National University of Computer & Emerging Sciences, Islamabad

Computer Science Department

HOME WORK - ASSIGNMENT COVER SHEET

COURSE TITLE DATABASE SYSTEMS COURSE CODE CS204

INSTRUCTOR EJAZ AHMED TYPE (Please tick)

	Indiv.	Group
		√

ASSIGNMENT NO

ASSIGNMENT Lab Project – Hamarey Bachchey System

HAND OUT DATE 23-APR-2020 DUE DATE 31-MAY-2020

ESTIMATE TIME 50 Hours

ASSESSMENT CRITERIA (or attached)	% Mark
Instructions to Candidates: Grade Distribution is Attached Submission: Print & online Tools: **Oracle Database & PHP** Group of max 4 students is allowed, individual work is discouraged with 10% deduction	

TO BE COMPLETED BY STUDENT

NAME: **Hamza Ijaz**

ID NO: **18I-0522 Section: G**

Time Taken 60 Hours

DECLARATION: I/We declare that this Coursework is my/our group's own work

SIGNATURES (All members) HAMZA HADIA NAMEIRA WAJEEHA

GROUP MEMBERS ID

ID **18i-0577** Sec# **G**

ID **18i-0695** Sec# **G**

ID **18i-1587** Sec# **G**

GRADE/ MARK AWARDED

COMMENTS

INSTRUCTOR'S SIGNATURE DATE

DATABASE SEMESTER PROJECT

Section: BS-CS (G)

HAMARAY BACHCHEY

DOCUMENTATION

Submitted by:

Hamza Ijaz - 18I-0522
Nameira Rana – 18I-0695
Wajeeha Malik – 18I-1587
Hadia Chaudhary - 18I-0577

Submitted to:

Sir Turab

Submission Date:

June 7th, 2020

Schema + Functional Dependencies shown in file named FINAL_ERD
ERD shown in file named Final

Our ERD tables were already in 1NF as there were no repeating groups.

Functional Dependencies:

Table: Father
{F_ID} -> {F_name, F_Cnic, F_Num, F_Address, F_Mail, F_Income, F_Isalive, F_emp_ID}

Table: Father_History *(Dependent on Father Table)*
{SerialNumber_fh, F_ID} -> {F_name, F_Cnic, F_Num, F_Address, F_Mail, F_Income, F_Isalive, F_emp_ID}

Table: Mother
{M_ID} -> {M_name, M_Cnic, M_Num, M_Address, M_Mail, M_Income, M_Isalive, M_emp_ID}

Table: Mother *(Dependent on Mother Table)*
{SerialNumber_mh, M_ID} -> {M_name, M_Cnic, M_Num, M_Address, M_Mail, M_Income, M_Isalive, M_emp_ID}

Table: Guardian
{G_ID} -> {G_name, G_Cnic, G_Num, G_Address, G_Mail, G_Gender, G_Income, G_emp_ID}

Table: Guardian *(Dependent on Guardian Table)*
{SerialNumber_gh G_ID} -> {G_name, G_Cnic, G_Num, G_Address, G_Mail, G_Gender, G_Income, G_emp_ID}

Table: Student
{s_rollnumber} -> {S_Name, S_Gender, S_bayformno, DOB, S_Address, S_Pid, S_Yearenrolled, S_Age}

Table: Student_History *(Dependent on Student Table)*
{SerialNumber_sh, s_rollnumber} -> {S_Name, S_Gender, S_bayformno, DOB, S_Address, S_Pid, S_Yearenrolled, S_Age, Relationship}

Table: Class
{Class_ID} -> {Cl_Name, Section, Class_Strength}

Table: Course
{Co_ID} -> {Co_name, Co_type, Co_dur, Age, Fee, Status}

Table: Registration *(Dependent on Student, Course and Class Tables)*
{ChallanNumber} -> {Fee_Amount, Discount_Percentage, R_Date, R_Status, Final_Amount}

Table: Registration_History (*Dependent on Registration Table)*
{SerialNumber_rh, ChallanNumber} -> {Fee_Amount, Discount_Percentage, R_Date, R_Status, Final_Amount, Section_Change_Time, Section_Change_Reason}

It is clear from the above data that there are no partial or transitive dependencies in our ERD Tables. Our tables are in B

TABLE DESCRIPTIONS

Guardian:

