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**INTRODUCTION:**

A database management system (DBMS) refers to the technology for creating and managing databases.

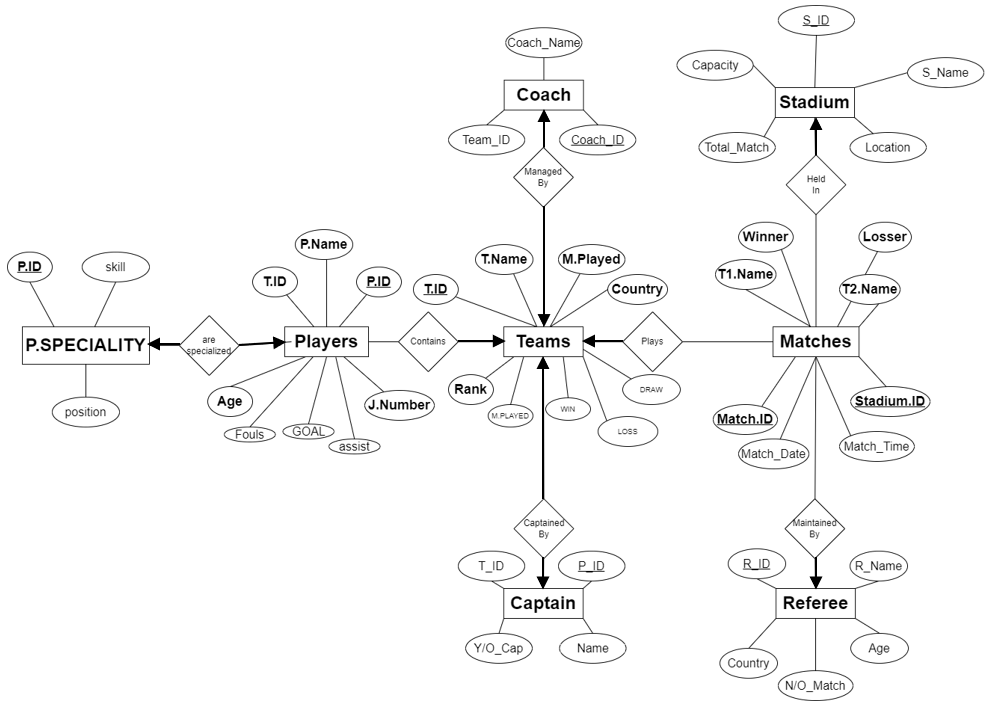
The main objective of this database project is to create a database to centrally handle a Database Management System based on FIFA Football World Cup Management. The database can provide various information about the teams or matters within the teams such as players or coaches of the World cup. Others matters such as matches, referee, stadium can be found also. This database consists of ten entities.

**SCENARIO DESCRIPTION:**

A FIFA Football World Cup management system contains Team. Team is uniquely identified by TEAM ID. Other attributes of a Team are TEAM NAME, RANK. A team has a Team\_Stats. Team\_Stats is also identified by TEAM ID Team\_Stats has MATCH PLAYED, WIN, LOSS, DRAW. A Team plays many Matches. A Match is identified by MATCH ID. A Match also has TEAM 1 NAME, TEAM 2 NAME, WINNER, LOSSER, MATCH DATE, STADIUM ID, REFEREE ID. Many Matches are held in many Stadiums. A Stadium has unique STADIUM ID. Stadium also has STADIUM NAME, LOCATION, TOTAL MATCHES, CAPACITY. One Match is maintained by one Referee. Referee has unique REFEREE ID as primary key. Referee also has REFEREE NAME, AGE, N/O MATCHES, COUNTRY. One Team is maintained by one Coach. Coach is identified by COACH ID. Coach also has TEAM ID and COACH NAME. One Team contains many players. Player is identified by unique PLAYER ID. Player also has PLAYER NAME, TEAM ID, AGE and JERSEY NUMBER. A team also is captained by one Captain. Captain is identified by PLAYER ID. Captain also has TEAM ID, Y/O CAPTAINCY. One Player has one Player Stats. Player Stats is also identified by PLAYER ID. Player\_Stats also has TEAM ID, GOALS, ASSIST, MATCH PLAYED, FOUL. A Player can be specialized in many Player Speciality. Player Speciality is also identified by PLAYER ID. Player Speciality also has POSITION and SKILL.

**ER DIAGARM ON SCENARIO:**

BEFORE NORMALIZATION:



AFTER NORMALIZATION:



**NORMALIZATION:**

**1NF** (done on Player Speciality table):

Before 1NF:

|  |  |  |
| --- | --- | --- |
| PLAYER\_ID | POSITION | SKILL |
| PORP01 | LEFT WING, STRIKER | GOAL MAKER, GOAL MACHINE |
| ARGP01 | RIGHT WING, CENTRE MIDFIELD | PLAY MAKER, GREAT PASS |
| GERPO3 | CENTRE MIDFIELD, STRIKER | GREAT PASS, SHOOT |
| FRAP01 | STRIKER | SCORER |
| BRAPO1 | LEFTWING, MIDFIELD | DRIBBLING, PLAYMAKER |

After 1NF:



**2NF** (done on Player table and team table):

**Player Table:**

Before 2NF:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| PLAYER  \_ID | TEAM\_ID | PLAYER\_  NAME | AGE | MATCH  \_PLAYED | GOALS | ASSIST | FOULS | JERSEY NUMBER |
| ARGP01 | ARG01 | MESSI | 35 | 4 | 5 | 2 | 1 | 10 |
| ARGP02 | ARG01 | DI MARIA | 34 | 4 | 2 | 3 | 2 | 11 |
| ARGP03 | ARG01 | DE PAUL | 24 | 4 | 1 | 5 | 3 | 7 |
| ARGP04 | ARG01 | EMI | 30 | 5 | 0 | 2 | 1 | 1 |
| GERP01 | GER01 | MUSIALA | 19 | 4 | 6 | 1 | 0 | 14 |
| GERP02 | GER01 | HERVERTZ | 23 | 4 | 3 | 2 | 4 | 11 |
| GERP03 | GER01 | MULLER | 34 | 6 | 2 | 5 | 2 | 13 |
| BRAP01 | BRA01 | NEYMER | 30 | 4 | 7 | 2 | 1 | 10 |

AFTER 2 NF:

**PLAYER TABLE:**

****

**PLAYER\_STATS TABLE:**

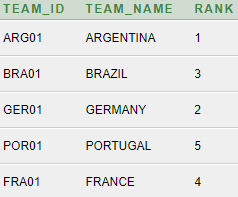
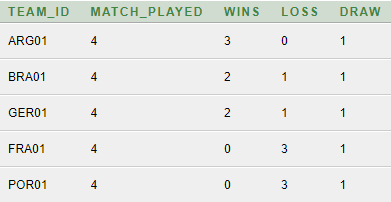


**Table Team before 2NF:**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| TEAM\_  ID | TEAM\_NAME | RANK | MATCH\_PLAYED | WINS | LOSS | DRAW |
| ARG01 | ARGENTINA | 1 | 4 | 3 | 0 | 1 |
| BRA01 | BRAZIL | 3 | 4 | 2 | 1 | 1 |
| GER01 | GERMANY | 2 | 4 | 2 | 1 | 1 |
| POR01 | PORTUGAL | 5 | 4 | 0 | 3 | 1 |
| FRA01 | FRANCE | 4 | 4 | 0 | 3 | 1 |

After 2NF:

**Table TEAM:** **Table TEAM\_STATS:**



3NF:

3NF is not required on the database as:

* The database does not have any Transitive Dependency.
* No data duplication.
* No data anomalies.

**TABLE CREATION:**

**TEAM:**

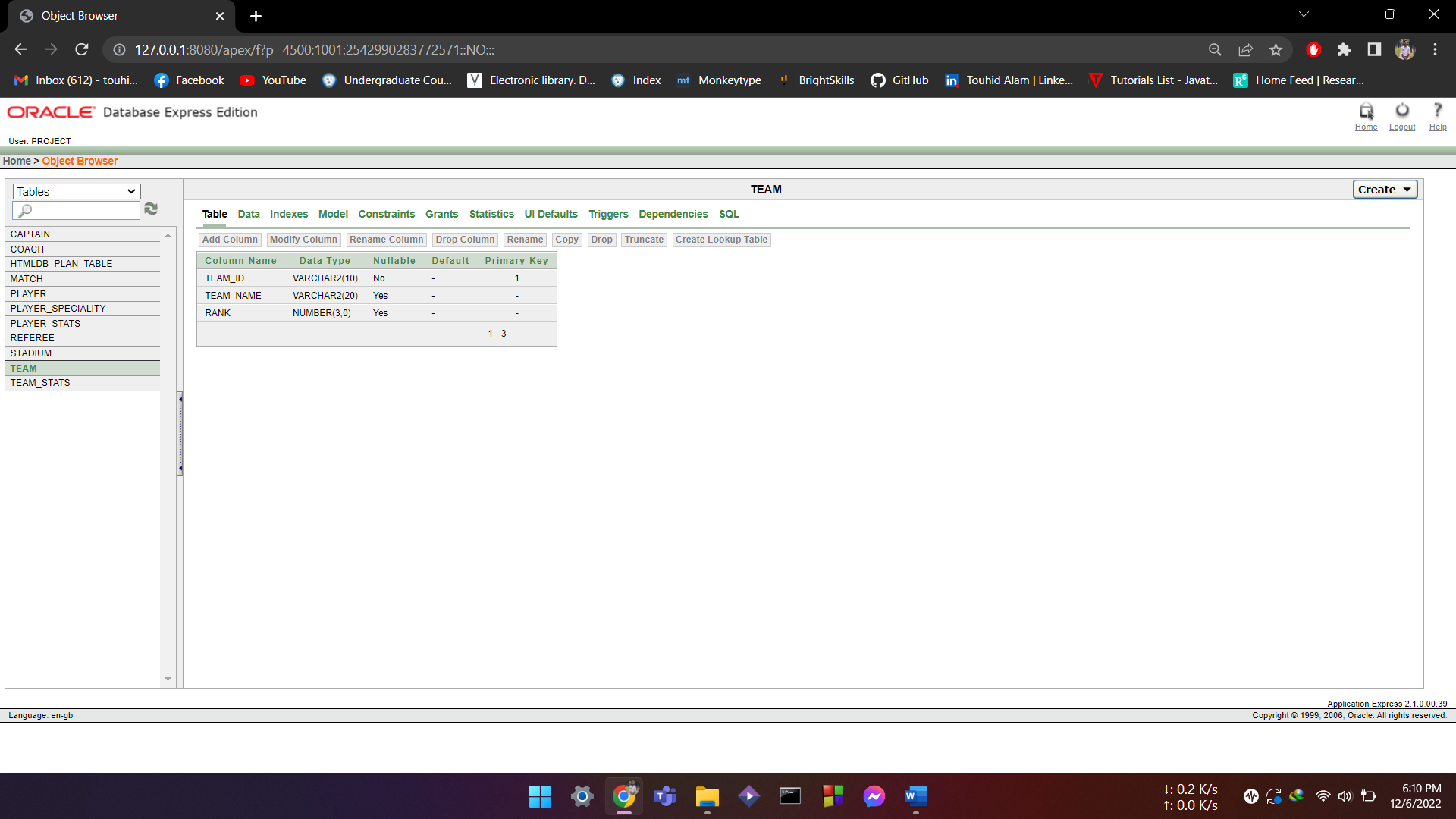
create table TEAM(

TEAM\_ID varchar(10) primary key,

TEAM\_NAME varchar(20),

RANK number(3)

);



**TEAM\_STATS:**

create table TEAM\_STATS(

TEAM\_ID references TEAM,

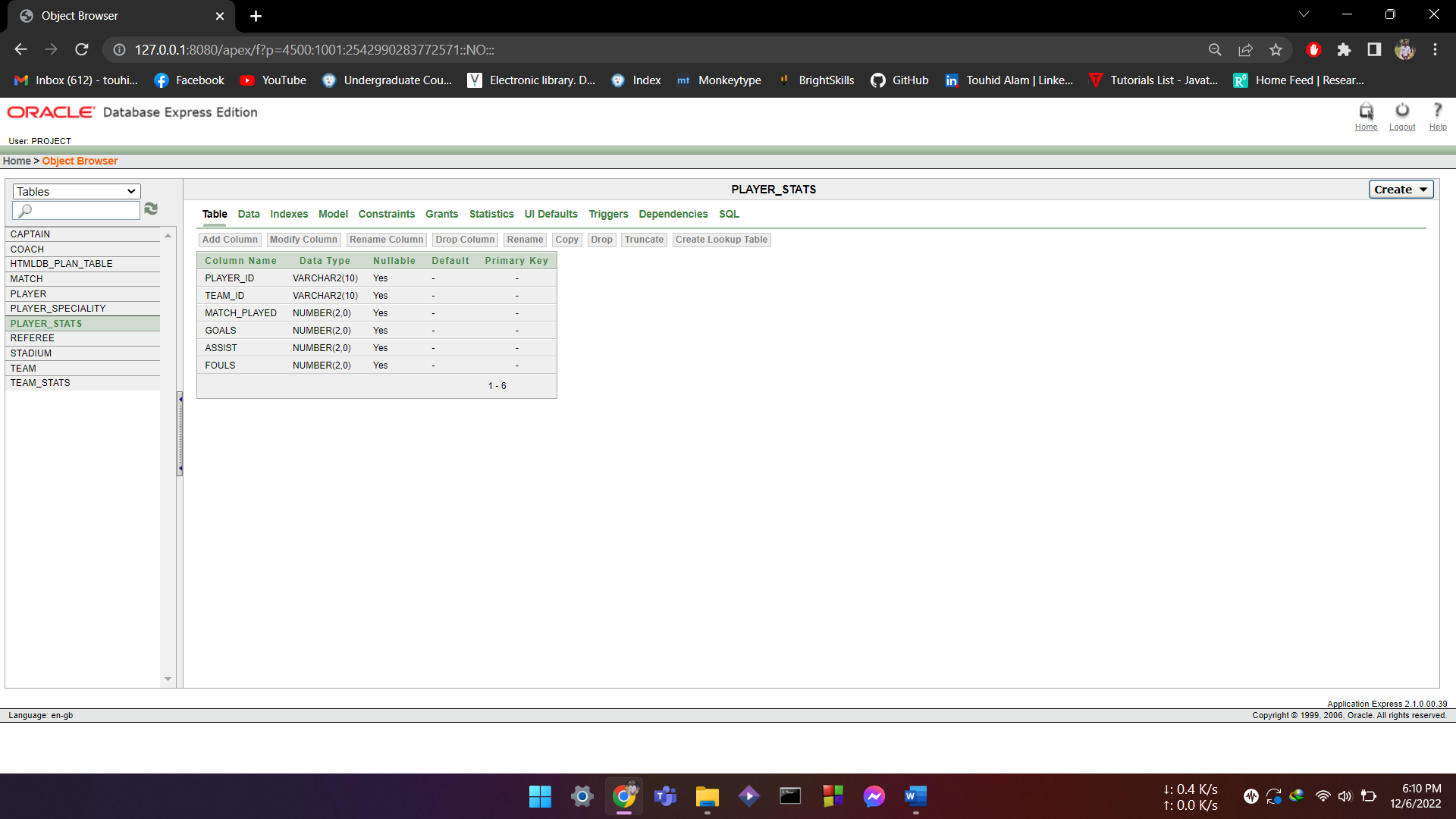
MATCH\_PLAYED number(2),

WINS number(2),

LOSS number (2),

DRAW number(2)

