

SQL Assignment -Output Snapshots

✓	23	05:40:13	create database Student	1 row(s) affected
✓	24	05:40:22	use Student	0 row(s) affected
✓	25	05:40:38	create table CourseDetails(CourseId enum("IP101","IP102","IP103","IP104","IP105") ...	0 row(s) affected
✓	26	05:40:38	create table SubjectDetails(SubjectCode int primary key, SubjectName varchar(20) n...	0 row(s) affected
✓	27	05:40:38	create table StudentBasicDetails(FirstName varchar(20) not null, LastName varchar(20),...	0 row(s) affected
✓	28	05:40:39	create table StudentPaymentDetails(ReceiptId varchar(6) primary key, RollNo int not ...	0 row(s) affected
✓	29	05:40:39	create table StudentSubjectDetails(SubjectCode int not null, CourseId enum("IP101",...	0 row(s) affected
✓	30	05:40:39	create table StudentScholarshipDetails(ScholarshipId int primary key, ScholarshipNa...	0 row(s) affected

Student Database and Required Tables Created

NOTE- Some modifications to the columns and creation of extra tables is incorporated in addition to the specifications written in the document ***to avoid redundancy and capturing real time scenarios.***

CourseId	CourseName	CourseFee
IP 101	PCM	44000.00
IP 102	Arts	25000.00
IP 103	Humanities	35000.00
IP 104	PCMB	54000.00
IP 105	Commerce	40000.00

Course Details Table Post Insertion

SubjectCode	SubjectName
201	Physics
202	Chemistry
203	Maths
204	English
205	History
206	Biology
207	PoliticalScience
208	Hindi
209	IT
210	Accounts
211	Economics
212	Psychology

Subject Details Table Post Insertion

FirstName	LastName	RollNo	Address	Email	ContactNo	DOB	Gender	ScholarshipOpted	AdmissionDate	CourseId
Sachin	Kumar	2030	47-JanakPuri Delhi	sachin@gmail.com	9874658381	1999-03-27	Male	1	2016-03-16	IP101
Sagar	Kumar	2031	44/23 GTB Delhi	sagar@gmail.com	9834568381	1999-04-17	Male	0	2016-05-01	IP101
Aachal	Pawar	2032	06/19 JanakPuri Delhi	aachal@gmail.com	9874645333	1998-05-21	Female	1	2015-03-16	IP103
Rohit	Sharma	2033	51, Isha Puram Ghaziabad	rohit@gmail.com	9999258381	1999-03-06	Male	1	2015-04-16	IP102
Tej	Gupta	2034	Noida	tej@gmail.com	9723658381	1997-06-27	Male	0	2015-02-16	IP102
Abhishek	Kumar	2035	16-Kalash nagar Delhi	abhi@gmail.com	9823558394	1998-05-11	Male	1	2016-03-25	IP105
Komal	Tiwari	2036	GTB Delhi	komal@gmail.com	9945658385	1998-09-07	Female	0	2015-06-06	IP104
Payal	Khanna	2037	Noida	payal@gmail.com	9896758381	1998-08-27	Female	1	2016-03-16	IP103
Aarushi	Tomar	2038	Ghaziabad	aarushi@gmail.com	9974658374	1997-04-27	Female	1	2016-04-16	IP104
Raghav	Tandon	2039	32-JanakPuri Delhi	raghav@gmail.com	9955658384	1999-03-05	Male	1	2016-03-16	IP105

Student Basic Details Table Post Insertion

ReceiptId	RollNo	CourseId	AmountPaid	PaymentMode	PaymentDate
24BT6	2034	IP102	6400.00	Online	2016-05-05
2F8T6	2037	IP103	15000.00	Offline	2017-06-07
2N7T6	2039	IP105	5000.00	Online	2016-05-05
2S4T6	2033	IP102	5000.00	Online	2015-05-05
324T6	2032	IP103	5000.00	Online	2016-10-05
6S0T6	2035	IP105	5000.00	Online	2018-05-04
6Y4T6	2031	IP101	5000.00	Online	2016-09-05
75RT6	2038	IP104	5000.00	Online	2018-04-05
8E4T6	2030	IP101	23000.00	Online	2017-04-05
94WT6	2036	IP104	3000.00	Offline	2018-05-05

