American International University-Bangladesh (AIUB)

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MID-ASSIGNMENT

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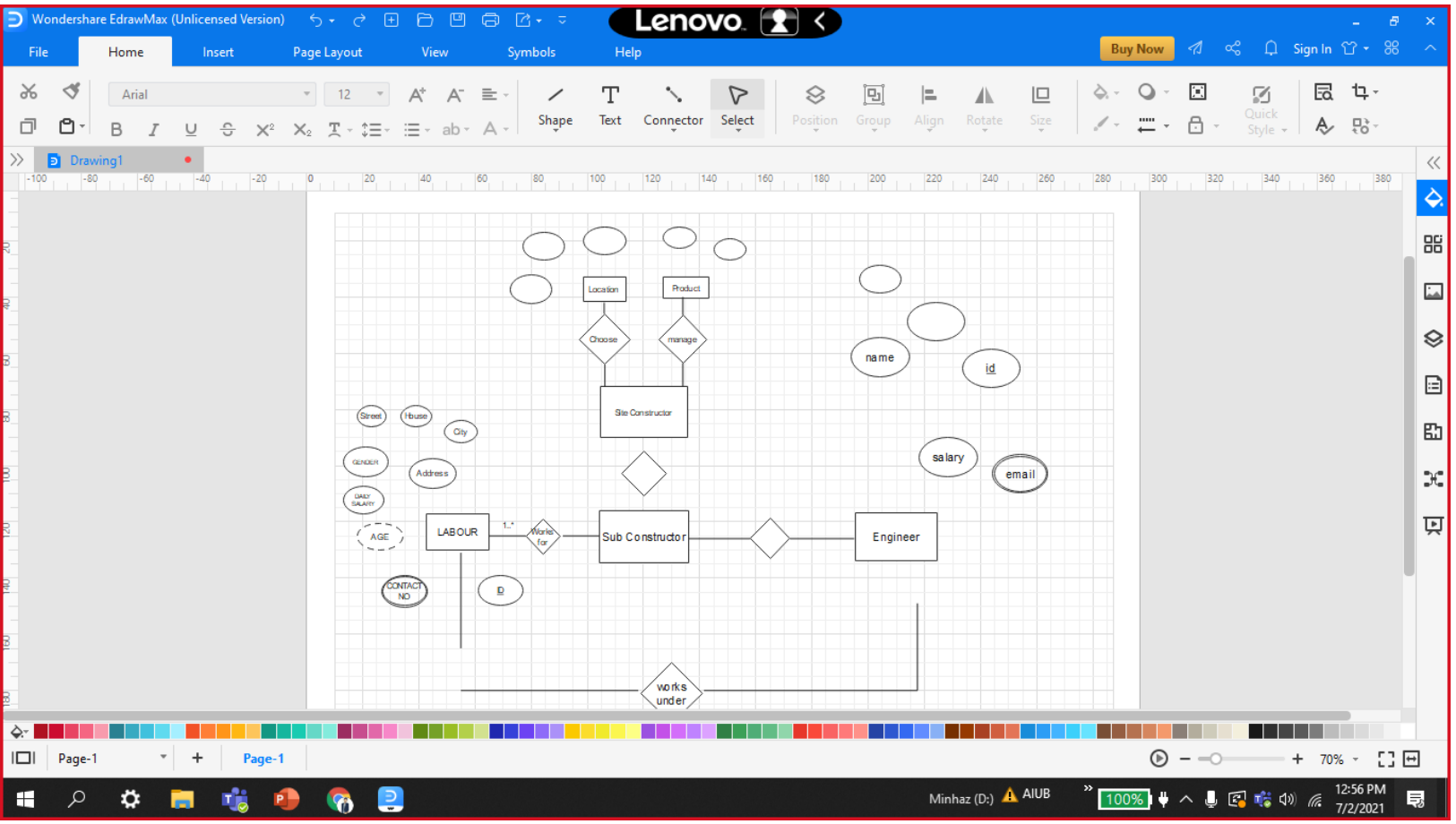
Case Study

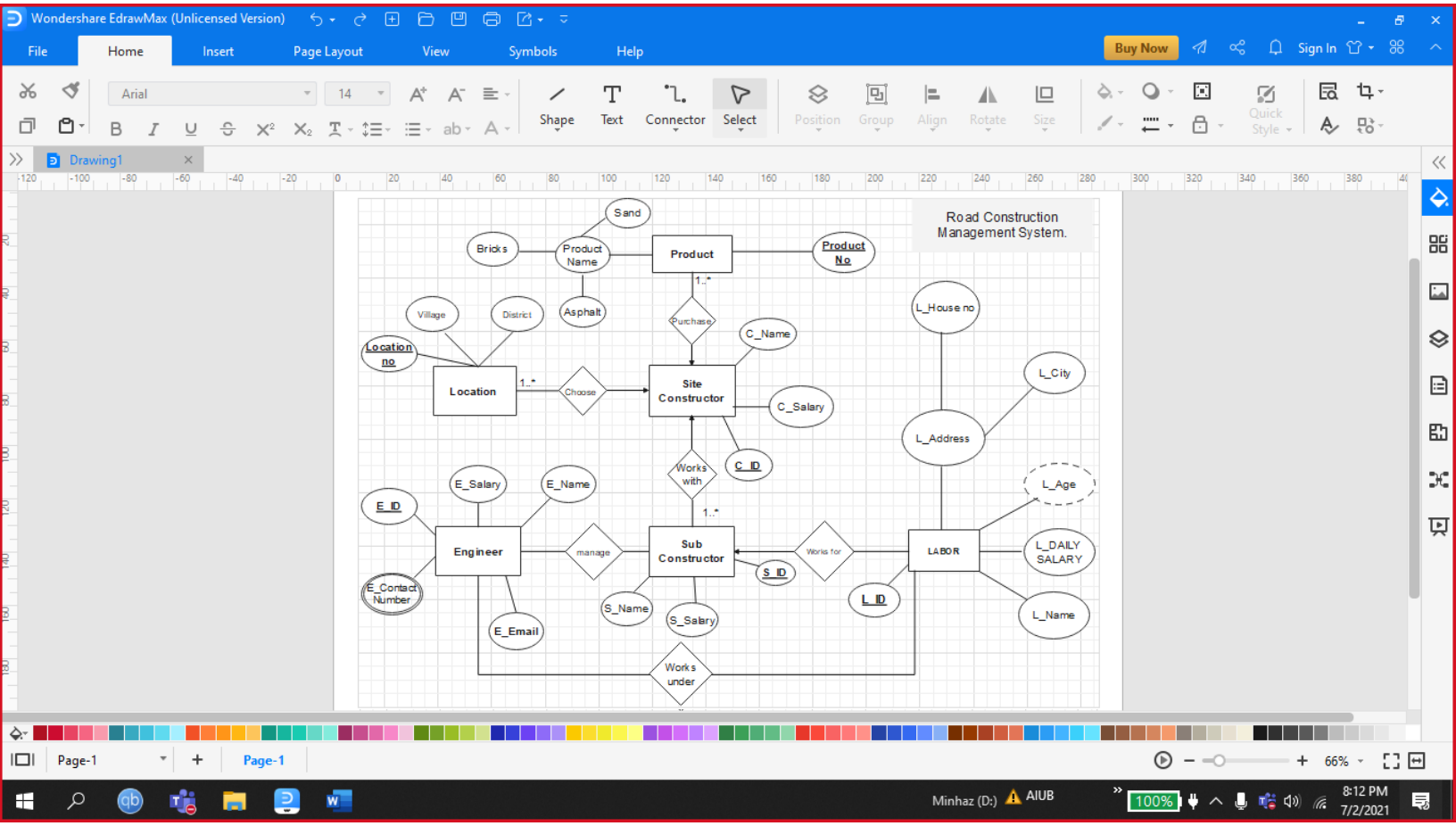
Road Construction Management System

In a Road Construction Management System, A Site Constructor choose at least one Location. The location address is composed of District, Village and identify by Location ID which is chosen by Exactly One Site Constructor. The database also store the Site Constructor Name, Salary & Identify by Constructor ID. Exactly one constructor purchase at least one product. There is a product name which is composed of Bricks, Sand & Asphalt. A site constructor works with at least one sub-constructor. At least one sub constructor may be works with exactly one Site Constructor. The database stores the Sub-Constructor Name, Salary & Identify by sub-Constructor ID. Sub-constructor manage many engineer. The information about the engineer (Name, Salary, contact no, Email) will be stored. And Engineer identify by the Engineer ID. There maybe multiple contact number of an Engineer. Many Labor works for exactly One Sub Constructor. And the labor is identify by Labor ID. The database also store the labors Name, age , address, daily salary. A Labor address is composed of house number and city. Many labor works under the direction of many engineer.

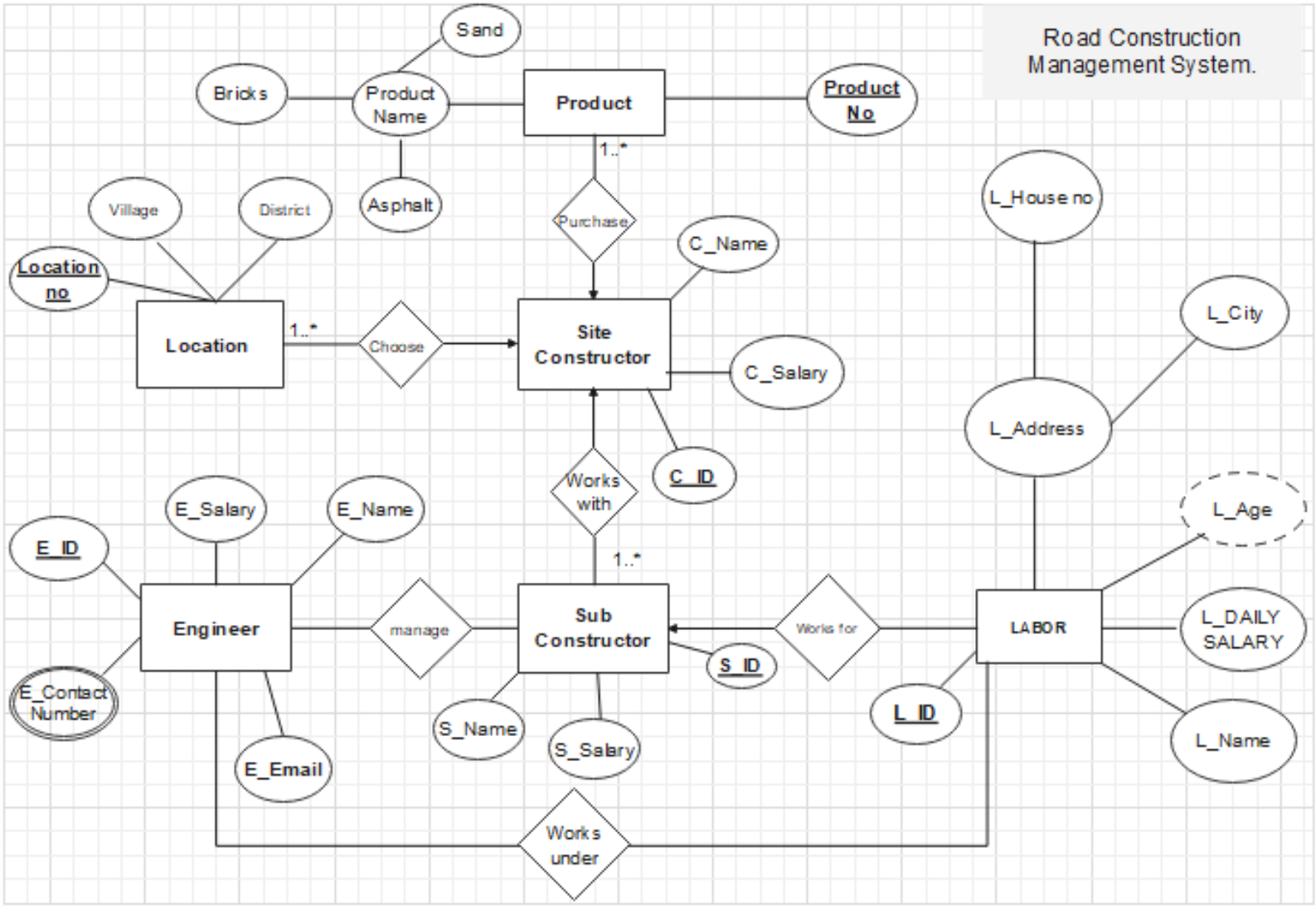
Starting time screenshot



Almost ending time Screenshot



Final Diagram



NORMALIZATION:

Choose:

UNF: C_Name, C_Salary, C_ID, Location_No, Village, District

1NF: 1st: C_ID, Location_No, C_Name, C_Salary, Village, District.

