



**SQL Analysis**

# **"IN-DEPTH COMPUTER SCIENCE STUDENT ANALYSIS**

**By Chirag Sharma**

# 1. Find the student(s) with the highest GPA and list their name, interested domain, and future career.

```
Query  Query History
1  select name, interested_domain, future_career, gpa from students where gpa in
2  (select max(gpa)
3  from students)
4
```

Data Output Messages Notifications				
	name character varying (50)	interested_domain character varying (50)	future_career character varying (100)	gpa numeric (2,1)
1	Laura Lee	Machine Learning	Machine Learning Engineer	3.9
2	Laura Lee	Machine Learning	Machine Learning Engineer	3.9
3	Laura Lee	Machine Learning	Machine Learning Engineer	3.9
4	Laura Lee	Machine Learning	Machine Learning Engineer	3.9
5	Agent Coulson	Cloud Computing	Cloud Solutions Architect	3.9
6	Agent Fitz	Software Development	Software Engineer	3.9
7	Michael Brown	Web Development	Web Developer	3.9
8	Laura Lee	Natural Language Processing	NLP Engineer	3.9
9	Laura Lee	Distributed Systems	Distributed Systems Engin...	3.9
10	Olivia Davis	Software Development	Software Engineer	3.9
11	Ava Miller	Cybersecurity	Information Security Analyst	3.9
12	William Smith	Machine Learning	Machine Learning Engineer	3.9

**2. Calculate the average GPA for each interested domain and display the results along with the domain names.**

```
1 select interested_domain, round(avg(gpa),1) as average_gpa  
2 from students  
3 group by 1  
4 order by 2 desc  
5
```

Data Output

Messages

Notifications

	<div>interested_domain</div> <div>character varying (50)</div> <div></div>	<div>average_gpa</div> <div>numeric</div> <div></div>
1	Natural Language Processing	3.9
2	Distributed Systems	3.9
3	Quantum Computing	3.8
4	Data Privacy	3.8
5	Software Engineering	3.8
6	Machine Learning	3.7
7	Bioinformatics	3.7
8	Cloud Computing	3.7
9	Software Development	3.7
10	Artificial Intelligence	3.7
11	Network Security	3.7
12	Web Development	3.6



### 3. List the students who have 'Strong' skills in at least two of the programming languages (Python, SQL, Java).

Query Query History

```
1  select name, python_skill, sql_skill
2  from students
3  where python_skill = 'Strong' and sql_skill = 'Strong'
```

Data Output Messages Notifications

	name character varying (50) 🔒	python_skill character varying (10) 🔒	sql_skill character varying (10) 🔒
1	John Smith	Strong	Strong
2	Robert Davis	Strong	Strong
3	David Jones	Strong	Strong
4	Susan Davis	Strong	Strong
5	David Jones	Strong	Strong
6	Susan Davis	Strong	Strong
7	David Jones	Strong	Strong
8	Susan Davis	Strong	Strong
9	Jessica Jones	Strong	Strong
10	Jason Macendale	Strong	Strong

# 4. Identify students who have the same interested domain and future career, and list their names along with the domain and career.

Query Query History

```
1 select a.name, a.interested_domain, a.future_career,
2 b.name, b.interested_domain, b.future_career
3 from students as a
4 join students as b
5 ON a.name != b.name
6 and a.interested_domain = b.interested_domain
7 and a.future_career = b.future_career
```

	name character varying (50)	interested_domain character varying (50)	future_career character varying (100)	name character varying (50)	interested_domain character varying (50)	future_career character varying (100)
1	Alice Johnson	Data Science	Data Scientist	Joseph Miller	Data Science	Data Scientist
2	Alice Johnson	Data Science	Data Scientist	Oliver Davis	Data Science	Data Scientist
3	Alice Johnson	Data Science	Data Scientist	Agent Lance Hunter	Data Science	Data Scientist
4	Alice Johnson	Data Science	Data Scientist	MODOK	Data Science	Data Scientist
5	Alice Johnson	Data Science	Data Scientist	Shocker	Data Science	Data Scientist
6	Alice Johnson	Data Science	Data Scientist	Venom	Data Science	Data Scientist
7	Alice Johnson	Data Science	Data Scientist	Michelle Williams	Data Science	Data Scientist
8	Robert Davis	Software Development	Software Engineer	Emma Wilson	Software Development	Software Engineer
9	Robert Davis	Software Development	Software Engineer	Emma Wilson	Software Development	Software Engineer
10	Robert Davis	Software Development	Software Engineer	Isabella Brown	Software Development	Software Engineer
11	Robert Davis	Software Development	Software Engineer	Olivia Davis	Software Development	Software Engineer
12	Robert Davis	Software Development	Software Engineer	Agent Fitz	Software Development	Software Engineer

