Database Management System(DBMS): A software used to store, retrieving the data and to maintain the data.

Database: It is collection of interrelated data.

Eg: If hr is a db then: 1. Tables

1. Employees

2. Departments

3. Locations

2. Views

procedures are functions

The operations that are performed on a table are as follows:

1. Projection

2. Selection

3. Join

Types of SQL are as follows:

1. Data Definition Language (DDL)

2. Data Manipulation Language (DML)

3. Data Control Language (DCL)

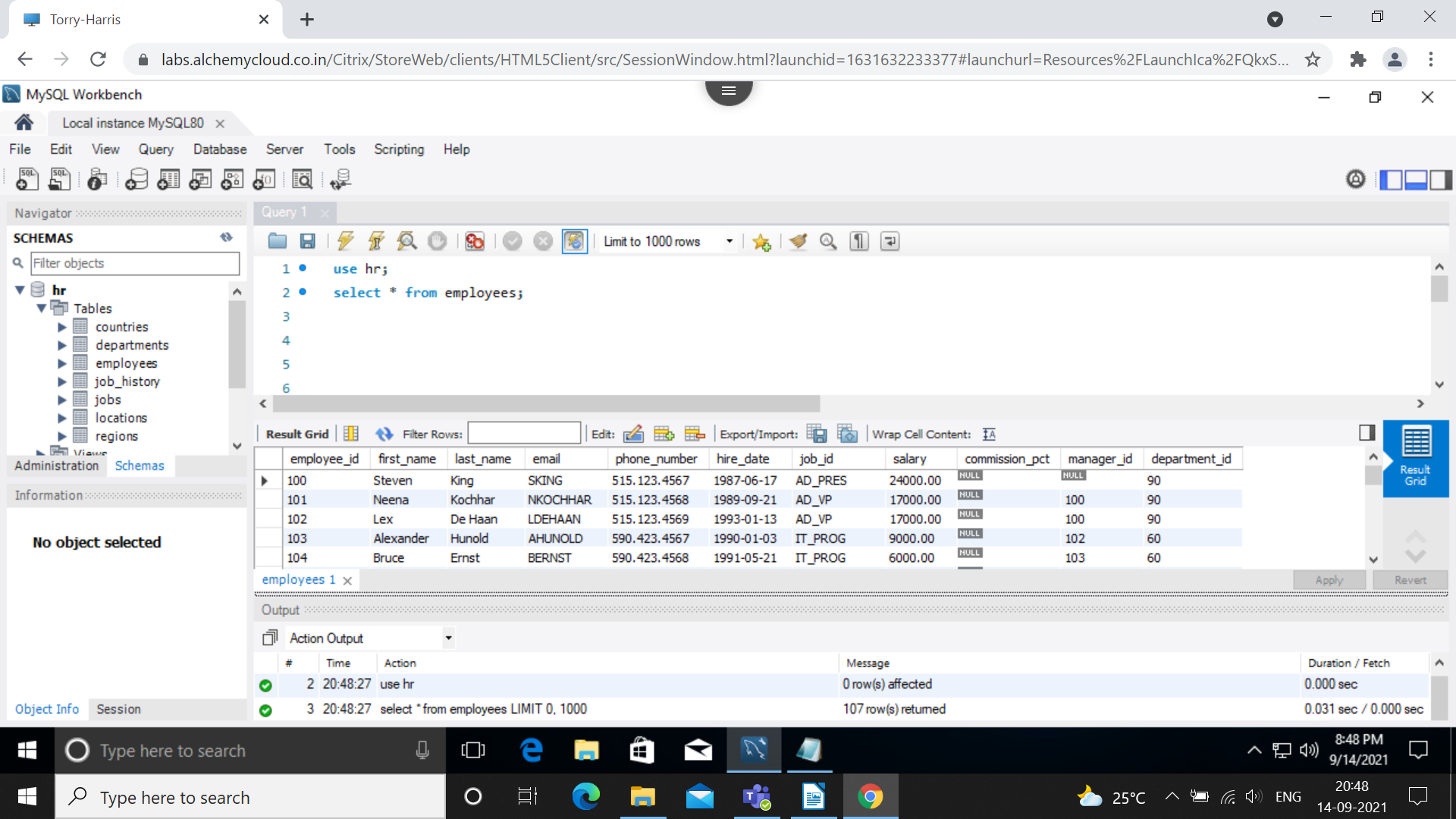
4. Data Query Language (DQL)

