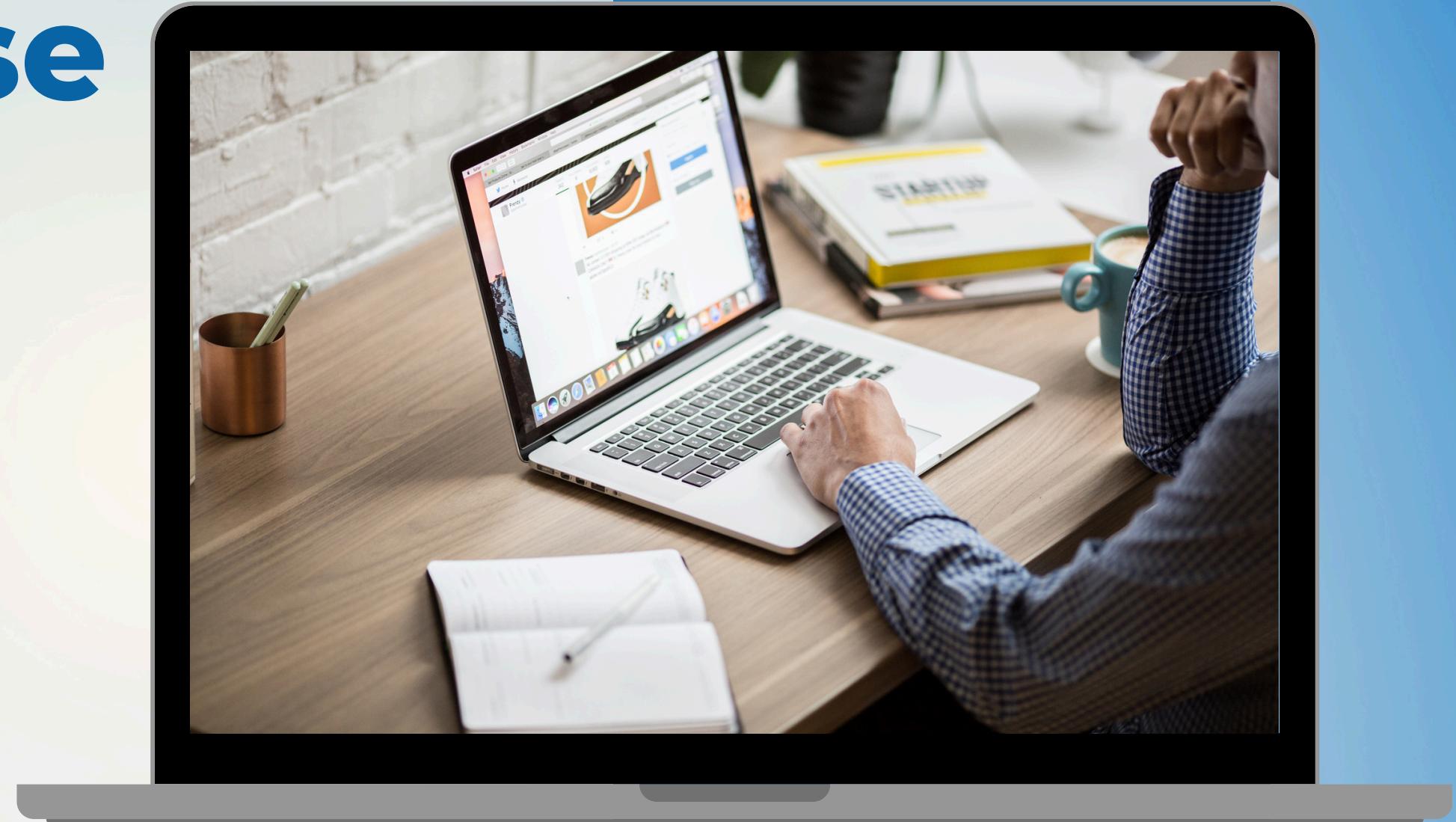


# University Course Data Insights via SQL

Internship Program: Soulvibe.Tech



Batch Name:  
SVT/DAINT/2025/06-B10

# Introduction

## ➤ Objective

Analyze a higher education course dataset using SQL to uncover meaningful patterns across institutions, course types, and regions.