5. Find students who are older than the average age of all students and list their names, ages, and GPA.

QueryQuery History

```
1 select name, age, gpa
2 from students
3 where age > (select avg(age) from students)
4
```

Data OutputMessagesNotifications			
	name character varying (50)	age integer	gpa numeric (2,1)
1	Michael Brown	23	3.4
2	James Wilson	23	3.3
3	Charles Miller	23	3.5
4	William Johnson	23	3.6
5	Andrew Hall	23	3.8
6	Charles Miller	23	3.5
7	William Johnson	23	3.6
8	Andrew Hall	23	3.8
9	Charles Miller	23	3.5
10	Harry Osborn	23	3.5






**6. List the different majors and the count of students in each major who are interested in a specific domain (e.g., Data Science, Web Development).**

```
1 select major, interested_domain, count(student_id) As Total_Students
2 from students
3 where interested_domain in ('Data Science', 'Web Development')
4 group by 1,2
5
```

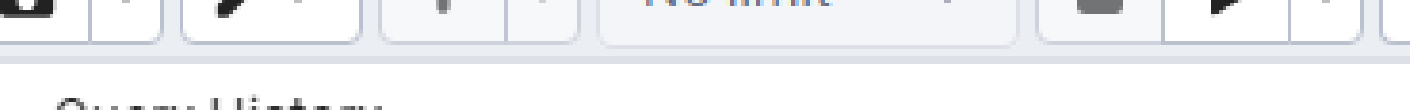
Data Output

Messages

Notifications

	major character varying (50) 	interested_domain character varying (50) 	total_students bigint 
1	Computer Science	Web Development	19
2	Computer Science	Data Science	13

**7. Determine which students have a weaker skill level in Python compared to their skill in Java, and display their names and corresponding skill levels.**



```
1 select name, python_skill, sql_skill, java_skill
2 from students
3 where python_skill = 'Weak'
```

Data Output					Messages	Notifications
<div> <div> <div>☰</div> <div>📄</div> <div>▼</div> <div>📋</div> <div>▼</div> <div>🗑️</div> </div> <div> <div>🗄️</div> <div>⬇️</div> <div>📈</div> </div> </div>						
	name character varying (50) 🔒	python_skill character varying (10) 🔒	sql_skill character varying (10) 🔒	java_skill character varying (10) 🔒		
1	Emily Wilson	Weak	Strong	Strong		
2	Sarah Miller	Weak	Strong	Average		
3	Olivia Clark	Weak	Average	Strong		
4	Charles Miller	Weak	Average	Strong		
5	Sarah Miller	Weak	Strong	Average		
6	Olivia Clark	Weak	Average	Strong		
7	Charles Miller	Weak	Average	Strong		
8	Sarah Miller	Weak	Strong	Average		
9	Olivia Clark	Weak	Average	Strong		
10	Charles Miller	Weak	Average	Strong		
11	Mary Jane Watson	Weak	Strong	Strong		



# 8. Rank the Domains by GPA in descending order and assign a rank to each Domain with their respective Students. Display the rank, student name, GPA, and interested domain.

Query Query History

```
1 select * from
2 (select interested_domain, name, gpa,
3 row_number()over(partition by interested_domain order by gpa desc) as ranks
4 from students)as a
5 where ranks = 1
```

	Interested_domain character varying (50)	name character varying (50)	gpa numeric (2,1)	ranks bigint
1	Artificial Intelligence	Andrew Hall	3.8	1
2	Bioinformatics	Emily Wilson	3.7	1
3	Biomedical Computing	Olivia Clark	3.5	1
4	Blockchain Technology	Elizabeth Williams	3.3	1
5	Cloud Computing	Agent Coulson	3.9	1
6	Computer Graphics	Gwen Stacy	3.8	1
7	Computer Vision	Alice Johnson	3.2	1
8	Cybersecurity	Ava Miller	3.9	1
9	Data Mining	William Johnson	3.6	1
10	Data Privacy	Susan Davis	3.8	1
11	Data Science	Emily Lee	3.7	1
12	Database Management	Liam Wilson	3.8	1

9. Identify students whose interested domain includes the word "Development" and who have a strong skill in at least one programming language. List their names, domains, and skill levels.