2NF: 1st: Location_No, Village, District, C_ID

2nd: C_ID, C_Name, C_Salary

3NF: 1st: Location_No, Village, C_ID

2nd: Village, District

3rd: C_ID, C_Name, C_Salary

Purchase:

UNF: C_Name, C_Salary, C_ID, Product_No, Bricks, Sand, Asphalt

1NF: 1st: C_ID, Product_No, C_Name, C_Salary, Bricks, Sand, Asphalt

2NF: 1st: Product_No, Sand, Bricks, Asphalt, C_ID

2nd: C_ID, C_Name, C_Salary

3NF: 1st: Product_No, Sand, Bricks, Asphalt, C_ID

2nd: C_ID, C_Name, C_Salary

Works with:

UNF: C_Name, C_Salary, C_ID, S_ID, S_Name, S_Salary

1NF: 1st: C_ID, S_ID, C_Name, , C_Salary, S_Name, S_Salary

2NF: 1st: S_ID, S_Name, S_Salary, C_ID

2nd: C_ID, , C_Name, C_Salary

3NF: 1st: S_ID, S_Name, S_Salary, C_ID

2nd: C_ID, C_Name, C_Salary

Manage:

UNF: S_ID, S_Name, S_Salary , E_ID, E_Name, E_Salary, E_Contact_Number, E_Email

1NF: 1st: S_ID, E_ID, E_Contact_Number, S_Name, S_Salary , E_Name, E_Salary, E_Email

2NF: 1st: S_ID, S_Name, S_Salary

2nd: E_ID, E_Contact_Number, E_Name, E_Email, E_Salary

3rd: S_ID, E_ID

3NF: 1st: S_ID, S_Name, S_Salary

2nd: E_ID, E_Contact_Number, E_Name, E_Email, E_Salary

3rd: S_ID, E_ID

Works for

UNF: S_ID, S_Name, S_Salary , L_ID, L_Name, L_Daily_Salary, L_Age, L_City, L_House_No

1NF: 1st: S_ID, L_ID, S_Name, S_Salary ,L_Name, L_Daily_Salary, L_Age, L_City, L_House_No

2NF: 1st: L_ID, L_Name, L_Daily_Salary, L_Age, L_City, L_House_No, S_ID

2nd: S_ID, S_Name, S_Salary

3NF: 1st: L_ID, L_Name, L_Daily_Salary, L_Age, L_House_No, S_ID

2nd: L_House_No, L_City

3rd: S_ID, S_Name, S_Salary

Works Under:

UNF: E_ID, E_Name, E_Salary, E_Contact_Number, E_Email, L_ID, L_Name, L_Daily_Salary, L_Age, L_City, L_House_No

1NF: 1st: E_ID, E_Contact_Number, L_ID, E_Name, E_Salary, E_Email, L_Name, L_Daily_Salary, L_Age, L_City, L_House_No

2NF: 1st: L_ID, L_Name, L_Daily_Salary, L_Age, L_City, L_House_No

2nd: E_ID, E_Contact_Number, E_Name, E_Salary, E_Email

3rd: L_ID, E_ID

3NF: 1st: L_ID, L_Name, L_Daily_Salary, L_Age, L_House_No

2nd: L_House_No, L_City

3rd: E_ID, E_Contact_Number, E_Name, E_Email, E_Salary

4th: L_ID, E_ID

FINAL TABLE

Location_Number: 1st: **Location_No**, Village, C_ID

Location_Address: 2nd: **Village**, District

Site_Constructor: 3rd: **C_ID**, C_Name, C_Salary

Product: 4th: **Product_No**, Sand, Bricks, Asphalt, C_ID

Sub_Constructor: 5th: **S_ID**, S_Name, S_Salary, C_ID

Engineer: 6th: **E_ID**, **E_Contact_Number**, E_Name, E_Email, E_Salary

SubConstructor_Manage_Eng: 7th: **S_ID**, **E_ID**

Labor: 8th: **L_ID**, L_Name, L_Daily_Salary, L_Age, L_House_No, S_ID

Labor_City: 9th: **L_House_No**, L_City

Labor_Info: 11th: **L_ID**, L_Name, L_Daily_Salary, L_Age, L_House_No

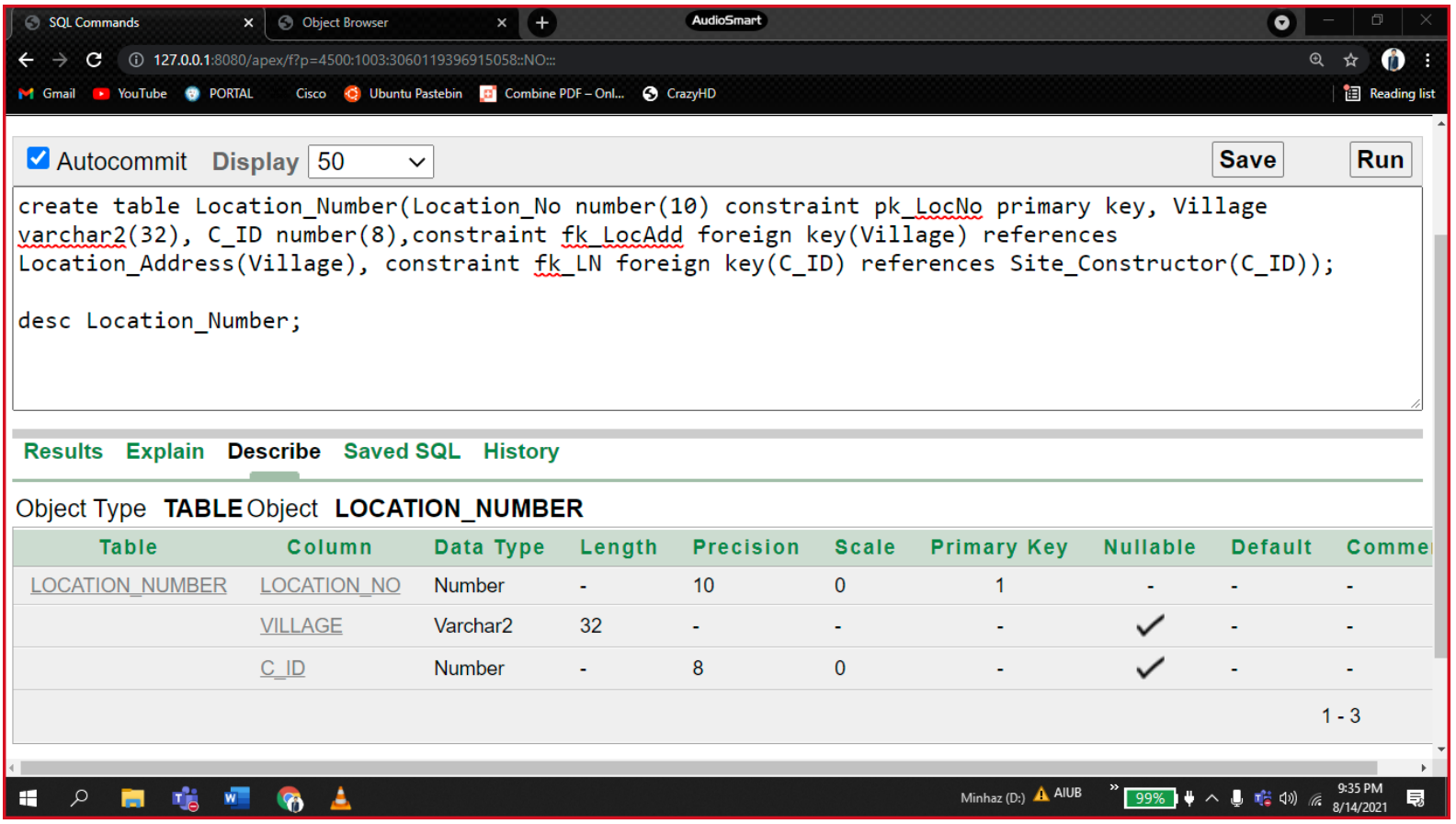
Labor_WorksUnder_Engineer: 12th: **L_ID**, **E_ID**

Table Creation

Location_Number:

create table Location_Number(Location_No number(10) constraint pk_LocNo primary key, Village varchar2(32), C_ID number(8),constraint fk_LocAdd foreign key(Village) references Location_Address(Village), constraint fk_LN foreign key(C_ID) references Site_Constructor(C_ID));

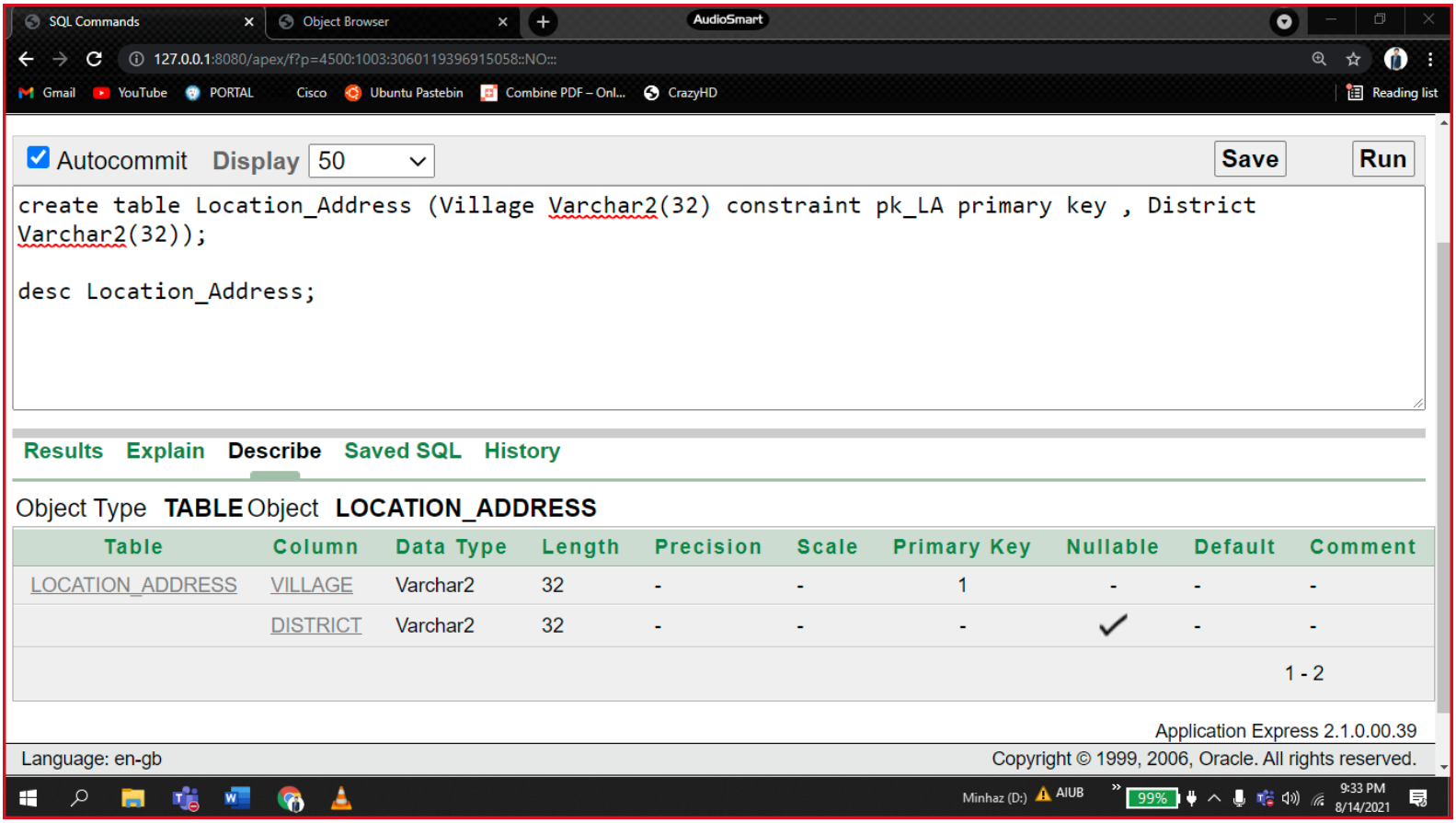
desc Location_Number;



Location_Address:

create table Location_Address (Village Varchar2(32) constraint pk_LA primary key , District Varchar2(32));

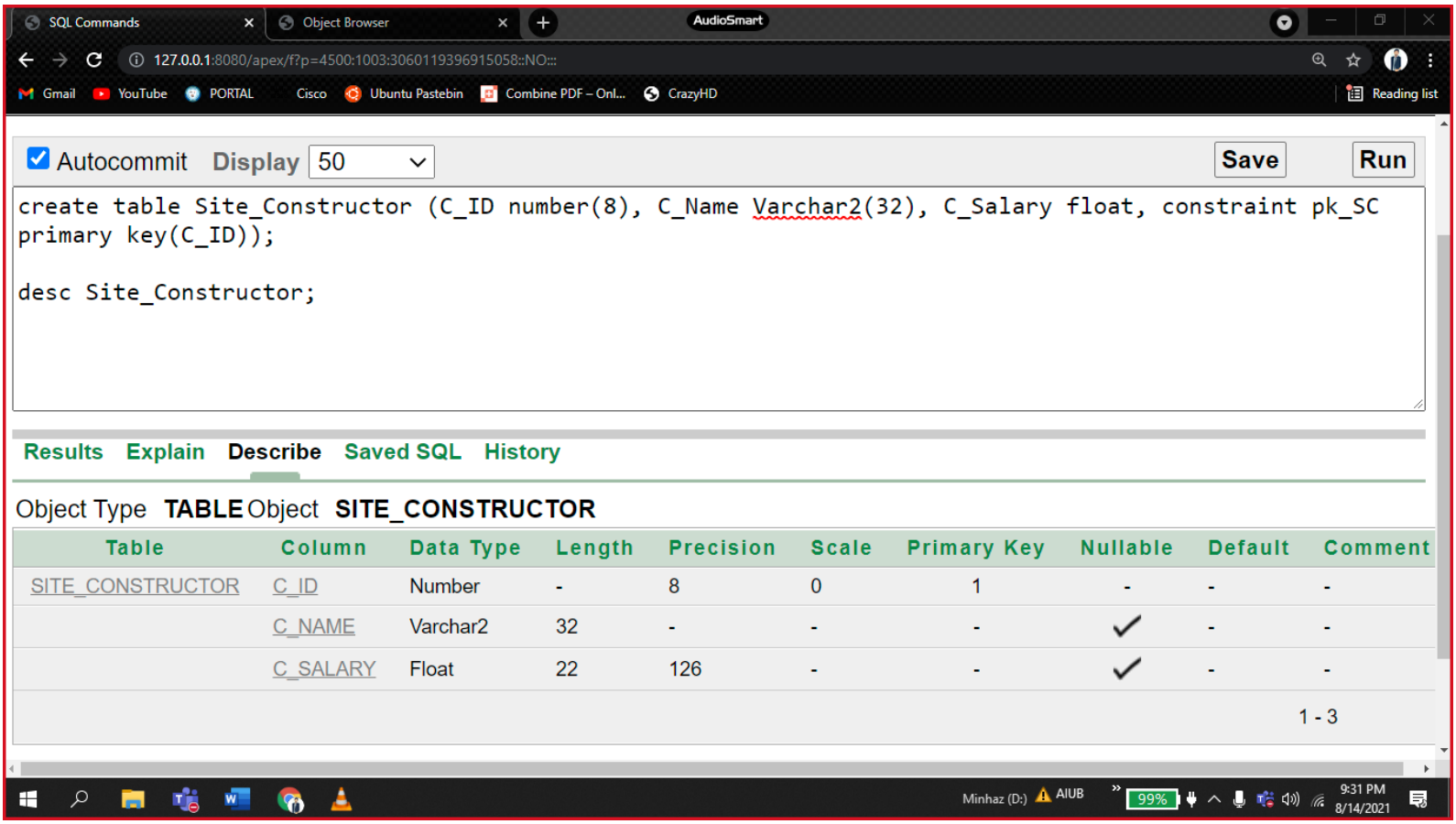
desc Location_Address;