);



**MATCH:**

CREATE TABLE MATCH(

MATCH\_ID VARCHAR(20) PRIMARY KEY,

TEAM1\_NAME VARCHAR(20),

TEAM2\_NAME VARCHAR(20),

WINNER VARCHAR(20),

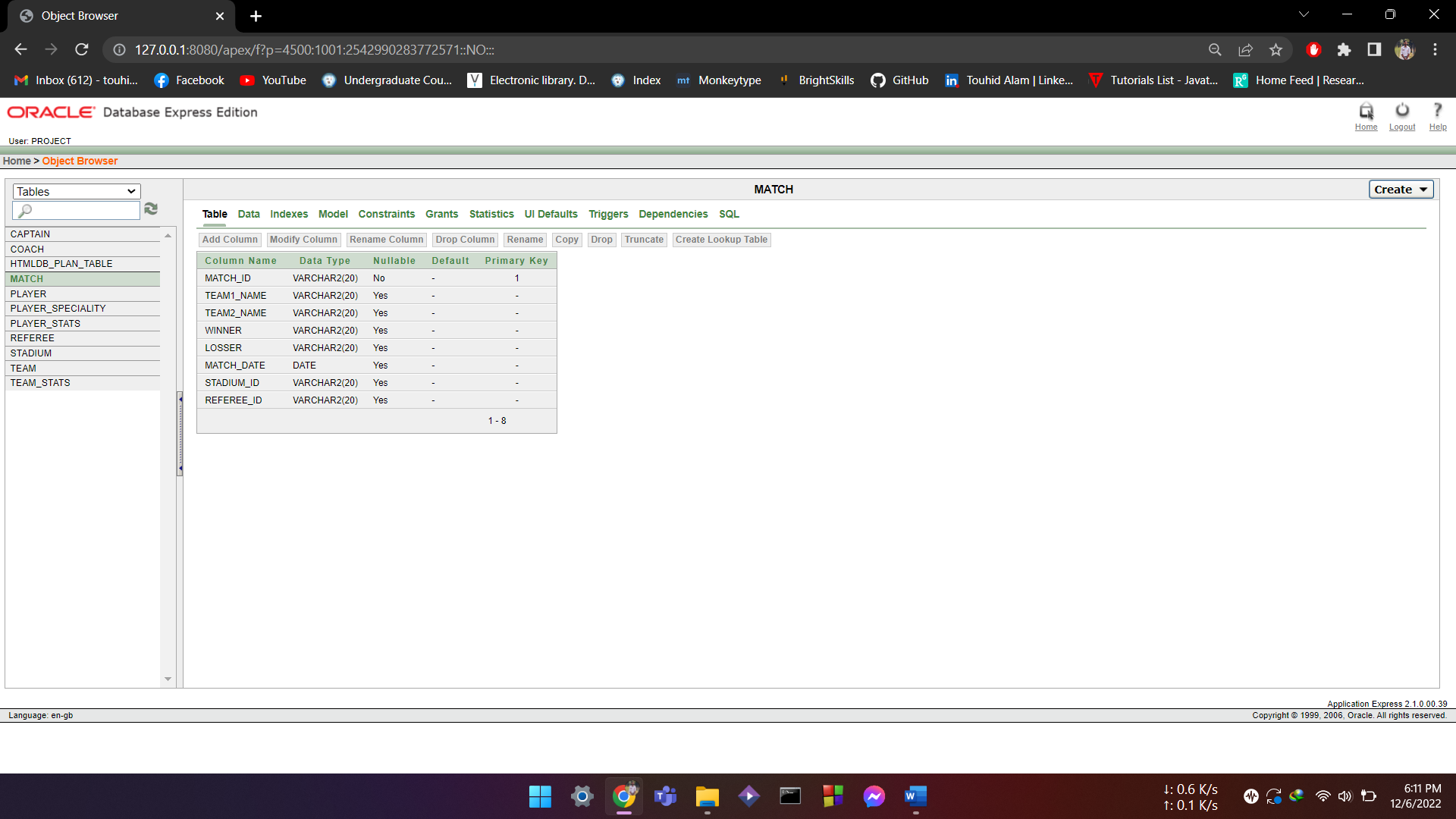
LOSSER VARCHAR(20),

MATCH\_DATE DATE,

STADIUM\_ID REFERENCES STADIUM,

REFEREE\_ID REFERENCES REFEREE

);



**REFREE:**

create table REFEREE(

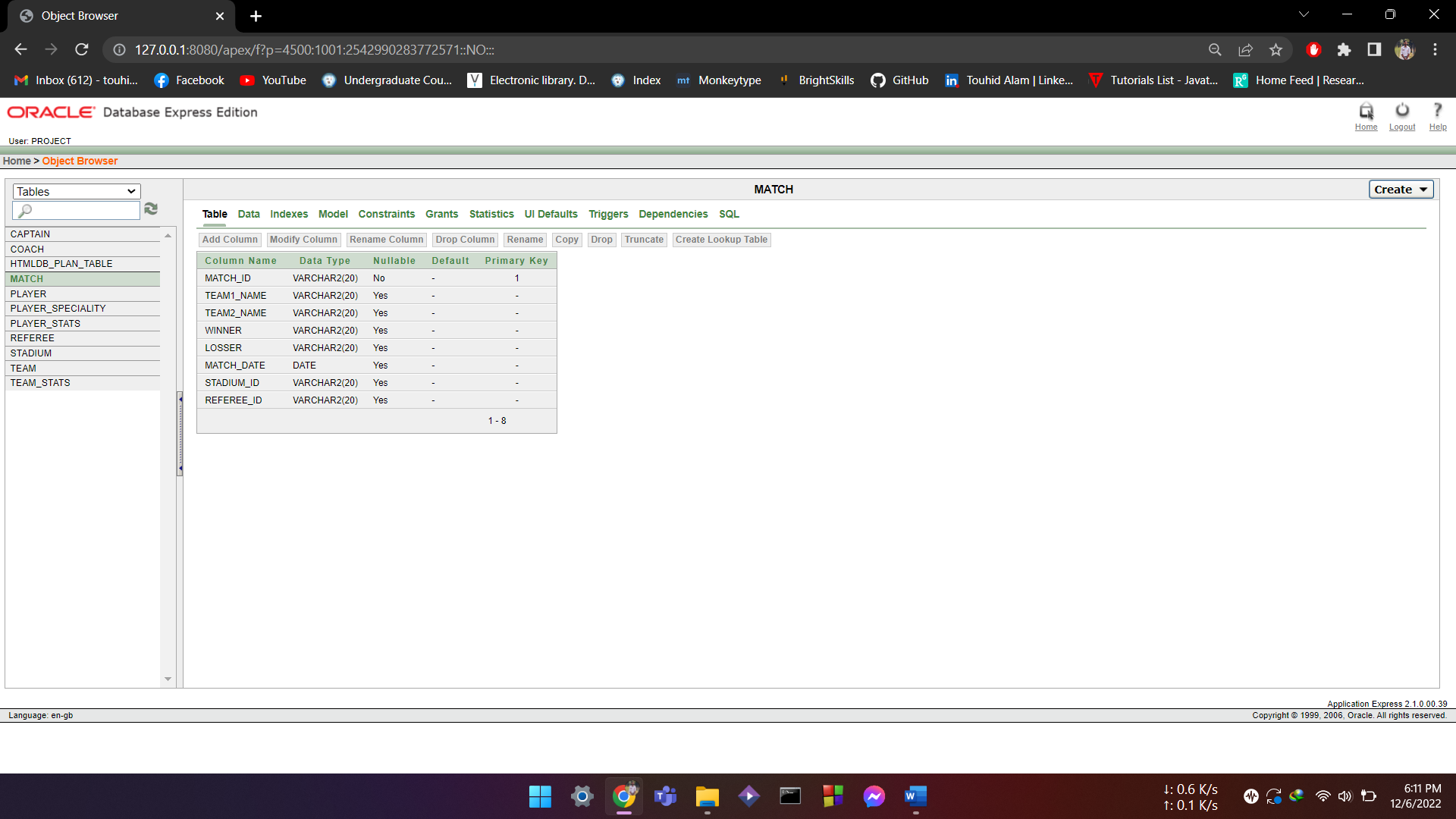
REFEREE\_ID varchar(20) primary key,

REFEREE\_NAME varchar(20),

AGE number(3),

COUNTRY varchar(20),

TOTAL\_MATCH number(3));



**STADIUM:**

create table STADIUM(

STADIUM\_ID varchar(20) primary key,

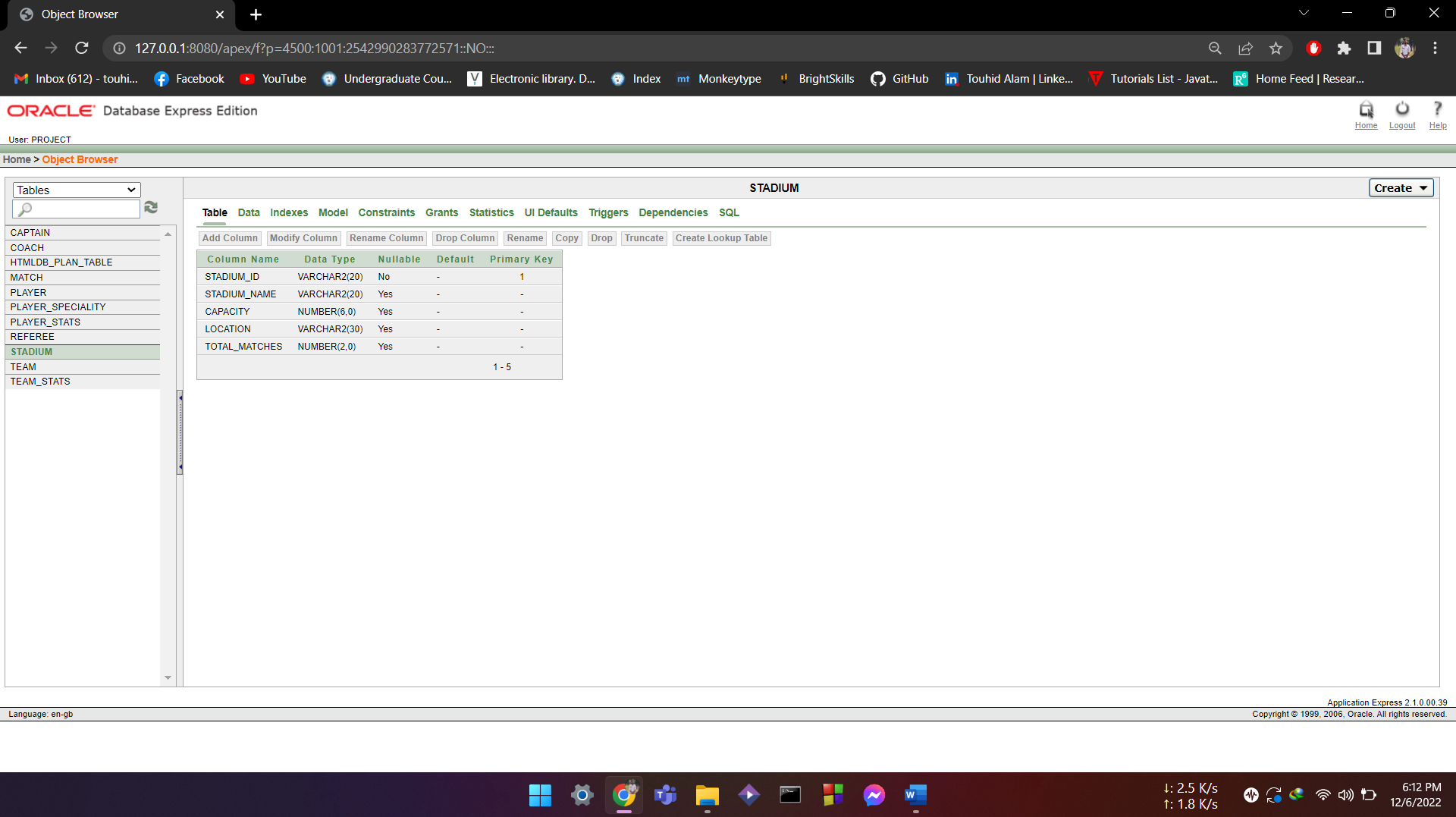
STADIUM\_NAME varchar(20),

CAPACITY number(6),

LOCATION varchar(30),

TOTAL\_MATCHES number(2)

);