5. Transaction Control Language(TCL)

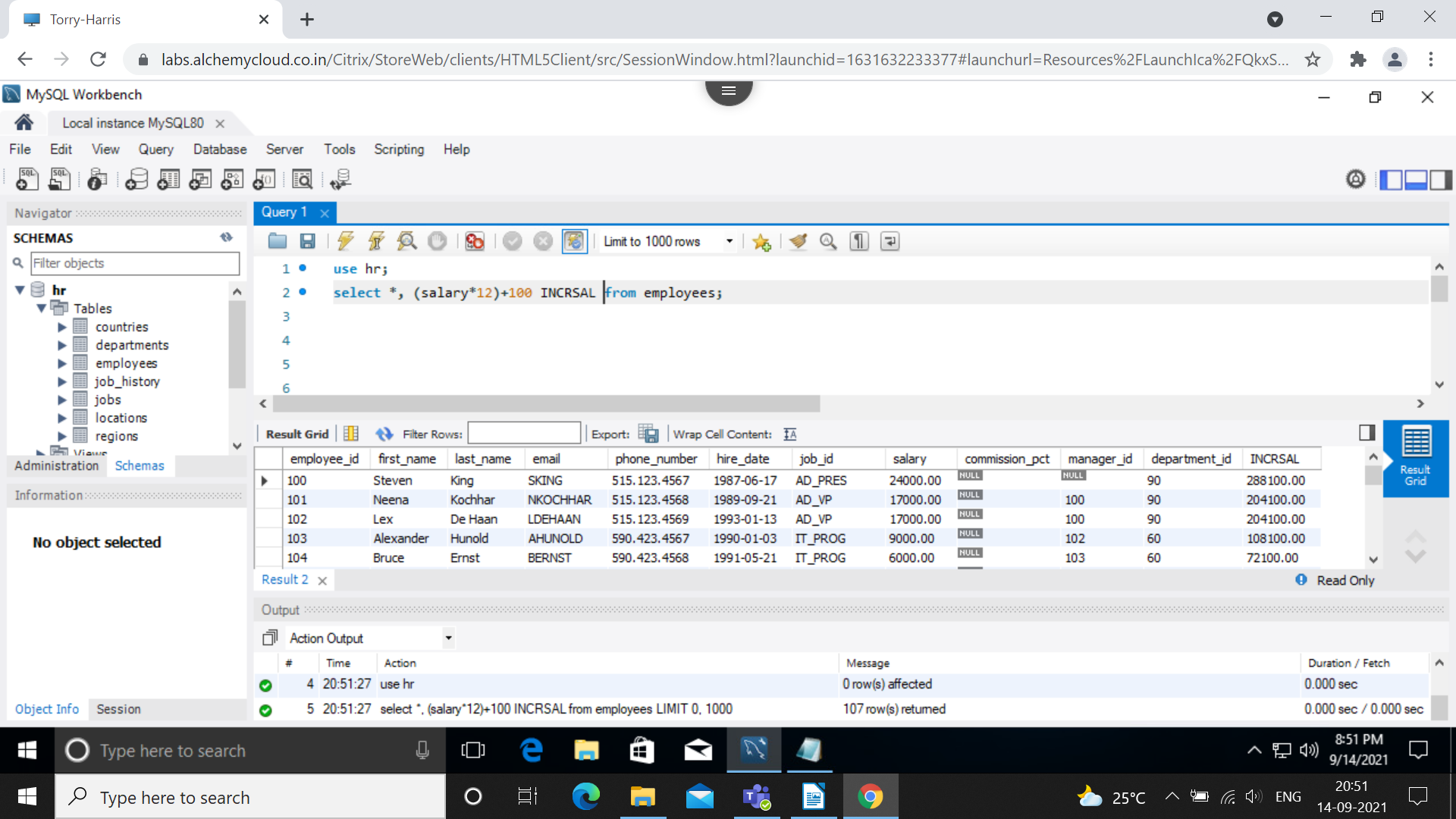
**DATA QUERY LANGUAGE(DQL):**

* **SELECT:** Used to retrieve data from database.

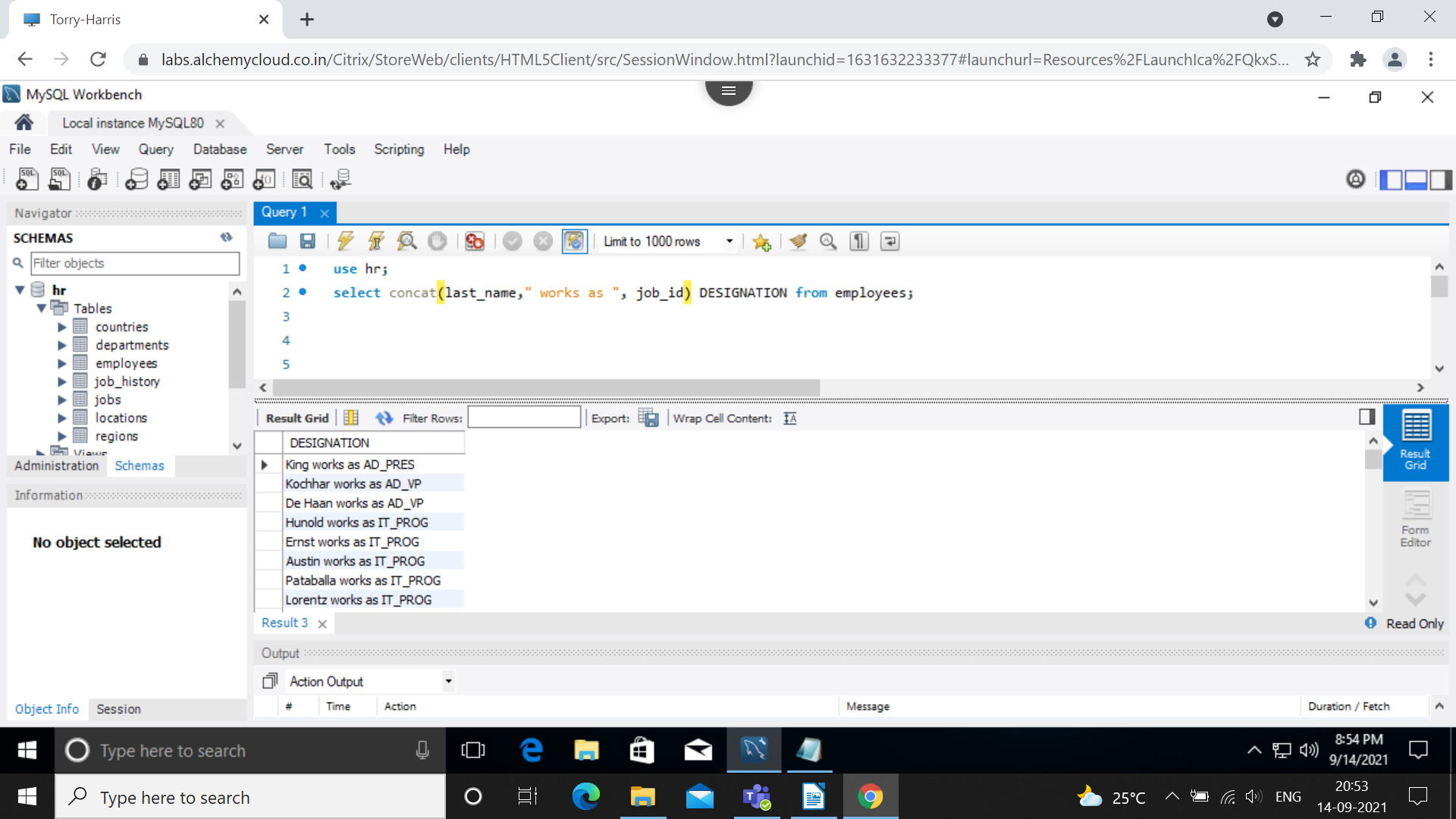
1. Selection and Projection:

