

# Advanced Database Management Systems

## LAB 1

### (SQL-Experiment 1)

**Name -** Ashish Sharma

**SAP ID -** 500087115

**Batch -** B4


**Enrolment nu -**


#### Activities :


1. Create an Oracle Single Sign on using your university email ID and submit the profile page of your as the output.

#### Oracle Account Profile :

Oracle Account

 My Profile

 Subscriptions

 Communities

### My Profile

Username/Email

500087115@stu.upes.ac.in [Edit](#)  
Your email address has been verified. [Resend verification email](#)

Password

(not shown) [Edit](#)

#### Contact Information

Name

Ashish Sharma

Job Title

Student

Country

India

Work Phone

8949491441

Company Name

University of Petroleum and Energy

Address

Bhidoli, via Ponda, Dehradun

City

Dehradun

State/Province

Uttarakhand

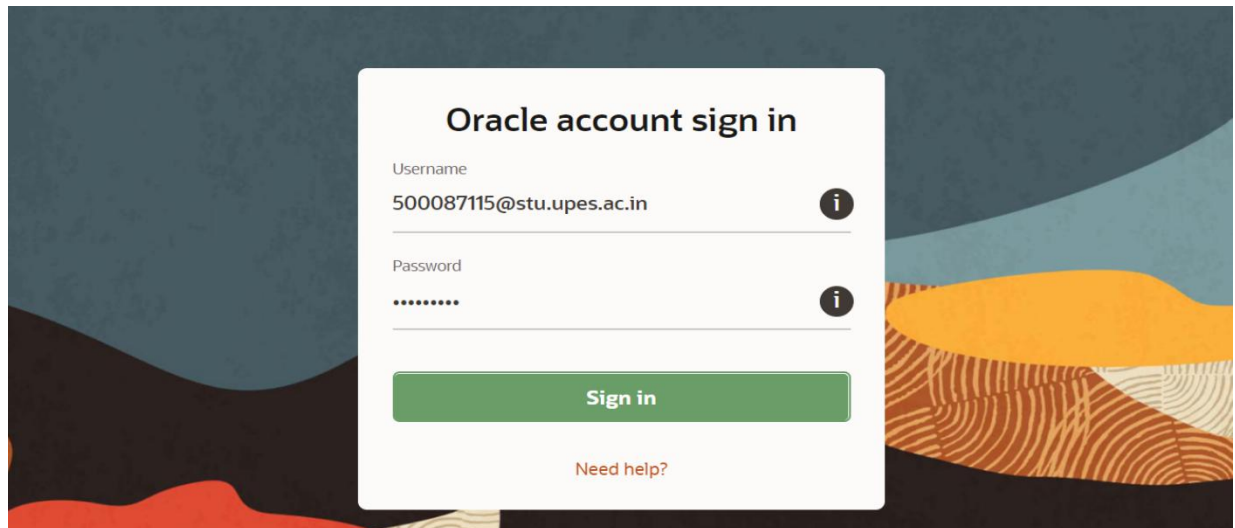
ZIP/Postal Code

248007

[Save and Continue](#)