## ➤ Approach

Used SQL queries to filter, group, join, and summarize data, focusing on course duration, specialization, professional vs. unaided programs, and university affiliations.

## ➤ Outcome

Derived insights into academic trends, identified top-performing districts and universities, and answered 20 specific questions through structured data analysis.



```
1 #Q1. Find the top 5 districts with the highest number of colleges offering professional courses.
2
3 • SELECT District FROM soulvibe_internship.collegecourses
4 WHERE `Is Professional` = 'Professional Course'
5 GROUP BY District
6 ORDER BY COUNT(DISTINCT `College Name`) DESC
7 LIMIT 5
8 j
```

---

Result Grid | Filter Rows:  | Export: | Wrap Cell Content: | Fetch rows:

District
Pune
Nagpur
Nashik
Ahmednagar
Aurangabad

- collegecourses1 × 1. Find the top 5 districts with the highest number of colleges offering professional courses.

```
1 #Q2. Calculate the average course duration (in months) for each Course Type and sort them in descending order.
2 • SELECT `Course Type`,
3   AVG(`Course Duration (In months)`) AS avg_duration,
4   ROUND(AVG(`Course Duration (In months)`)) AS Rounded_avg
5   FROM collegecourses
6   GROUP BY `Course Type`
7   ORDER BY avg_duration DESC
8 j
```

Result Grid | Filter Rows:  | Export: | Wrap Cell Content:

	Course Type	avg_duration	Rounded_avg
▶	DUAL Degree	54.9836	55
	Ph.D	52.4308	52
	Under Graduate Course	38.6024	39
	Diploma Course	32.1285	32
	Post Graduate Course	24.8092	25
	Post Graduate Diploma Course	21.1927	21
	Vocational Course	19.7631	20
	Certificate Course	14.4828	14
	Others	10.0000	10

2. Calculate the average course duration (in months) for each Course Type and sort them in descending order.

```
1 #Q3. Count how many unique College Names offer each Course Category.  
2 • SELECT `Course Category`,  
3 COUNT(DISTINCT `College Name`) AS `Unique Colleges`  
4 FROM collegecourses  
5 GROUP BY `Course Category`  
6 j
```

Result Grid | Filter Rows:  Export: Wrap Cell Content:

	Course Category	Unique Colleges
▶	Agriculture	136
	ARCHITECTURE AND TOWN PLANNING	99
	Arts	7642
	Commerce	3994
	Education	1206
	Engineering	834
	Health Science	360
	Hotel Management and Catering	17

3. Count how many unique College Names offer each Course Category.



```
1 #Q4. Find the names of colleges offering both Post Graduate and Under Graduate courses.
2 • SELECT `College Name`
3   FROM `collegecourses`
4 WHERE `Course Type` IN ('Under Graduate Course', 'Post Graduate Course')
5 GROUP BY `College Name`
6 HAVING COUNT(DISTINCT `Course Type`)=2
7 ;
8
```

Result Grid	
	College Name
▶	a.s.Mandal,s Arts,Com.Colllege Trust's,C.H.C.Arts,S.G...
	A.T.S.P. MANDAL'S Arts, Commerce & Science College ...
	A.V.COLLEGE ARTS, K.M. COLLEGE OF COMMERCE & ...
	Aakar Institute of Management & Resurch Studies Nag...
	Aakash Degree College of Commerce
	Aantarbhartiya Homoeopathy Medical College And Hos...
	Abasaheb Marathe Arts & New Commerce,Science Coll...
	Abhijit Kadam Institute Of Management and Social Scie...
	ABHILASH COLLEGE OF ARTS & COMMERCE
	Collegecourses1

4. . Find the names of colleges offering both Post Graduate and Under Graduate courses.

```
1 #Q5. List all universities that have more than 10 unaided courses that are not professional.
2 • SELECT `University`
3   FROM collegecourses
4   WHERE `Course (Aided / Unaided)`='UnAided'
5       AND `Is Professional` !='Professional Course'
6   GROUP BY `University`
7   HAVING COUNT(`Course (Aided / Unaided)`)>10
8   ;
```

Result Grid | Filter Rows:  | Export: | Wrap Cell Content:

University
NORTH MAHARASHTRA UNIVERSITY
RASHTRASANT TUKADOJI MAHARAJ NAGPUR ...
SHIVAJI UNIVERSITY
DR. B. A. MARATHWADA UNIVERSITY
SNDT Women's University
SOLAPUR UNIVERSITY
NMU JALGAON
MUMBAI UNIVERSITY

collegecourses1 × Read Only

5. List all universities that have more than 10 unaided courses that are not professional.



```
1 #Q6. Display colleges from the "Engineering" category that have at least one course with a duration greater than the category
2 • SELECT DISTINCT `College Name`, `Course Name`, `Course Duration (In months)`
3   FROM collegecourses
4   WHERE `Course Category`='Engineering'
5     AND (`Course Duration (In months)` > (
6       SELECT AVG(`Course Duration (In months)`)
7         FROM collegecourses
8         WHERE `Course Category`='Engineering' )
9   j
10
11
```

Result Grid			Filter Rows:	Export:	Wrap Cell Content:	Fetch rows:	
College Name	Course Name	Course Duration (In months)					
Government College of Engineering, Amravati	Bachelor of Engineering (B. E.) - Information Technology	48					
Government College of Engineering, Amravati	Bachelor of Engineering (B. E.) - Electrical Engineering	48					
Government College of Engineering, Amravati	Bachelor of Engineering (B. E.) - Instrumentation Engineering	48					
Government College of Engineering, Amravati	Bachelor of Engineering (B. E.) - Electronics and Telecommunica...	48					
Government College of Engineering, Amravati	Bachelor of Engineering (B. E.) - Computer Science and Enginee...	48					
Government College of Engineering, Amravati	Bachelor of Engineering (B. E.) - Civil Engineering	48					
Government College of Engineering, Amravati	Bachelor of Engineering (B. E.) - Mechanical Engineering	48					
Sant Gadge Baba Amravati University, Amravati	Bachelor of Technology (B. Tech) - Chemical Technology	48					

**6.** Display colleges from the "Engineering" category that have at least one course with a duration greater than the category's average.



1     #Q7. Assign a rank to each course within a College Name based on course duration, longest first.

2 •    SELECT `College Name`,  
3       `Course Name`,  
4       `Course Duration (In months)`,  
5       RANK() OVER (PARTITION BY `College Name` ORDER BY `Course Duration (In months)` DESC ) AS `RANK`  
6    FROM collegecourses

7

8

Result Grid | Filter Rows:  | Export: | Wrap Cell Content:

	College Name	Course Name	Course Duration (In months)	RANK
▶	Arts Commerce Senior College ,8th Mile, Davalameti, ...	B.Com.	36	1
	Arts Commerce Senior College ,8th Mile, Davalameti, ...	B.A.	36	1
	Sharaddchandrajee Pawar College of Horticulture, Kha...	B.Sc. (Honours) (Horticulture)	48	1
	(BHARAT RATNA) KHAN ABDUL GAFFAR KHAN URDU ...	11th Arts	12	1
	(BHARAT RATNA) KHAN ABDUL GAFFAR KHAN URDU ...	12th Arts	12	1
	(S.E.S.) S.D.OCHANI HIGH SCHOOL & JR. COLLEGE, U...	12th Composite	12	1
	(S.E.S.) S.D.OCHANI HIGH SCHOOL & JR. COLLEGE, U...	11th Composite	12	1
	▲ ▲ DESAT HIGH SCHOOL RHATSHFT	12th Composite	12	1

Result 1 ×      Read Only

7. Assign a rank to each course within a College Name based on course duration, longest first.

```
1 #Q8. Find colleges where the longest and shortest course durations are more than 24 months apart
2 • SELECT `College Name`,
3   MAX(`Course Duration (In months)`) AS max,
4   MIN(`Course Duration (In months)`) AS min
5   FROM collegecourses
6   GROUP BY `College Name`
7   HAVING max-min >24;
8
```

Result Grid | Filter Rows:  Export: Wrap Cell Content:

	College Name	max	min
▶	Government College of Pharmacy, Amravati	72	24
	P. R. Pote (Patil) Education & Welfare Trust's Group of ...	60	24
	Shri Shivaji Education Society's College of Engineering ...	60	24
	Government College of Pharmacy, Aurangabad	72	24
	M.G.M.'s Jawaharlal Nehru Engineering College, Auran...	60	24
	Adarsh Shikshan Prasarak Mandal's K.T. Patil College o...	72	24
	Sahyog Sewabhavi Sanstha's Indira College of Pharma...	72	24
	Late Shri. Vishnu Waman Thakur Charitable Trust, Viva...	60	24

**8.** Find colleges where the longest and shortest course durations are more than 24 months apart.



```
1 #Q9. Show the cumulative number of professional courses offered by each university sorted alphabetically.  
2 • SELECT University,  
3     COUNT(`Course Name`) AS `No. of Professional Courses`  
4 FROM collegecourses  
5 WHERE `Is Professional`='Professional Course'  
6 GROUP BY University  
7 ORDER BY University
```

Result Grid | Filter Rows:  Export: Wrap Cell Content:

University	No. of Professional Courses
All India Institute of Local Self-Government	1
AUTONOMOUS INSTITUTE	264
AUTONOMUS INSTITUTE OF GOVERNMENT OF ...	59
BHARATI VIDYAPEETH UNIVERSITY	20
CENTRAL GOVERNMENT	3
CIPET, Head Office, Chennai	8
DATTA MEGHE INSTITUTE OF MEDICAL SCIENC...	4
DEFMED I INTVERSTITY	41

Result 1

Read Only

9. Show the cumulative number of professional courses offered by each university sorted alphabetically.

```
1 #Q10)Using a self-join or CTE, find colleges offering more than one course category
2 • WITH CTE AS (
3     SELECT `College Name`
4     FROM collegecourses
5     GROUP BY `College Name`
6     HAVING COUNT(DISTINCT `Course Category`)>1
7
8 )
9
10 SELECT *
11 FROM CTE.
```

Result Grid		Filter Rows:	Export:	Wrap Cell Content:	Fetch rows:	
<b>College Name</b>						
▶	Arts Commerce Senior College ,8th Mile, Davalameti, ...					
	A E S MAHESH VIDYALAYA VAMBORI					
	A T U CHAND SULTAN HIGH SCHOOL					
	A. K. PRA. & JR COLLEGE AMARAPUR					
	A.D. Institute of Science & Management College.					
	A.D.KADAM UCCH MADHYMIK ASHRAMSHALA SANDGE...					
	A.E.S Abhinav CBSE School					
	A.E.S Bhausaheb Firodiya Highschool. Ahmednagar.					

Result 1

Read Only

**10** Using a self-join or CTE, find colleges offering more than one course category.

```
1  #Q11)Create a temporary table (CTE) that includes average duration of courses by district
2  #and use it to list talukas where the average course duration is above the district average.
3  • WITH CTE AS (
4      SELECT District,
5          AVG(`Course Duration (In months)`) AS avg_duration
6      FROM collegecourses
7      GROUP BY District
8
9  )
10     SELECT Taluka,
11        CTE avg_duration
```

Result Grid | Filter Rows:  | Export: | Wrap Cell Content:

Taluka	avg_duration	avg_taluka
Amravati	20.8412	24.4531
Khamgaon	18.2623	19.3756
Washim	17.7030	21.1222
Yavatmal	18.1660	23.1871
Akola	18.0490	20.5200
Shegaon	18.2623	23.1600
Pusad	18.1660	18.6818
Buldana	18.2623	18.7119

11. Create a temporary table (CTE) that includes average duration of courses by district and use it to list talukas where the average course duration is above the district average.

```

2     Short (< 12 months)
3     Medium (12-36 months)
4     Long (> 36 months)
5     Then count the number of each duration type per course category.
6     */
7 •  SELECT
8     `Course Category`,
9     COUNT(*) AS count_course,
10    CASE
11        WHEN `Course Duration (In months)`< 12 THEN 'Short'
12        WHEN `Course Duration (In months)` BETWEEN 12 AND 36 THEN 'Medium'
13        WHEN `Course Duration (In months)`>36 THEN 'Long'
14    END AS Course_Time
15    FROM collegecourses
16    GROUP BY `Course Category`,Course_Time