Attributes	Description	Constraints	Type	Example
G_ID	Guardian identifier	INDX	varchar2(9)	G_1, G_2,etc
G_Name	Name of guardian	NOT NULL	varchar2(30)	Ali,ayesha,etc
g_cnic	Guardian CNIC	NOT NULL	varchar2(13)	XXXXXXXXXXXXX
g_gender	Gender of guardian	NOT NULL	varchar2(1)	M or F
g_num	Contact Number	NOT NULL	Number (11)	XXXXXXXXXXX
g_address	Address of guardian	NOT NULL	varchar2(100)	House#123, Street#123, Islamabad,etc
g_mail	Email of guardian	NOT NULL	varchar2(50)	xyz@gmail.com
g_income	Income of guardian	NOT NULL	Number (10)	XXXXXXXX
g_emp_ID	Identifier if guardian is Employee at school	NOT NULL	varchar2(5)	If guardian is not employe then 0 else 1142,123, etc

Guardian_History:

Attributes	Description	Constraints	Type	Example
G_Pk (g_ID,sno)	It is the composite primary key of serial number and Guardian Identifier	INDX	_	(G_1,1) (G_4,5) etc.
sno	Serial number	INDX	number	1,2,3…n
g_ID	Guardian identifier coming from guardian table.	INDX, FK	varchar2(9)	G_1, G_2, etc
g_name	Name of guardian	NOT NULL	varchar2(30)	Ahmed,sana
g_cnic	Guardian CNIC	NOT NULL	varchar2(13)	XXXXXXXXXXXX
g_gender	Gender of guardian	NOT NULL	varchar2(1)	M or F
g_num	Contact Number	NOT NULL	Number (11)	XXXXXXXXXXX
g_address	Address of guardian	NOT NULL	varchar2(100)	House#123, Street#123, Islamabad, etc
g_mail	Email of guardian	NOT NULL	varchar2(50)	xyz@gmail.com

g_income	Income of guardian	NOT NULL	Number (10)	XXXXXXXX
g_emp_ID	Identifier if guardian is Employee at school	NOT NULL	varchar2(5)	If guardian is not employe then 0 else 1142,123, etc

Mother:

Attributes	Description	Constraints	Type	Example
m_ID	Mother identifier	INDX	varchar2(9)	M_1, M_5, etc
m_name	Mother Name	NOT NULL	varchar2(30)	Hira, Sana
m_cnic	Mother CNIC	NOT NULL	varchar2(13)	XXXXXXXXXXXX
m_num	Phone number of mother	NOT NULL	Number (11)	XXXXXXXXXXX
m_address	Adress of mother	NOT NULL	varchar2(100)	House#123, Street#123, Islamabad, etc
m_mail	Email of mother	NOT NULL	varchar2(50)	xyz@gmail.com
m_income	Income of mother	NOT NULL	Number (10)	XXXXXXXXXX
m_isalive	Status whether mother is alive or not	NOT NULL	varchar2(1)	0 or 1
m_emp_ID	Identifier if mother is employee at school	NOT NULL	varchar2(30)	If guardian is not employe then 0 else 1142,123, etc

MOTHER HISTORY:

Attributes	Description	Constraints	Type	Example
m_Pk (m_ID,sno)	It is the composite primary key of serial number and mother Identifier	INDX	_	(M_1,1) (M_5,7) etc
sno	Serial number	INDX	number	1,2,3…n
m_ID	Mother identifier coming from mother table	INDX, FK	varchar2(9)	M_1,M_3,etc
m_name	Mother Name	NOT NULL	varchar2(30)	Hira,Sana,etc
m_cnic	Mother CNIC	NOT NULL	varchar2(13)	XXXXXXXXXXXX

m_num	Phone number of mother	NOT NULL	Number (11)	XXXXXXXXXXX
m_address	Adress of mother	NOT NULL	varchar2(100)	House#123, Street#123, Islamabad, etc
m_mail	Email of mother	NOT NULL	varchar2(50)	xyz@gmail.com
m_income	Income of mother	NOT NULL	Number (10)	XXXXXXXXX
m_isalive	Status whether mother is alive or not	NOT NULL	varchar2(1)	0 or 1
m_emp_ID	Identifier if mother is employee at school	NOT NULL	varchar2(30)	If guardian is not employee then 0 else 1142,123, etc

FATHER:

Attributes	Description	Constraints	Type	Example
f_ID	Father identifier	INDX	varchar2(9)	F_1, F_5, etc
f_name	Father name	NOT NULL	varchar2(30)	Ahmed, hassan, etc
f_cnic	Father cnic	NOT NULL	varchar2(13)	XXXXXXXXXXX
f_num	Phone number of father	NOT NULL	Number (11)	XXXXXXXXXXX
f_address	Address of father	NOT NULL	varchar2(100)	House#123, Street#123, Islamabad,etc
f_mail	Email of father	NOT NULL	varchar2(50)	xyz@gmail.com
f_income	Income of father	NOT NULL	number(10)	XXXXXXXXX
f_isalive	Status whether father is alive or not	NOT NULL	varchar2(1)	0 or 1
f_emp_ID	Identifier if father is employee at school	NOT NULL	varchar2(30)	If guardian is not employee then 0 else 1142,123, etc