QueryQuery History

1

2

3

4

▼

```
select name, interested_domain, python_skill, sql_skill, java_skill
from students
where interested_domain like '%Devel%' AND
python_skill = 'Strong' |
```

Data OutputMessagesNotifications					
	name character varying (50) 🔒	interested_domain character varying (50) 🔒	python_skill character varying (10) 🔒	sql_skill character varying (10) 🔒	java_skill character varying (10) 🔒
1	Robert Davis	Software Development	Strong	Strong	Average
2	David Jones	Web Development	Strong	Strong	Average
3	David Jones	Web Development	Strong	Strong	Average
4	David Jones	Web Development	Strong	Strong	Average
5	Agent Daisy Johnson	Mobile App Development	Strong	Average	Strong
6	Michael Brown	Web Development	Strong	Average	Weak
7	Olivia Davis	Software Development	Strong	Strong	Average
8	Isabella Brown	Software Development	Strong	Weak	Strong
9	Emma Wilson	Software Development	Strong	Strong	Average
10	Emma Wilson	Software Development	Strong	Strong	Average

10. Retrieve a list of students who have not chosen 'Data Scientist' as their future career and have a GPA of 3.5 or above. List their names, future careers, and GPA.

QueryQuery History

1

2

3

4

▼

```
select name, future_career, gpa
from students
where future_career = 'Data Scientist'
and gpa >= 3.5
```

Data OutputMessagesNotifications			
<div><div>≡+</div><div></div><div>▼</div><div></div><div>▼</div><div></div><div></div><div></div><div></div></div>			
	<div><div>name</div><div>character varying (50)</div><div>🔒</div></div>	<div><div>future_career</div><div>character varying (100)</div><div>🔒</div></div>	<div><div>gpa</div><div>numeric (2,1)</div><div>🔒</div></div>
1	Agent Lance Hunter	Data Scientist	3.6
2	Oliver Davis	Data Scientist	3.7
3	Joseph Miller	Data Scientist	3.6



# 11. Calculate the number of students interested in each domain where the average GPA of students in that domain is above 3.6.

QueryQuery History

```
1 select * from
2 (select interested_domain, name, round(avg(gpa),1) as average_gpa
3 from students
4 group by 1,2)as q
5 where average_gpa > 3.6
```

Data OutputMessagesNotifications			
	interested_domain character varying (50)	name character varying (50)	average_gpa numeric
1	Quantum Computing	Andrew Hall	3.8
2	Computer Graphics	Agent Mack	3.8
3	Cybersecurity	Carnage	3.7
4	Software Development	Robert Davis	3.8
5	Software Engineering	David Brown	3.8
6	Software Development	Emma Wilson	3.8
7	Web Development	Emily Wilson	3.7
8	Machine Learning	David Lee	3.8
9	Data Privacy	Susan Davis	3.8
10	Cybersecurity	Kraven the Hunter	3.7
11	Machine Learning	Alice Johnson	3.7
12	Web Development	Betty Brent	3.7

# 12. Find pairs of students who have the same GPA and different future careers, and list their names, GPA, and respective careers.