Site_Constructor

create table Site_Constructor (C_ID number(8), C_Name Varchar2(32), C_Salary float, constraint pk_SC primary key(C_ID));

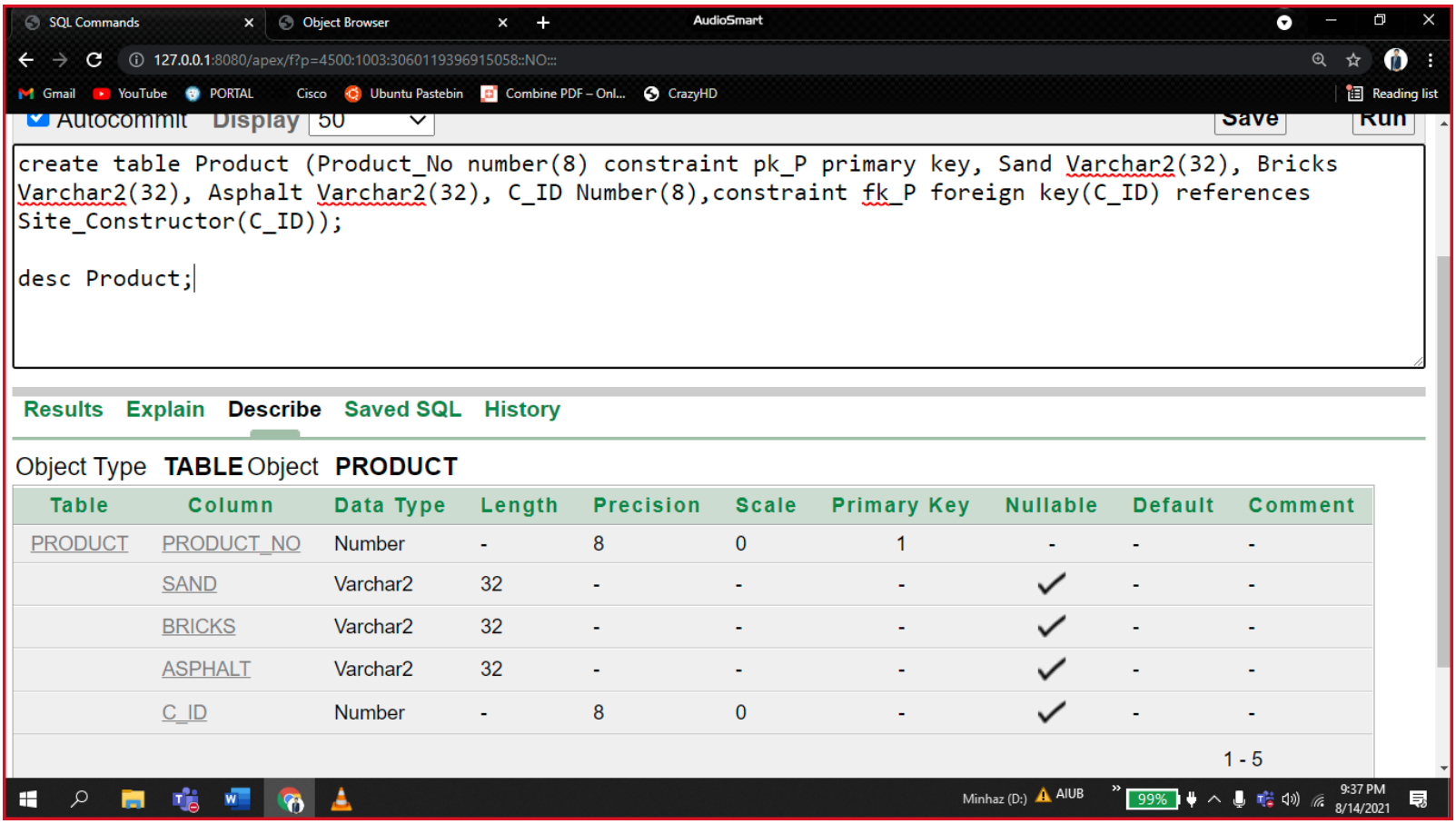
desc Site_Constructor;



Product:

create table Product (Product_No number(8) constraint pk_P primary key, Sand Varchar2(32), Bricks Varchar2(32), Asphalt Varchar2(32), C_ID Number(8),constraint fk_P foreign key(C_ID) references Site_Constructor(C_ID));

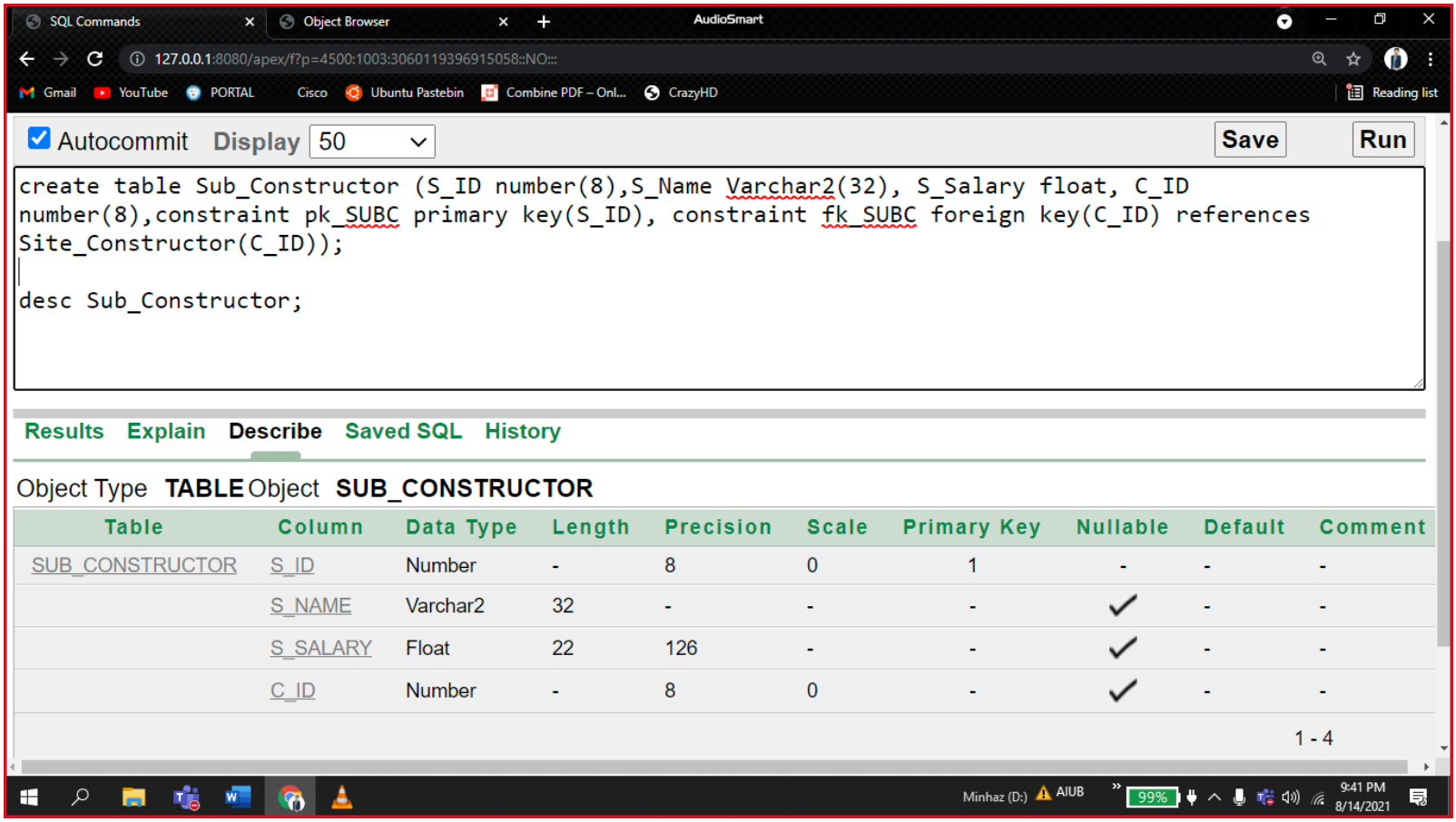
desc Product;



Sub_Constructor:

create table Sub_Constructor (S_ID number(8),S_Name Varchar2(32), S_Salary float, C_ID number(8),constraint pk_SUBC primary key(S_ID), constraint fk_SUBC foreign key(C_ID) references Site_Constructor(C_ID));

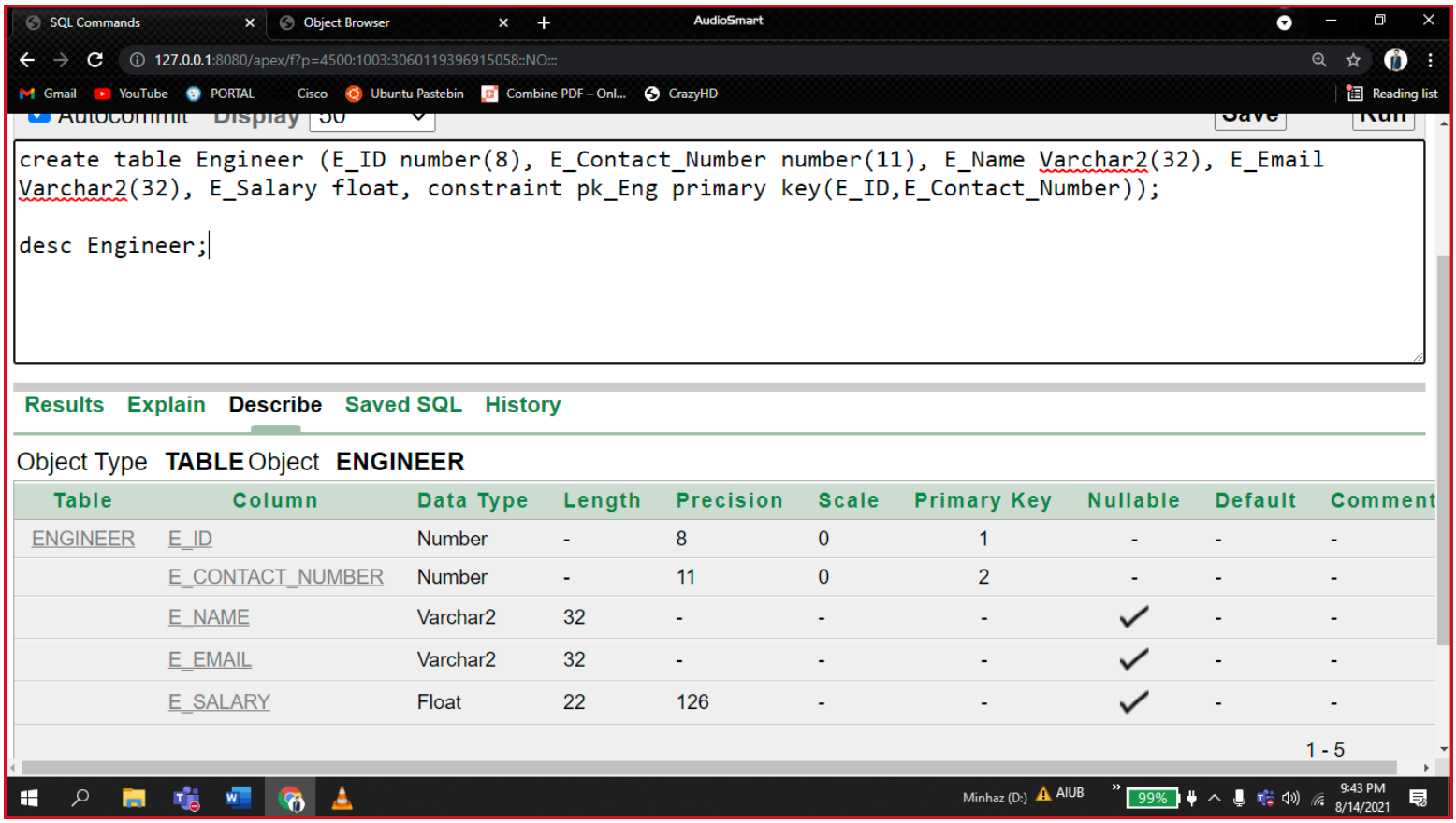
desc Sub_Constructor;