FATHER_HISTORY:

Attributes	Description	Constraints	Type	Example
Pk (f_ID,sno)	It is the composite primary key of serial number and father Identifier	INDX	–	(F_1,1) (F_6,3) etc
sno	Serial number	INDX	number	1,2,3….n
f_ID	Father identifier coming from father table	INDX, FK	varchar2(9)	F_1, F_7, etc
f_name	Father name	NOT NULL	varchar2(30)	Ahmed, hassan
f_cnic	Father cnic	NOT NULL	varchar2(13)	XXXXXXXXXXXX
f_num	Phone number of father	NOT NULL	Number (11)	XXXXXXXXXX
f_address	Address of father	NOT NULL	varchar2(100)	House#123, Street#123, Islamabad,etc
f_mail	Email of father	NOT NULL	varchar2(50)	xyz@gmail.com
f_income	Income of father	NOT NULL	Number (10)	XXXXXXXXX
f_isalive	Status whether father is alive or not	NOT NULL	varchar2(1)	0 or 1
f_emp_ID	Identifier if father is employee at school	NOT NULL	varchar2(30)	If guardian is not employe then 0 else 1142, 123, etc

STUDENT:

Attributes	Description	Constraints	Type	Example
s_rollnumber	Roll number of student generated by system	INDX	varchar2(9)	20S_1,20S_2 etc Here 20 is the year
s_name	Name of student	NOT NULL	varchar2(30)	Talha, Esha
s_bayformno	B-form number of student	NOT NULL	Number (12)	XXXXXXXXXXX
s_gender	Gender of student	NOT NULL	varchar2(1)	F or M
DOB	Date of birth of student	NOT NULL	Date	XX-XX-XXXX
s_yearenrolled	Date at which student is enrolled	NOT NULL	Date	XX-XX-XXXX
f_ID	Father identifier coming from father table	FK, NOT NULL	varchar2(9)	F_2, F_6 ,etc
m_ID	Mother identifier coming from mother table	FK, NOT NULL	varchar2(9)	M_9, M_4, etc

g_ID	Guardian identifier coming from guardian table	FK, NOT NULL	varchar2(9)	G_4, G_8, etc
relation	Relation of student with guardian	–	varchar2(10)	Uncle, aunt,etc
s_pid	Picture identifier	-	varchar2(100)	1.jpg, 4.jpg, etc

STUDENT_HISTORY:

Attributes	Description	Constraints	Type	Example
Pk (sno,s_rollnumber)	It is the composite primary key of serial number and student roll number	INDX	–	(1,20S_7) (4,20S_8) etc
sno	Serial number	INDX	Number	1,2,3….n
s_rollnumber	Roll number of student coming from student table	INDX, FK	varchar2(9)	20S_2,20S_5, etc
s_name	Name of student	NOT NULL	varchar2(30)	Talha,esha
s_bayformno	B-form number of student	NOT NULL	Number (12)	XXXXXXXXXXX
s_gender	Gender of student	NOT NULL	varchar2(1)	F or M
DOB	Date of birth of student	NOT NULL	Date	XX-XX-XXXX
s_yearenrolled	Year in which student is enrolled	NOT NULL	Date	XX-XX-XXXX
f_ID	Father identifier coming from father table	NOT NULL	varchar2(9)	F_2, F_6, etc
m_ID	Mother identifier coming from mother table	NOT NULL	varchar2(9)	M_9, M_4, etc
g_ID	Guardian identifier coming from guardian table	NOT NULL	varchar2(9)	G_4,G_8,etc
relation	Relation of student with guardian	–	varchar2(10)	Uncle, aunt,etc
s_pid	Picture identifier	-	varchar2(100)	1.jpg, 4.jpg, etc

CLASS:

Attributes	Description	Constraints	Type	Example
class_Id	Class identifier	_	Number (10)	100, 101, 200, etc
Section	Section of class depending on no. of students	NOT NULL	Varchar2(1)	A, B, etc
Gender	Gender to specify if class has male, female students	NOT NULL	varchar (5)	M or F
class_Name	Name of class that identify in which grade student is.	NOT NULL	Varchar2(20)	1,2,3,4…. etc