**COACH:**

create table COACH(

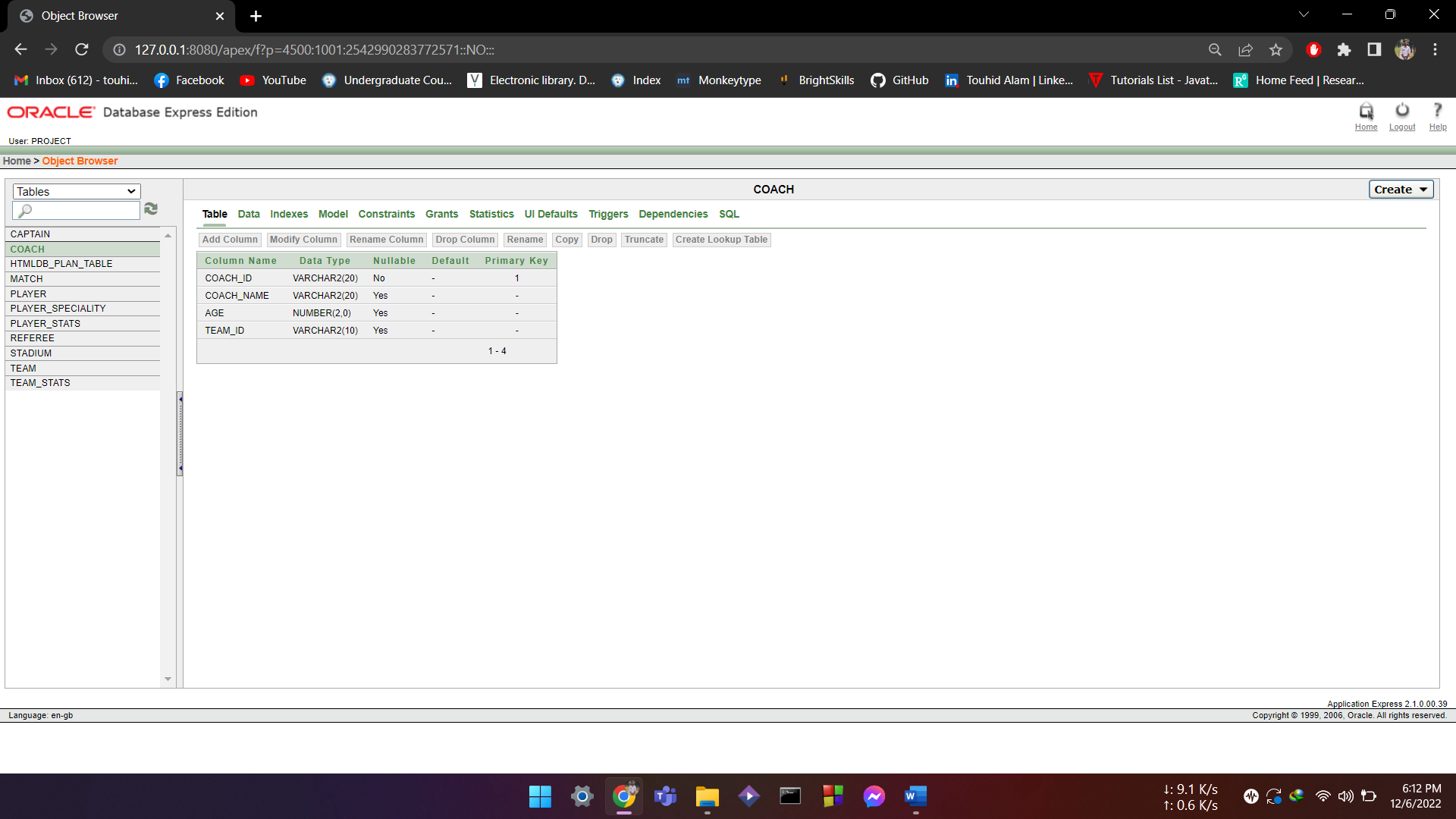
COACH\_ID varchar(20) primary key,

COACH\_NAME varchar(20),

AGE number(2),

TEAM\_ID references TEAM

);



**PLAYER:**

create table PLAYER(

PLAYER\_ID varchar(10) primary key,

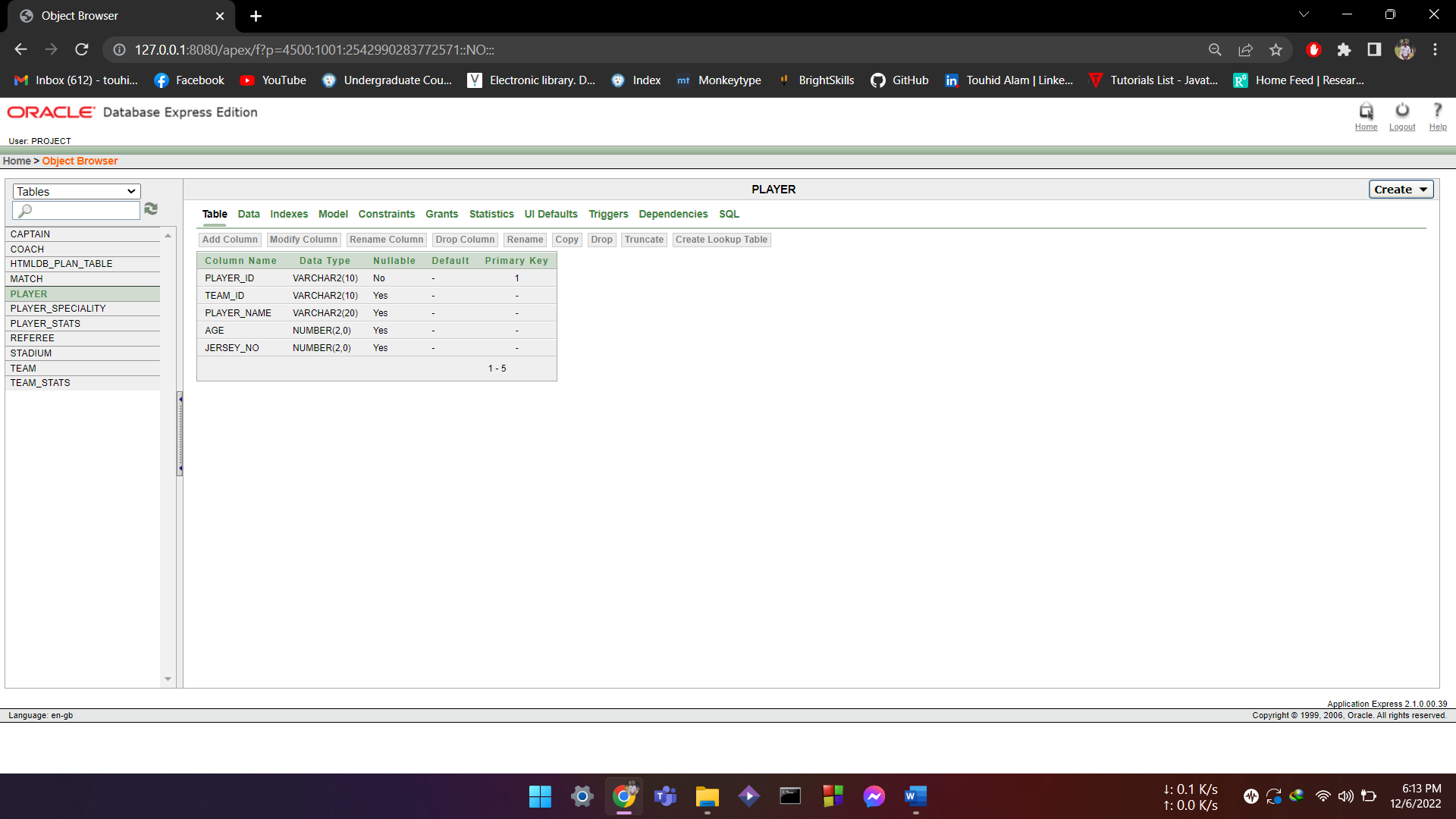
TEAM\_ID references TEAM,

PLAYER\_NAME varchar(20),

AGE number(2),

JERSEY\_NO number(2)

);



**CAPTION:**

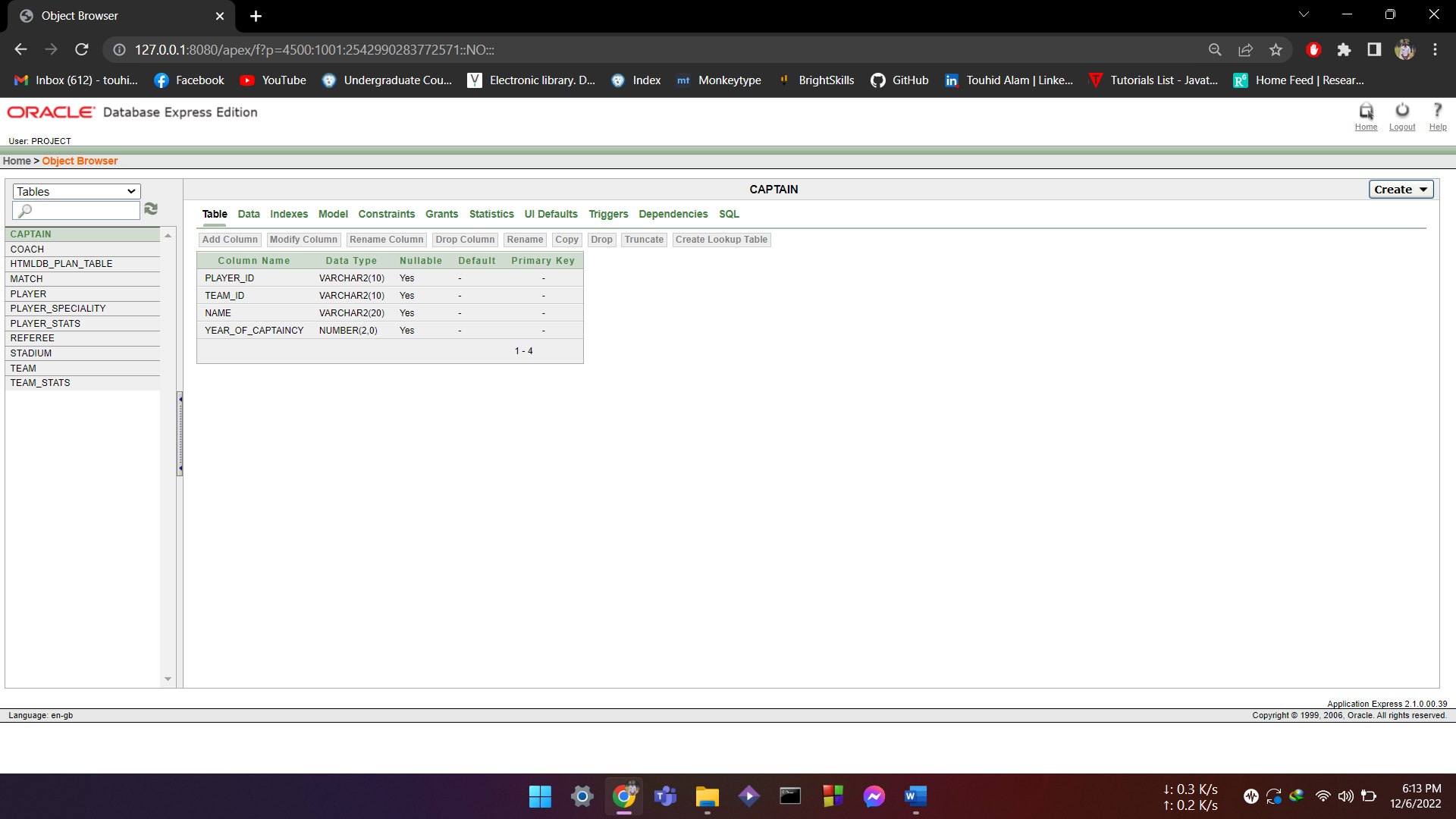
create table CAPTAIN(

PLAYER\_ID references PLAYER,

TEAM\_ID references TEAM,

NAME varchar(20),

YEAR\_OF\_CAPTAINCY number(2));



**PLAYER\_STATS**:

create table PLAYER\_STATS(

PLAYER\_ID REFERENCES PLAYER,

TEAM\_ID REFERENCES TEAM,

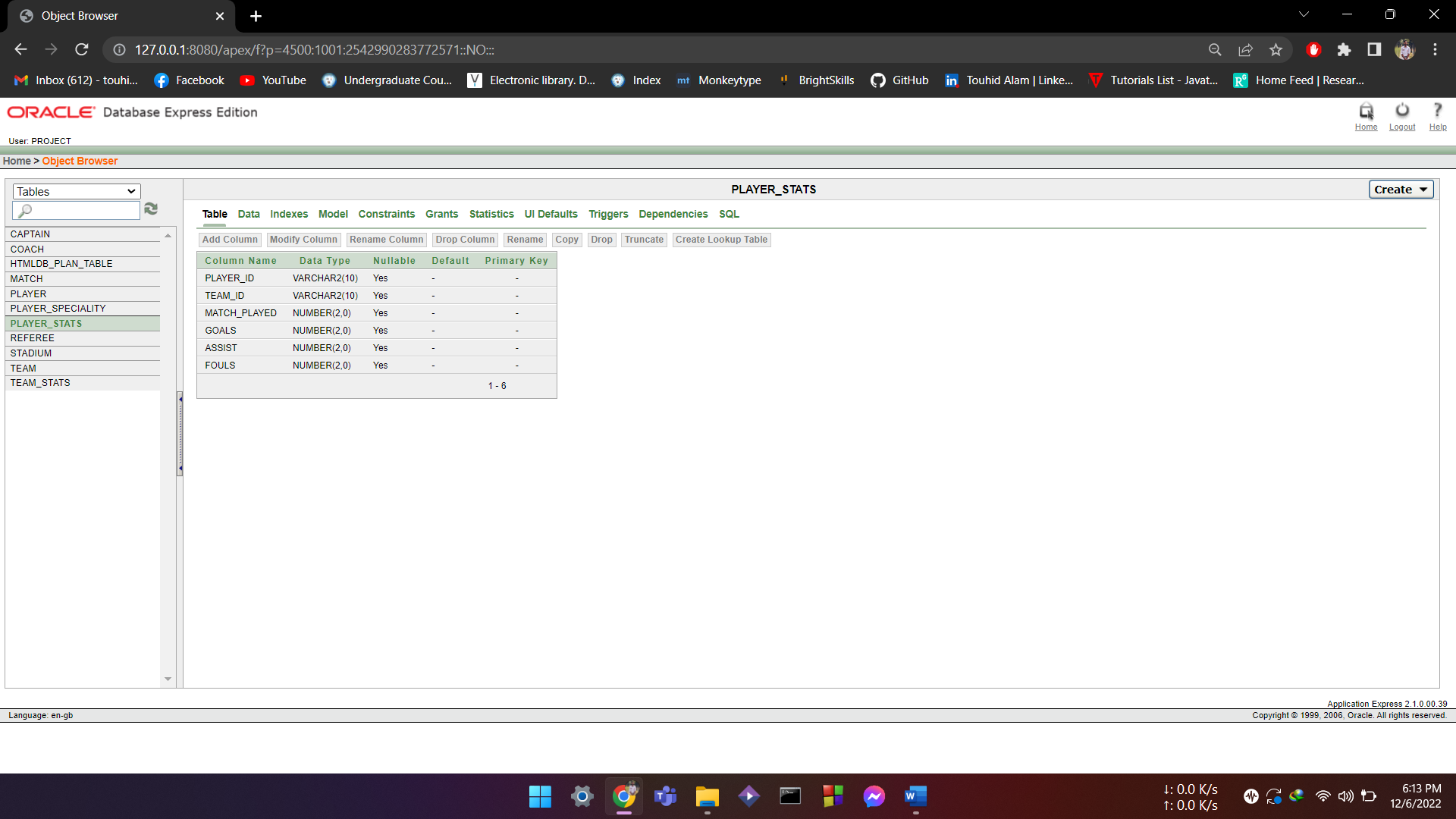
MATCH\_PLAYED NUMBER(2),

GOALS NUMBER(2),

ASSIST NUMBER(2),

FOULS NUMBER(2)