Query Query History

```
1 select a.name, a.gpa, a.future_career, b.name, b.gpa, b.future_career
2 from students as a
3 join students as b
4 ON a.name != b.name AND
5 a.gpa = b.gpa AND
6 a.future_career != b.future_career
```

Data Output Messages Notifications

	name character varying (50)	gpa numeric (2,1)	future_career character varying (100)	name character varying (50)	gpa numeric (2,1)	future_career character varying (100)
1	John Smith	3.5	Machine Learning Researc...	Sophia Johnson	3.5	Database Administrator
2	John Smith	3.5	Machine Learning Researc...	Olivia Clark	3.5	Mobile App Developer
3	John Smith	3.5	Machine Learning Researc...	Sophia Johnson	3.5	Information Security Analyst
4	John Smith	3.5	Machine Learning Researc...	Olivia Brown	3.5	Data Analyst
5	John Smith	3.5	Machine Learning Researc...	Sophia Johnson	3.5	Database Administrator
6	John Smith	3.5	Machine Learning Researc...	Olivia Clark	3.5	Mobile App Developer
7	John Smith	3.5	Machine Learning Researc...	Sophia Johnson	3.5	Information Security Analyst
8	John Smith	3.5	Machine Learning Researc...	Olivia Brown	3.5	Data Analyst
9	John Smith	3.5	Machine Learning Researc...	Sophia Johnson	3.5	Database Administrator
10	John Smith	3.5	Machine Learning Researc...	Emma Johnson	3.5	Cloud Solutions Architect
11	John Smith	3.5	Machine Learning Researc...	Emily Johnson	3.5	Graphics Programmer

**13. List the students whose future career involves 'Security' and have 'Strong' or 'Average' skills in Python or SQL. Display their names, future career, and skill levels.**

```
1 select name, future_career, python_skill, sql_skill
2 from students
3 where future_career like '%Security%' AND
4 python_skill = 'Strong' AND sql_skill = 'Average'
5
```

Data Output

Messages

Notifications

	<div>name</div> <div>character varying (50)</div> <div></div>	<div>future_career</div> <div>character varying (100)</div> <div></div>	<div>python_skill</div> <div>character varying (10)</div> <div></div>	<div>sql_skill</div> <div>character varying (10)</div> <div></div>
1	Oliver Davis	Security Analyst	Strong	Average
2	Ava Miller	Information Security Analyst	Strong	Average
3	Emma Johnson	Information Security Analyst	Strong	Average
4	Emma Johnson	Information Security Analyst	Strong	Average



**14. Determine which students are interested in domains that involve 'Machine Learning' or 'Artificial Intelligence' and have strong Python skills. Display their names, GPA, and interested domains.**

```
1 select name, gpa, interested_domain, python_skill
2 from students
3 where interested_domain = 'Machine Learning' or interested_domain = 'Artificial intelligence'
4 AND python_skill = 'Strong'
5
```

Data Output

Messages

Notifications

	<div>name</div> <div>character varying (50)</div> <div></div>	<div>gpa</div> <div>numeric (2,1)</div> <div></div>	<div>interested_domain</div> <div>character varying (50)</div> <div></div>	<div>python_skill</div> <div>character varying (10)</div> <div></div>
1	Laura Lee	3.9	Machine Learning	Strong
2	Laura Lee	3.9	Machine Learning	Strong
3	Laura Lee	3.9	Machine Learning	Strong
4	Laura Lee	3.9	Machine Learning	Strong
5	Ava Miller	3.6	Machine Learning	Strong
6	David Lee	3.8	Machine Learning	Strong
7	Liam Wilson	3.7	Machine Learning	Strong
8	Alice Johnson	3.7	Machine Learning	Strong
9	William Smith	3.9	Machine Learning	Strong
10	Liam Wilson	3.4	Machine Learning	Strong
11	Alice Johnson	3.7	Machine Learning	Strong
12	William Smith	3.9	Machine Learning	Strong

**15. Identify the top 3 students with the highest GPA who have weak skills in at least one programming language (Python, SQL, or Java). List their names, GPA, the programming language in which they have weak skills, and their interested domain.**

```
Query Query History
```

```
1 select * from  
2 (select *, row_number()over(order by gpa desc) as ranks from  
3 (select name, gpa, python_skill, sql_skill, java_skill  
4 from students  
5 where python_skill = 'Weak')as f)as q  
6 where ranks <= 3
```

	name character varying (50) 🔒	gpa numeric (2,1) 🔒	python_skill character varying (10) 🔒	sql_skill character varying (10) 🔒	java_skill character varying (10) 🔒	ranks bigint 🔒
1	Laura Lee	3.9	Weak	Average	Strong	1
2	Gwen Stacy	3.8	Weak	Average	Strong	2
3	Silver Sable	3.8	Weak	Average	Strong	3

THANK  
YOU