Engineer:

create table Engineer (E_ID number(8), E_Contact_Number number(11), E_Name Varchar2(32), E_Email Varchar2(32), E_Salary float, constraint pk_Eng primary key(E_ID,E_Contact_Number));

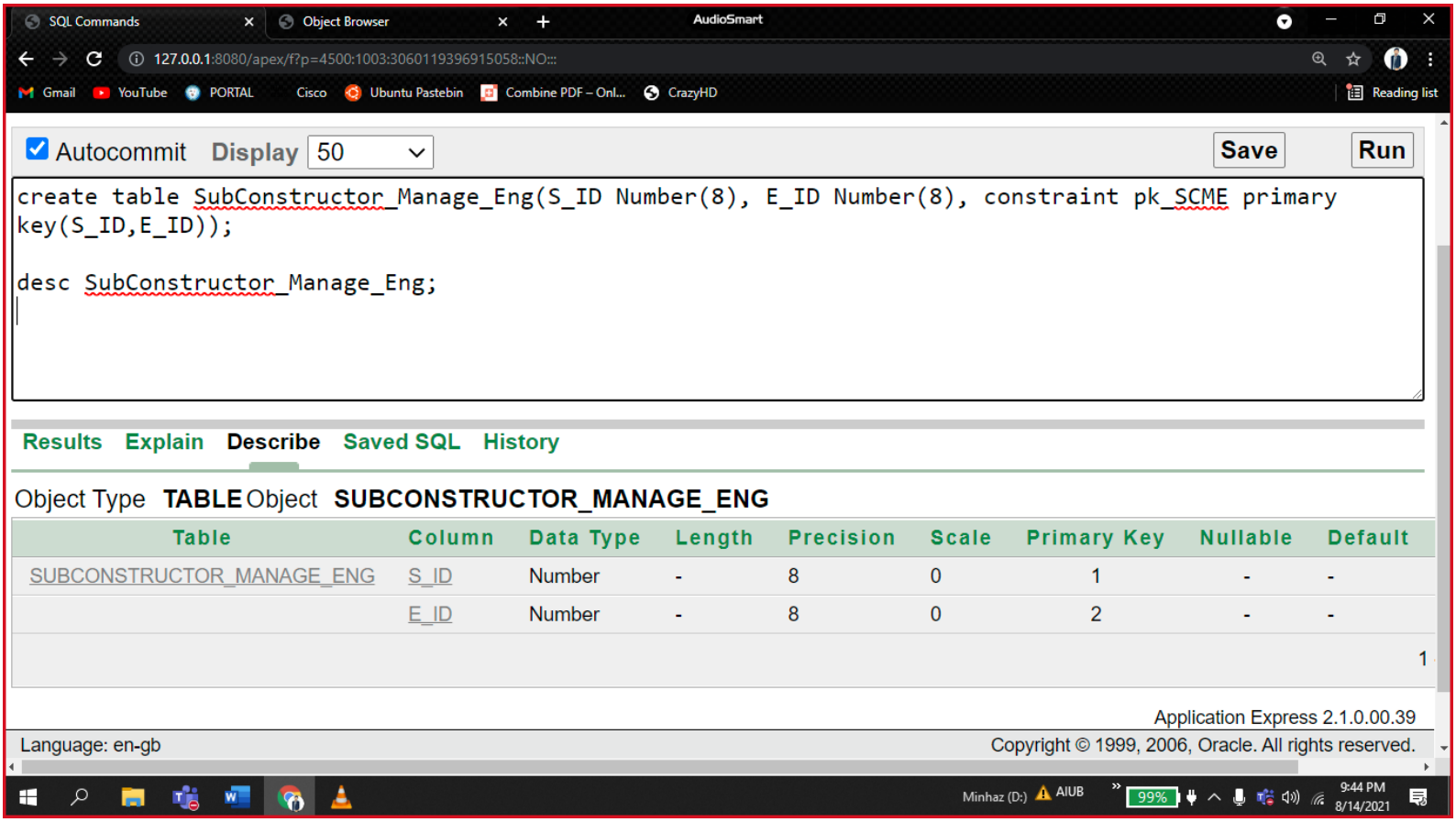
desc Engineer;



SubConstructor_Manage_Eng:

create table SubConstructor_Manage_Eng(S_ID Number(8), E_ID Number(8), constraint pk_SCME primary key(S_ID,E_ID));

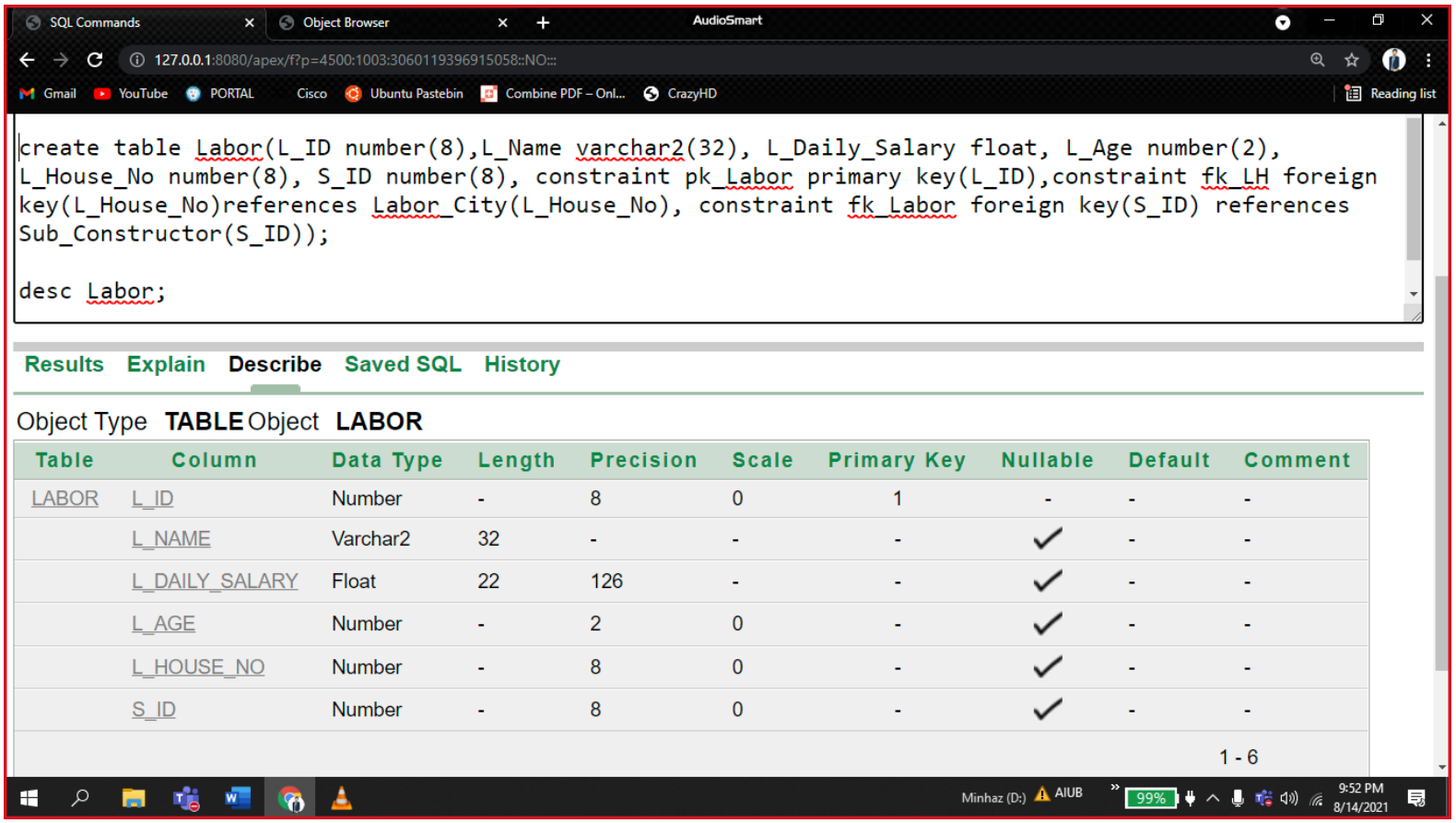
desc SubConstructor_Manage_Eng;



Labor:

create table Labor(L_ID number(8),L_Name varchar2(32), L_Daily_Salary float, L_Age number(2), L_House_No number(8), S_ID number(8), constraint pk_Labor primary key(L_ID),constraint fk_LH foreign key(L_House_No)references Labor_City(L_House_No), constraint fk_Labor foreign key(S_ID) references Sub_Constructor(S_ID));

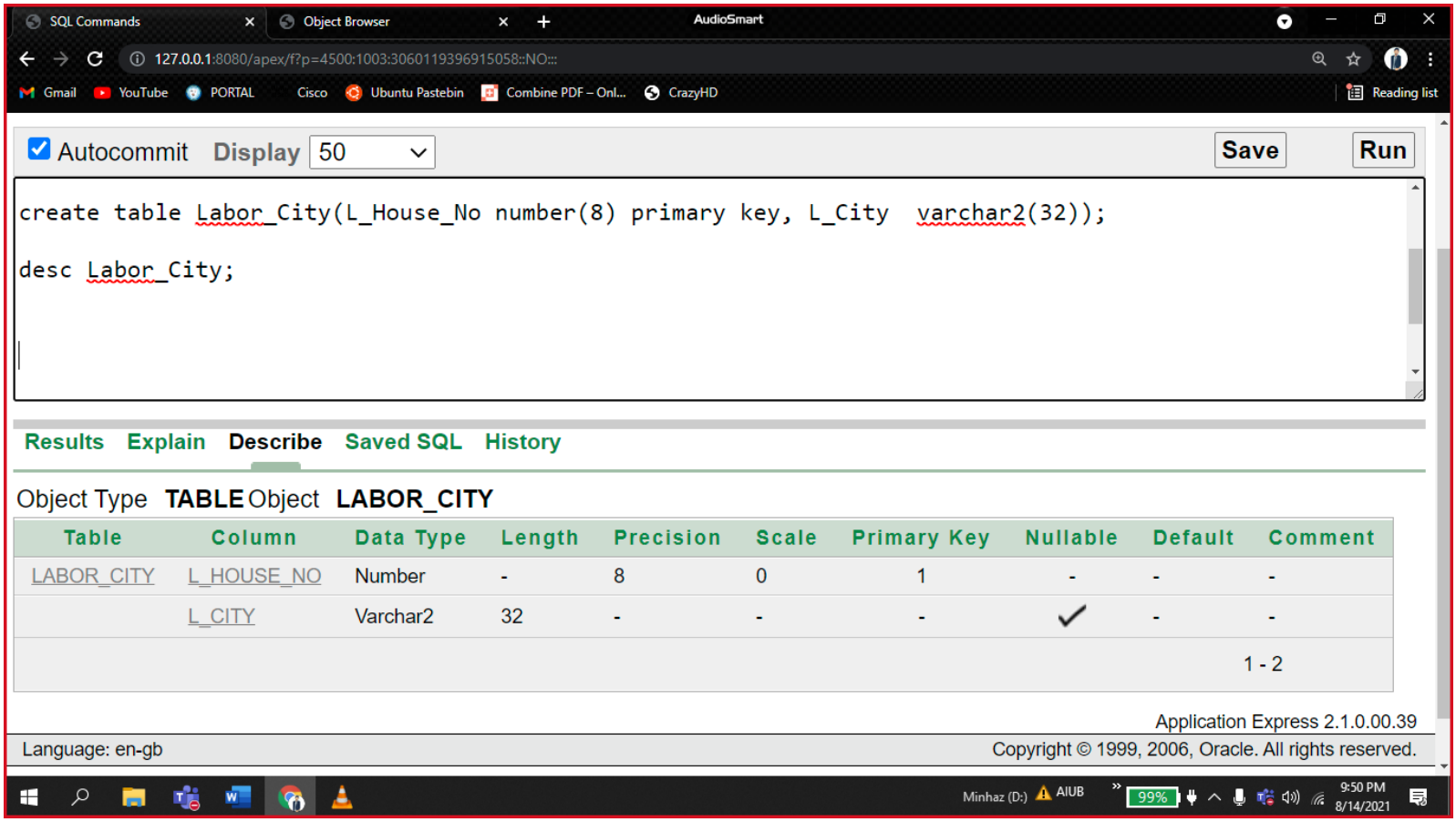
desc Labor;



Labor_City:

create table Labor_City(L_House_No number(8) primary key, L_City varchar2(32));