COURSE:

Attributes	Description	Constraints	Type	Example
co_ID	Course identifier	INDX	varchar2(9)	1,2, 3 ...etc
co_name	Course name	NOT NULL	varchar2(30)	Algebra, computer etc
co_type	Type of course	NOT NULL	varchar2(10)	M, F or M/F
co_dur	Duration of course	NOT NULL	varchar2(10)	1,2etc
age	Course for students of different age group	–	Number (3)	4,5,12 years
status	Status whether the course is available or not	_	Number (3)	0 or 1

ACCOMPANIER:

Attributes	Description	Constraints	Type	Example
Pk (s_rollnumber,a_date)	It is a composite primary key of date of accompany and student roll number coming from student table	INDX	_	(20S_1,12-jun-20) etc
s_rollnumber	Student roll number coming from student table	INDX, FK	varchar2(9)	20S_9,20S_2 etc
a_date	Date of accompany	NOT NULL, FK	Date	XX-XX-XXXX

ID	Identifier of accompanier	NOT NULL	varchar2(9)	If mother then M_1, M_2etc And if guardian then G_1, G_2 etc
a_reason	Reason for accompanier	NOT NULL	varchar2(50)	Sick or out of city etc
a_Pregnant	Whether the accompanier id pregnant or not	NOT NULL	varchar2(1)	0 or 1

REGISTRATION:

Attributes	Description	Constraints	Type	Example
class_count	Count of number of students	_	Number	4,6, 10, etc
ChallanNumber	Challan number	NOT NULL	varchar2(9s)	123, 34, etc
s_rollnumber	Student roll number coming from student table	NOT NULL	varchar2(9)	20S_1 etc
class_id	Class identifier coming from class table	NOT NULL	Number	100,302 etc
co_ID	Course identifier coming from course table	NOT NULL	varchar2(9)	2,4,1 depending on age
Fee_Amount	Amount of fee that is fixed for each class	NOT NULL	Number (5)	1000,2000, 3000, etc
Discount_Percentage	Percentage of discount given	NOT NULL	Number (3)	10,50,100
R_Date	Date of registration	NOT NULL	Date	XX-XX-XXXX
R_Status	Status whether the course is completed or not	NOT NULL	varchar2(10)	0 or 1

REGISTRATION_HISTORY:

Attributes	Description	Constraints	Type	Example
sno	Serial number	-	number	1,2,3…n
Challan Number	Challan number	NOT NULL	varchar2(9)	123, 122, etc
s_rollnumber	Student roll number coming from student table	NOT NULL	varchar2(9)	20S_4,20S_6
Cl_ID	Class identifier coming from class table	NOT NULL	number	100, 400, etc
co_ID	Course identifier coming from course table	NOT NULL	number	2,1,5, etc
Fee_Amount	Amount of fee that is fixed for each class	NOT NULL	varchar2(9)	1000,2000, 3000, etc
Discount_Percentage	Percentage of discount given	NOT NULL	Number (5)	10,50,100
R_Date	Date of registration	NOT NULL	Number (3)	XX-XX-XXXX
R_Status	Status whether the course is completed or not	NOT NULL	Date	0 or 1
Section_change	Section change status reason	–	varchar2(200)	Not satisfied with teacher, etc
dateOfChange	Date of section change	–	Date	XX-XX-XXXX

We made three different tables for Mother, Father and Guardian to cater to Students that may have 1/2 parent that are the same. Now if 2 students have the same guardian but the guardian is and uncle of one of the student but grandfather of the other student.So instead of saving 2 entries in the guardian table with different relationship, to avoid update, deletion anomaly we included relationship of the guardian as a attribute in the student table. Now a Guardians key information would remain the same.
The Student History, Mother History, Father History and Guardian History table save information with serial numbers every time an entry in their respective parent table is updated.

The Course, Class and Student table are linked to the Registration table. So every time a Student register for a course, their Roll Number, Class and Course ID would be added in the Registration table. Now every time a Student changes their class their old record is saved in Registration History with a serial number. If the course being taught is completed all records in registration are saved to Registration History.
In the course table course type and status help identify whether male and female students will be in the same class or not while status identifies whether the court is currently being taught or not.
The status in registration helps identify if a student is staying the course while in Registration History status helps identify if student passed the course or not.

In Accompanier table records are saved according to the Student and the date he was accompanied on with Student roll number and date. Accompanier Id can either be Guardian ID or Mother ID. This implementation helps us let their be flexibility in accompanier by allowing both Mother and Guardian.