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Select statement using arithmetic operators:

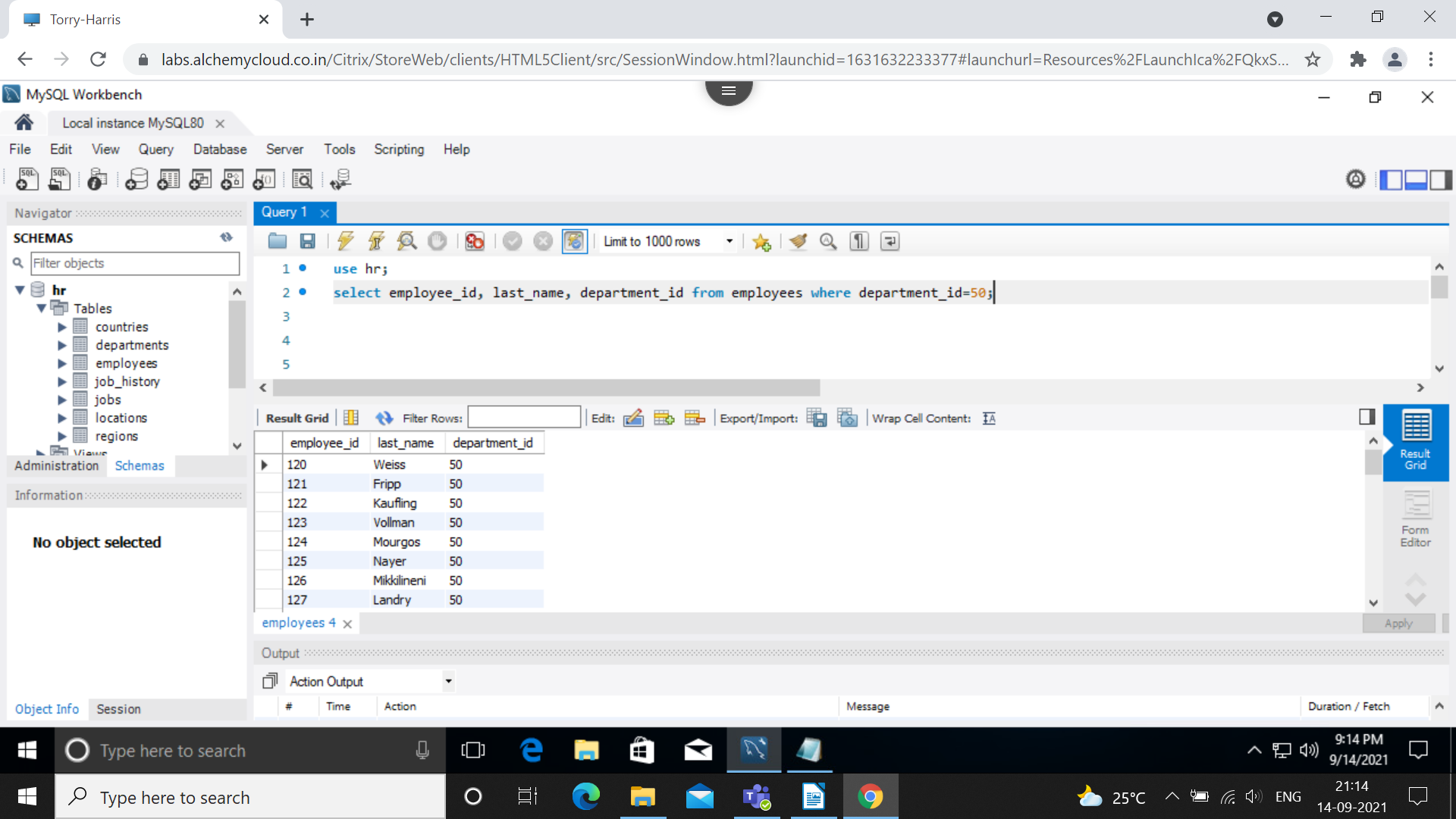
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Select statement using concat function:

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2. Restriction and Sorting:

select employee\_id, last\_name, department\_id from employees where department\_id=50;

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-select employee\_id, last\_name, department\_id, hire\_date from employees where last\_name=’Vollman’;

-select employee\_id, last\_name, department\_id, hire\_date, salary from employees where hire\_date=’1997-10-10’;

3. Restrictions with comparison operators:

= : Equal

< > : Not Equal

> : Greater than

< : Less than

>= : Greater than or Equal

<= : Less than or Equal

IN : Matches a values in a list

LIKE : Pattern matching with % and \_

BETWEEN : Within a range(Inclusive)

select employee\_id, salary from employees where salary <= 8000;

select employee\_id, salary from employees where salary >= 6000;

