University of East London

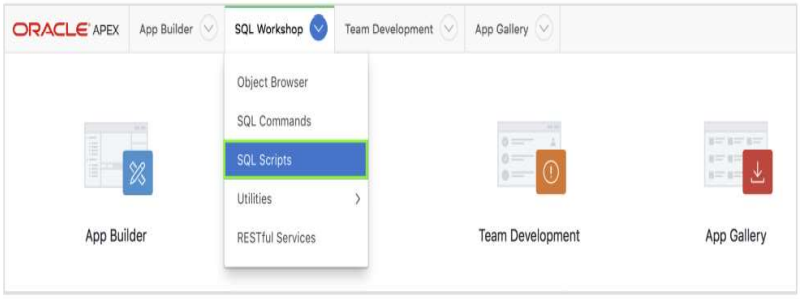
Pioneering Futures Since 1898

Use APEX for all the lab activities and company schema you have created in the previous lab. The company schema is also provided on the Moodle. You need to create a database by running the script. Use the below steps to run the script.

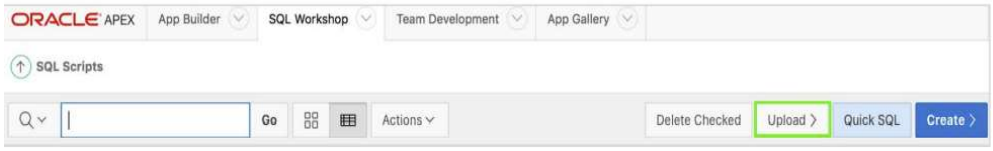
Loading the Tables and Data (companySchema.SQL)

In this activity, you create the required database objects and populate the tables with sample data.

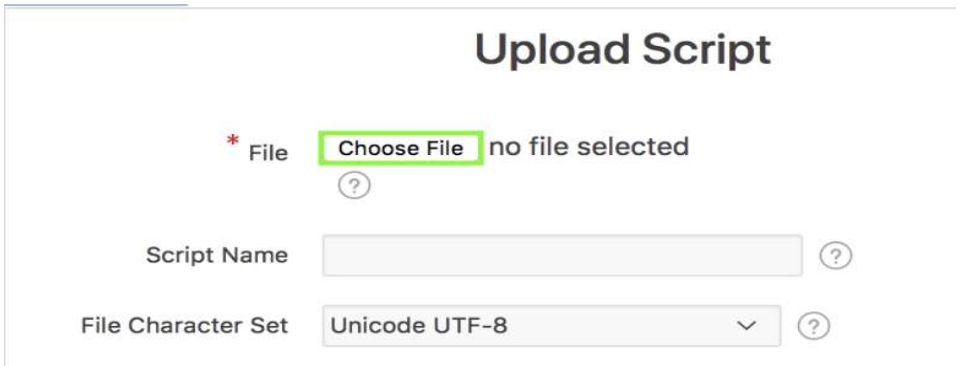
1. Use SQL Workshop to upload a script that creates the tables for company database. Perform the following steps:
    1. Navigate to SQL Workshop and select SQL Scripts