```

Result Grid | Filter Rows:  Export: Wrap Cell Content:

	Course Category	count_course	Course_Time
▶	Engineering	3805	Medium
	Engineering	2182	Long
	Hotel Management and Catering	10	Medium
	Pharmacy	654	Medium
	Pharmacy	249	Long

12. Create a new column classifying course duration ,then count the number of each duration type per course category.

#Q13) Extract only the course specialization from Course Name.

```
• SELECT `College Name`,  
      `Course Name`,  
      CASE  
          WHEN `Course Name` = 'Master in Computer Application (Direct Second Year) - Master in Computer Application(2nd Year)'  
          THEN 'Computer Application(2nd Year)'  
          WHEN `Course Name` LIKE '% - %' THEN substring_index(`Course Name`, ' - ', -1)  
          WHEN `Course Name` LIKE '% in %' THEN substring_index(`Course Name`, ' in ', -1)  
          ELSE 'null'  
      END AS specialization  
  FROM collegecourses;
```

College Name	Course Name	specialization
Government College of Engineering, Amravati	Master of Engineering (M. E.) - Computer Science and Engineering	Computer Science and Engineering
Government College of Engineering, Amravati	Master of Engineering (M. E.) - Electrical Power System	Electrical Power System
Government College of Engineering, Amravati	Master of Engineering (M. E.) - Thermal Power Engineering	Thermal Power Engineering
Government College of Engineering, Amravati	Bachelor of Engineering (B. E.) - Information Technology	Information Technology
Government College of Engineering, Amravati	Bachelor of Engineering (B. E.) - Electrical Engineering	Electrical Engineering

13. Extract only the course specialization from Course Name. (e.g., from "Bachelor of Engineering

```
1 #Q14)Count how many courses include the word Engineering in the name.
2 • SELECT
3     COUNT(`Course Name`) AS Total_COUNT
4     FROM collegecourses
5     WHERE `Course Name` LIKE '%Engineering%'
```

---

Result Grid | Filter Rows:  Export: Wrap Cell Content:

Total_COUNT
5771

Result 1 Read Only

14. Count how many courses include the word Engineering in the name.

1 #Q15)List all unique combinations of Course Name, Course Type, and Course Category.

2 • SELECT `Course Name`,  
3 `Course Type`,  
4 `Course Category`  
5 FROM collegecourses  
6 Group by `Course Name`, `Course Type`, `Course Category`

---

Result Grid | Filter Rows:  | Export: | Wrap Cell Content: | Fetch rows:

	Course Name	Course Type	Course Category
▶	Master of Engineering (M. E.) - Computer Science and Engineering	Post Graduate Course	Engineering
	Master of Engineering (M. E.) - Electrical Power System	Post Graduate Course	Engineering
	Master of Engineering (M. E.) - Thermal Power Engineering	Post Graduate Course	Engineering
	Bachelor of Engineering (B. E.) - Information Technology	Under Graduate Course	Engineering
	Bachelor of Engineering (B. E.) - Electrical Engineering	Under Graduate Course	Engineering
	Bachelor of Engineering (B. E.) - Instrumentation Engineering	Under Graduate Course	Engineering
	Master of Engineering (M. E.) - Geo Technical Engineering	Post Graduate Course	Engineering
	Master of Engineering (M. E.) - Production Engineering	Post Graduate Course	Engineering

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15. List all unique combinations of Course Name, Course Type, and Course Category.



```
1 #Q16)Get all courses that are not offered by any Government college.
2 • SELECT `Course Name`,
3   `College Type`
4 FROM collegecourses
5 WHERE `College Type` != 'Government'
```

Result Grid | Filter Rows:  Export: Wrap Cell Content: Fetch rows:

Course Name	College Type
Master of Engineering (M. E.) - Computer Science and Informati...	University Department
Bachelor of Technology (B. Tech.) - Chemical Technology	University Department
M. B. A.	University Department
Master in Computer Application	University Department
Post S.S.C. Diploma in Engineering (Polytechnics) - Computer E...	Government-Aided
Post S.S.C. Diploma in Engineering (Polytechnics) - Electronics E...	Government-Aided
Post S.S.C. Diploma in Engineering (Polytechnics) - Computer E...	Government-Aided
Post S.S.C. Diploma in Engineering (Polytechnics) - Information ...	Government-Aided