)



**PLAYER\_SPECIALITY:**

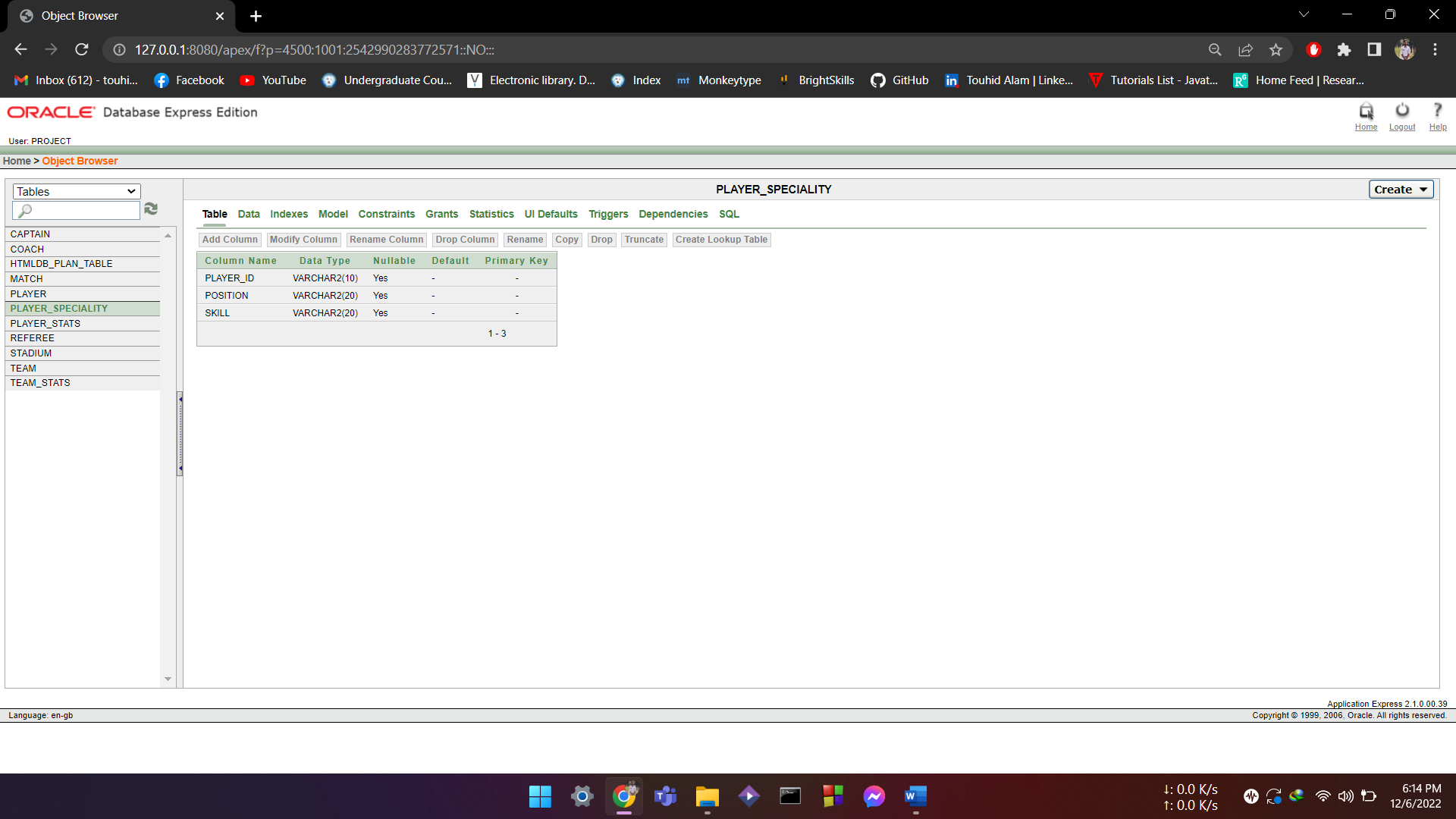
CREATE TABLE PLAYER\_SPECIALITY(

PLAYER\_ID REFERENCES PLAYER,

POSITION VARCHAR(20),

SKILL VARCHAR(20)

);



**DATA INSERTION:**

**INSERT INTO TEAM:**

INSERT INTO TEAM VALUES(

'BRA01','BRAZIL',3);

INSERT INTO TEAM VALUES(

'ARG01','ARGENTINA',1);

INSERT INTO TEAM VALUES(

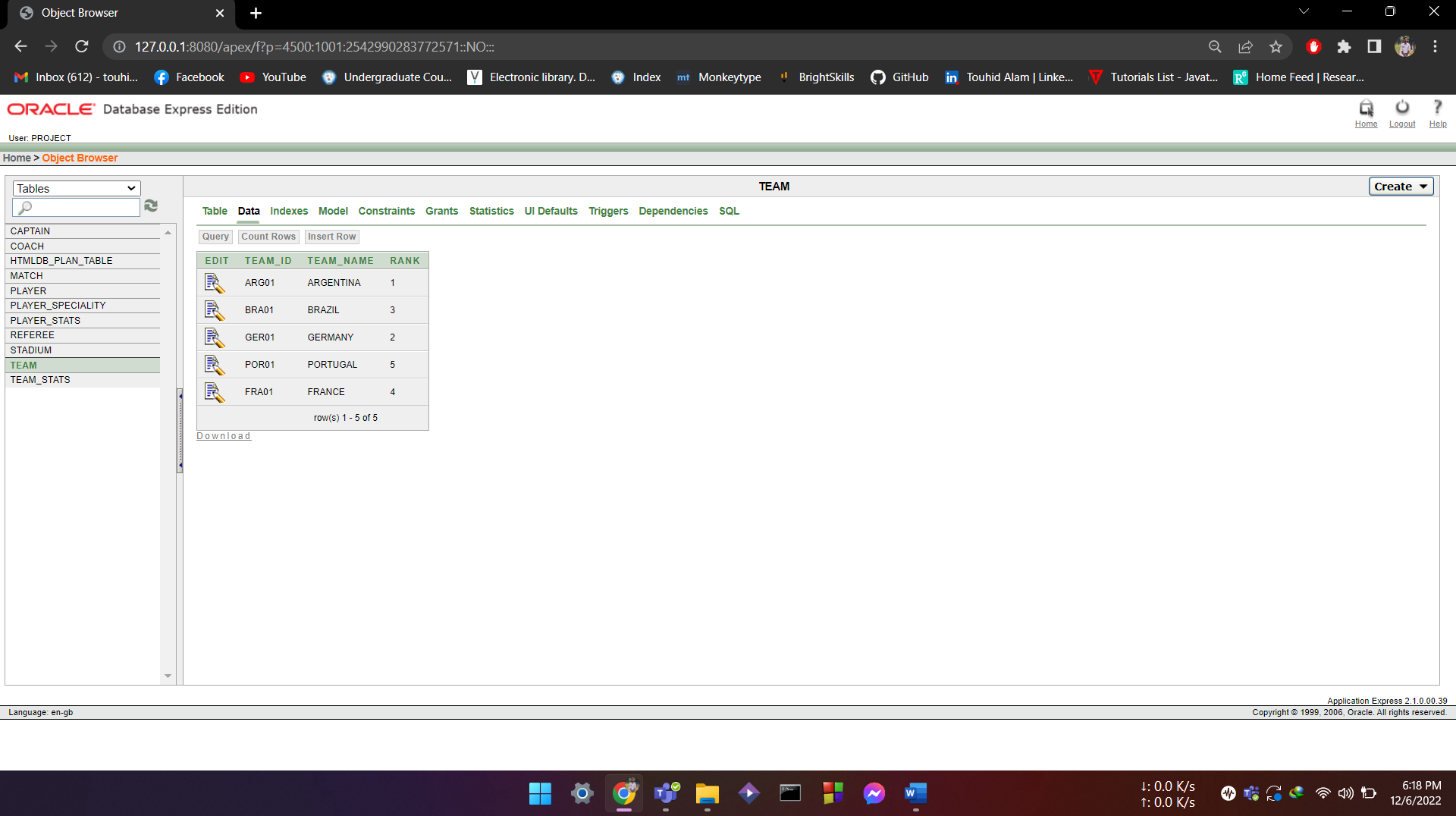
'GER01','GERMANY',2);

INSERT INTO TEAM VALUES(

'POR01','PORTUGAL',5);

INSERT INTO TEAM VALUES(

'FRA01','FRANCE',4);



**INSERT INTO TEAM\_STATS:**

insert into TEAM\_STATS VALUES(

'ARG01',4,3,0,1);

insert into TEAM\_STATS VALUES(

'BRA01',4,2,1,1);

insert into TEAM\_STATS VALUES(

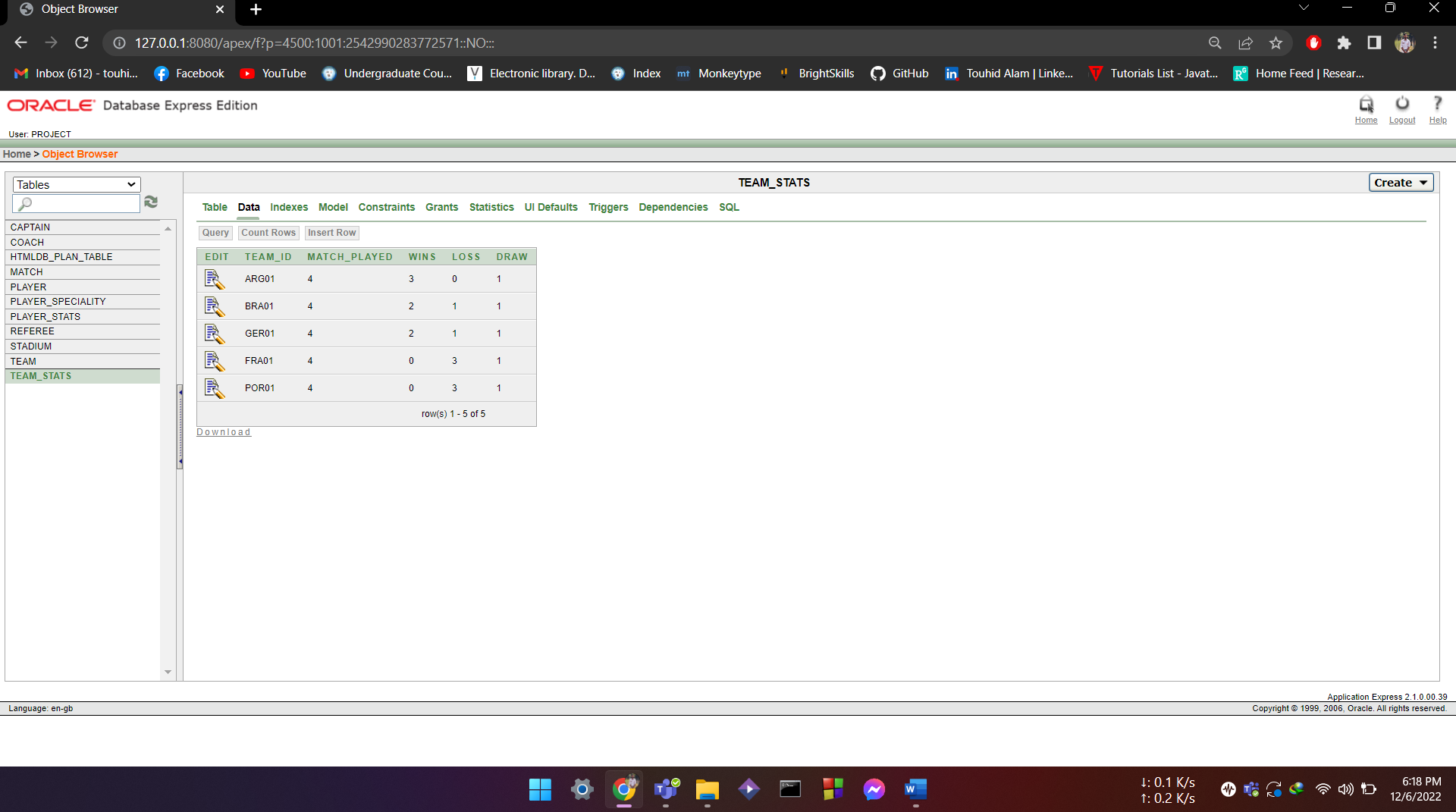
'GER01',4,2,1,1);

insert into TEAM\_STATS VALUES(

'FRA01',4,0,3,1);

insert into TEAM\_STATS VALUES(

'POR01',4,0,3,1);



**INSERT INTO REFEREE:**

INSERT INTO REFEREE VALUES(

'REF01','MARK',45,'SPAIN',23);

INSERT INTO REFEREE VALUES(

'REF02','COLLINA',54,'ITALY',54);