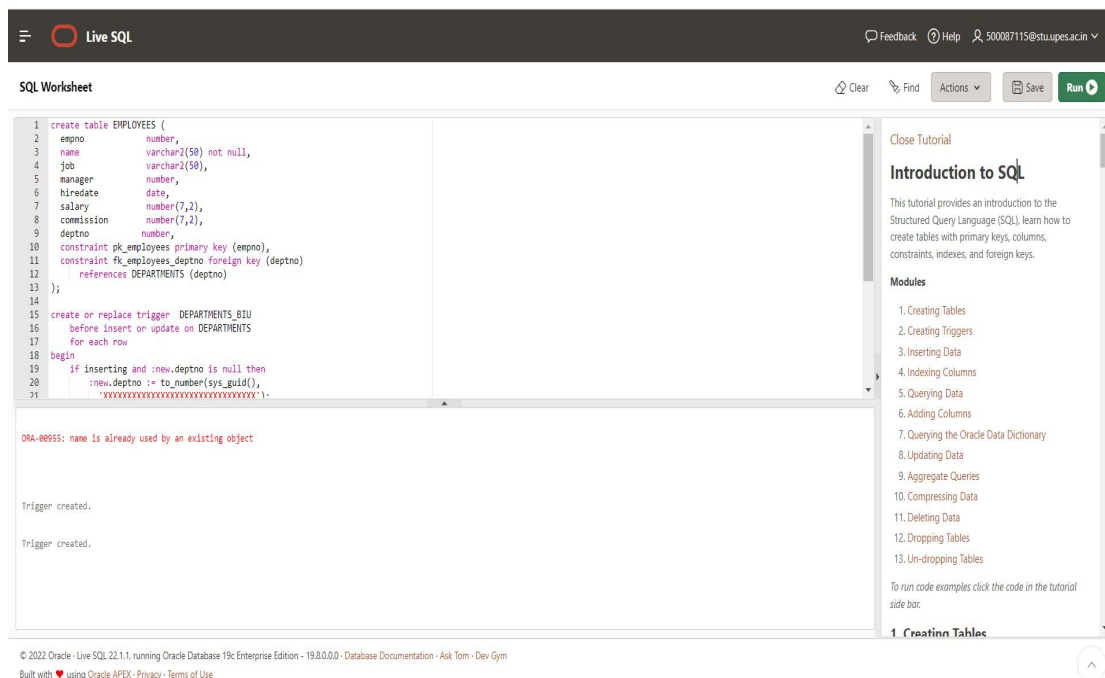
2. Learn to login and browse on the feature of SQL on an Oracle Database using Oracle LiveSQL. Provide a snapshot with your Live SQL login and Introduction to SQL tutorial in Live SQL.

### Live SQL Account Login/Sign-in :



The image shows the Oracle account sign-in interface. It features a white sign-in box centered on a dark background with abstract orange and yellow patterns. The box has the title "Oracle account sign in" at the top. Below the title are two input fields: "Username" with the value "500087115@stu.upes.ac.in" and "Password" with masked characters "\*\*\*\*\*". Each field has an information icon (i) to its right. At the bottom of the box is a green "Sign in" button and a link for "Need help?".

### Introduction to SQL :



The image displays the Oracle Live SQL web interface. The top navigation bar includes the "Live SQL" logo, a "Feedback" link, a "Help" link, and a user profile icon with the email "500087115@stu.upes.ac.in". The main area is divided into two panels. The left panel, titled "SQL Worksheet", contains SQL code for creating an "EMPLOYEES" table and a trigger. The right panel, titled "Introduction to SQL", shows a tutorial overview and a list of modules. The bottom of the interface displays the execution results of the SQL code.

**SQL Worksheet**

```
1 create table EMPLOYEES (  
2   empno      number,  
3   name       varchar2(50) not null,  
4   job        varchar2(50),  
5   manager    number,  
6   hiredate   date,  
7   salary     number(7,2),  
8   commission number(7,2),  
9   deptno     number,  
10  constraint pk_employees primary key (empno),  
11  constraint fk_employees_deptno foreign key (deptno)  
12    references DEPARTMENTS (deptno)  
13 );  
14  
15 create or replace trigger DEPARTMENTS_BIU  
16   before insert or update on DEPARTMENTS  
17   for each row  
18   begin  
19     if inserting and :new.deptno is null then  
20       :new.deptno := to_number(sys_guid(),  
21         'XXXXXXXXXXXXXXXXXXXXXXXXXXXX').
```

**Execution Results:**

```
ORA-00955: name is already used by an existing object  
  
Trigger created.  
  
Trigger created.
```

**Introduction to SQL**

This tutorial provides an introduction to the Structured Query Language (SQL), learn how to create tables with primary keys, columns, constraints, indexes, and foreign keys.

**Modules**

1. Creating Tables
2. Creating Triggers
3. Inserting Data
4. Indexing Columns
5. Querying Data
6. Adding Columns
7. Querying the Oracle Data Dictionary
8. Updating Data
9. Aggregate Queries
10. Compressing Data
11. Deleting Data
12. Dropping Tables
13. Un-dropping Tables

To run code examples click the code in the tutorial side bar.

