	7116	Lafayette Ave	Syracuse	New York	13205	NULL	NULL
5	5	Ray	Myato...	-5491	raymyatorio@syr.edu	234	Latayette Rd	Syracuse	New York	13205	9:30am-5:30pm Mond...	NULL

2. Alter tables to let users input state abbreviations instead of the state full name. For example, if the state name is “New York”, change it to “NY”. Similarly, if state name is “California”, change it to “CA” and so on. Change all the tables that have the state column. (Candidate, Interviewer, Company). Also alter the data we inserted to fit this new data-type. **Hint:** if there is already data in these tables and the data does not conform to the new data-type, you might need to update the data before you can alter the table.

```
UPDATE Candidates SET CState = 'NY' Where CState = 'New York';
UPDATE Interviewers SET IState = 'NY' Where IState = 'New York';
UPDATE Companies SET CoState = 'NY' Where CoState = 'New York';

ALTER TABLE Candidates alter COLUMN CState varchar(2);
ALTER TABLE Interviewers alter COLUMN IState varchar(2);
ALTER TABLE Companies alter COLUMN CoState varchar(2);

select * from Companies;
select * from Interviewers;
select * from Candidates;
```

Results Messages

	CompanyID	CompanyName	CompnayPhone	Companywebsite	CoStreetNo	CoStreetName	CoCity	CoState	CoZip
1	1	Emst & Young	-5491	www.ey.com	234	Lafayette Rd	New York	NY	13205
2	2	Deloitte	-5928	www.deloitte.com	456	Summer Ave	New York	NY	13100
3	3	PWC	-5366	www.pwc.com	791	Maryland Ave	New York	NY	13801
4	4	KPMG	-5491	www.kpmg.com	437	Lanchaster Ave	New York	NY	12147
5	5	Cognizant	-5346	www.cognizant.com	825	Acjeman Street	New York	NY	10071

	InterviewerID	IFName	ILName	IPhone	IEmail	IStreetNo	IStreetName	ICity	IState	IZip	ISchedule	MiddleInitial
1	1	Dorothy	Paige	-366	dorothy.paige@syr.edu	137	Summer Ave	Syracuse	NY	13210	9am-5pm Monday-Friday	NULL
2	2	Amy	May	-5240	amy.may@syr.edu	777	Ackeman ...	Syracuse	NY	13210	NULL	NULL
3	3	Charles	Duncan	-5684	charles.duncan@syr....	345	Lancaster ...	Syracuse	NY	13210	8am-6pm Monday-Sat...	NULL
4	4	Vctor	Miller	-5583	vctor.miller@syr.edu	7116	Lafayette ...	Syracuse	NY	13205	NULL	NULL
5	5	Ray	Myato...	-5491	raymyatorio@syr.edu	234	Latayette Rd	Syracuse	NY	13205	9:30am-5:30pm Mond...	NULL

	CandidateID	CFName	CLName	CPhone	CEmail	CStreetNo	CStreetName	CCity	CState	CZip	CExperience	CRelevantExp	MiddleInitial
1	1	Nathan	Kerr	315-555-5555	nathan@syr.edu	112	Lafayette Rd	Syracuse	NY	13205	Database, Business Analysis	Databse	NULL
2	2	Sebatian	Chapm...	315-555-6666	17	sebatian...	James St	Syracuse	NY	13210	Consultant, Business Analysis	Consultant	NULL
3	3	Heather	Cameron	315-555-7777	410	heather...	Comatock ...	Syracuse	NY	13210	Developer, Business Analysis	Developer	NULL
4	4	Olivia	Walace	315-555-8888	4248	olivia@s...	Nottingham...	Syracuse	NY	13244	Database, Business Analysis	Databse	NULL
5	5	Lily	Tumer	315-555-9999	3	lily@syr....	Ostrom Ave	Syracuse	NY	13225	Database, Business Analysi...	Databse	NULL

3. Simple data questions
    a. Find all Candidates who live in area having zip code “13225”. Show all columns.

```
/* a. Find all Candidates who live in area having zip code “13225”. Show all
columns.*/
SELECT * FROM Candidates WHERE Czip = '13225';
```

Results Messages

	CandidateID	CFName	CLName	CPhone	CEmail	CStreetNo	CStreetName	CCity	CState	CZip	CExperience	CRelevantExp	MiddleInitial
1	5	Lily	Tumer	315-555-9999	3	lily@syr.edu	Ostrom Ave	Syracuse	NY	13225	Database, Business Analysis, Developer, Analyst	Databse	NULL

    b. Find all Interviewers living on “Lancaster Ave”. Show Interviewer name, City and State.

```
/* b. Find all Interviewers living on “Lancaster Ave”. Show Interviewer name,
City and State.*/
SELECT concat(IFName, ', ', ILName) AS 'Interviewer Name', ICity, IState from
Interviewers WHERE IStreetName = 'Lancaster Ave';
```