INSERT INTO REFEREE VALUES(

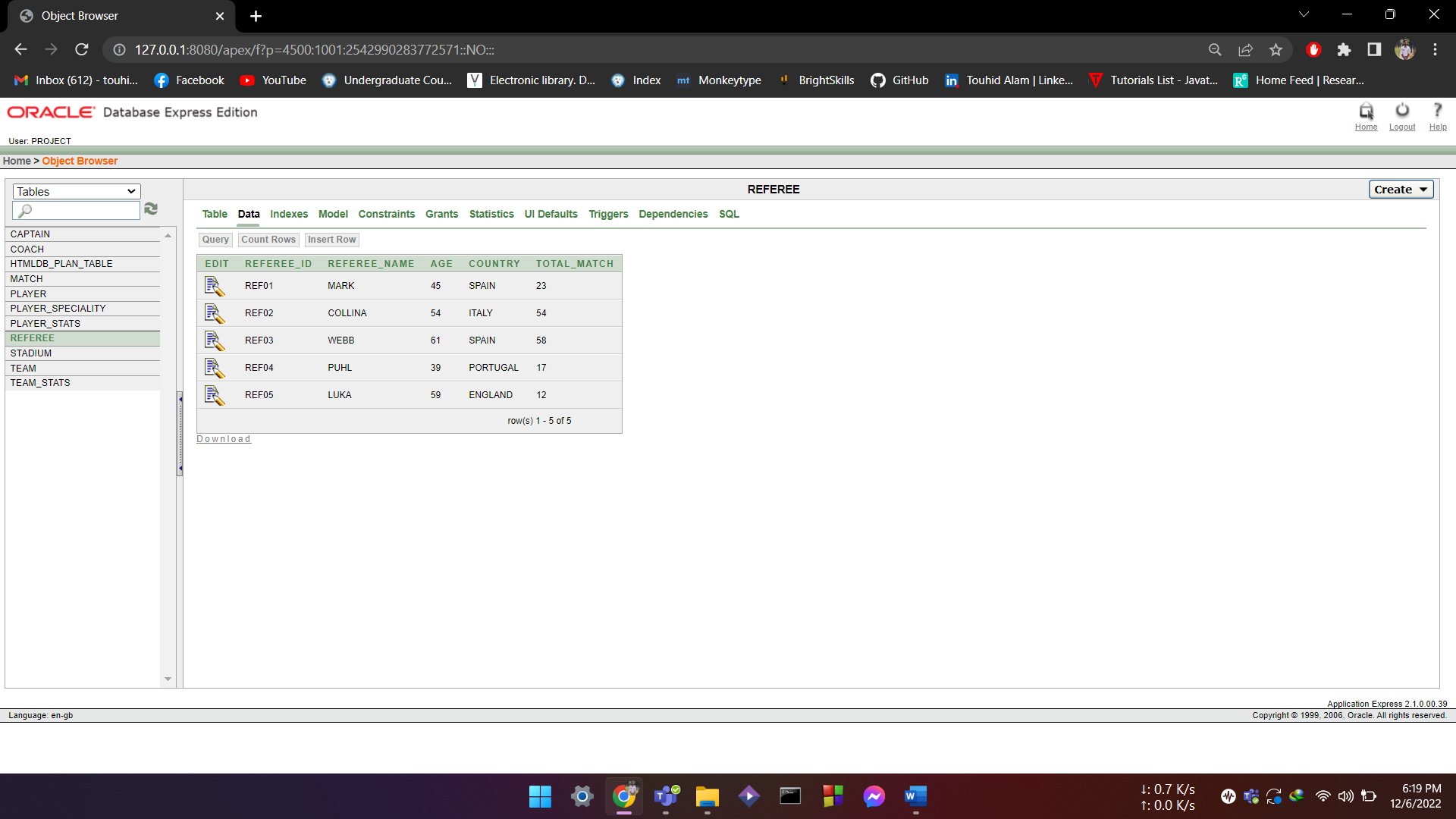
'REF03','WEBB',61,'SPAIN',58);

INSERT INTO REFEREE VALUES(

'REF04','PUHL',39,'PORTUGAL',17)

INSERT INTO REFEREE VALUES(

'REF05','LUKA',59,'ENGLAND',12);



**INSERT INTO STADIUM:**

INSERT INTO STADIUM VALUES

('STD01','ALLINAZ ARENA',90000,'BAYERN',67);

INSERT INTO STADIUM VALUES

('STD02','SIGNAL IDUNA',70000,'BOROSSIA',54);

INSERT INTO STADIUM VALUES

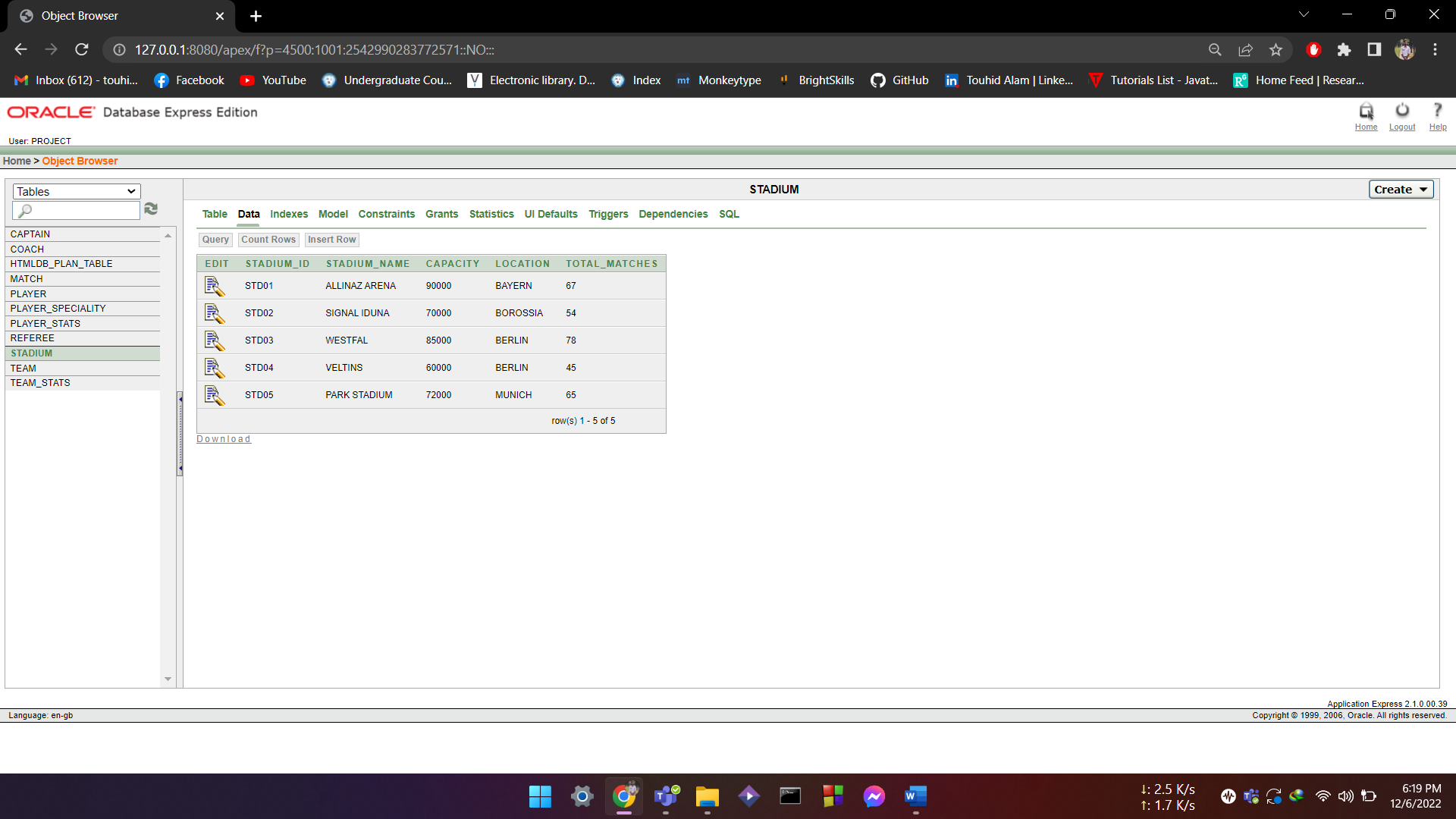
('STD03','WESTFAL',85000,'BERLIN',78);

INSERT INTO STADIUM VALUES

('STD04','VELTINS',60000,'BERLIN',45);

INSERT INTO STADIUM VALUES

('STD05','PARK STADIUM',72000,'MUNICH',65);



**INSERT INTO COACH:**

INSERT INTO COACH VALUES(

'GERC01','FLICK',57,'GER01');

INSERT INTO COACH VALUES(

'ARGC01','SCOLANI',41,'ARG01');

INSERT INTO COACH VALUES(

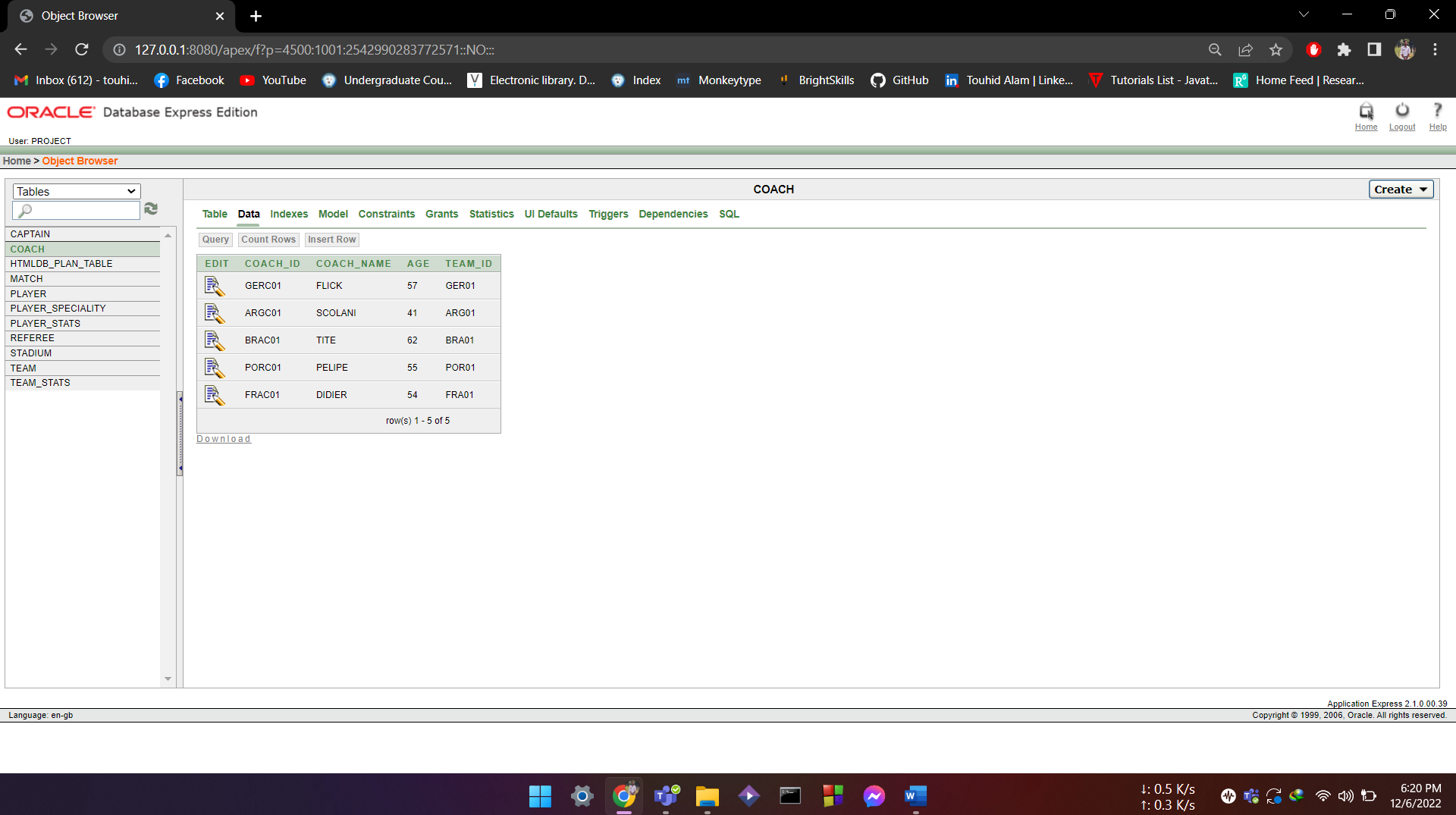
'BRAC01','TITE',62,'BRA01');

INSERT INTO COACH VALUES(

'PORC01','PELIPE',55,'POR01');

INSERT INTO COACH VALUES(

'FRAC01','DIDIER',54,'FRA01');



**INSERT INTO PLAYER:**

INSERT INTO PLAYER VALUES(

'ARGP01','ARG01','MESSI',35,10);

INSERT INTO PLAYER VALUES(

'ARGP02','ARG01','DI MARIA',34,11);

INSERT INTO PLAYER VALUES(

'ARGP03','ARG01','DE PAUL',24,7);

INSERT INTO PLAYER VALUES(

'ARGP04','ARG01','ALVAREZ',21,9);

INSERT INTO PLAYER VALUES(

'ARGP05','ARG01','EMI',30,1);

INSERT INTO PLAYER VALUES(

'GERP01','GER01','MUSIALA',19,14);

INSERT INTO PLAYER VALUES(

'GERP02','GER01','HARVERTZ',23,11);

INSERT INTO PLAYER VALUES(

'GERP03','GER01','MULLER',34,13);

INSERT INTO PLAYER VALUES(

'GERP04','GER01','NUERE',35,1);

INSERT INTO PLAYER VALUES(

'BRAP01','BRA01','NEYMAR',30,10);

INSERT INTO PLAYER VALUES(

'BRAP02','BRA01','RODREYGO',20,11);

INSERT INTO PLAYER VALUES(

'BRAP03','BRA01','VINI',19,18);

INSERT INTO PLAYER VALUES(

'BRAP04','BRA01','BECKER',29,01);

INSERT INTO PLAYER VALUES(

'FRAP01','FRA01','MBAPPE',21,10);

INSERT INTO PLAYER VALUES(

'FRAP02','FRA01','GIROUD',28,9);

INSERT INTO PLAYER VALUES(

'FRAP03','FRA01','KANTE',26,6);

INSERT INTO PLAYER VALUES(

'FRAP04','FRA01','LLORIS',32,1);

INSERT INTO PLAYER VALUES(

'PORP01','POR01','RONALDO',37,7);