Student Payment Details Table Post Insertion

SubjectCode	CourseId	RollNo	TotalMarks	MarksObtained
201	IP101	2030	100.00	67.00
202	IP101	2030	150.00	80.00
203	IP101	2030	200.00	120.00
202	IP101	2031	150.00	90.00
204	IP103	2032	70.00	55.00
204	IP102	2033	70.00	59.00
205	IP102	2034	100.00	69.00
211	IP105	2035	100.00	87.00
202	IP104	2036	150.00	67.00
212	IP103	2037	100.00	96.00
203	IP104	2038	200.00	135.00
206	IP104	2038	100.00	86.00

Student Subject Details Table Post Insertion

ScholarshipId	ScholarshipName	RollNo	ScholarshipDesc	FundingOrgName	Amount	Category
123	KP DasGupta Scholarship	2033	Given to outstanding Student	Maitri	4000	Education
347	KP DasGupta Scholarship	2032	Given to outstanding Student	Maitri	4000	Education
421	KP DasGupta Scholarship	2030	Given to outstanding Student	Maitri	4000	Education
425	KP DasGupta Scholarship	2035	Given to outstanding Student	Maitri	4000	Education
436	Junior Research Scholarship	2033	Given for research	RajivGandhi	60000	Higher Education
453	Junior Research Scholarship	2038	Given for research	RajivGandhi	60000	Higher Education
764	Coders Scholarship	2039	Given to technolgy enthusiast	Maitri	30000	Technology
789	Coders Scholarship	2038	Given to technolgy enthusiast	Maitri	30000	Technology
912	Kanya Vidhya Scholarship	2032	Given to meritorious girl child	Maitri	6000	Girl Child

Student Scholarship Details Table Post Insertion

FirstName	LastName	RollNo	Address	Email	ContactNo	DOB	Gender	ScholarshipOpted	AdmissionDate	CourseId
Sachin	Kumar	2030	47-JanakPuri Delhi	sachin@gmail.com	9874658381	1999-03-27	Male	1	2016-03-16	IP101
Sagar	Kumar	2031	44/23 GTB Delhi	sagar@gmail.com	8799687234	1999-04-17	Male	0	2016-05-01	IP101
Aachal	Pawar	2032	06/19 JanakPuri Delhi	aachal@gmail.com	9874645333	1998-05-21	Female	1	2015-03-16	IP103
Rohit	Sharma	2033	51, Isha Puram Ghaziabad	rohit@gmail.com	9999258381	1999-03-06	Male	1	2015-04-16	IP102
Tej	Gupta	2034	Noida	tej@gmail.com	9723658381	1997-06-27	Male	0	2015-02-16	IP102
Abhishek	Kumar	2035	16-Kalash nagar Delhi	abhi@gmail.com	9823558394	1998-05-11	Male	1	2016-03-25	IP105
Komal	Tiwari	2036	97-Model Town Delhi	komal@gmail.com	9945658385	1998-09-07	Female	0	2015-06-06	IP104
Payal	Khanna	2037	Noida	payal@gmail.com	9896758381	1998-08-27	Female	1	2016-03-16	IP103
Aarushi	Tomar	2038	Ghaziabad	aarushi@gmail.com	9974658374	1997-04-27	Female	1	2016-04-16	IP104
Raghav	Tandon	2039	32-JanakPuri Delhi	raghav@gmail.com	9955658384	1999-03-05	Male	1	2016-03-16	IP105

Student Basic Details Table Post Updation (Update 1 and 2)

SubjectCode	CourseId	RollNo	TotalMarks	MarksObtained
201	IP 101	2030	100.00	67.00
202	IP 101	2030	150.00	80.00
203	IP 101	2030	200.00	120.00
203	IP 101	2031	150.00	90.00
204	IP 103	2032	70.00	55.00
204	IP 102	2033	70.00	59.00
205	IP 102	2034	100.00	69.00
211	IP 105	2035	100.00	87.00
202	IP 104	2036	150.00	82.00
212	IP 103	2037	100.00	96.00
203	IP 104	2038	200.00	135.00
206	IP 104	2038	100.00	86.00