**16.** Write a query to get all courses that are not offered by any Government college.

```
1 #Q17. Find the university that has the second-highest number of aided courses.
2 • SELECT University,
3     COUNT(*) AS Aided_courses
4 FROM collegecourses
5 WHERE `Course (Aided / Unaided)`='Aided'
6 GROUP BY University
7 ORDER BY Aided_courses DESC
8 LIMIT 1,1;
9
10
```

Result Grid		Filter Rows:	Export:	Wrap Cell Content:	Fetch rows:	
	University	Aided_courses				
▶	NCVT	3445				

Result 1

Read Only

17. Find the university that has the second-highest number of aided courses.

```

2 • WITH ranked_courses AS (
3     SELECT `Course Duration (In months)`,
4         ROW_NUMBER() OVER (ORDER BY `Course Duration (In months)`) as row_num,
5         COUNT(*) OVER () as total_count #(SELECT COUNT(*) FROM courses) as total_count
6     FROM collegecourses
7 ),
8 median_duration AS (
9     SELECT AVG(`Course Duration (In months)`) as median_val
10    FROM ranked_courses
11   WHERE row_num IN ((total_count + 1) / 2, (total_count + 2) / 2)
12 )
13 SELECT `Course Name`,
14 `Course Duration (In months)`,
15 (SELECT median_val FROM median_duration) AS Median_Dur
16 FROM collegecourses
17 WHERE `Course Duration (In months)` > (SELECT median_val FROM median_duration)

```

---

Result Grid | Filter Rows:  Export: Wrap Cell Content: Fetch rows:

	Course Name	Course Duration (In months)	Median_Dur
▶	Master of Engineering (M. E.) - Computer Science and Engineering	24	12.0000
	Master of Engineering (M. E.) - Electrical Power System	24	12.0000

18. Show courses whose durations are above the median course duration.

1    #Q19For each University, find the percentage of unaided courses that are professional.  
2    Save the script to a file.

```
3 •  SELECT University,  
4   ⊖ (SUM(CASE  
5       WHEN `Is Professional`='Professional Course' THEN 1 ELSE 0  
6       END)/COUNT(*))*100 AS No_Professional  
7   FROM collegecourses  
8   WHERE `Course (Aided / Unaided)`='Unaided'  
9   GROUP BY University
```

Result Grid | Filter Rows:  | Export: | Wrap Cell Content:

University	No_Professional
DEEMED UNIVERSITY	100.0000
SANT GADGE BABA AMRAVATI UNIVERSITY	37.0815
MAHARASHTRA STATE BOARD OF TECHNICAL ...	99.9224
NORTH MAHARASHTRA UNIVERSITY	34.5426
DR. B.A.T. UNIVERSITY	100.0000
DR. B. A. MARATHWADA UNIVERSITY	26.6761
S. R. T. MARATHWADA UNIVERSITY	30.4102
AUTONOMOUS INSTITUTE	94.8718
MANIPAL INSTITUTE	22.4070

Result 1

! Read Only

19. For each University, find the percentage of unaided courses that are professional.



Limit to 1000 rows



```
1      #Q20. Determine which Course Category has the highest average course duration and display the top 3.  
2 •  SELECT `Course Category` ,  
3      AVG(`Course Duration (In months)`) AS avg_dur  
4  FROM collegecourses  
5  GROUP BY `Course Category`  
6  ORDER BY avg_dur DESC  
7  LIMIT 3
```

Result Grid | Filter Rows:  Export: Wrap Cell Content: Fetch rows:

	Course Category	avg_dur
▶	ARCHITECTURE AND TOWN PLANNING	49.9301
	Health Science	46.0827
	Agriculture	40.7072

Result 1

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**20.** Determine which Course Category has the highest average course duration and display the top 3.