**1. Creating Tables**

3. Provide a structure of the any three Schema available as read only.

{Academic (AD)}

The screenshot displays the 'Schema' page in the Live SQL application. The left sidebar contains navigation links: Home, SQL Worksheet, My Session, Schema (selected), Quick SQL, My Scripts, My Tutorials, and Code Library. The main content area is titled 'Schema' and shows a search bar for 'Search Database Objects'. Below the search bar, the 'Schema' dropdown is set to 'Academic (AD)'. The 'Sort By' dropdown is set to 'Name'. The 'Options' section has 'Primary Objects' selected. A yellow banner at the top of the main content area states: 'You have read-only access to the AD sample schema.' Below this banner, there are six table cards arranged in a 2x3 grid. Each card represents a table in the schema, showing its name, status, and creation time. The tables are: AD\_ACADEMIC\_SESSION, AD\_DEPARTMENTS, AD\_EXAM\_TYPE, AD\_FACULTY\_DETAILS, AD\_JOBS, AD\_PARENT\_INFORMATION, AD\_STUDENT\_COURSE\_DETAILS, and AD\_STUDENT\_DETAILS. Each table card has a 'Table' icon and a 'Status: Valid' indicator. The 'AD\_PARENT\_INFORMATION' table has a 'Primary Object' icon.

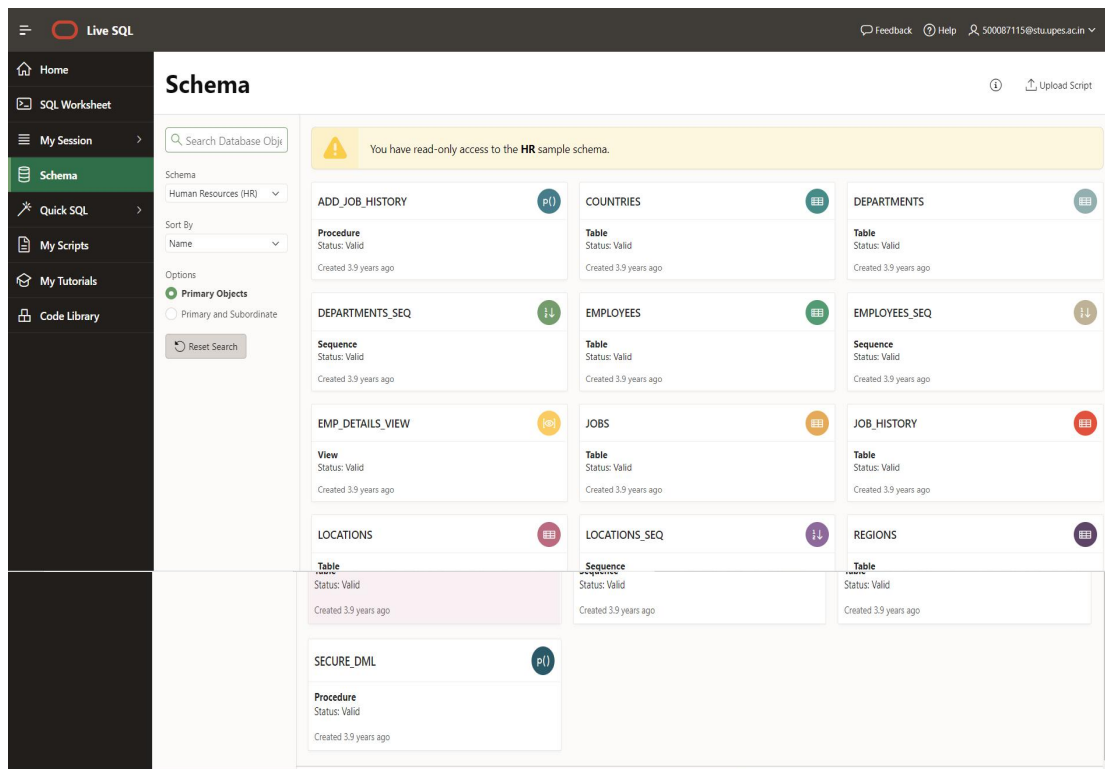
Table Name	Status	Created
AD_ACADEMIC_SESSION	Valid	3.9 years ago
AD_DEPARTMENTS	Valid	3.9 years ago
AD_EXAM_TYPE	Valid	3.9 years ago
AD_FACULTY_DETAILS	Valid	3.9 years ago
AD_JOBS	Valid	3.9 years ago
AD_PARENT_INFORMATION	Valid	3.9 years ago
AD_STUDENT_COURSE_DETAILS	Valid	3.9 years ago
AD_STUDENT_DETAILS	Valid	3.9 years ago