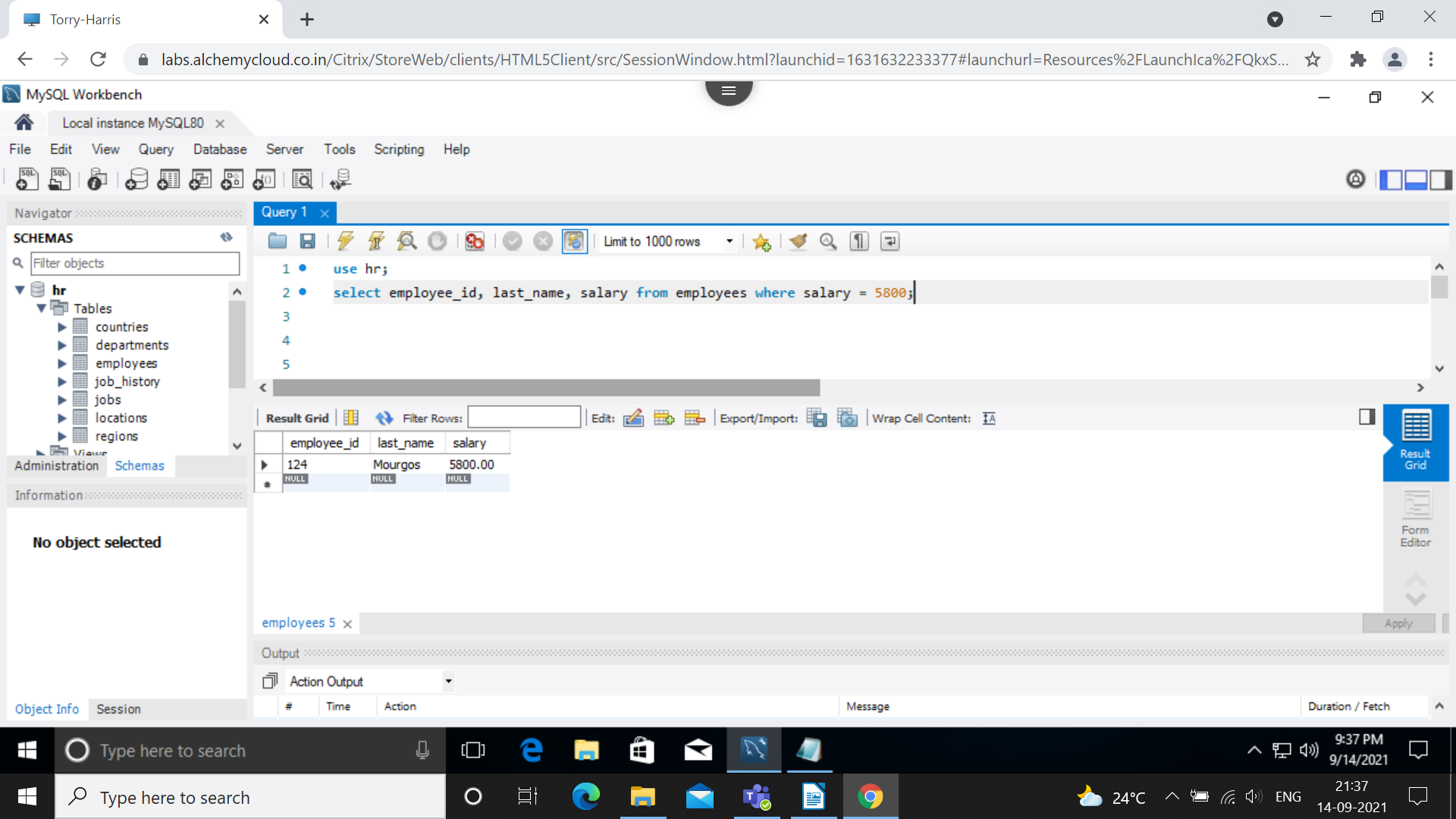
select employee\_id, salary from employees where salary = 5800;

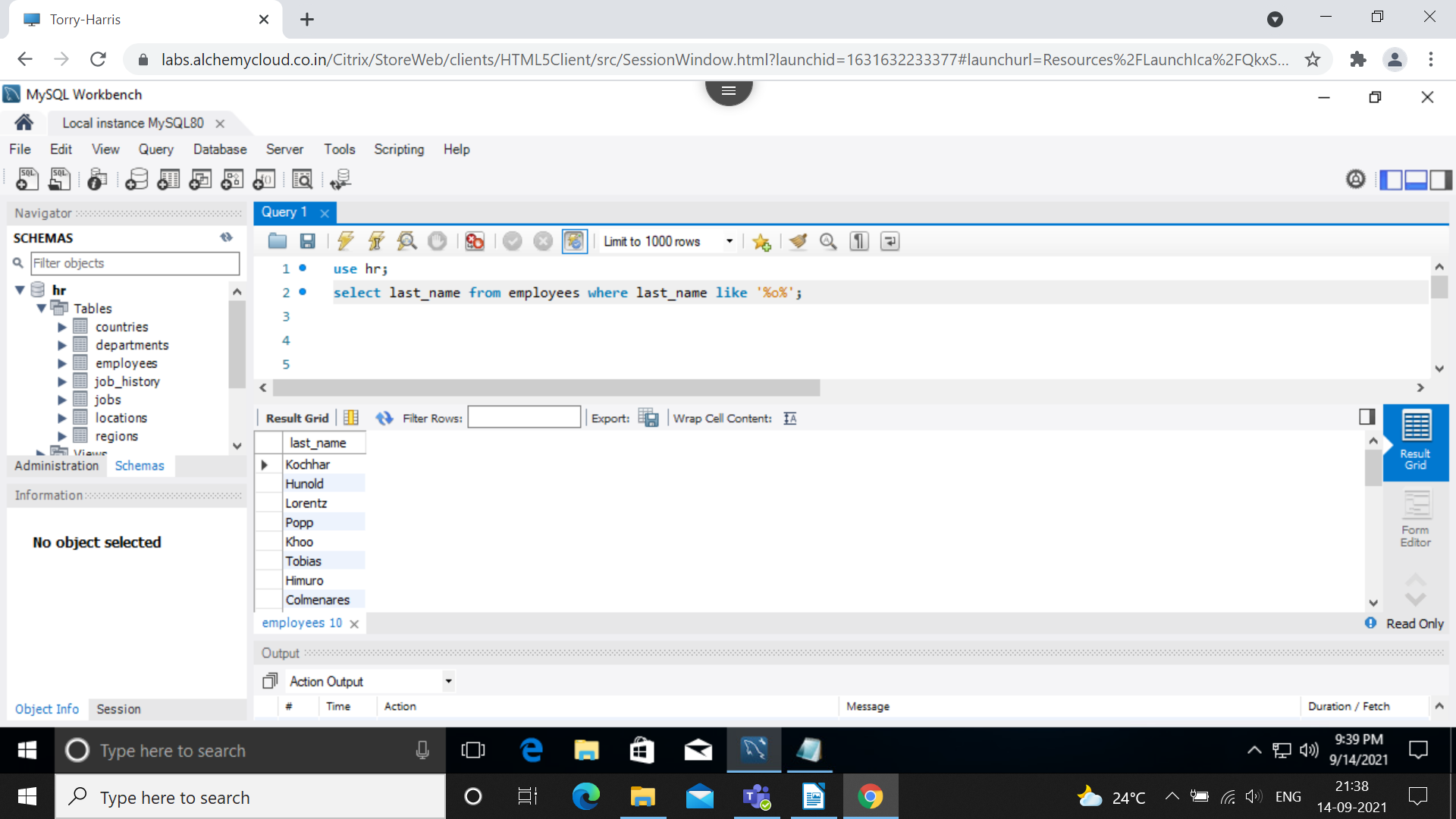
select employee\_id, salary from employees where salary < > 8000;