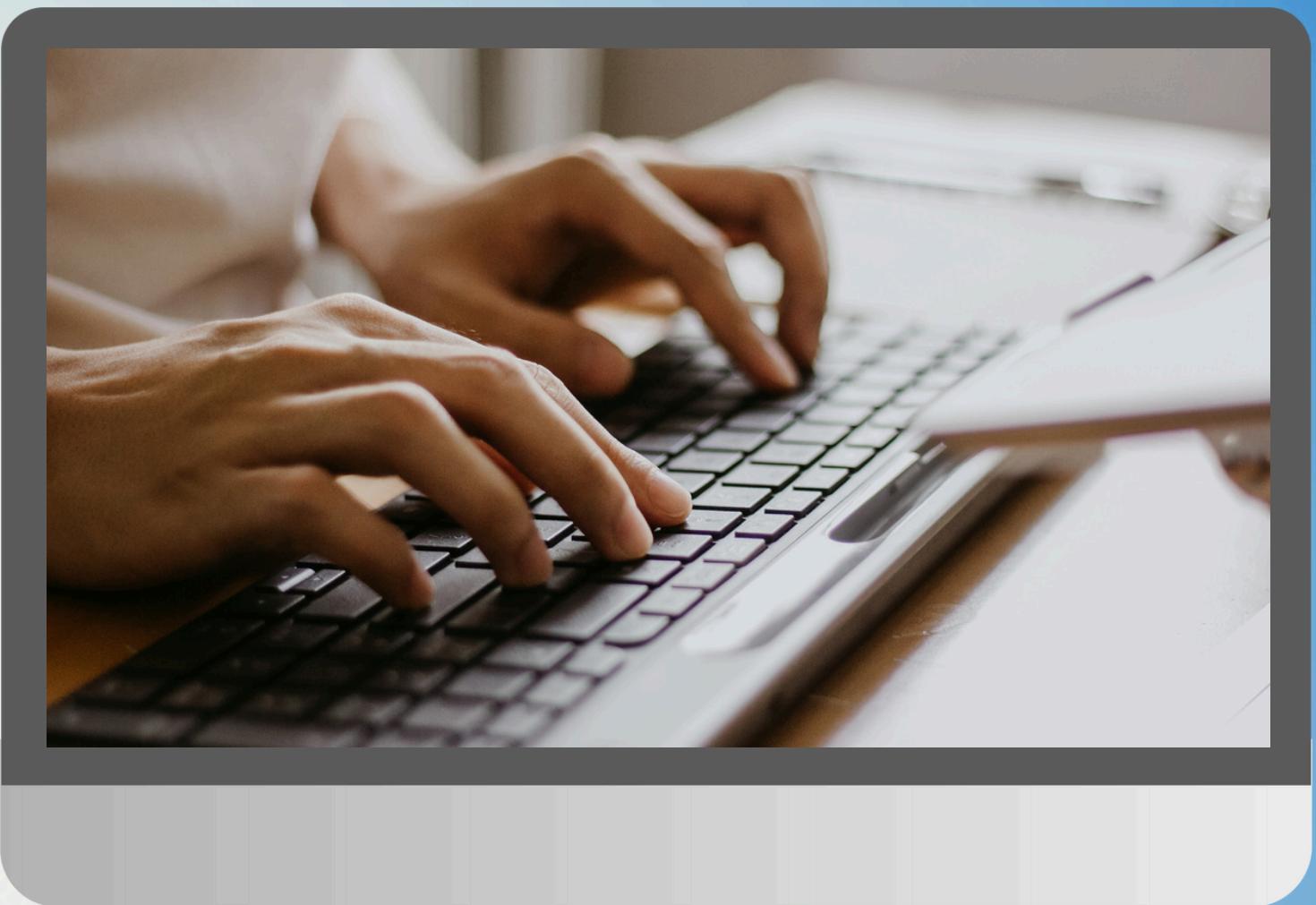
# Conclusion

Through SQL-based analysis of the CollegeCourses dataset, I gained hands-on experience in querying, filtering, grouping, and summarizing educational data. This helped me:

- Understand course distribution across districts and universities
- Analyze duration trends and professional vs. non-professional offerings
- Extract specializations and uncover institutional patterns

## **Key Takeaways:**

- SQL is effective for deep, structured data analysis
- Querying enhanced my understanding of data relationships
- Insights can support academic planning and visualization in tools like Power BI or Tableau



# Thank You!