{Analytic Views (AV)}

The screenshot displays the 'Schema' page in the Live SQL application, showing the 'Analytic Views (AV)' schema. The left sidebar is the same as in the previous screenshot. The main content area is titled 'Schema' and shows a search bar for 'Search Database Objects'. Below the search bar, the 'Schema' dropdown is set to 'Analytic Views (AV)'. The 'Sort By' dropdown is set to 'Name'. The 'Options' section has 'Primary Objects' selected. A yellow banner at the top of the main content area states: 'You have read-only access to the AV sample schema.' Below this banner, there are four table cards arranged in a 2x2 grid. Each card represents a table in the schema, showing its name, status, and creation time. The tables are: GEOGRAPHY\_DIM, PRODUCT\_DIM, SALES\_FACT, and TIME\_DIM. Each table card has a 'Table' icon and a 'Status: Valid' indicator. The 'TIME\_DIM' table has a 'Primary Object' icon.

Table Name	Status	Created
GEOGRAPHY_DIM	Valid	3.9 years ago
PRODUCT_DIM	Valid	3.9 years ago
SALES_FACT	Valid	3.9 years ago
TIME_DIM	Valid	3.9 years ago

## {Human Resources (HR)}



4. List any 5 database in the markets and its advantages and disadvantages.

### ● MySQL :-

#### Advantages of MySQL:

1. A free version is available
2. A number of functionalities are available even for the database engine that is free
3. The wide range of user interfaces that can be used
4. Ease of integration with a number of databases, including Oracle and DB2
5. Well-suited for organizations looking for a robust database management tool at affordable prices

#### Drawbacks of MySQL:

1. No in-built support for OLAP or XML
2. Though support is available for the free version, it does not come for free

3. The effort and time required to get MySQL to perform some activities, such as creating incremental backups are much more when compared with other systems

## ● PostgreSQL :-

### **Advantages of PostgreSQL:**

1. Support to JSON
2. Availability of numerous interface.
3. The saleable database management engine
4. Possible to handle terabytes of data
5. Comes with a variety of predefined functions

### **Drawbacks of PostgreSQL:**

1. The documentation part is weak, which means if you get stuck with your project, it might not be easy to figure out how to come out of it.
2. Speed can be affected while reading queries or when the load is too heavy
3. Configuration part might be a challenge

## ● SAP HANA :-

### **Advantages of SAP HANA:**

1. Resource requirements are minimized via compression
2. It has the ability to interface with a variety of apps
3. It can be used or integrated with OLAP, SQL, and even OLTP
4. Access times can be brought down as it allows access to data stored within memory
5. You have the provision for inventory management and real-time reporting
6. If you do not have budget restrictions and would like to pull data from apps, then SAP HANA is the best bet

### **Drawbacks of SAP HANA:**

1. The patches and updates are brought about frequently as it is new in the field
2. SAP HANA comes with a higher licensing cost

## ● **Mongo DB :-**

### **Advantages of Mongo DB:**

1. No or lesser downtime required for writing the schema
2. Easy and quickly storable data, regardless of whether it is structured or unstructured
3. Fast, easy and simple to use
4. With this engine, integrating with JSON and other NoSQL documents is easier

### **Drawbacks of Mongo DB:**

1. Setting up would take a longer time when compared with other systems
2. Insecurities could be detected across default settings
3. Though there are tools for translating SQL to Mongo DB queries, these would make the process further complicated
4. Here, the query language is not SQL

## ● **Microsoft SQL Server :-**

### **Advantages of Microsoft SQL:**

1. Server: Blends well with all kinds of Microsoft products
2. Visualizations can be accessed on mobile devices
3. Faster and stable
4. It is possible for the engine to adjust and track performance level, reducing resource usage

### **Drawbacks of Microsoft SQL Server:**

1. The enterprise pricing is far from what the organizations are capable of bearing
2. If people are not experts with Microsoft SQL server, then importing files using SQL server integration services would be a challenge

## 5. Find out and Draw the version history of Oracle Database.

Oracle is the most extensively utilised Database Management System in the majority of businesses. Oracle uses SQL pronounced as 'Sequel' language to data manipulation and operations on data.

'SEQUEL' stands for 'Structured English Query Language,' and it was created in 1979 by IBM Corporation Limited to use Codd's model. Oracle released the first commercially available SQL implementation in 1979. SQL is now known as the Standard RDBMS language. In 1977, two computer programmers, Larry Ellison and Bob Miner, founded Oracle Corporation. Larry and Bob have both previously worked on database applications for other firms. Their initial goal was to create a CIA-specific database application (Central Intelligence Agency).