select employee\_id, salary from employees where salary between 2500 and 5500;

select employee\_id, salary from employees where manager\_id in(100,101,102);

select first\_name, last\_name from employees where last\_name like ‘S%’ || ‘\_o%’||’%o%||’%a’;

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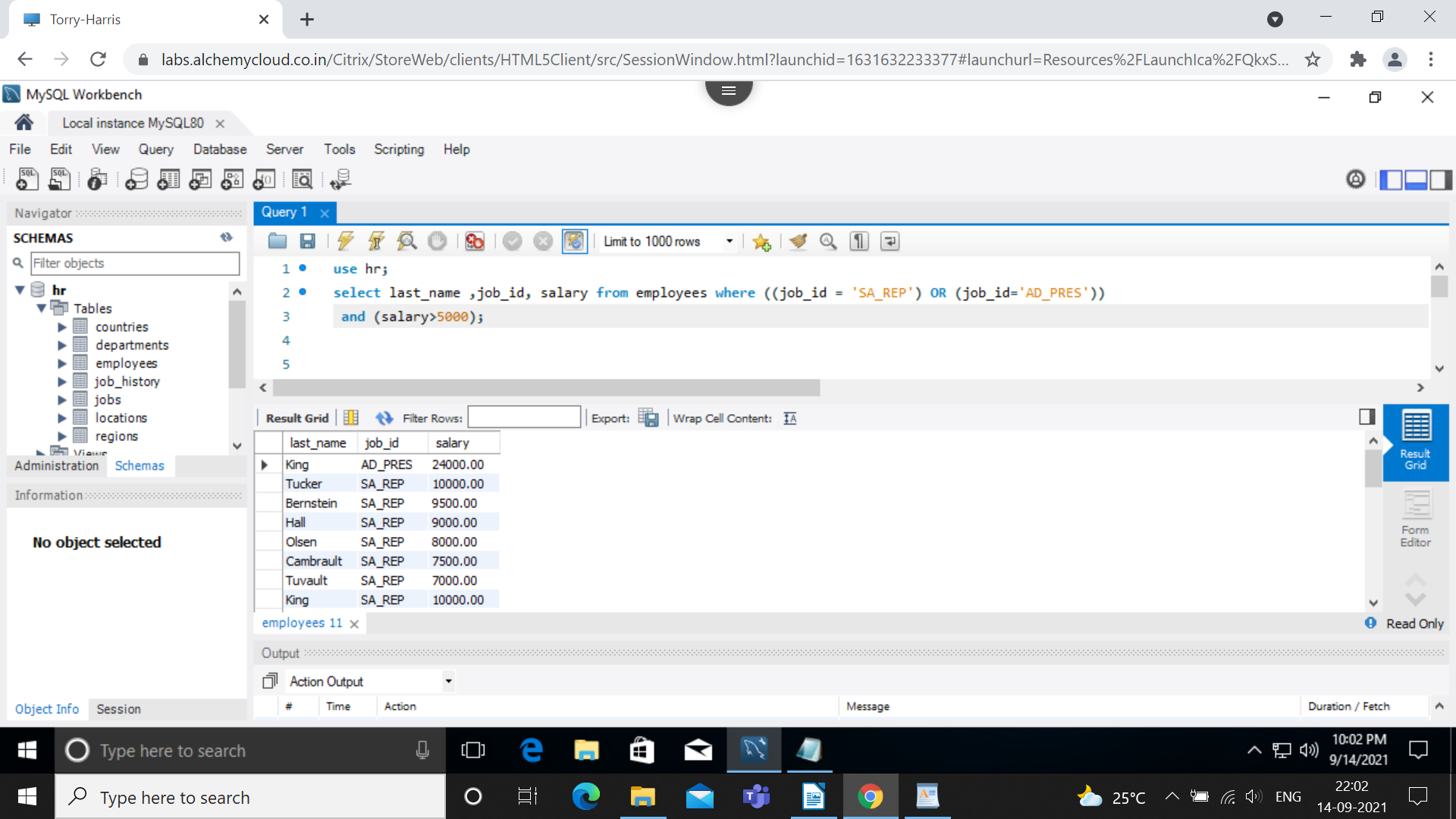
Logical operators:

select employee\_id,last\_name,job\_id,salary from employees where ((salary>=5000) and (job\_id LIKE '%MAN%'));

select last\_name,job\_id from employees where job\_id NOT IN ('IT\_PROG','ST\_MAN');

select last\_name,job\_id,salary from employees where ((job\_id = 'SA\_REP') OR (job\_id = 'AD\_PRES')) and (salary>5000);

select last\_name,job\_id,salary from employees where (job\_id = 'SA\_REP') OR (job\_id = 'AD\_PRES') and (salary>5000);