Student Subject Details Table Post Updation (Update 3 and 4)

SubjectCode	SubjectName
201	Physics
202	Chemistry
203	Maths
204	English
205	History
206	Biology
207	PoliticalScience
208	Hindi
209	Sanskrit
210	Accounts
211	Economics
212	Psychology

Subject Details Table Post Updation (Update 5)

7. Select the student details records who has received the scholarship more than 5000Rs/-

FirstName	LastName	RollNo	Address	Email	ContactNo	DOB	Gender	Scholarship	AdmissionDate	CourseId	ScholarshipAmount	ScholarshipName	ScholarshipDesc	FundingOrg	Amount	Category
Rohit	Sharma	2033	51, Isha ...	rohit@g...	9999258...	1999-03-06	Male	1	2015-04-16	IP102	436	Junior Resear...	Given for research	RajivGa...	60000	Higher Edu...
Aarushi	Tomar	2038	Ghaziabad	aarushi...	9974658...	1997-04-27	Fe...	1	2016-04-16	IP104	453	Junior Resear...	Given for research	RajivGa...	60000	Higher Edu...
Raghav	Tan...	2039	32-Janak...	raghav...	9955658...	1999-03-05	Male	1	2016-03-16	IP105	764	Coders Schola...	Given to technol...	Maitri	30000	Technology
Aarushi	Tomar	2038	Ghaziabad	aarushi...	9974658...	1997-04-27	Fe...	1	2016-04-16	IP104	789	Coders Schola...	Given to technol...	Maitri	30000	Technology
Aachal	Pawar	2032	06/19 Ja...	aachal@...	9874645...	1998-05-21	Fe...	1	2015-03-16	IP103	912	Kanya Vidhya ...	Given to meritori...	Maitri	6000	Girl Child
Payal	Kha...	2037	Noida	payal@g...	9896758...	1998-08-27	Fe...	1	2016-03-16	IP103	992	Kanya Vidhya ...	Given to meritori...	Maitri	6000	Girl Child

8. Select the students who opted for scholarship but has not got the scholarship

FirstName	LastName	RollNo	Address	Email	ContactNo	DOB	Gender	ScholarshipOpted	AdmissionDate	CourseId
Payal	Khanna	2037	Noida	payal@gmail.com	9896758381	1998-08-27	Female	1	2016-03-16	IP103

9. Fill in data for the percentage column i.e. StudentMarksPercentage in the table StudentSubjectInformation by creating and using the stored procedure created

RollNo	CourseId	StudentPercentage
2030	IP101	59.33
2033	IP102	84.29
2036	IP104	54.67
2037	IP103	96.00
2038	IP104	73.67

10. Decide the category of the scholarship depending upon the marks/percentage obtained by the student and likewise update the ScholarshipCategory column, create a stored procedure in order to handle this operation

ScholarshipName	ScholarshipDesc	ScholarshipCategory	Amount
Einstein Scholarship	Given to student having percentage above 95%	Merit_A1	10000.00
First Division Scholarship	Given to student having percentage above 60%	Merit_A3	5000.00
Mary Curie Scholarship	Given to student having percentage above 85%	Merit_A2	8000.00

ScholarshipId	ScholarshipName	RollNo	ScholarshipDesc	FundingOrgName	Amount	Category
123	KP DasGupta Scholarship	2033	Given to outstanding Student	Maitri	4000	Education
211	First Division Scholarship	2033	Given to student having perce...	University	5000	Merit_A3
222	Einstein Scholarship	2037	Given to student having perce...	University	10000	Merit_A1
347	KP DasGupta Scholarship	2032	Given to outstanding Student	Maitri	4000	Education
421	KP DasGupta Scholarship	2030	Given to outstanding Student	Maitri	4000	Education
425	KP DasGupta Scholarship	2035	Given to outstanding Student	Maitri	4000	Education
436	Junior Research Scholarship	2033	Given for research	RajivGandhi	60000	Higher Education
453	Junior Research Scholarship	2038	Given for research	RajivGandhi	60000	Higher Education
764	Coders Scholarship	2039	Given to technolgy enthusiast	Maitri	30000	Technology
789	Coders Scholarship	2038	Given to technolgy enthusiast	Maitri	30000	Technology
912	Kanya Vidhya Scholarship	2032	Given to meritorious girl child	Maitri	6000	Girl Child