*Larry Ellison is the father of Oracle, having founded the business Software Development Laboratory in 1977. This company is currently known as the 'Oracle Corporation.'*

### **Different Versions Of Oracle:**

- In 1977, SEL (Software Development Laboratory) ... V1
- In 1979, RSI (Relational S/W Incorporation) .... V2
- In 1983, Oracle Corporation à Oracle 3 [Developed Using 'C', which supports simple queries but does not support transactions]
- In 1984, Oracle 4 Supports Transactions [Commit/Rollback]
- In 1985, Oracle 5 Client-Server Architecture [Only install DB in Server, so that 'N' no of Clients can connect is known as Client-Server Architecture].
- In 1989, Oracle 6 PL/SQL
- In 1992, Oracle 7 Supports DWH [OLAP-Online Analytical Processing]
- In 1997, Oracle 8 ORDMBS
- In 1999, Oracle 8i 'I' means Internet & it has inbuilt JVM (JAVA Virtual Machine)
- In 2001, Oracle 9i with 400 New features, e.g. XML (X tended Markup Language), RAC (Real Application Clusters) etc which provided high availability & performance.
- In 2003, Oracle 10g 'g' means grid (group of DB Servers)
- In 2006, Oracle 11g we can add columns with values etc.

- In July 2014 Oracle 12 C is launched which means oracle with Cloud.
- In Feb 2018 Oracle 18 C is launched which is worlds first autonomous database

## (SQL-Experiment 2)

### Procedure:

**Step 1:** Login to Oracle Live SQL by the given link <https://livesql.oracle.com/>

**Step 2:** Select one read only Schema from the list as per the sum of your number in your SAP ID For Example your SAPID is 50001111 = sum of the digits = 9 , so your have to select the read only schema with that no

**Step 3:** Start analyzing the tables inside the schema

- 
1. Academic
  2. Analytic View
  3. Emp and Department
  4. Human Resource
  5. Olympic Data
  6. Order Entry
  7. Analytic View
  8. Emp and Department
  9. Human Respurce

**Step 4:** Have a fixed notebook for SQL and draw the schema in your notebook as demonstrated in the video attached.



## Analytic Views (AV)

→ Schema / Product - DIM

Table Attributes :

Table Name	PRODUCT - DIM
Status	VALID
Temporary	No
Nested	No
Owner	AV

Columns :

#	Column	Type	Length	Precision	Scale	Nullable	Semantics	Comment
						Yes		
1	DEPARTMENT_ID	Number	22			Yes	Byte	
2	DEPARTMENT_NAME	VARCHAR2	100			Yes		
3	CATEGORY_ID	Number	22			Yes	Byte	
4	CATEGORY_NAME	VARCHAR2	100			Yes		

Indexes : No indexes defined

Triggers : No triggers defined

Constraints : No constraints defined

• Schema / TIME - DIM

Table Attributes :

Table Name	TIME - DIM
Status	VALID
Temporary	No
Nested	No
Owner	AV

Columns :

#	Column	Type	Length	Precision	Scale	Nullable	Semantic	Comment
1	YEAR - ID	VARCHAR2	30			Yes	Byte	
2	YEAR - NAME	VARCHAR2	40			Yes	Byte	
3	YEAR - END - DATE	DATE	7			Yes		
4	QUARTER - ID	VARCHAR2	30			Yes	Byte	
5	QUARTER - NAME	VARCHAR2	40			Yes	Byte	
6	QUARTER - OF - YEAR	NUMBER	22			Yes		
7	MONTH - ID	VARCHAR2	30			Yes	Byte	
8	MONTH - NAME	VARCHAR2	40			Yes	Byte	
9	MONTH - END - DATE	DATE	7			Yes		
10	MONTH - OF - YEAR	NUMBER	22			Yes		
11	MONTH - LONG - NAME	VARCHAR2	30			Yes	Byte	
12	SEASON	VARCHAR2	10			Yes	Byte	
13	SEASON - ORDER	NUMBER	22			Yes		
14	MONTH - OF - QUARTER	NUMBER	22			Yes		

Indexes : No indexes defined

Triggers : No triggers defined

Constraints : No constraints defined