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String Functions:

select concat('hello','world');

select substr('helloworld',1,5); -----> hello

select length('helloworld');

select instr('helloworld','w');

select replace('Jack and Jue','J','Bl');

select trim('h' from 'helloworld');

select lpad(salary,10,'\*') from employees;

select rpad(last\_name,15,'\*') from employees;

select employee\_id,concat(first\_name,last\_name) Name, job\_id, length(last\_name),instr(last\_name,'a') 'contains a?' from employees where

substr(job\_id,4)='REP';

select substr('helloworld',4);

select job\_id from employees;

select last\_name, instr(last\_name,'a') 'position of the first occurrence of a' from employees;

select upper(concat(substr(last\_name, 1,8), '\_B84')) from employees where department\_id=50;

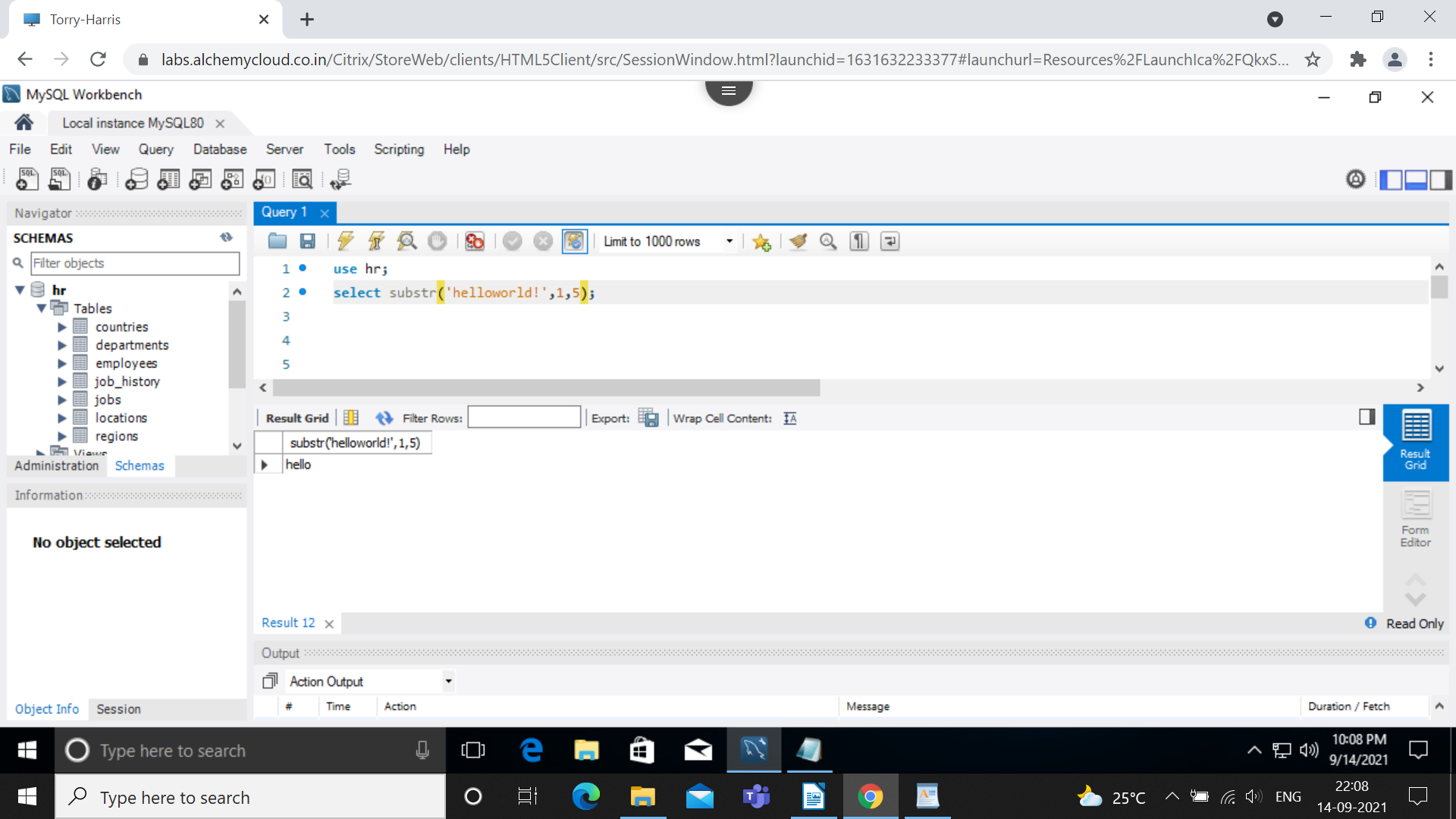
select employee\_id, last\_name from employees where last\_name='higgins';