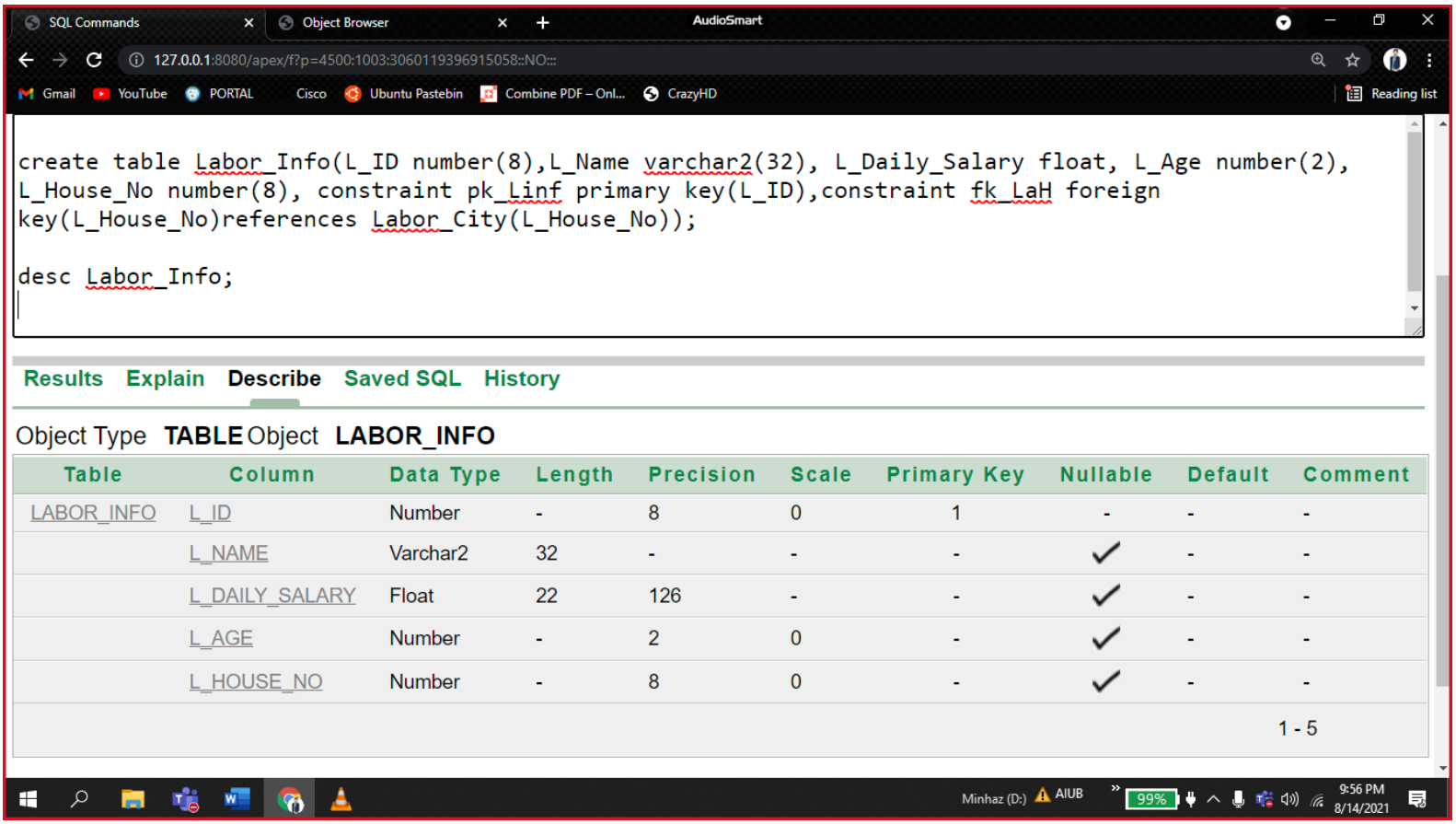
desc Labor_City;



Labor_Info:

create table Labor_Info(L_ID number(8),L_Name varchar2(32), L_Daily_Salary float, L_Age number(2), L_House_No number(8), constraint pk_Linf primary key(L_ID),constraint fk_LaH foreign key(L_House_No)references Labor_City(L_House_No));

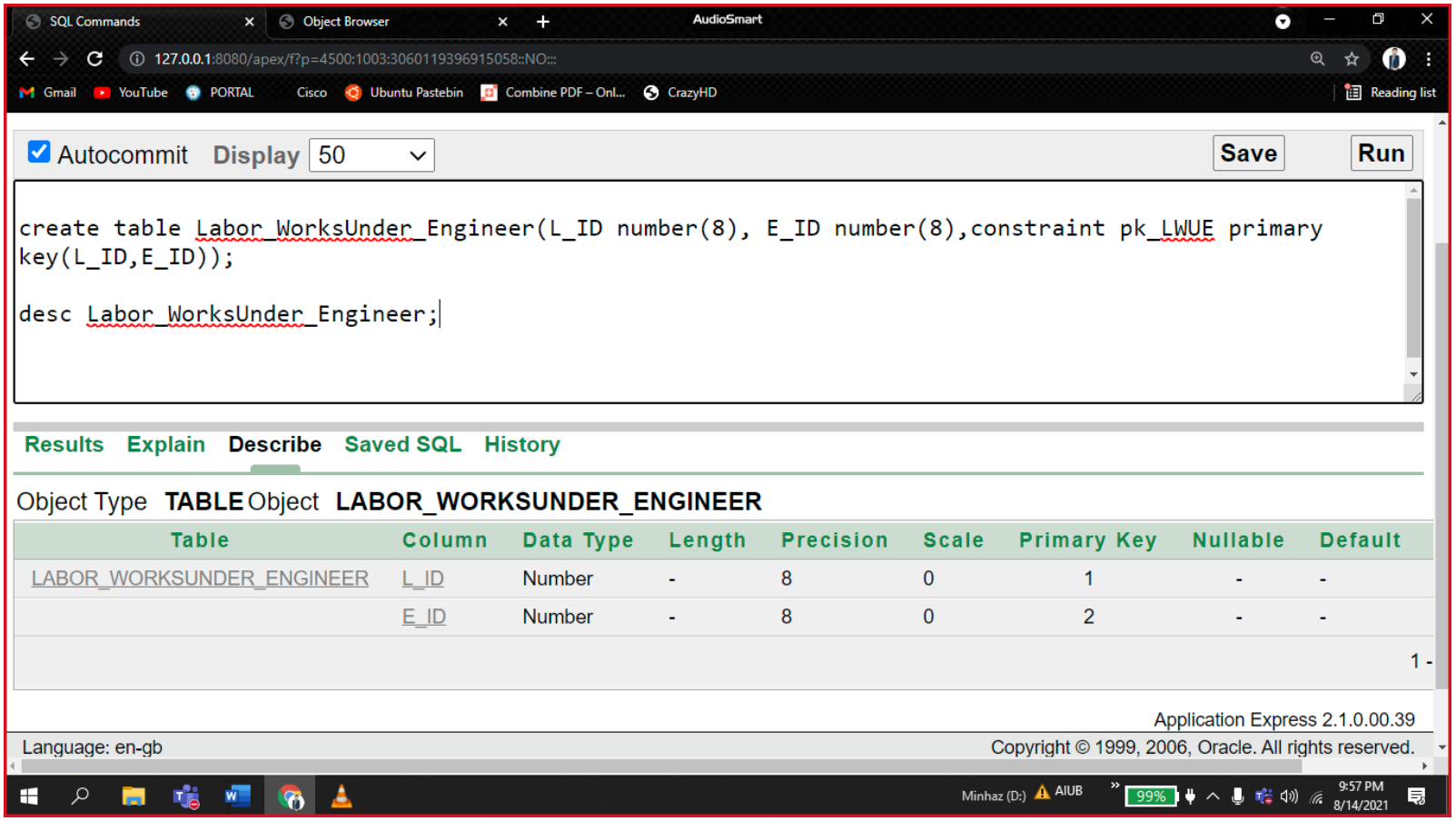
desc Labor_Info;



Labor_WorksUnder_Engineer:

create table Labor_WorksUnder_Engineer(L_ID number(8), E_ID number(8),constraint pk_LWUE primary key(L_ID,E_ID));

desc Labor_WorksUnder_Engineer;

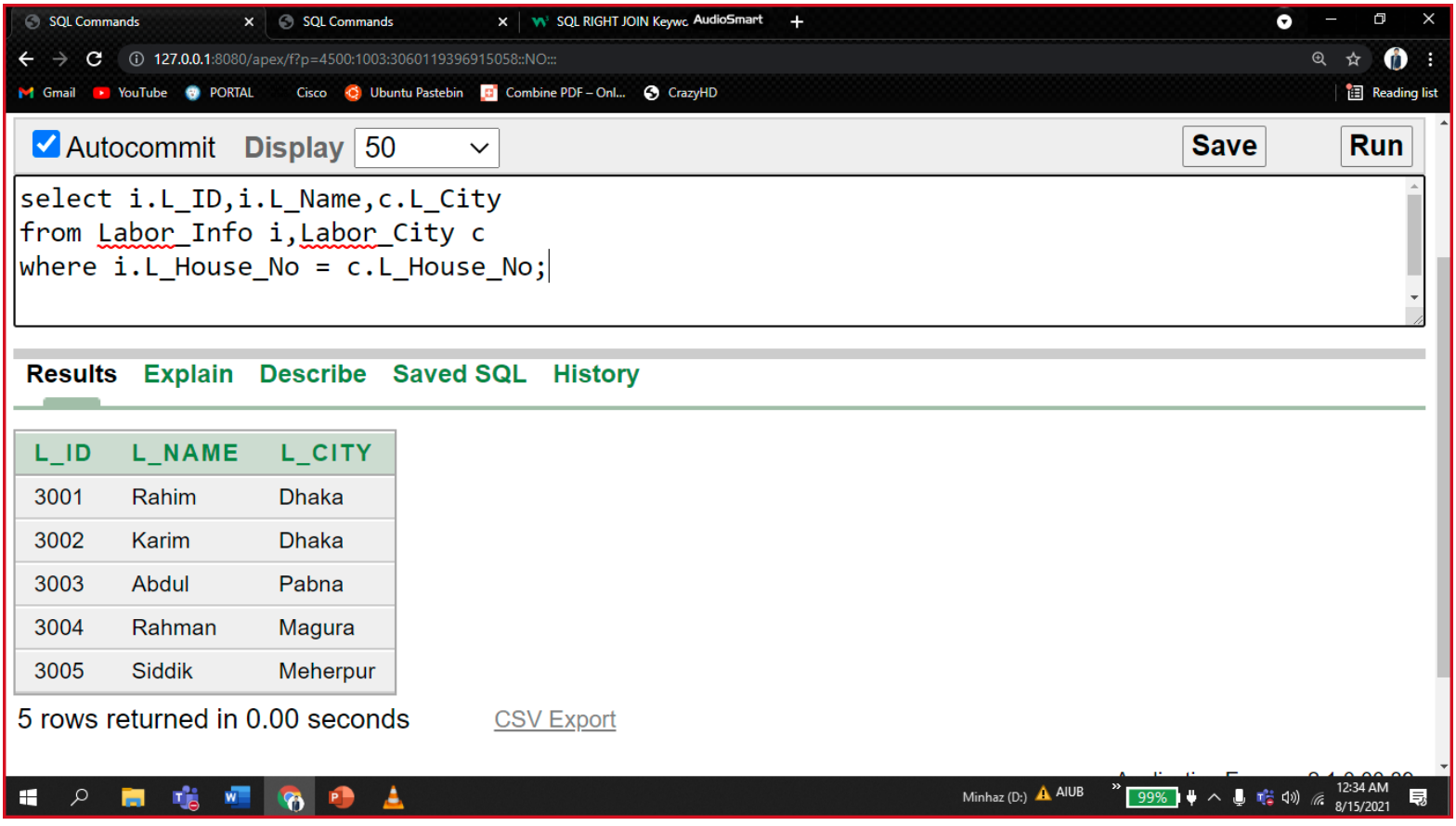


Joining

1. EQUIJOIN:

Join the Labor ID, Labor Name, Labor City using EQUIJOIN from Labor information and Labor city table.