11. Create the View which shows balance amount to be paid by the student along with the student detailed information (use join)

RollNo	FirstName	LastName	AdmissionDate	Email	AmountPaid	PaymentLeft
2031	Sagar	Kumar	2016-05-01	sagar@gmail.com	5000.00	39000.00
2030	Sachin	Kumar	2016-03-16	sachin@gmail.com	23000.00	21000.00
2034	Tej	Gupta	2015-02-16	tej@gmail.com	6400.00	18600.00
2033	Rohit	Sharma	2015-04-16	rohit@gmail.com	5000.00	20000.00
2037	Payal	Khanna	2016-03-16	payal@gmail.com	15000.00	20000.00
2032	Aachal	Pawar	2015-03-16	aachal@gmail.com	5000.00	30000.00
2038	Aarushi	Tomar	2016-04-16	aarushi@gmail.com	5000.00	49000.00
2036	Komal	Tiwari	2015-06-06	komal@gmail.com	3000.00	51000.00
2039	Raghav	Tandon	2016-03-16	raghav@gmail.com	5000.00	35000.00
2035	Abhishek	Kumar	2016-03-25	abhi@gmail.com	5000.00	35000.00

12. Get the details of the students who haven't got any scholarship (use joins/subqueries)

FirstNam	LastName	RollNo	Address	Email	ContactNo	DOB	Gender	ScholarshipOpted	AdmissionDate	CourseId
Sagar	Kumar	2031	44/23 GTB ...	sagar@gmail.com	8799687234	1999-04-17	Male	0	2016-05-01	IP101
Tej	Gupta	2034	Noida	tej@gmail.com	9723658381	1997-06-27	Male	0	2015-02-16	IP102
Komal	Tiwari	2036	97-Model T...	komal@gmail.com	9945658385	1998-09-07	Female	0	2015-06-06	IP104
Payal	Khanna	2037	Noida	payal@gmail.com	9896758381	1998-08-27	Female	1	2016-03-16	IP103

13. Create Stored Procedure which will be return the amount balance to be paid by the student as per the student roll number passed through the stored procedure as the input

call ReturnAmountBalance(2031, @PaymentLeft);

@PaymentLeft
39000.00

14. Retrieve the top five student details as per the StudentMarksPercentage values (use subqueries)

FirstNam	LastName	RollNo	Address	Email	ContactNo	DOB	Gender	ScholarshipOpted	AdmissionDate	CourseId	RollNo
Payal	Khanna	2037	Noida	payal@gmail.com	9896758381	1998-08-27	Female	1	2016-03-16	IP103	2037
Abhishek	Kumar	2035	16-Kalash ...	abhi@gmail.com	9823558394	1998-05-11	Male	1	2016-03-25	IP105	2035
Rohit	Sharma	2033	51, Isha P...	rohit@gmail.com	9999258381	1999-03-06	Male	1	2015-04-16	IP102	2033
Aachal	Pawar	2032	06/19 Jan...	aachal@gmail.com	9874645333	1998-05-21	Female	1	2015-03-16	IP103	2032
Aarushi	Tomar	2038	Ghaziabad	aarushi@gmail.com	9974658374	1997-04-27	Female	1	2016-04-16	IP104	2038

15. Try to use all the three types of join learned today in a relevant way, and explain the same why you thought of using that particular join for your selected scenarios (try to cover relevant and real time scenarios for all the three studied joins)

- Inner Join: Returns records that have matching values in both tables
- Left Outer Join: Returns all records from the left table, and the matched records from the right table
- Right Outer Join: Returns all records from the right table, and the matched records from the left table

Inner Join-

Performed inner join in almost all queries to get the exact match and avoiding null values(See Queries)

Left Join-

To get the idea/count for how many students are enrolled in every subject, we perform left join(between SubjectDetails table and StudentSubjectDetails table) to achieve the possibility if there is no student enrolled in any of the subjects.