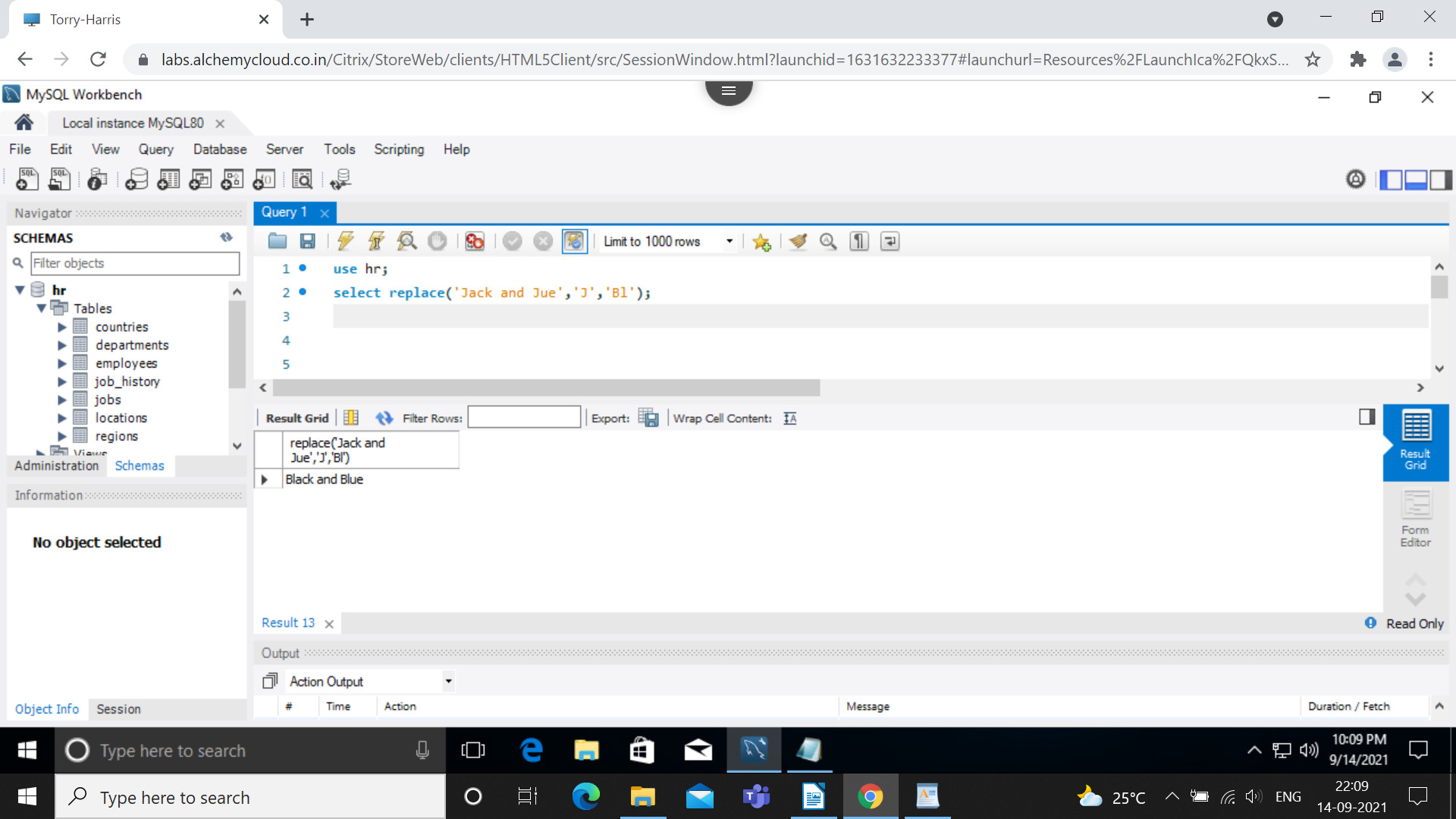
select round(45.933,2) from dual;

select truncate(45.937,2) from dual;

select mod(11,2) from dual;

select last\_name,salary,mod(salary,5000) from employees where job\_id ='SA\_REP';

