

## LAB # 13:

### PUTTING THE CONCEPTS LEARNT IN THE DATABASE SYSTEMS COURSE TO USE

#### Objective (aim) of the experiment

To self test and putting the concepts learnt in database systems course to use by solving the given open-ended problem.

#### Scoring Rubrics for Lab 13:

S#	Task	Weightage	Obtained	Signature and Date
1	Creating the database and the tables intelligently by examining the data at hand and putting in the constraints logically (particularly the following constraints: unique, primary key, foreign key).	30 %		
2	Creating a script to insert the given data	20 %		
3	Solving the given queries	50 %		
Total marks obtained in this lab		100%	%	

Equipment used

Sl. No.	Facilities Required	Quantity
1	System	1
2	Operating System	Windows 7
3	DBMS	SQL Server Management Studio 2012, Creately, ERWin, E-draw, Visio

#### Tasks To Perform

Here is a summary of the tasks that you must perform.

**Task 1.** Create an sql file having your roll number as the file name (e.g. '17-10525.sql'). In this file, you must write an sql script that performs the following tasks:

- Create a database titled 'StudentDB'.

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- b. Look at the data as shown in tabular form (i.e. set of tables) below and create tables accordingly.

**The data for the database (organized into various tables) is as follows:**

### **Program**

<b><u>ProgramID</u></b>	<b><u>Duration</u></b>	<b><u>Description</u></b>
BA	2	Bachelors in Arts
BBA	2	Bachelors in Business Administration
BSCS	4	Bachelors in Computer Science
MBA	2	Masters in Business Administration
MCS	2	Masters in Computer Science

### **Student**

<b><u>StudentID</u></b>	<b><u>FirstName</u></b>	<b><u>LastName</u></b>	<b><u>Gender</u></b>	<b><u>Program</u></b>	<b><u>EnrollSemester</u></b>	<b><u>EnrollYear</u></b>
S001	Ab	Rehman	M	BSCS	Spring	2014
S002	Alizeh	Irfan	F	BSCS	Fall	2016
S003	Nehal	Asif	F	BSCS	Spring	2015
S004	Zain	Qureshi	M	BSCS	Spring	2015
S005	Shozab	Khan	M	BSCS	Fall	2014
S006	Sohaib	Asghar	M	BSCS	Fall	2015
S007	Zainab	Ashfaq	F	BSCS	Fall	2015
S008	Ali	Haider	M	BSCS	Spring	2016
S009	Ijaz	Malik	M	BBA	Fall	2014
S010	Mujtaba	Ahsan	M	BBA	Spring	2014
S011	Zeeshan	Tariq	M	BBA	Fall	2015
S012	Ayesha	Abid	F	BBA	Spring	2016
S013	Fatima	Ijaz	F	BBA	Spring	2016
S014	Ali	Jaffery	M	BBA	Fall	2013
S015	Qasim	Abid	M	BA	Spring	2015
S016	Babak	Ashfaq	M	BA	Fall	2016
S017	Sakina	Abbas	F	BA	Fall	2015
S018	Ailia	Zahra	F	MBA	Spring	2014
S019	Usman	Ilyas	M	MBA	Fall	2014
S020	Amina	Hussain	F	MBA	Spring	2014
S021	Momina	Qureshi	F	MCS	Fall	2014

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S022	Christoper	Emmanuelle	M	MCS	Spring	2015
S023	Ali	Malik	M	MCS	Fall	2015

### **Facult**

<b><u>FacID</u></b>	<b><i>FirstName</i></b>	<b><i>LastName</i></b>	<b><i>Specialization</i></b>
F001	Sarwan	Abbasi	Human Computer Interaction
F002	Marshal	Mathers	Artificial Intelligence
F003	Tupac	Shakur	Algorithms
F004	Mike	Shinoda	Pakistan History
F005	Kanye	West	Mass Communication
F006	Dr	Dre	English Literature
F007	Ice	Cube	Economics
F008	Kendrik	Lamar	Management
F009	Rick	Ross	Marketing
F010	Lil	Wayne	Maths
F011	Jay	Z	Physics