Results | Messages

	Interviewer Name	ICity	IState
1	Charles, Duncan	Syracuse	NY

c. Update the table ‘Interview’, set date as ‘2013-09-28 00:00:00.000’ whereinterviewID is ‘1’. Find all interviews that took place on 28th day in the month ofSeptember, 2013. Show Interviewer ID and Position ID.

```
/* c.Update the table ‘Interview’, set date as ‘2013-09-28 00:00:00.000’
whereinterviewID is ‘1’.
Find all interviews that took place on 28th day in the month of September,
2013. Show Interviewer ID and Position ID.*/
UPDATE Interviews SET InterviewDate = '2013-09-28 00:00:00.000' WHERE
InterviewID = '1';
Select InterviewID, PositionID From Interviews WHERE InterviewDate = '2013-
09-28';
```

Results | Messages

	InterviewID	PositionID
1	1	1
2	2	2

d. Find all positions that are not available for level “Executive”. Show Position Nameand position available only.

```
/* d.Find all positions that are not available for level “Executive”. Show
Position Name and position available only.*/
Select PositionName, PositionAvailable From Positions WHERE PositionLevel
!= 'Executive';
```

Results | Messages

	PositionName	PositionAvailable
1	Technology Analyst	yes
2	Business Analyst	yes
3	Advisory Consultant	yes
4	Project Manager	no

e. Find all interviews that had rounds which exceeded 2. Show Interview ID, candidateid and Interview Date only.

```
/*e. Find all interviews that had rounds which exceeded 2. Show Interview
ID, candidateid and Interview Date only.*/
select InterviewID, CandidateID, InterviewDate from interviews where
roundNumber > 2;
```

Results | Messages

	InterviewID	CandidateID	InterviewDate
1	3	3	2013-09-17 00:00:00.000
2	5	5	2013-09-17 00:00:00.000

4. Use aggregate functions to answer the following data questions
    a. Count the number of candidate in each zip code. Show the Zip Code and the number of candidates in each zip code.

```
/*a.   Count the number of candidate in each zip code. Show the Zip Code
and the number of candidates in each zip code. */
select CZip, count(candidateID) as "Number of Candidate" from candidates
group by (CZip);
```

Results | Messages

	CZip	Number of Candidate
1	13205	1
2	13210	2
3	13225	1
4	13244	1

    b. Sort interview table by number of the round number. Show InterviewID and RoundNumber.

```
select InterviewID, RoundNumber from Interviews ORDER BY RoundNumber;
```

Results | Messages

	InterviewID	RoundNumber
1	2	1
2	4	2
3	1	2
4	3	3
5	5	5

    c. Sort interview by interview date. Show InterviewID, InterviewerID and the InterviewDate.

```
select InterviewID, InterviewerID, InterviewDate from Interviews ORDER BY
InterviewDate;
```

Results Messages

	InterviewID	InterviewerID	InterviewDate
1	4	2	2013-09-11 21:27:13.530
2	5	5	2013-09-17 00:00:00.000
3	3	3	2013-09-17 00:00:00.000
4	1	1	2013-09-28 00:00:00.000
5	2	2	2013-09-28 00:00:00.000

d. For each candidate, calculate the average, min, and max round number of the interviews that this candidate had. Show CandidateID, average RoundNumber, min RoundNumber, and max RoundNumber.

```
SELECT CandidateID, avg(RoundNumber) as "Average of RoundNumber",
min(RoundNumber) as "Minimum of RoundNumber", max(RoundNumber) as "Maximum
of RoundNumber"
FROM Interviews
GROUP BY candidateID;
```

Results Messages

	CandidateID	Average of RoundNumber	Minimum of RoundNumber	Maximum of RoundNumber
1	1	2.000000	2	2
2	2	1.000000	1	1
3	3	3.000000	3	3
4	5	5.000000	5	5

e. Find all candidates whose average round number of interviews is below 3 (i.e. average RoundNumber equals 1 or 2). Show the CandidateID and average RoundNumber.

```
SELECT CandidateID, avg(RoundNumber) as "Average of RoundNumber"
FROM Interviews
GROUP BY candidateID
HAVING avg(RoundNumber) < 3;
```

Results Messages

	CandidateID	Average of RoundNumber
1	1	2.000000
2	2	1.000000

Submission Instruction

Please submit your report in one Word file to BlackBoard under the appropriate Lab in the Labs section.

Name your file in this format “IST659SectionNumber-Lab5-Lastname-Firstname.doc”.

Due Date

Labs are due by the start of class of the following week. Please refer to the syllabus if there

is any confusion. The reason that this is done is so that I can review the solution in class while still giving you the most time possible.

Grading Rubric:

This lab evaluates students' understanding of some key concepts: entities, attributes, primary keys, cardinality of relationships, foreign key constraints. The grading is based on the assessment whether the student has grasped these key concepts.

5 points – all concepts correctly understood, all answers correct
4.5 points – confusion about a key concept, sometimes right
4 points – one key concept obviously misunderstood
3.5 points – confusion about a couple concepts, sometimes right
3 points – two key concepts obviously misunderstood
2 points or below – basically don't understand these concepts

Comment Summary

Page 2

1. Initial is CHAR(1)

   -.3

Page 4

2. positionlevel = executive and positionavailable = no