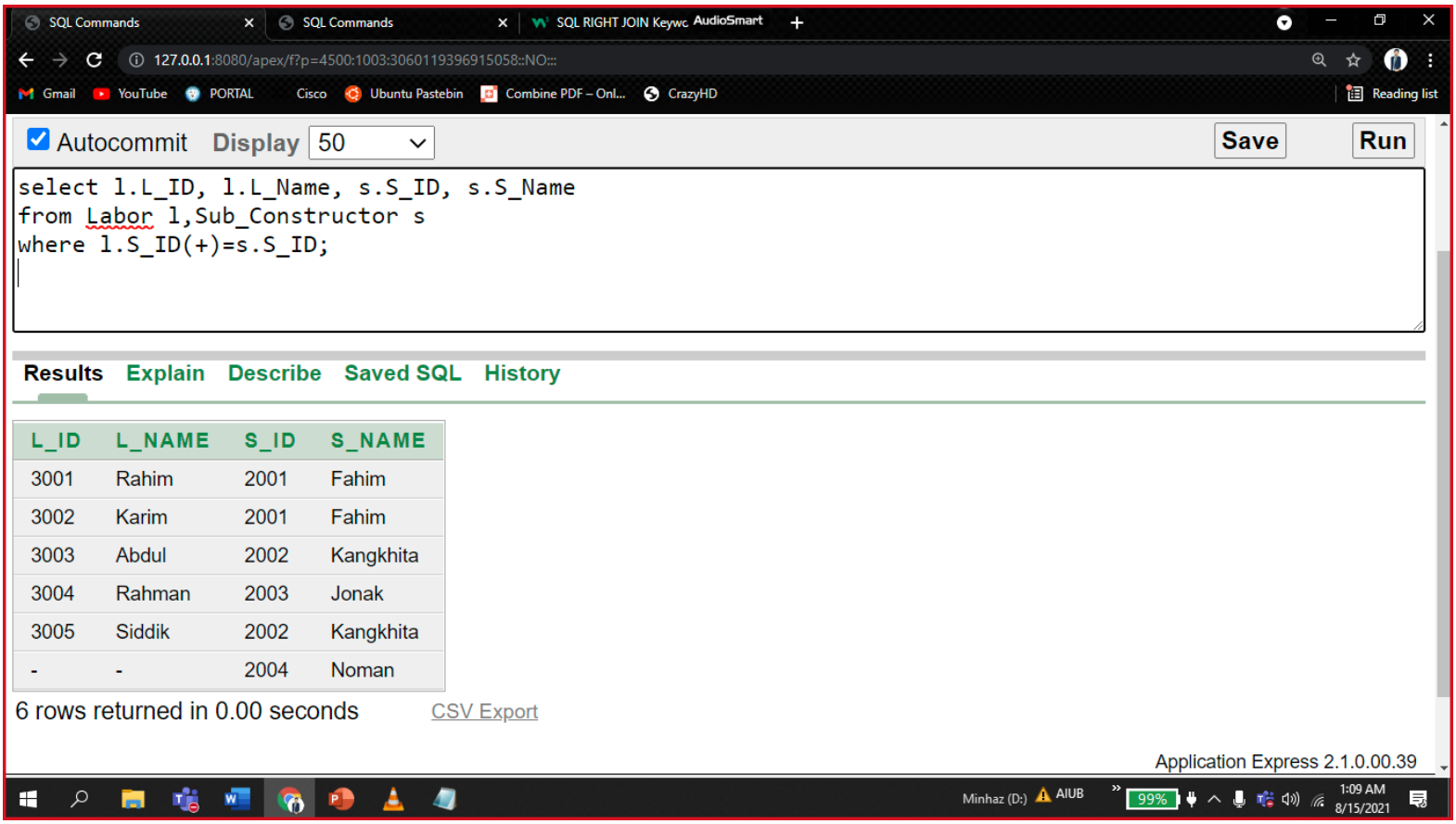
```
select i.L_ID,i.L_Name,c.L_City
from Labor_Info i,Labor_City c
where i.L_House_No = c.L_House_No;
```



2. OUTER-JOIN:

Get all the Matching Non-matching records from the Labor & Sub-Constructor table using OUTERJOIN and display the Labor ID, Labor name, Sub-Constructor ID and Sub-Constructor Name.

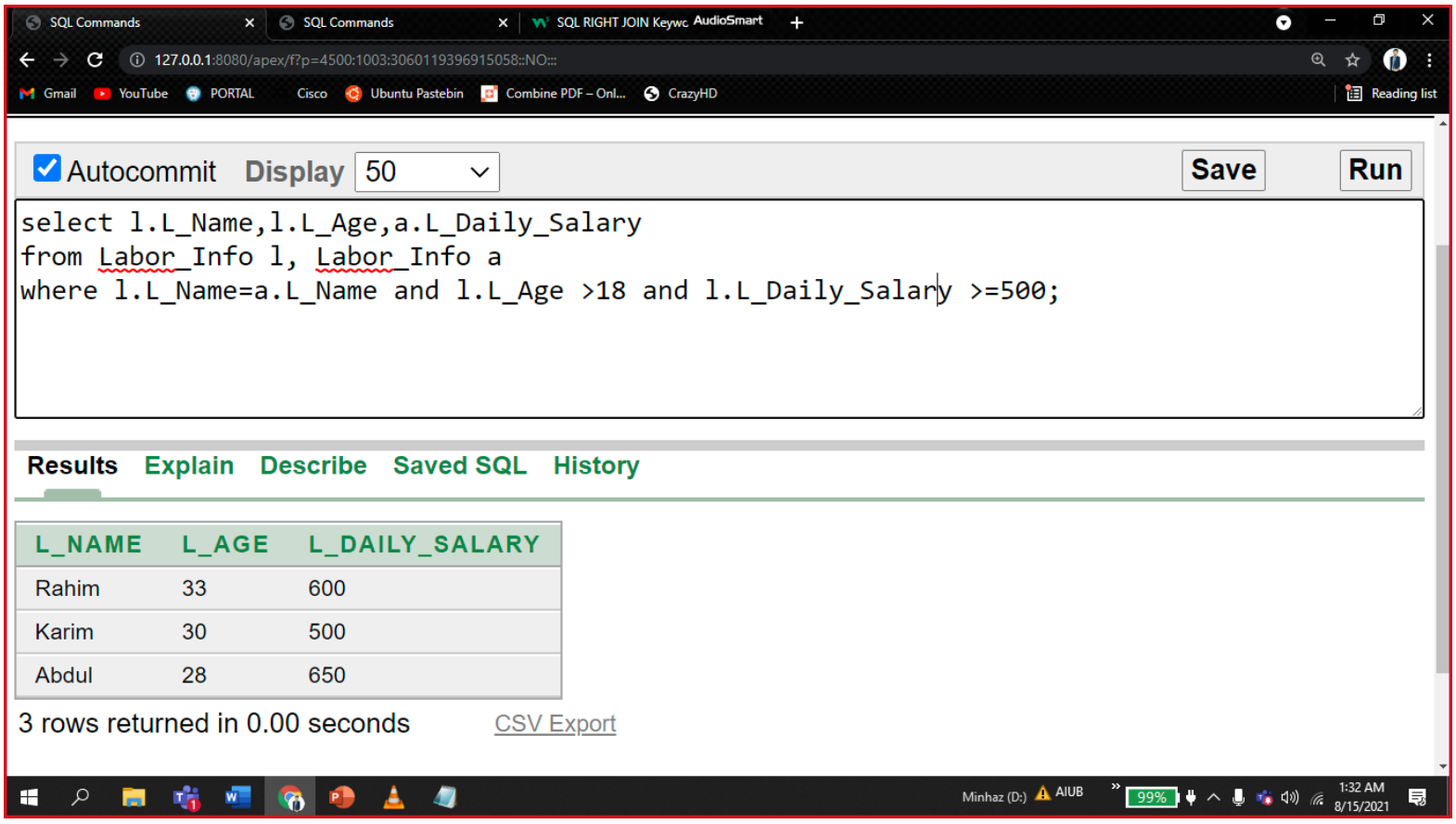
```
select l.L_ID, l.L_Name, s.S_ID, s.S_Name
from Labor l,Sub_Constructor s
where l.S_ID(+)=s.S_ID;
```



3. SELF-JOIN:

Select all the labor who are more than 18 years old and earning more than 500 BDT daily and display their Name, Age & Daily Salary.

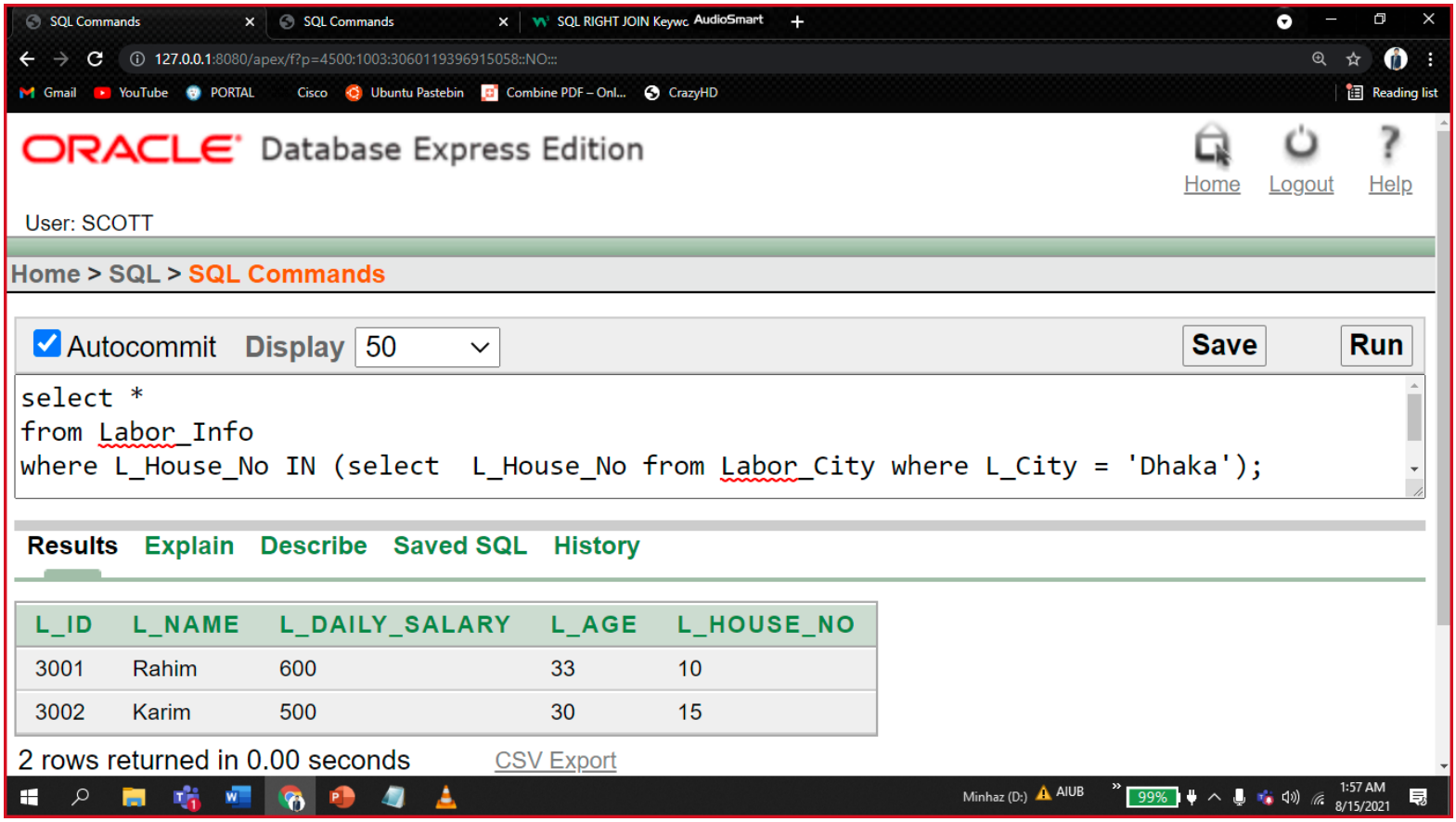
```
select l.L_Name,l.L_Age,a.L_Daily_Salary
from Labor_Info l, Labor_Info a
where l.L_Name=a.L_Name and l.L_Age >18 and l.L_Daily_Salary >=500;
```



Sub-Query

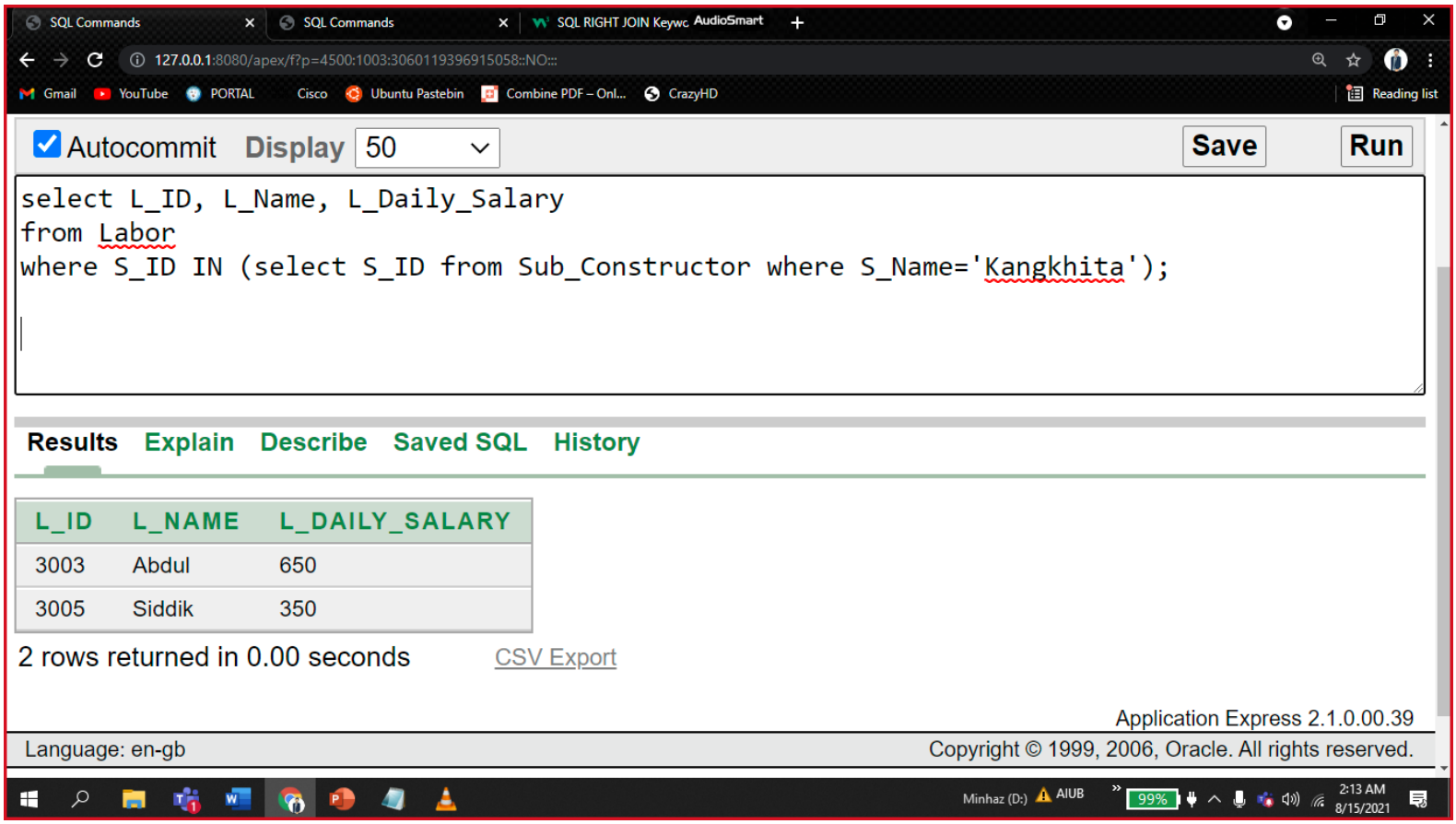
1. Select all the Labor who are from Dhaka