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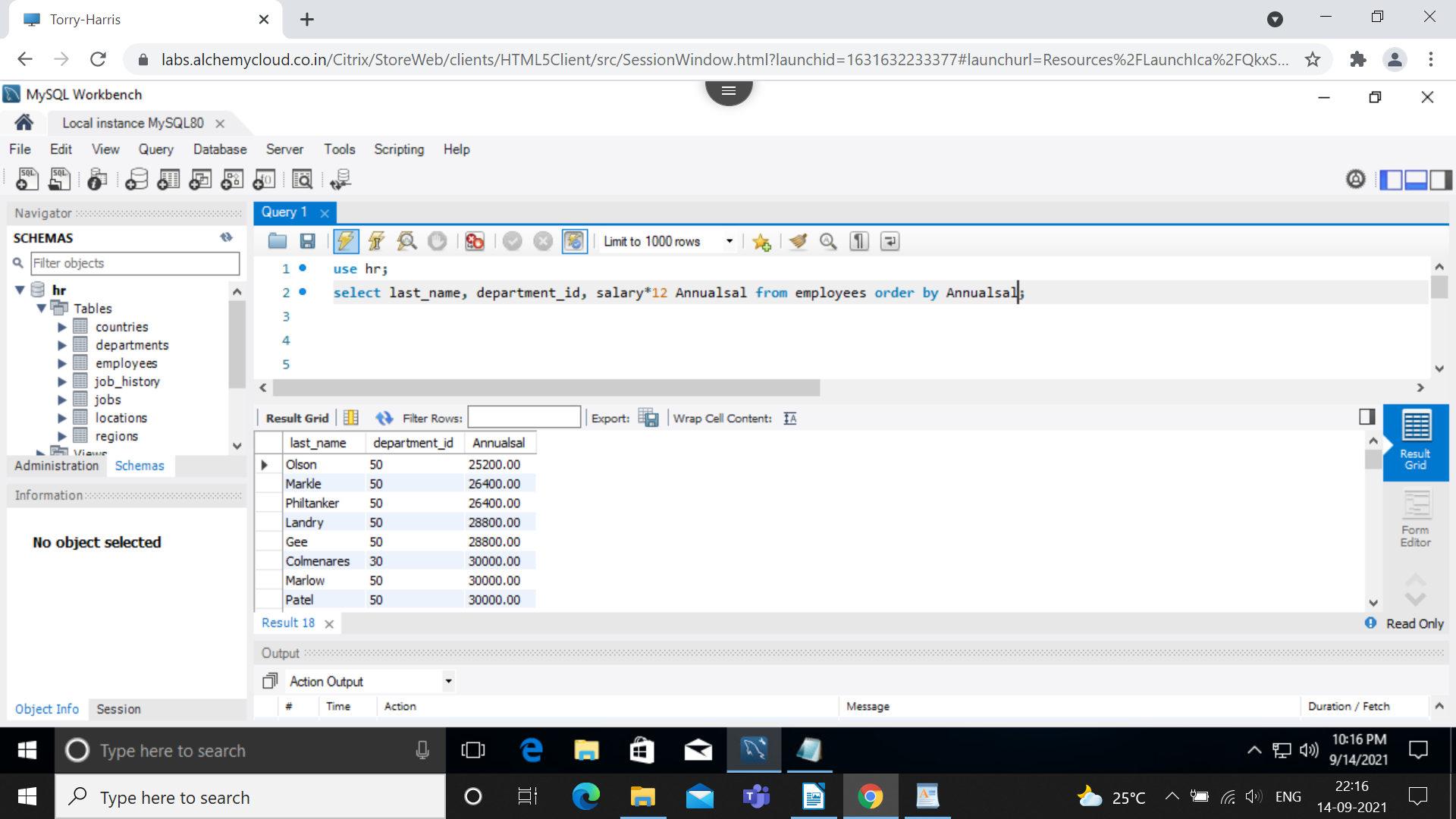
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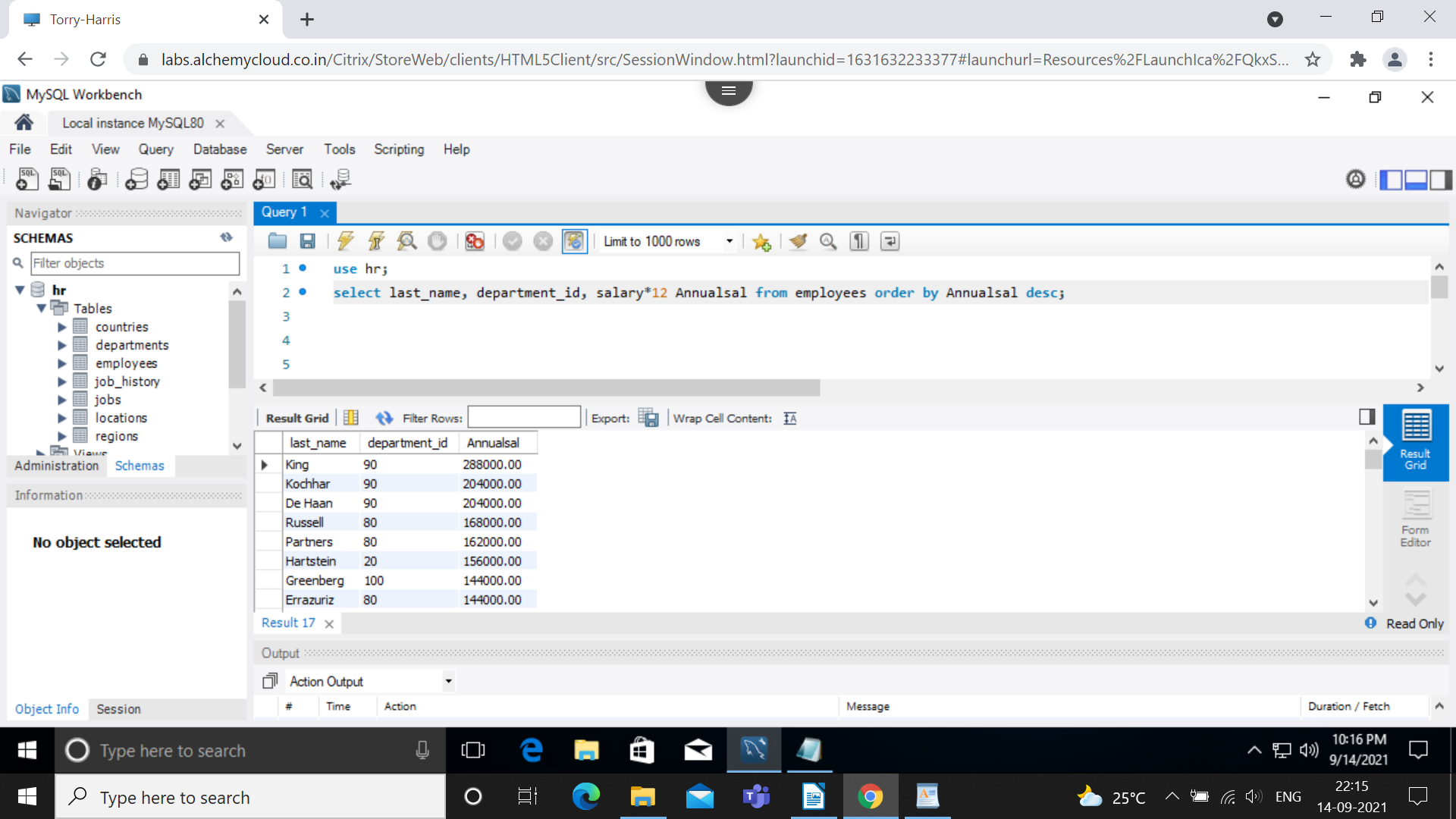
Sorting in Ascending and Descending order:

select last\_name,job\_id,department\_id,hire\_date from employees order by hire\_date DESC;

select last\_name,department\_id, salary\*12 annualsal from employees order by annualsal;

select last\_name,department\_id, salary\*12 annualsal from employees order by annualsal , last\_name desc;

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