### **Cours**

<b><u>CourseID</u></b>	<b><i>CourseName</i></b>	<b><i>Program</i></b>
BUSN121	Micro Economics	BBA
BUSN305	Corporate Governance	BBA
BUSN322	Financial Management	BBA
BUSN361	Ops Excellence	BBA
BUSN460	Business Law	BBA
BUSN554	Entrepreneurship	MBA
BUSN565	Advanced Marketing Skills	MBA
COMP111	Programming II	BSCS
COMP213	Database Systems	BSCS
COMP220	Software Engineering	BSCS
COMP301	Operating Systems	BSCS
COMP302	Theory of Automata	BSCS
COMP303	Algorithms	BSCS
COMP323	Computer Organization	BSCS
COMP650	Digital Signal Processing	MCS
COMP660	Advanced AI	MCS

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COMP788	Quantum Computing	MCS
CSCS100	Intro To Computing	ALL
ENGL101	Basic WritingSkills	ALL
ENGL103	Advanced Writing Skills	ALL
ENGL313	Sociolinguistics	BA
ENGL315	Poetry I	BA
MATHS100	Basic Mathematics	ALL
MATHS103	Calculus	ALL
MCOM100	Intro to Mass Communication	ALL
MCOM301	Press Laws And Ethics	BA
PHYS101	Physics I	ALL
PHYS103	Physics II	ALL
STAT101	Basic Statistics	ALL

### Course Section

<u>CSID</u>	<u>CourseID</u>	<u>Semester</u>	<u>FacID</u>	<u>Section</u>	<u>Room</u>
CS001	COMP213	Spring 2017	F001	A	S219
CS002	COMP213	Spring 2017	F003	B	S317
CS003	COMP303	Spring 2017	F003	A	S218
CS004	COMP303	Spring 2017	F003	B	S216
CS005	COMP302	Spring 2017	F001	A	S417
CS006	COMP302	Spring 2017	F003	B	S412
CS007	COMP111	Spring 2017	F001	A	S218
CS008	COMP111	Spring 2017	F001	B	S320
CS009	COMP220	Spring 2017	F001	A	S316
CS010	COMP220	Spring 2017	F002	B	S318
CS011	COMP301	Spring 2017	F003	A	S319
CS012	COMP301	Spring 2017	F002	B	S316
CS013	COMP323	Spring 2017	F002	A	S216
CS014	COMP323	Spring 2017	F002	B	S318
CS015	COMP788	Spring 2017	F001	A	S217
CS016	COMP650	Spring 2017	F002	A	S412
CS017	COMP660	Spring 2017	F002	A	S216
CS018	BUSN121	Spring 2017	F008	A	S417
CS019	BUSN121	Spring 2017	F009	B	S318
CS020	BUSN322	Spring 2017	F007	A	S318
CS021	BUSN322	Spring 2017	F009	B	S320
CS022	BUSN361	Spring 2017	F009	A	S313
CS023	BUSN361	Spring 2017	F009	B	S319
CS024	BUSN460	Spring 2017	F007	A	S318

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CS025	BUSN460	Spring 2017	F009	B	S412
CS026	BUSN305	Spring 2017	F007	A	S219
CS027	BUSN305	Spring 2017	F007	B	S218
CS028	BUSN554	Spring 2017	F008	A	S412
CS029	BUSN565	Spring 2017	F007	A	S218
CS030	ENGL313	Spring 2017	F006	A	S318
CS031	ENGL313	Spring 2017	F006	B	S316
CS032	ENGL315	Spring 2017	F006	A	S320
CS033	ENGL315	Spring 2017	F006	B	S216
CS034	MCOM301	Spring 2017	F005	A	E319
CS035	MCOM301	Spring 2017	F005	B	E317
CS036	ENGL101	Spring 2017	F006	A	E319
CS037	ENGL101	Spring 2017	F006	B	E416
CS038	ENGL103	Spring 2017	F006	A	E219
CS039	MCOM100	Spring 2017	F005	A	E320
CS040	MATHS100	Spring 2017	F010	A	S412
CS041	MATHS100	Spring 2017	F010	B	S219
CS042	MATHS103	Spring 2017	F010	A	S313
CS043	STAT101	Spring 2017	F010	A	S313
CS044	STAT101	Spring 2017	F010	B	S319
CS045	PHYS101	Spring 2017	F011	A	S313
CS046	PHYS101	Spring 2017	F011	B	S412
CS047	PHYS103	Spring 2017	F011	A	S316
CS048	CSCS100	Spring 2017	F001	A	S412
CS049	CSCS100	Spring 2017	F003	B	S316
CS050	CSCS100	Spring 2017	F003	C	S316
CS051	CSCS100	Spring 2017	F003	D	S316
CS052	CSCS100	Spring 2017	F003	E	S316
CS053	CSCS100	Spring 2017	F003	F	S316
CS054	COMP213	Fall 2017	F003	A	S320
CS055	COMP213	Fall 2017	F003	B	S216
CS056	COMP302	Fall 2017	F001	A	S417
CS057	COMP302	Fall 2017	F003	B	S412
CS058	COMP303	Fall 2017	F001	A	S217
CS059	COMP303	Fall 2017	F003	B	S218
CS060	COMP111	Fall 2017	F001	A	S417
CS061	COMP111	Fall 2017	F002	B	S313
CS062	COMP220	Fall 2017	F002	A	S217
CS063	COMP220	Fall 2017	F001	B	S320
CS064	COMP301	Fall 2017	F001	A	S417
CS065	COMP301	Fall 2017	F002	B	S320
CS066	COMP323	Fall 2017	F001	A	S319