Ans: select *
from Labor_Info
where L_House_No IN (select L_House_No from Labor_City
where L_City = 'Dhaka');



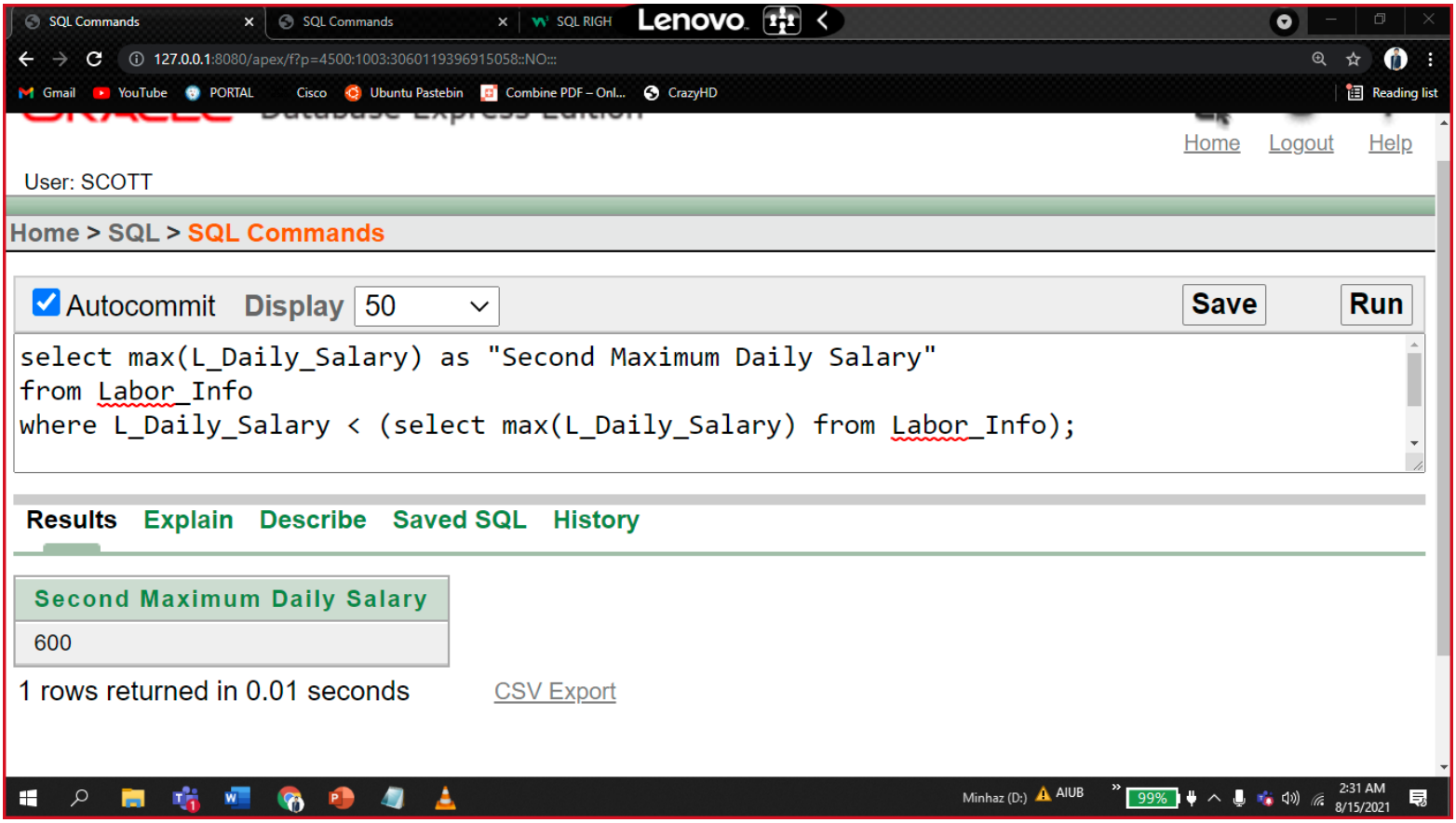
2. **Select Labor ID,Labour name,Labor Daily Salary of all the Labor who are works for Sub-Constructor 'Kangkhita'.**

Ans: select L_ID, L_Name, L_Daily_Salary
from Labor
where S_ID IN (select S_ID from Sub_Constructor where S_Name='Kangkhita');



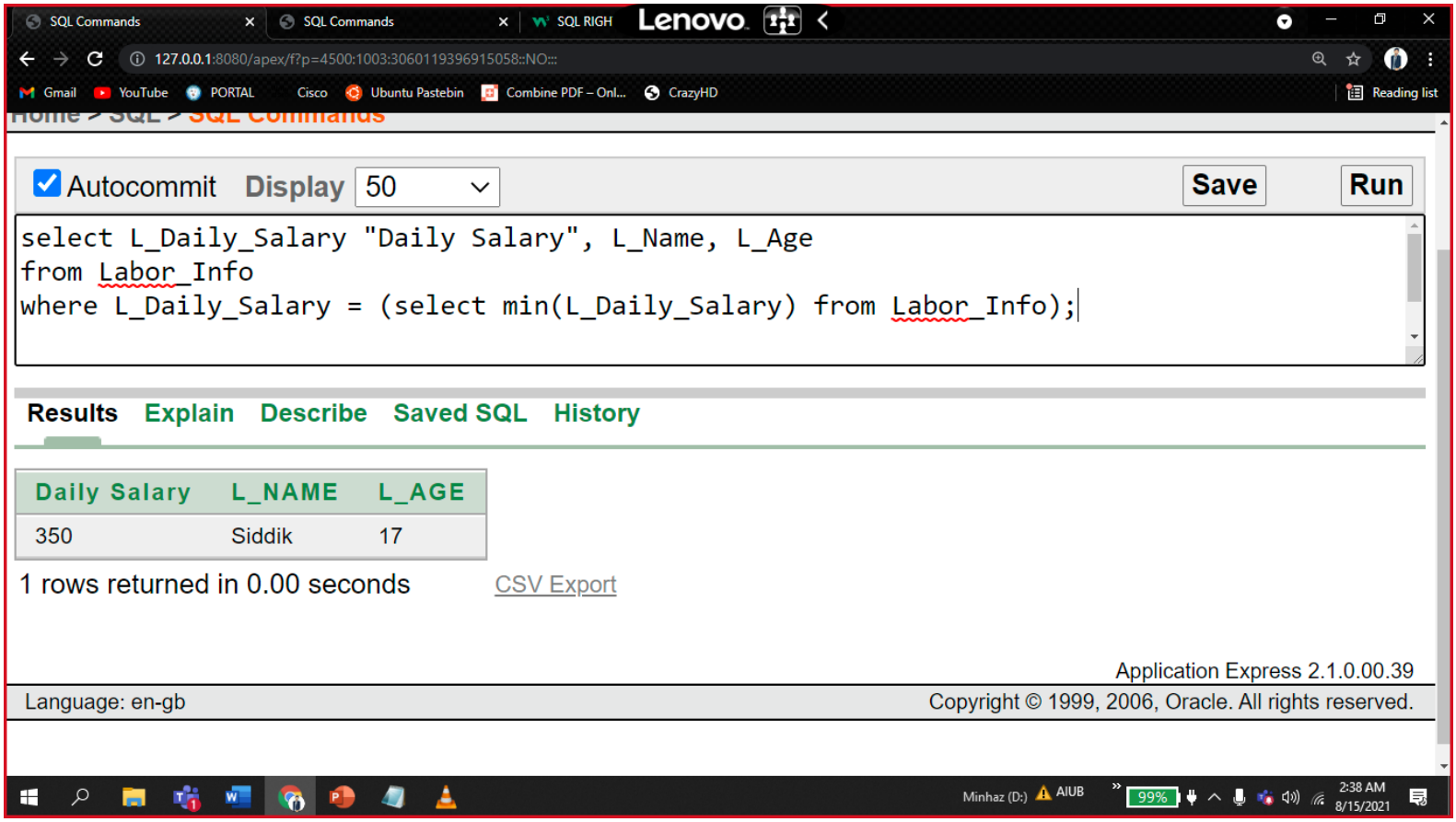
3. Display the second maximum salary as "Second Maximum Daily Salary" from Labor Information table.

Ans: select max (L_Daily_Salary) as "Second Maximum Daily Salary"
from Labor_Info
where L_Daily_Salary < (select max(L_Daily_Salary) from Labor_Info);



4. **Select the minimum salary of the Labor and display the salary as "Daily Salary", Labor Name and his/her Age.**

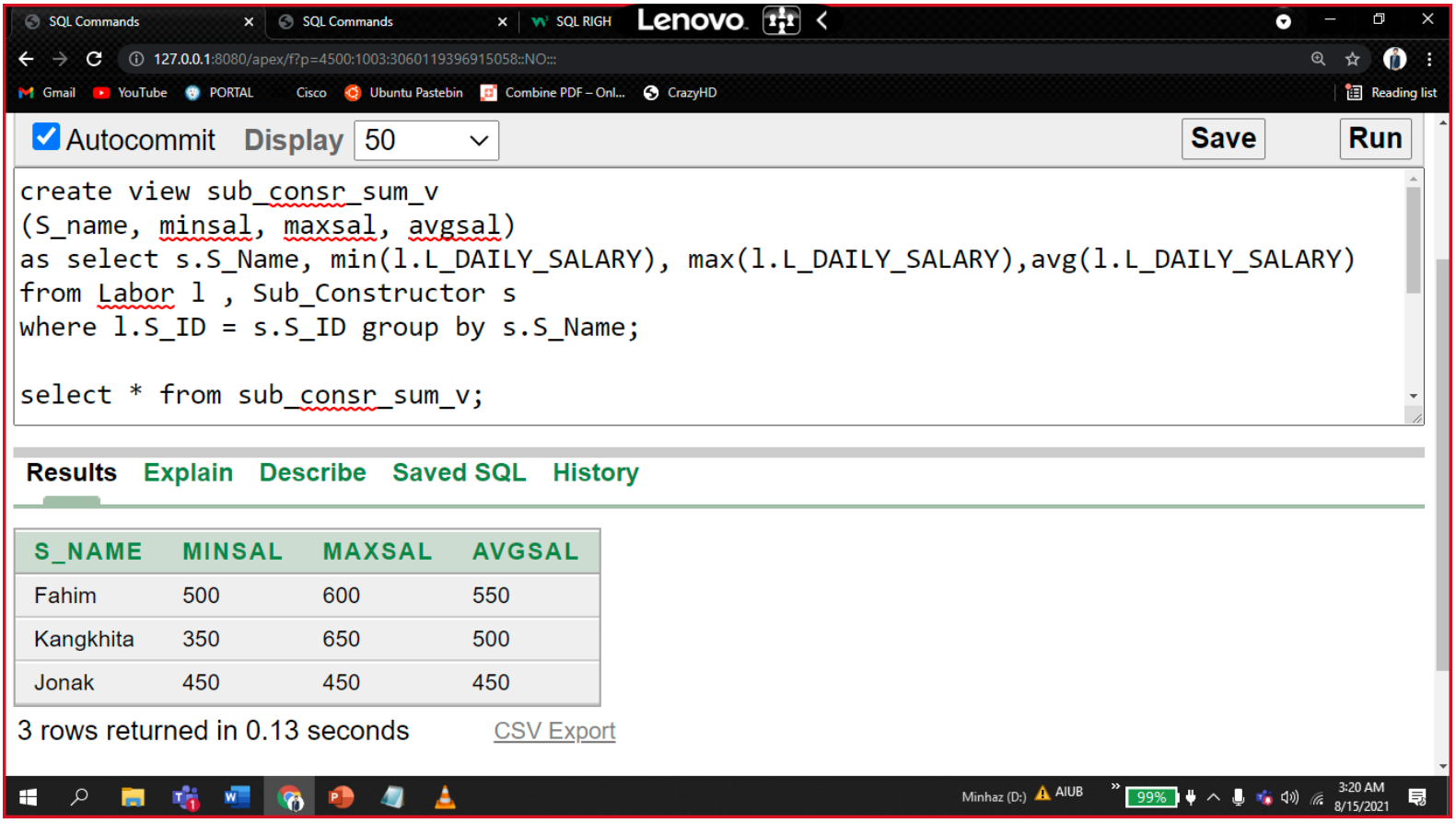
Ans: select L_Daily_Salary "Daily Salary", L_Name, L_Age
from Labor_Info
where L_Daily_Salary = (select min(L_Daily_Salary) from Labor_Info);



VIEW

Create a complex view that contains group functions to display values from Labor & Sub-Constructor table.