INSERT INTO PLAYER VALUES(

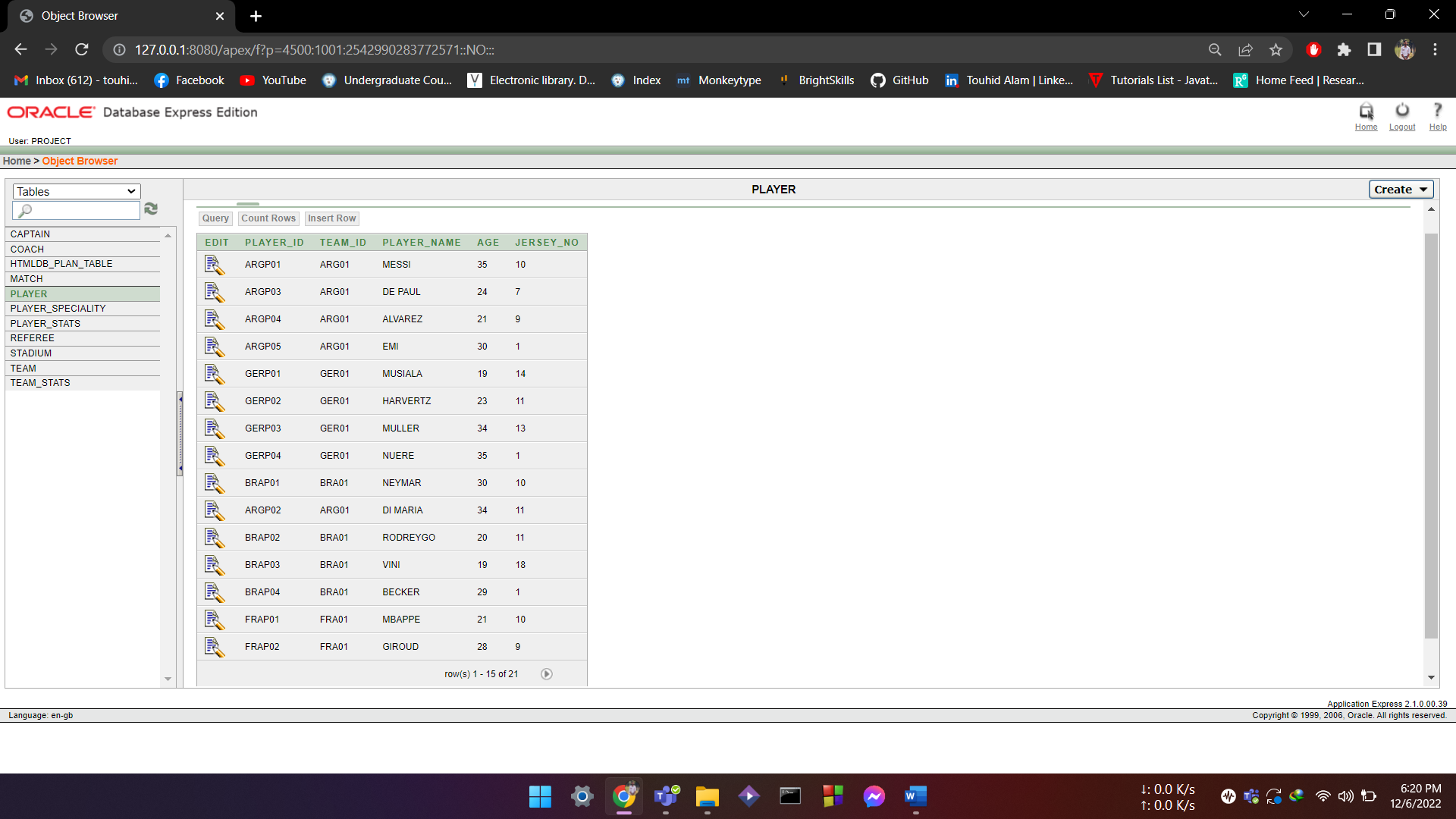
'PORP02','POR01','BRUNO',24,8);

INSERT INTO PLAYER VALUES(

'PORP03','POR01','MENDES',21,5);

INSERT INTO PLAYER VALUES(

'PORP04','POR01','COSTA',32,1);



**INSERT CAPTAIN:**

INSERT INTO CAPTAIN VALUES(

'ARGP01','ARG01','MESSI',8);

INSERT INTO CAPTAIN VALUES(

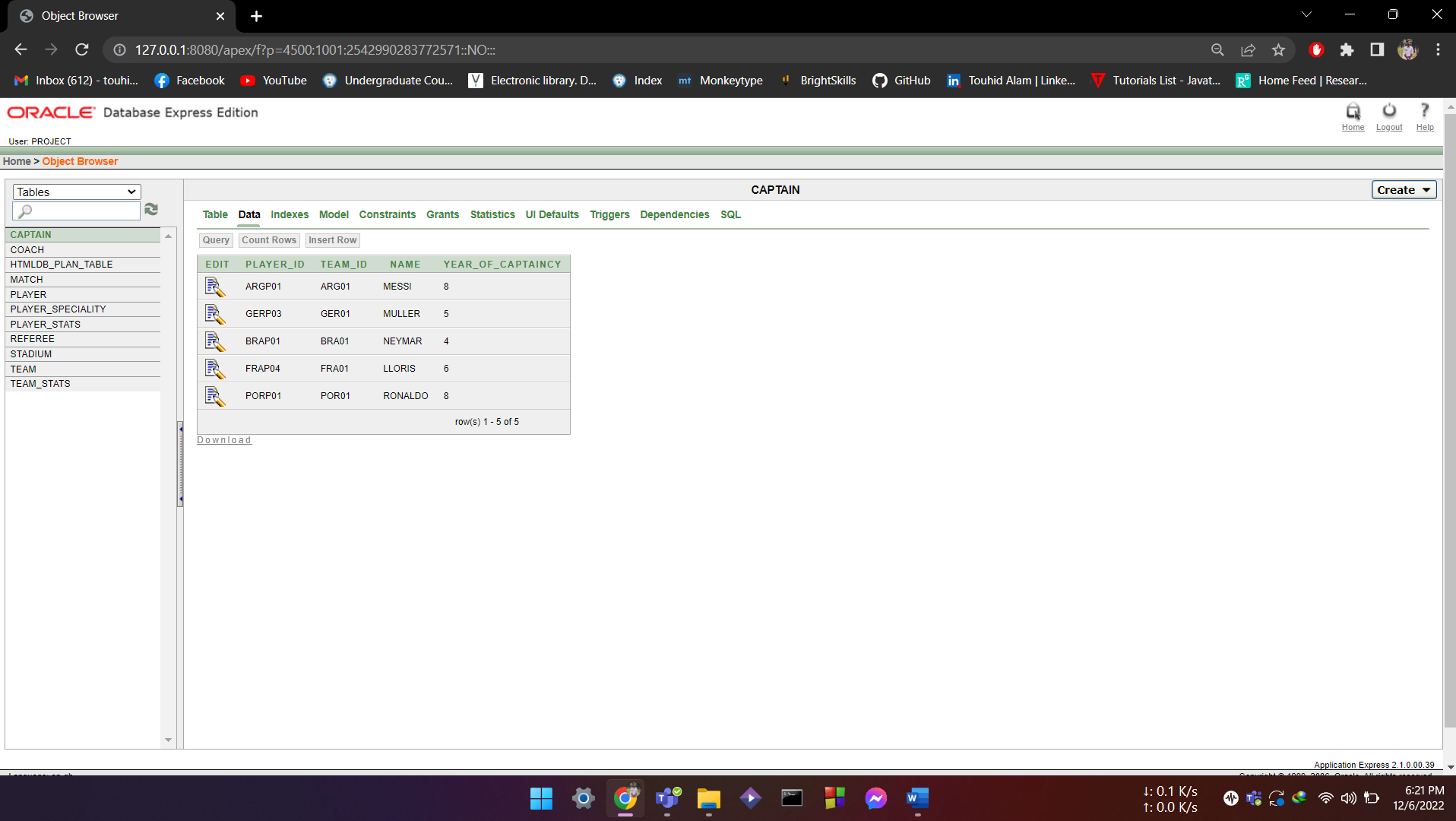
'GERP03','GER01','MULLER',5);

INSERT INTO CAPTAIN VALUES(

'BRAP01','BRA01','NEYMAR',4);

INSERT INTO CAPTAIN VALUES(

'FRAP04','FRA01','LLORIS',6);



**INSERT PLAYER\_STATS**

INSERT INTO PLAYER\_STATS

into PLAYER\_STATS VALUES(

'ARGP01','ARG01',04,05,02,01)

insert into PLAYER\_STATS VALUES(

'ARGP02','ARG01',04,02,03,02)

insert into PLAYER\_STATS VALUES(

'ARGP03','ARG01',04,01,05,03)

insert into PLAYER\_STATS VALUES(

'ARGP04','ARG01',05,0,02,01)

insert into PLAYER\_STATS VALUES(

'ARGP05','ARG01',04,0,02,03)

insert into PLAYER\_STATS VALUES(

'GERP01','GER01',04,06,01,00)

insert into PLAYER\_STATS VALUES(

'GERP02','GER01',04,03,02,04)

insert into PLAYER\_STATS VALUES(

'GERP03','GER01',06,02,05,02);

insert into PLAYER\_STATS VALUES(

'GERP04','GER01',03,00,00,01);

insert into PLAYER\_STATS VALUES(

'BRAP01','BRA01',04,07,02,01);

insert into PLAYER\_STATS VALUES(

'BRAP02','BRA01',04,02,04,04);

insert into PLAYER\_STATS VALUES(

'BRAP03','BRA01',04,01,06,08);

insert into PLAYER\_STATS VALUES(

'BRAP04','BRA01',02,00,01,01);

insert into PLAYER\_STATS VALUES(

'FRAP01','FRA01',04,10,00,03);

insert into PLAYER\_STATS VALUES(

'FRAP02','FRA01',04,2,05,07);

insert into PLAYER\_STATS VALUES(

'FRAP03','FRA01',04,0,3,04);

insert into PLAYER\_STATS VALUES(

'FRAP04','FRA01',05,0,0,00);

insert into PLAYER\_STATS VALUES(

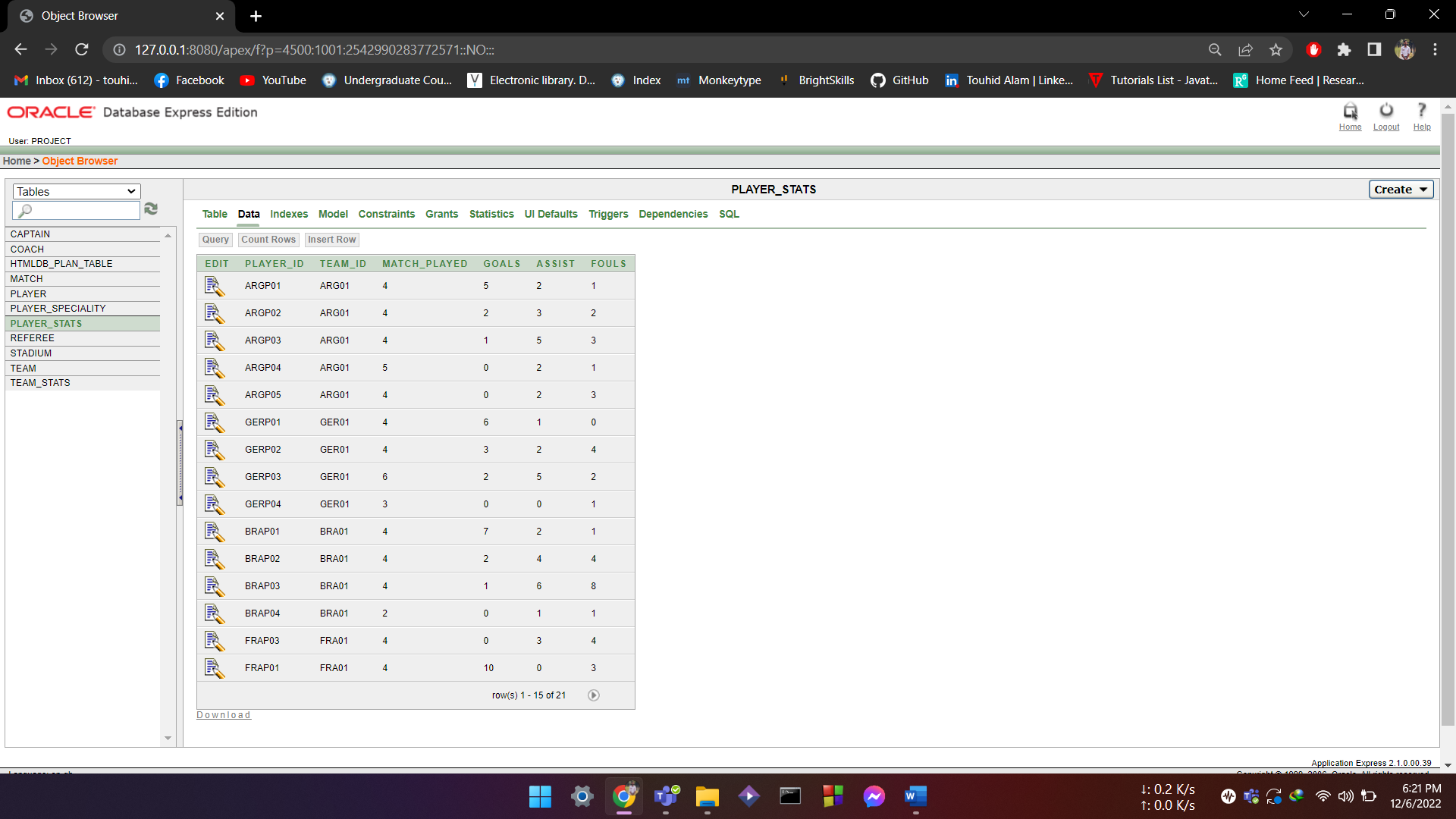
'PORP01','POR01',04,08,01,09);

insert into PLAYER\_STATS VALUES(

'PORP02','POR01',03,00,06,02);

insert into PLAYER\_STATS VALUES(

'PORP03','POR01',04,01,02,04);



**INSERT PLAYER\_SPECIALITY:**

INSERT INTO PLAYER\_SPECIALITY VALUES(

'ARG01','RIGHT WING','CROSSING');

INSERT INTO PLAYER\_SPECIALITY VALUES(

'ARGP01','CENTRE MIDFIELD','PLAY MAKER');

INSERT INTO PLAYER\_SPECIALITY VALUES(

'GERP03','CENTRE MIDFIELD','GREAT PASS');

INSERT INTO PLAYER\_SPECIALITY VALUES(

'GERP03','STRIKER','SHOOT');

INSERT INTO PLAYER\_SPECIALITY VALUES(

'FRAP01','STRIKER','SCORER');

INSERT INTO PLAYER\_SPECIALITY VALUES(

'BRAP01','LEFT WING','DRIBBLING');