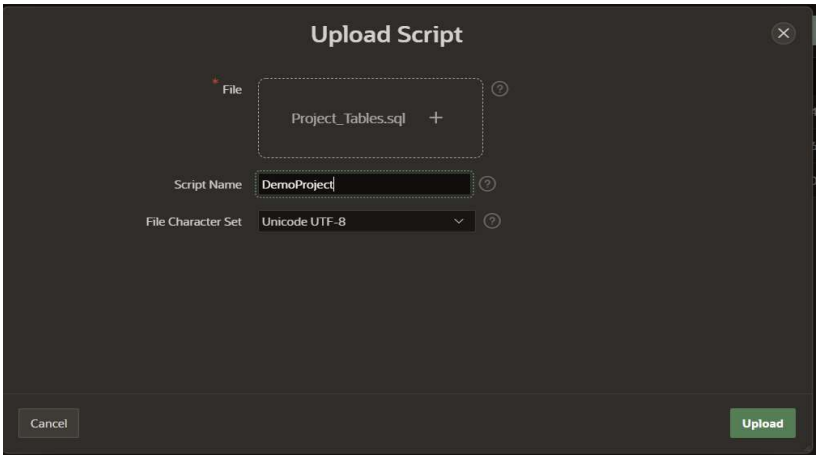
    2. Click Upload



    3. Click Choose File



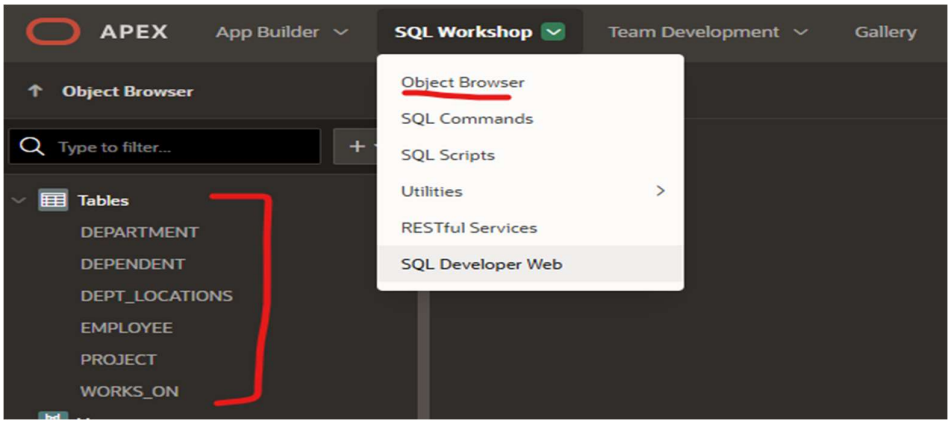
    4. Navigate to the working directory where you downloaded the script. Click Upload.



5. Review the uploaded script to see what tables will be created. In the SQL Scripts list, click the Edit icon (pencil), to the left of the script you just uploaded to explore.

6. Click the Run icon to the right of the script you uploaded.

After running, go to 'Object Browser, and verify tables.

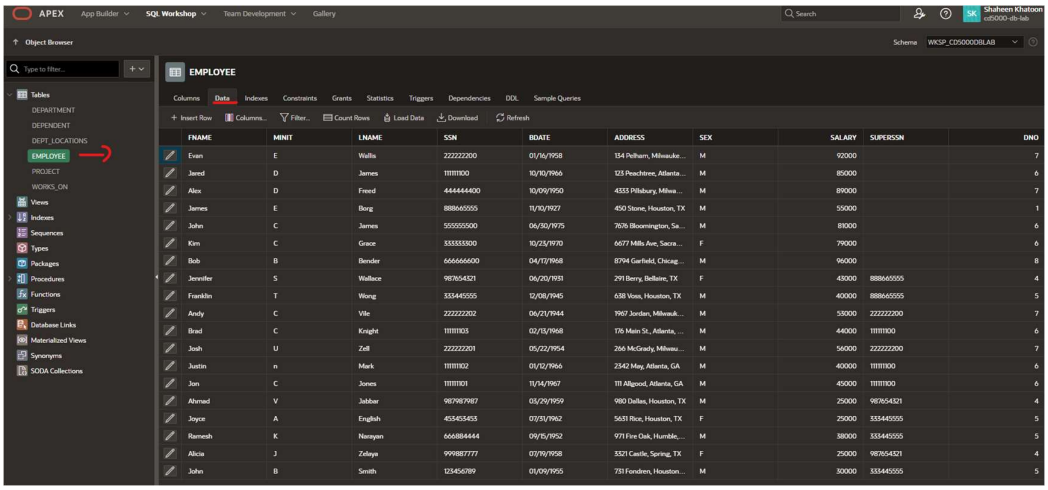


Check data in tables by clicking a table and Data tab as shown below:

Database Systems
2024-2025

University of East London

Pioneering Futures Since 1898



After setting up the database, perform the following tasks.

Task 1: Queries

Basic DMLs

1. Create a SQL statement that displays only the first_name and salary of an employee whose salary is between 30,000 and 40000.
2. Create a SQL statement that displays the first_name and last_name of employees whose last_name is either 'Smith', 'King', or 'Rogers'.
3. Create a SQL statement that displays the first_name and last_name of employees whose last_name starts with 'S'.

Grouping function

1. For each department, retrieve the department number, the number of employees in the department, and their average salary.
2. For each project, retrieve the project number, the project name, and the number of employees who work on that project.
3. For each project on which more than two employees work, retrieve the project number, the project name, and the number of employees who work on the project.

JOIN and sub-queries

1. Retrieve the name and address of all employees who work for the 'Research' department without using join
2. Modify query 1 and observe results by using join
3. Modify query 1 and use subquery instead of join
4. Retrieve the last name of employees and their supervisors (using inner join)

Prepared by: Shaheen Khatoon

5. Modify query 4 to display all employees with supervisor and also that employee where a supervisor is not assigned (left outer join)

Note the difference in results by increasing row counts in the output

6. Modify query 4 to display all the supervisors with and without employees assigned to them (Right outer join)
7. Modify query 4 to display all employees with and without supervisors and all supervisors with and without employees (Full outer join)

Lab task 2: Creating Views

1. **Create a view to display employee name and their salaries who work for the research department.**

2. **Create a view to display the employee name and the name of the project and project hour in which each employee works.**

Provide a screenshot of the code and results

Lab task 3: Creating and Executing Procedures

1. Download 1a - Raise SalaryProcedure, and run in APEX. Understand the procedure logic
2. Execute the procedure using 1b- Fire Raise Salary procedure, to test output.

   Provide different values in the test procedure to test each statement in the program logic. For each test statement provide a screenshot of the code and execution results

Lab task 4: Creating and Executing Functions

1. Download 2a - Salary Valid function, and run in APEX. Understand the function logic
2. Execute the function 2b - Test Salary_Valid Function to test output.

   Provide different values in the test procedure to test each statement in the program logic. For each test statement provide a shot of the code and execution results.