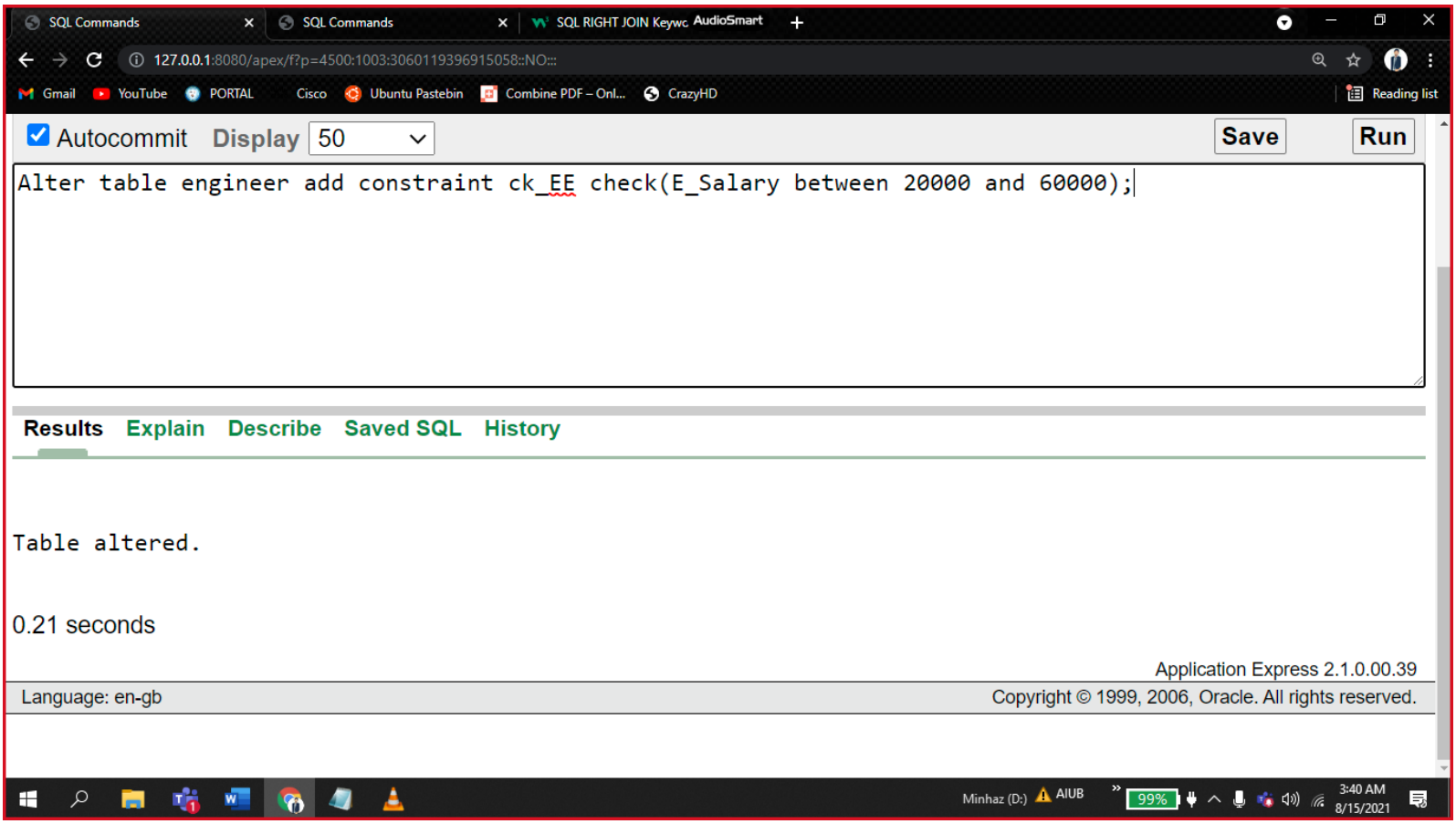
```
create view sub_consr_sum_v

(S_name, minsal, maxsal, avgsal)

as select s.S_Name, min(l.L_DAILY_SALARY),
max(l.L_DAILY_SALARY),avg(l.L_DAILY_SALARY)

from Labor l , Sub_Constructor s

where l.S_ID = s.S_ID group by s.S_Name;


select * from sub_consr_sum_v;
```

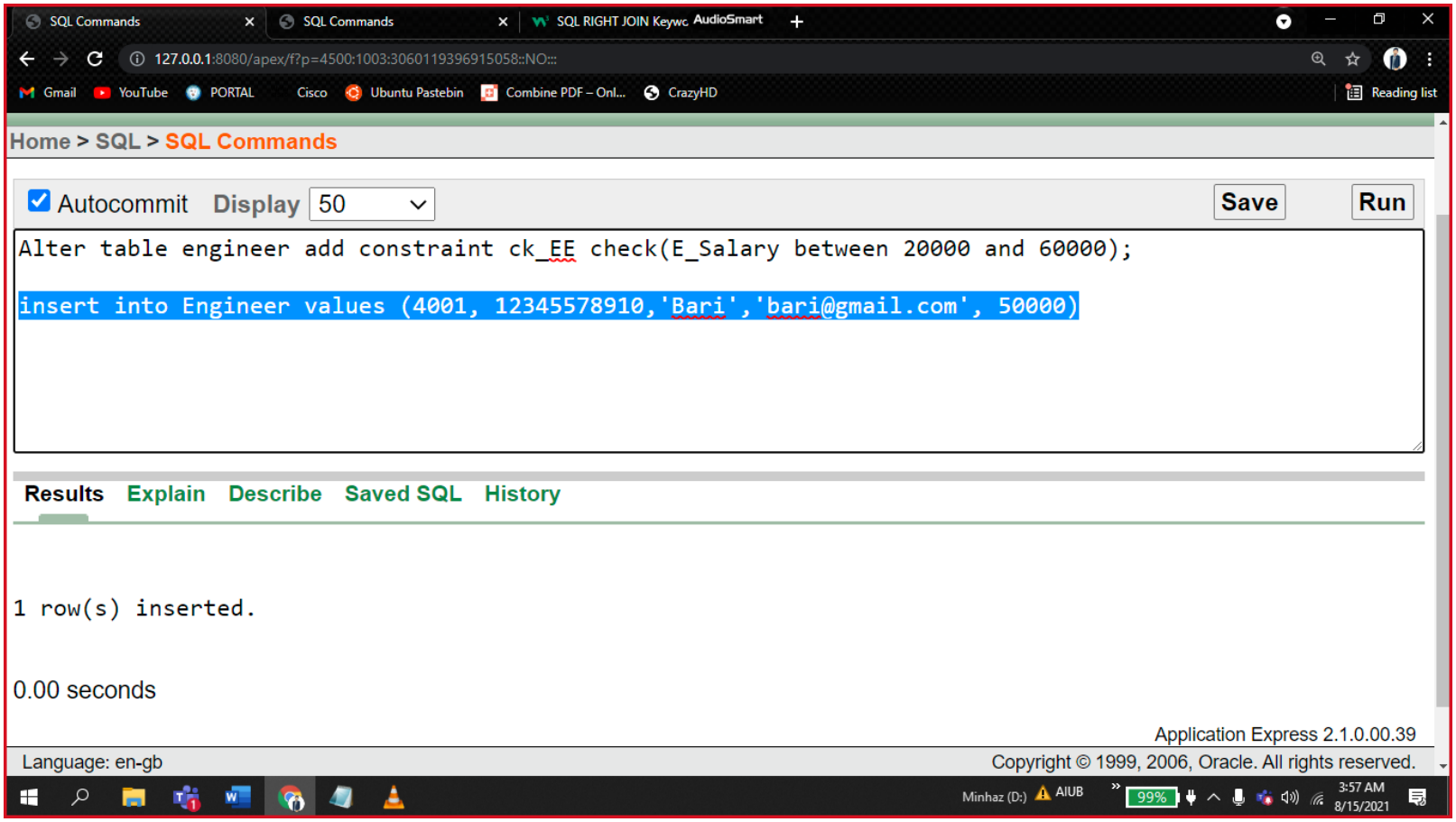


Add Constraint

Adding a constraint (Check):

Alter table engineer add constraint ck_EE check(E_Salary between 20000 and 60000);




SQL Commands
SQL Commands
SQL RIGHT JOIN Keywc AudioSmart
127.0.0.1:8080/apex/f?p=4500:1003:3060119396915058::NO:::
Gmail YouTube PORTAL Cisco Ubuntu Pastebin Combine PDF – Onl... CrazyHD
Reading list
Home > SQL > SQL Commands
Autocommit Display 50
Save
Run
Alter table engineer add constraint ck_EE check(E_Salary between 20000 and 60000);
insert into Engineer values (4001, 12345578910,'Bari','bari@gmail.com', 50000)
Results Explain Describe Saved SQL History
1 row(s) inserted.
0.00 seconds
Application Express 2.1.0.00.39
Language: en-gb
Copyright © 1999, 2006, Oracle. All rights reserved.
Minhaz (D:) AIUB
99%
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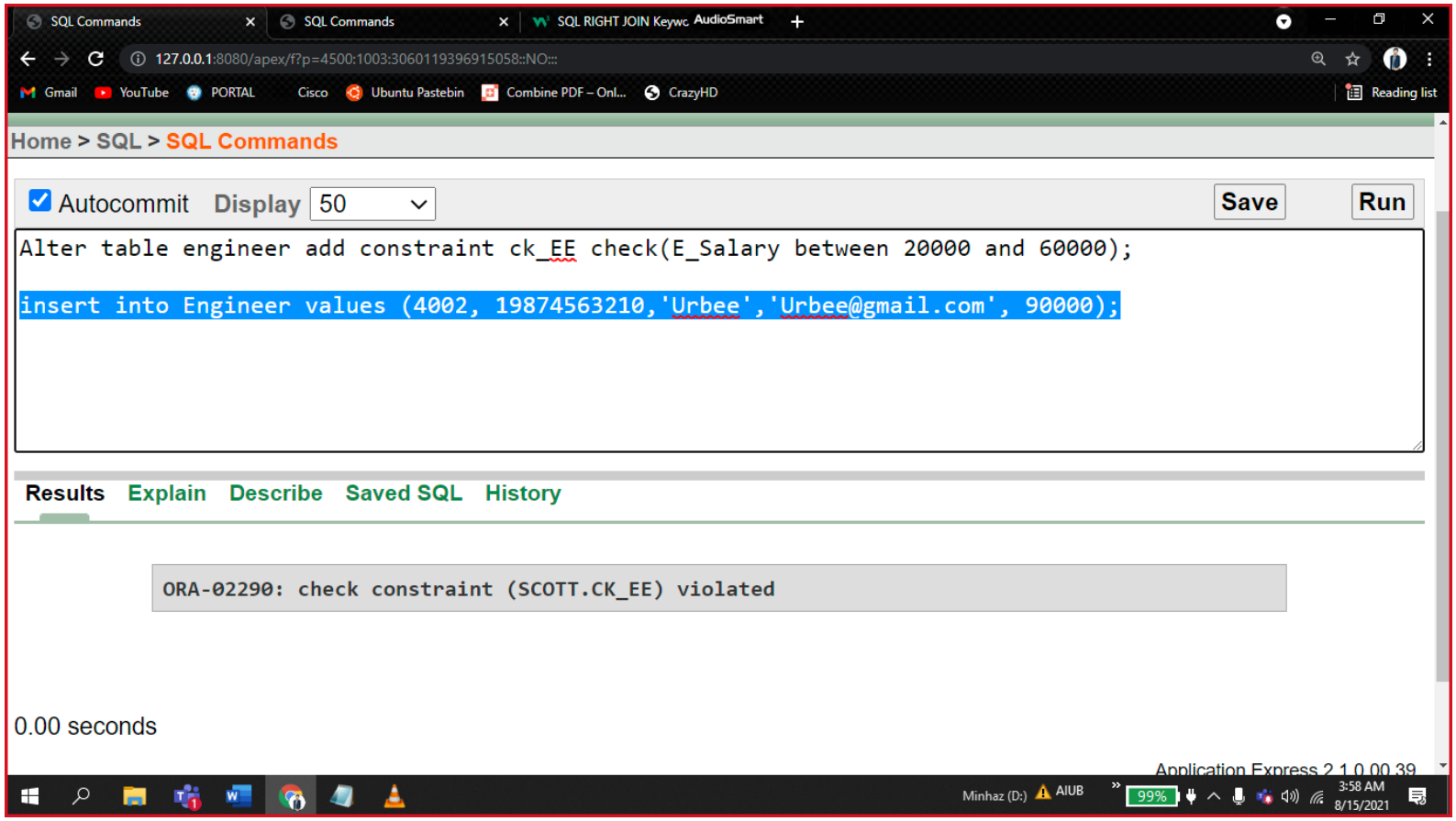
8/15/2021


SQL Commands
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SQL RIGHT JOIN Keywc AudioSmart
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Gmail YouTube PORTAL Cisco Ubuntu Pastebin Combine PDF – Onl... CrazyHD
Reading list
Home > SQL > SQL Commands
Autocommit Display 50
Save
Run
Alter table engineer add constraint ck_EE check(E_Salary between 20000 and 60000);
insert into Engineer values (4002, 19874563210,'Urbee','Urbee@gmail.com', 90000);
Results Explain Describe Saved SQL History
ORA-02290: check constraint (SCOTT.CK_EE) violated
0.00 seconds
Application Express 2.1.0.00.39
Minhaz (D:) AIUB
99%
3:58 AM
8/15/2021