INSERT INTO PLAYER\_SPECIALITY VALUES(

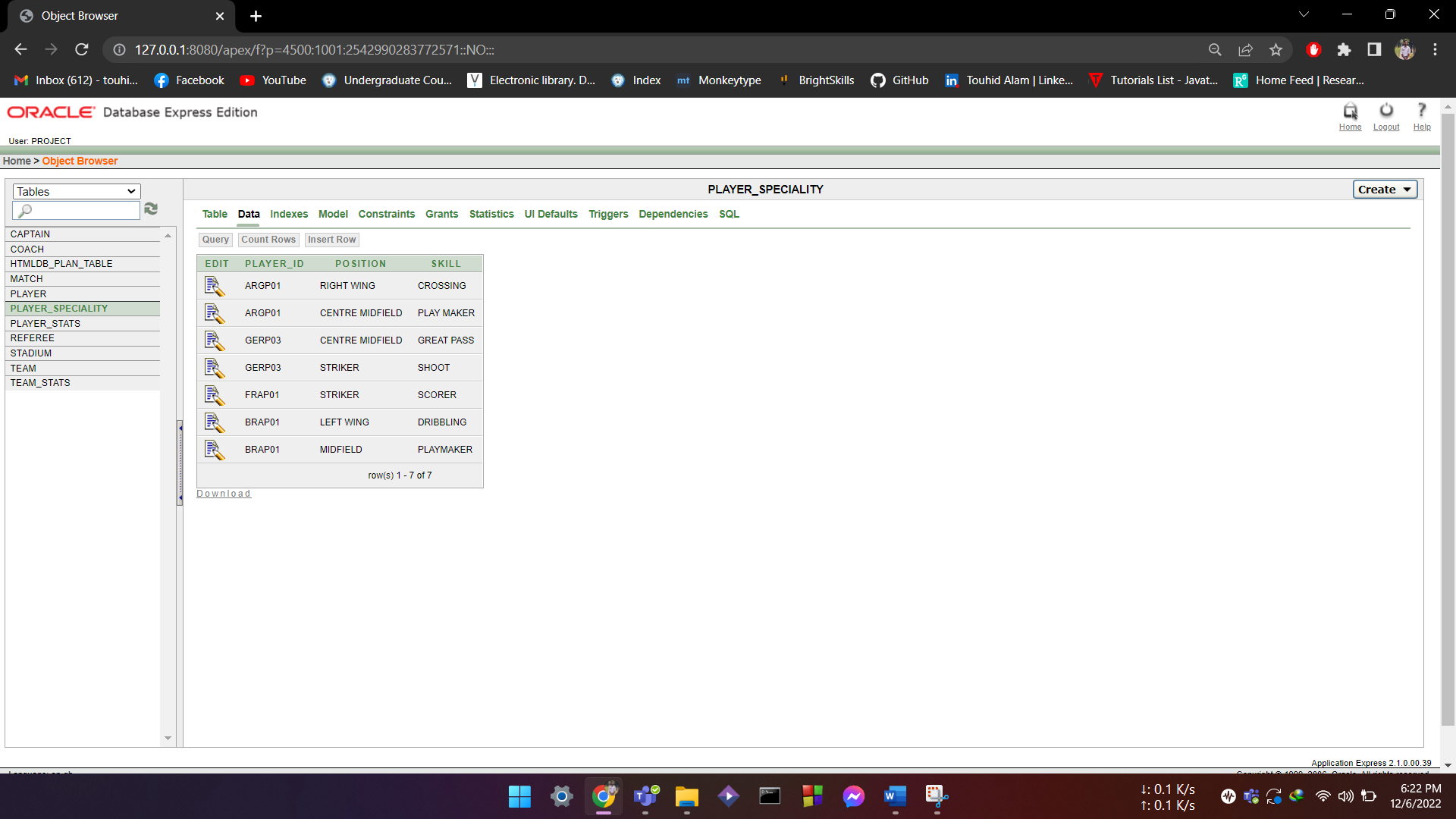
'BRAP01','MIDFIELD','PLAYMAKER');

insert into PLAYER\_SPECIALITY values(

'PORP01','LEFT WING','GOAL MAKER')

insert into PLAYER\_SPECIALITY values(

'PORP01','STRIKER','GOAL MACHINE')



**INSERT MATCH:**

INSERT INTO MATCH VALUES(

'MTH01','ARGENTINA','BRAZIL','','',TO\_DATE('01-12-2022','DD-MM-YYYY'),'STD01','REF01');

INSERT INTO MATCH VALUES(

'MTH02','FRANCE','PORTUGAL','','',TO\_DATE('01-12-2022','DD-MM-YYYY'),'STD04','REF03');

INSERT INTO MATCH VALUES(

'MTH03','GERMANY','ARGENTINA','ARGENTINA','GERMANY',TO\_DATE('03-12-2022','DD-MM-YYYY'),'STD02','REF05');

INSERT INTO MATCH VALUES(

'MTH04','BRAZIL','FRANCE','BRAZIL','FRANCE',TO\_DATE('04-12-2022','DD-MM-YYYY'),'STD03','REF02');

INSERT INTO MATCH VALUES(

'MTH05','ARGENTINA','PORTUGAL','ARGENTINA','PORTUGAL',TO\_DATE('05-12-2022','DD-MM-YYYY'),'STD05','REF04');

INSERT INTO MATCH VALUES(

'MTH06','GERMANY','FRANCE','GERMANY','FRANCE',TO\_DATE('07-12-2022','DD-MM-YYYY'),'STD01','REF01');

INSERT INTO MATCH VALUES(

'MTH07','BRAZIL','PORTUGAL','BRAZIL','PORTUGAL',TO\_DATE('08-12-2022','DD-MM-YYYY'),'STD02','REF04');

INSERT INTO MATCH VALUES(

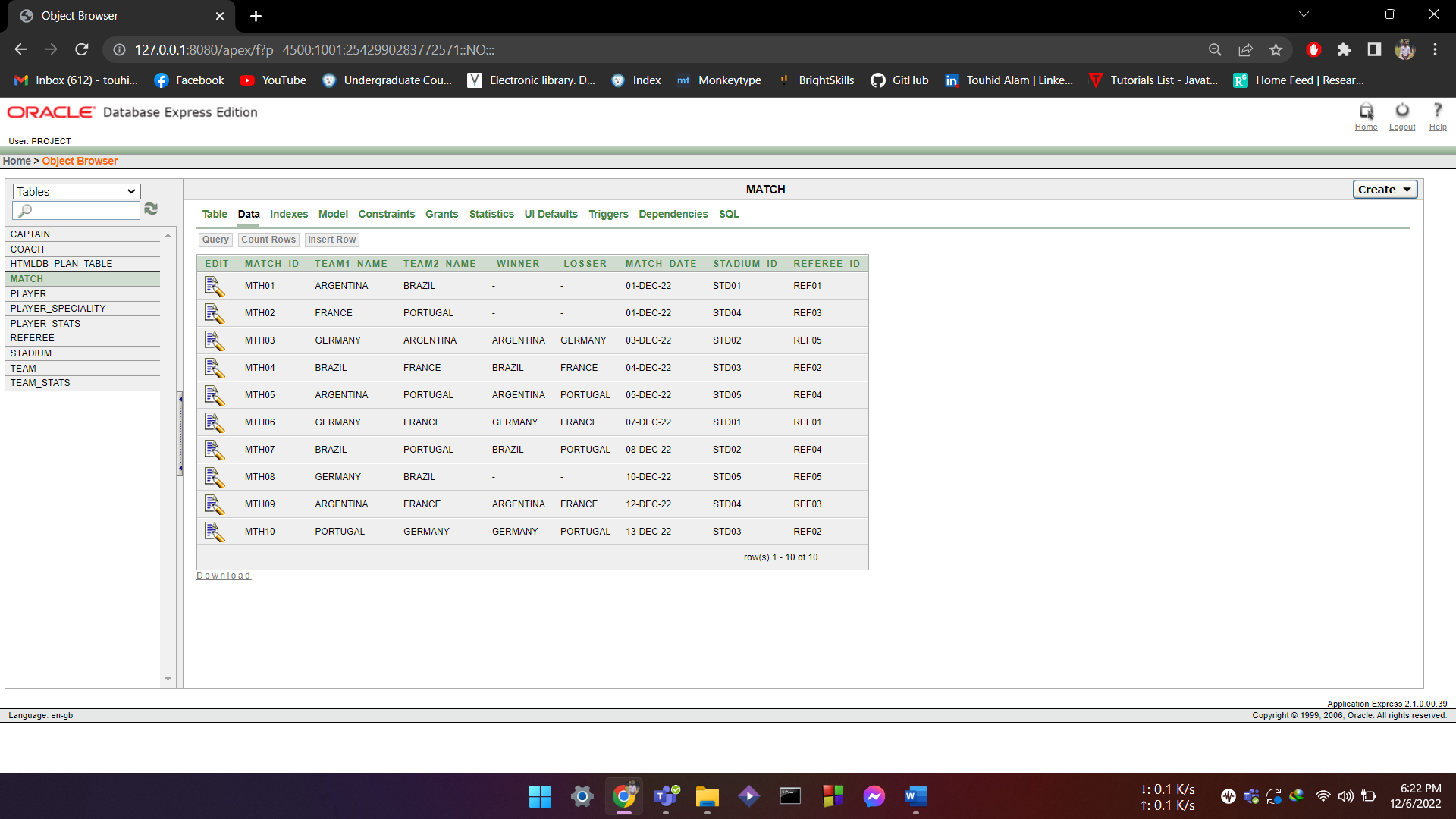
'MTH08','GERMANY','BRAZIL','','',TO\_DATE('10-12-2022','DD-MM-YYYY'),'STD05','REF05');

INSERT INTO MATCH VALUES(

'MTH09','ARGENTINA','FRANCE','ARGENTINA','FRANCE',TO\_DATE('12-12-2022','DD-MM-YYYY'),'STD04','REF03');

INSERT INTO MATCH VALUES(

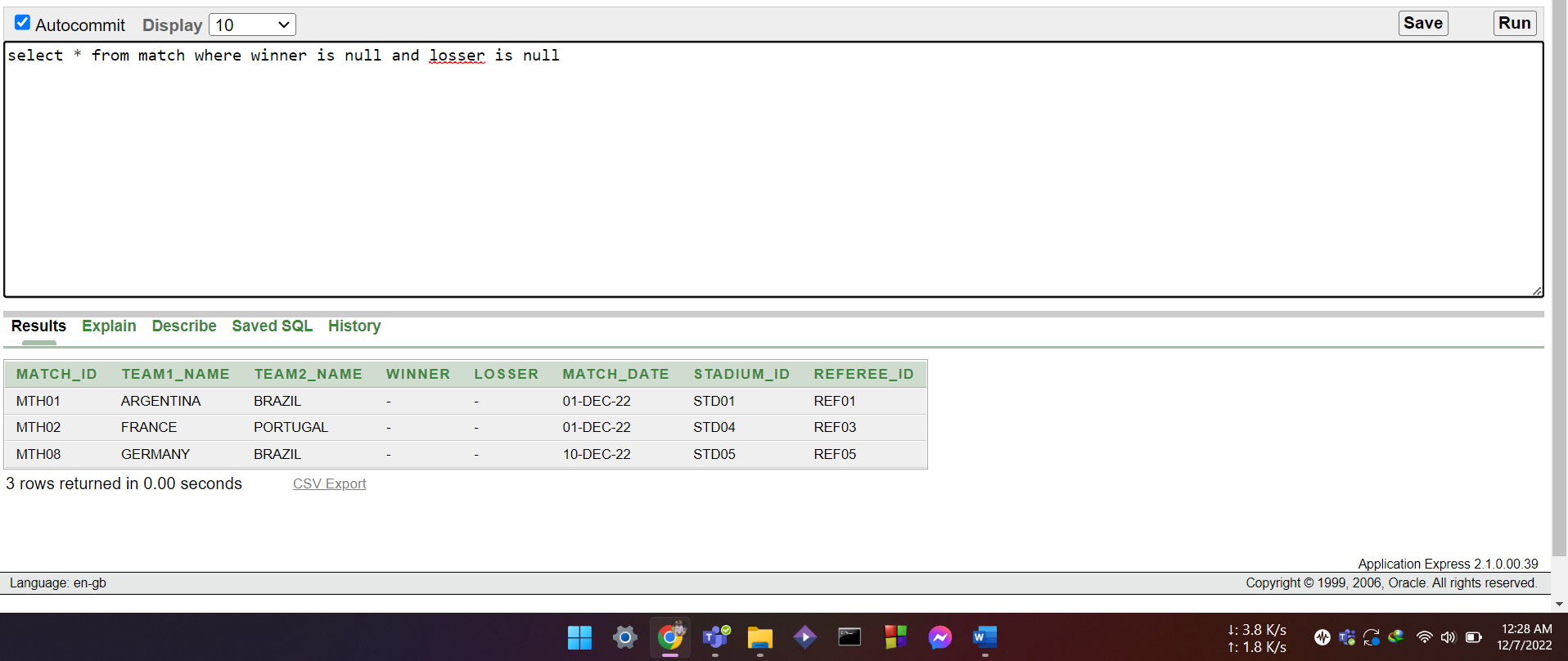
'MTH10','PORTUGAL','GERMANY','GERMANY','PORTUGAL',TO\_DATE('13-12-2022','DD-MM-YYYY'),'STD03','REF02');