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CS067	COMP323	Fall 2017	F001	B	S319
CS068	COMP788	Fall 2017	F003	A	S219
CS069	COMP650	Fall 2017	F001	A	S412
CS070	COMP660	Fall 2017	F003	A	S416
CS071	BUSN121	Fall 2017	F008	A	S412
CS072	BUSN121	Fall 2017	F007	B	S319
CS073	BUSN322	Fall 2017	F007	A	S219
CS074	BUSN322	Fall 2017	F009	B	S219
CS075	BUSN361	Fall 2017	F009	A	S313
CS076	BUSN361	Fall 2017	F009	B	S219
CS077	BUSN460	Fall 2017	F008	A	S317
CS078	BUSN460	Fall 2017	F009	B	S316
CS079	BUSN305	Fall 2017	F009	A	S318
CS080	BUSN305	Fall 2017	F007	B	S217
CS081	BUSN554	Fall 2017	F007	A	S313
CS082	BUSN565	Fall 2017	F009	A	S417
CS083	ENGL313	Fall 2017	F006	A	S320
CS084	ENGL313	Fall 2017	F006	B	S319
CS085	ENGL315	Fall 2017	F006	A	S217
CS086	ENGL315	Fall 2017	F006	B	S219
CS087	MCOM301	Fall 2017	F005	A	E318
CS088	MCOM301	Fall 2017	F005	B	E317
CS089	ENGL101	Fall 2017	F006	A	E216
CS090	ENGL101	Fall 2017	F006	B	E320
CS091	ENGL103	Fall 2017	F006	A	E217
CS092	MCOM100	Fall 2017	F005	A	E320
CS093	MATHS100	Fall 2017	F010	A	S217
CS094	MATHS100	Fall 2017	F010	B	S218
CS095	MATHS103	Fall 2017	F010	A	S412
CS096	STAT101	Fall 2017	F010	A	S219
CS097	STAT101	Fall 2017	F010	B	S313
CS098	PHYS101	Fall 2017	F011	A	S320
CS099	PHYS101	Fall 2017	F011	B	S313
CS100	PHYS103	Fall 2017	F011	A	S219
CS101	CSCS100	Fall 2017	F001	A	S417
CS102	CSCS100	Fall 2017	F002	B	S219
CS103	CSCS100	Fall 2017	F002	C	S219
CS104	CSCS100	Fall 2017	F002	D	S219

### **Student** **Courses**

<u><i>Stid</i></u>	<u><i>Csid</i></u>
S001	CS005
S001	CS009
S001	CS011
S001	CS013
S001	CS040
S001	CS054
S001	CS061
S001	CS065
S001	CS067
S001	CS102
S002	CS001
S002	CS004
S002	CS008
S002	CS014
S002	CS053
S002	CS054
S002	CS055
S002	CS062
S002	CS065
S002	CS101
S003	CS001
S003	CS004
S003	CS006
S003	CS011
S003	CS050
S003	CS054
S003	CS056
S003	CS060
S003	CS065
S003	CS102
S004	CS001
S004	CS008
S004	CS012

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S004	CS014
S004	CS042
S004	CS054
S004	CS057
S004	CS061
S004	CS067
S004	CS104
S005	CS001
S005	CS005
S005	CS012
S005	CS014
S005	CS050
S005	CS056
S005	CS058
S005	CS061
S005	CS065
S005	CS093
S006	CS001
S006	CS005
S006	CS008
S006	CS013
S006	CS042
S006	CS055
S006	CS058
S006	CS063
S006	CS067
S006	CS096
S007	CS001
S007	CS004
S007	CS007
S007	CS014
S007	CS046
S007	CS056
S007	CS060
S007	CS064
S007	CS067
S007	CS094
S008	CS001
S008	CS003
S008	CS006
S008	CS009
S008	CS049