Eg- Political Science, Hindi, Sanskrit, Accounts have no students enrolled

SubjectCode	SubjectName	SubjectCode	CourseId	RollNo	TotalMarks	MarksObtained
201	Physics	201	IP101	2030	100.00	67.00
202	Chemsitry	202	IP101	2030	150.00	80.00
202	Chemsitry	202	IP104	2036	150.00	82.00
203	Maths	203	IP101	2030	200.00	120.00
203	Maths	203	IP101	2031	150.00	90.00
203	Maths	203	IP104	2038	200.00	135.00
204	English	204	IP103	2032	70.00	55.00
204	English	204	IP102	2033	70.00	59.00
205	History	205	IP102	2034	100.00	69.00
206	Biology	206	IP104	2038	100.00	86.00
207	PoliticalScience	NULL	NULL	NULL	NULL	NULL
208	Hindi	NULL	NULL	NULL	NULL	NULL
209	Sanskrit	NULL	NULL	NULL	NULL	NULL
210	Accounts	NULL	NULL	NULL	NULL	NULL
211	Economics	211	IP105	2035	100.00	87.00
212	Psychology	212	IP103	2037	100.00	96.00

Right Join-

To get the idea/count for how many students haven't got the scholarship, we perform the right join(between StudentScholarshipDetails table and StudentBasicDetails table)

For eg- Sagar, Komal and Tez haven't got the scholarship

16. Mention the differences between the delete, drop and truncate commands

Delete-

- A DML Command so it can be rolled back.
- Used to delete existing records from an existing table
- It scans every row before deleting it. Thus it is slower as compared to *truncate* command. If we want to delete all the records of a table, it is preferable to use *truncate* in place of *delete* as the former is faster than the latter.

Truncate-

- A DDL command so it can not be rolled back.
- It deletes all the records from an existing table but not the table itself.
- Truncate is equivalent to delete without a *where* clause. The *truncate* command removes the records from a table without scanning it. This is why it is faster than the *delete* statement.

Drop-

- A DDL Command. Objects deleted using *drop* are permanently lost and it cannot be rolled back.
- Removes the table definition and all the data, indexes, triggers, constraints and permission specifications for that table unlike *truncate* and *delete*.

17. Get the count of the Scholarship category which is highly been availed by the students, i.e. get the count of the total number of students corresponding to the each scholarships category

ScholarshipName	No_Of_Students_Availed
KP DasGupta Scholarship	4
Junior Research Scholarship	2
Coders Scholarship	2
Kanya Vidhya Scholarship	1

18. Along with the assignment no. 17 try to retrieve the maximum used scholarship category

ScholarshipName	No_Of_Students_Availed
KP DasGupta Scholarship	4

19. Retrieve the percentage of the students along with students detailed information who has scored the highest percentage along with availing the maximum scholarship amount

RollNo	FirstNam	LastName	ScholarshipId	ScholarshipName	Amount	Category	MAX(StudentPercentage)
2030	Sachin	Kumar	346	Merit Scholarship	80000	Merit	96.00

20. Difference between the Triggers, Stored Procedures, Views and Functions

Triggers-

- Implicitly invoked on firing of an event
- Transaction statements such as COMMIT, ROLLBACK, SAVEPOINT are not allowed in triggers.
- Used to maintain integrity by keeping track on the activities performed in the database.
- Can't return or pass values or parameters

Stored Procedures-

- Explicitly called by user application
- All transaction statements such as COMMIT, ROLLBACK are allowed in procedures.
- Used to perform tasks or functions or multi-step process specified by administrator or designers
- Can return values or output parameters

Views-

- Virtual tables, often used to alleviate security concerns.
- Does not accepts parameters
- Can contain only one single Select query unlike stored procedures
- Can not perform modification to any table unlike triggers and stored procedures.

Functions-

- Must return a value unlike stored procedure in which it is optional
- Can have only input parameters unlike stored procedures which have both
- Functions can be called from procedure but not vice-versa
- Eg- AVG(), COUNT(), MAX(), SUM() etc