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S008	CS055
S008	CS060
S008	CS065
S008	CS067
S008	CS104
S009	CS018
S009	CS020
S009	CS024
S009	CS027
S009	CS050
S009	CS071
S009	CS073
S009	CS076
S009	CS079
S009	CS096
S010	CS018
S010	CS021
S010	CS025
S010	CS027
S010	CS038
S010	CS071
S010	CS075
S010	CS077
S010	CS080
S010	CS100
S011	CS018
S011	CS021
S011	CS024
S011	CS027
S011	CS050
S011	CS072
S011	CS077
S011	CS078
S011	CS080
S011	CS097
S012	CS018
S012	CS023
S012	CS026
S012	CS027
S012	CS047
S012	CS072
S012	CS074

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S012	CS077
S012	CS079
S012	CS091
S013	CS018
S013	CS021
S013	CS025
S013	CS027
S013	CS050
S013	CS071
S013	CS073
S013	CS076
S013	CS079
S013	CS095
S014	CS018
S014	CS021
S014	CS025
S014	CS027
S014	CS038
S014	CS073
S014	CS077
S014	CS079
S014	CS085
S014	CS089
S015	CS032
S015	CS036
S015	CS039
S015	CS044
S015	CS052
S015	CS086
S015	CS091
S015	CS097
S015	CS103
S015	CS104
S016	CS030
S016	CS040
S016	CS044
S016	CS049
S016	CS053
S016	CS085
S016	CS094
S016	CS097
S016	CS101

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S016	CS104
S017	CS034
S017	CS036
S017	CS039
S017	CS048
S017	CS053
S017	CS085
S017	CS090
S017	CS093
S017	CS095
S017	CS102
S018	CS029
S018	CS039
S018	CS047
S018	CS081
S018	CS094
S018	CS098
S019	CS029
S019	CS044
S019	CS047
S019	CS082
S019	CS100
S019	CS104
S020	CS029
S020	CS042
S020	CS048
S020	CS082
S020	CS097
S020	CS103
S021	CS016
S021	CS038
S021	CS045
S021	CS070
S021	CS095
S021	CS100
S022	CS015
S022	CS041
S022	CS047
S022	CS070
S022	CS093
S022	CS104

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*Note: The column names in blue font color and underline denote primary keys, and the column name with orange font color and dotted line denote foreign keys.*

*Note: You must logically assess the order in which the tables ought to be created and populated systematically in a certain order. Moreover, the table names ought to be as shown against each table below. Some of the primary keys and foreign keys have been marked to get you started.*

**Task 2.** After the database and the tables have been created and populated and the links between them have been set, you need to create/draw an ERD on paper, online on 'Creately', or in the SQL server IDE.

**Task 3.** Solve the queries below

### List of Queries

- Query\_01: How many courses has 'Ab Rehman' registered for in Fall-2017.
- Query\_02: List down the courses that 'Ab Rehman' has taken till now or is currently taking.
- Query\_03: List down the courses that 'Ab Rehman' has taken till now (but not the ones that he is currently taking).
- Query\_04: Which course (rather a specific section of a course) has the most students enrolled in it.
- Query\_05: For which course have students registered for the most (in all times).
- Query\_06: Which student have repeated the same course more than once.
- Query\_07: Write down the names of all students who are class fellows of either 'Momina Qureshi' or 'Alizeh Irfan'?

**Task 4.** Send your database script containing the entire database (i.e. an sql file that you have created containing the database, table structure and all the data); the queries (they too ought to be placed at the end of the sql file); and a soft (or scanned) copy of ERD in an email. Note: The email ought to be sent as follows:

- i. The Subject of the email ought to be in the following format:

'Spr2017/COMP213(A)/ClassActivity/RollNo/YYYY-MM-DD'

(e..g SUB: 'Spr2017/COMP213(A)/ClassActivity/18-10345/2017-04-30')

- ii. Email the deliverables to me (i.e. <[sarwanabbasi@fccollege.edu.pk](mailto:sarwanabbasi@fccollege.edu.pk)>) at with Cc to  
Taha (i.e. <[taha@gmail.com](mailto:taha@gmail.com)>)

### **EXPECTED DELIVERABLE**

Email to the instructor as per the criteria as specified under 'Task 4' above.