**QUERY DESIGN:**

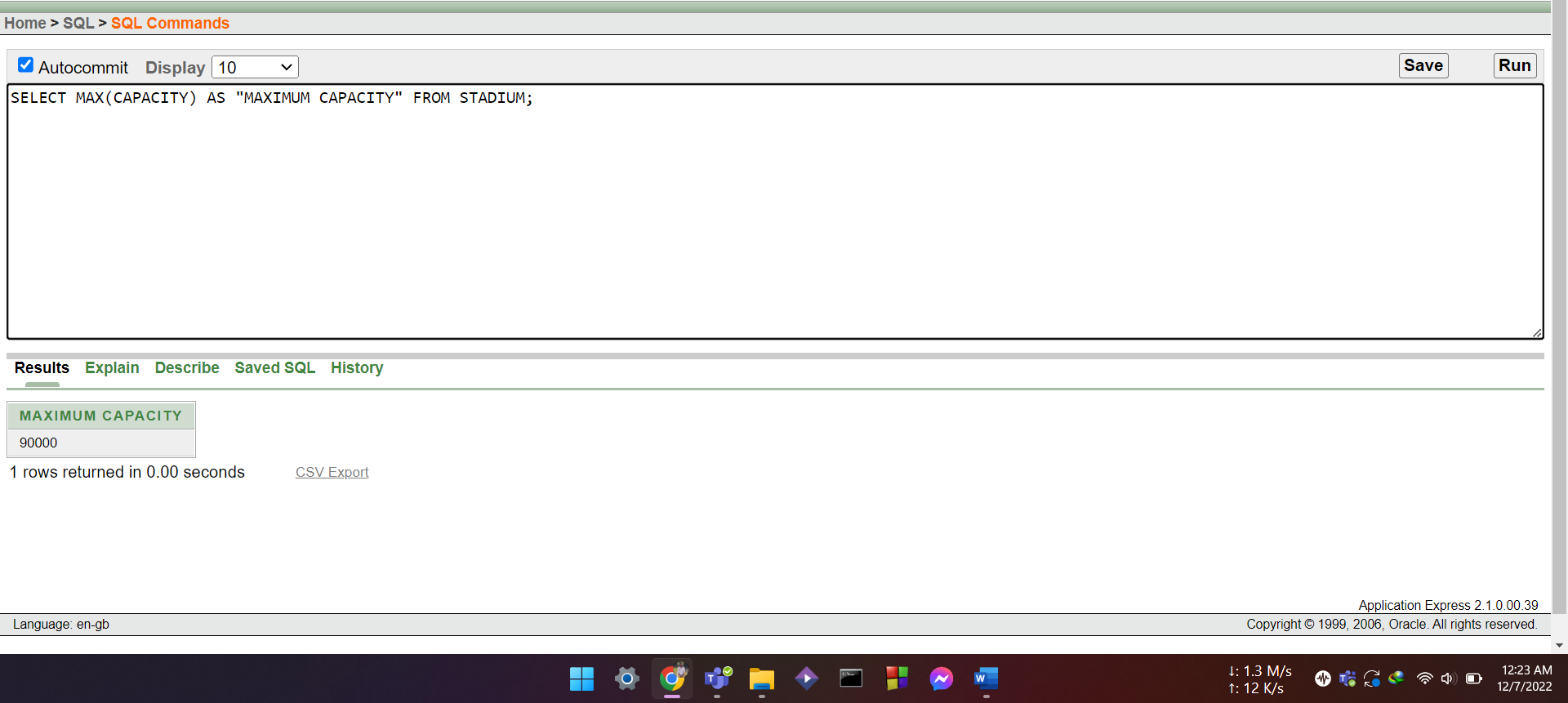
**Function:**

* Write a query to show match details with no winners

select \* from match where winner is null and losser is null

* Write a query to show the maximum capacity of stadium as MAX CAPACITY

SELECT MAX(CAPACITY) AS "MAXIMUM CAPACITY" FROM STADIUM;

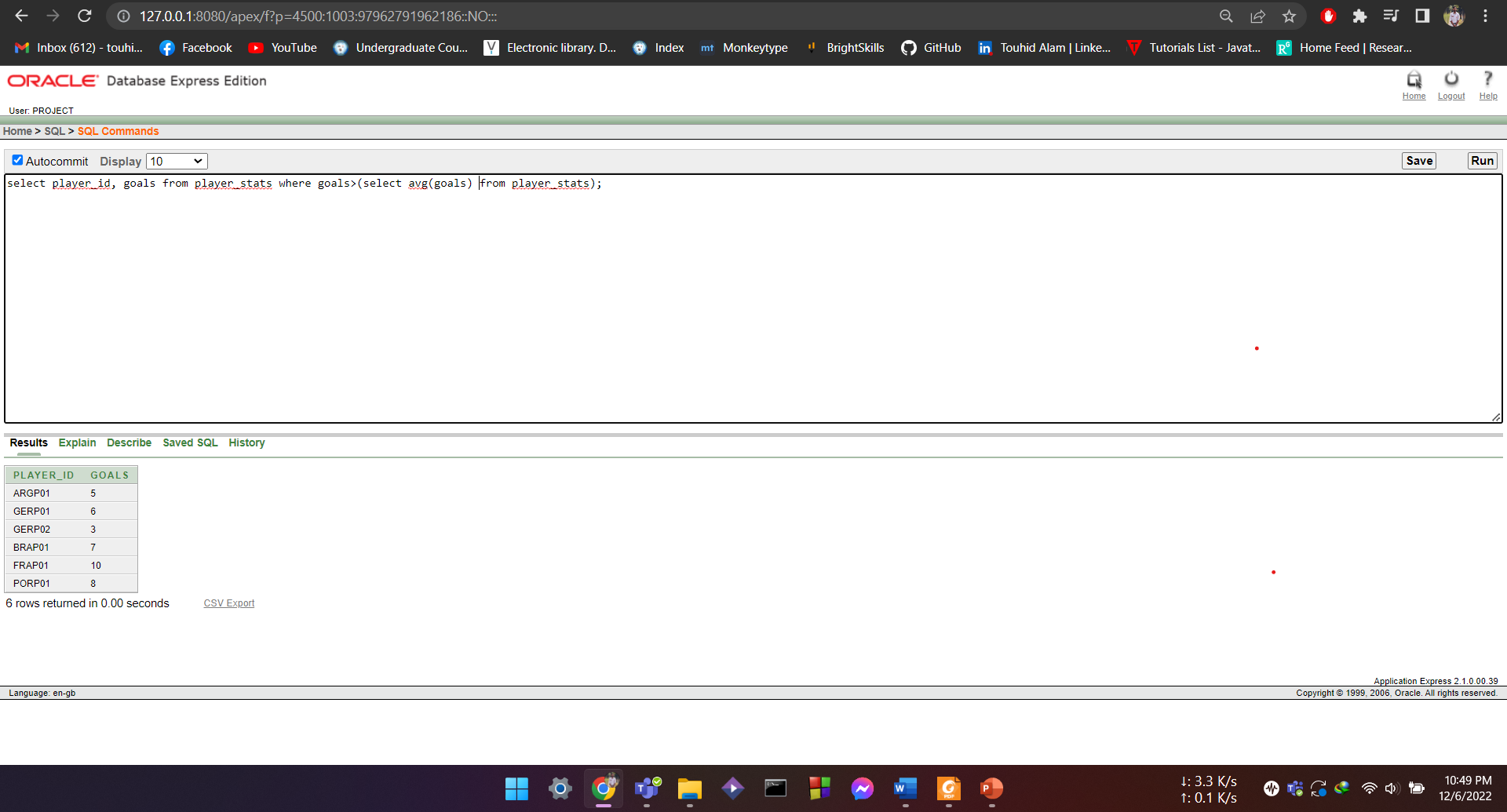


**Subquery:**

**Single row:**

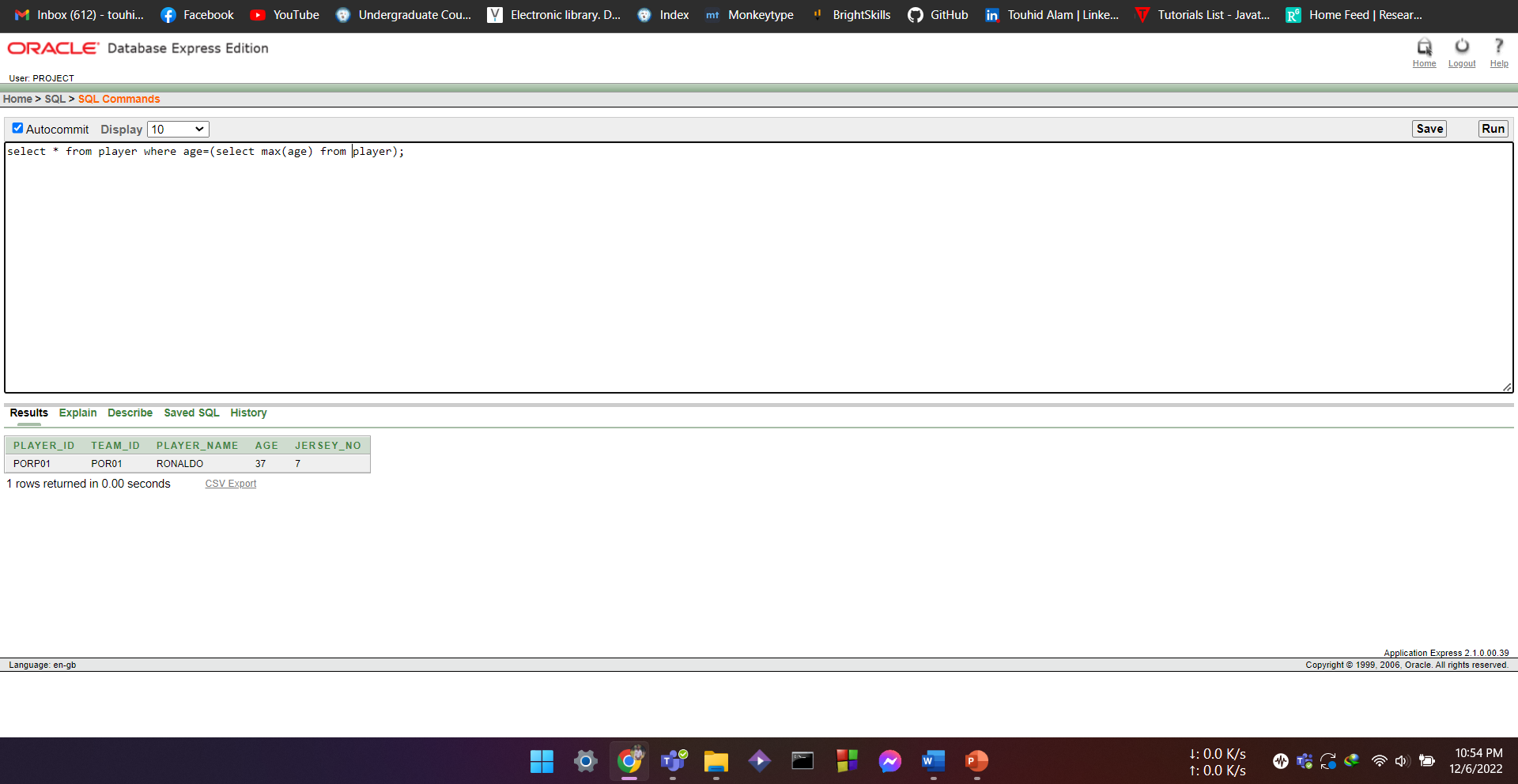
* Write a query to show the players who scored more than average goals scored.

select player\_id, goals from player\_stats where goals>(select avg(goals) from player\_stats);



* Write a quey to show the details of most aged aged player.

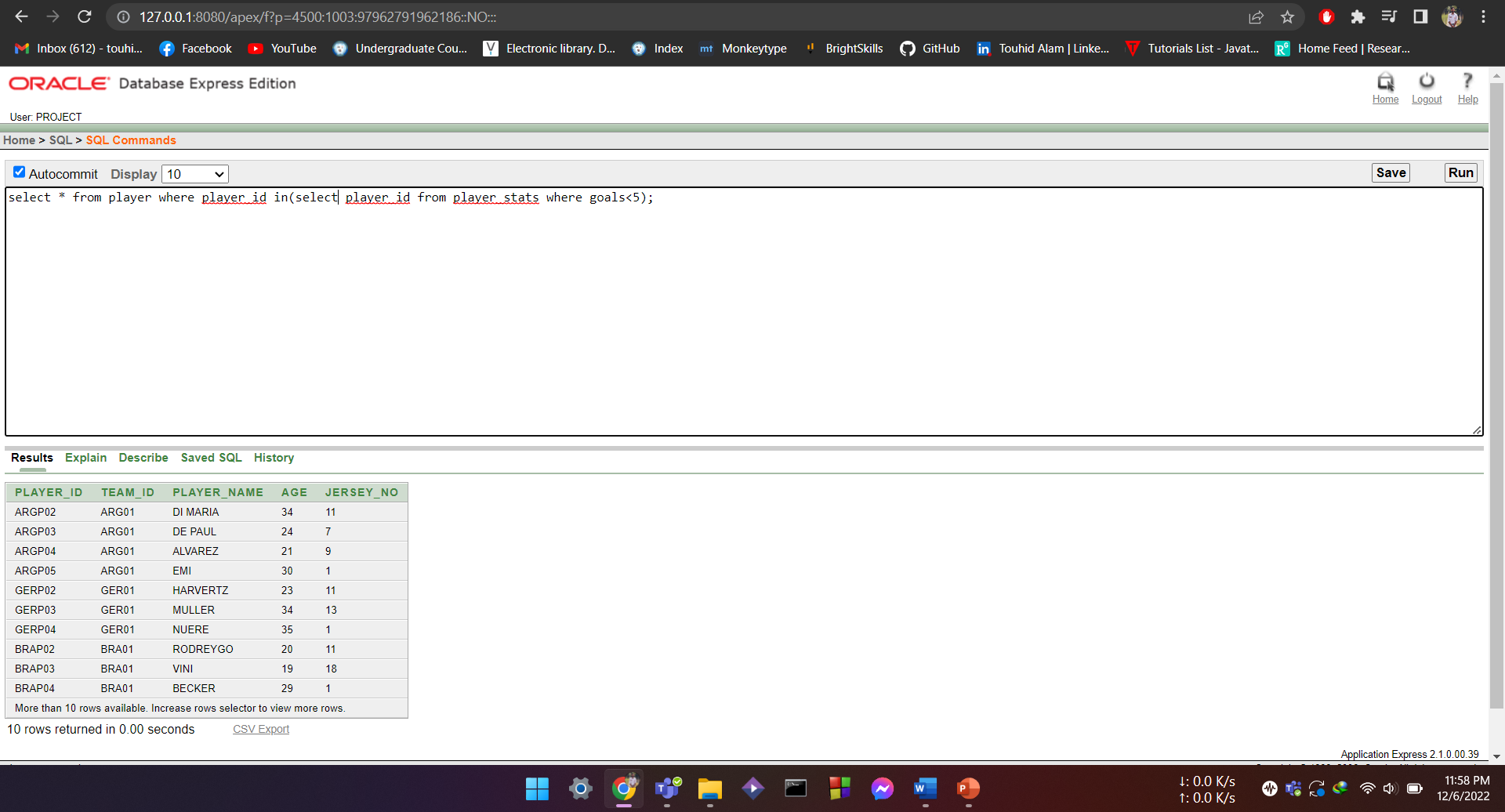
select \* from player where age=(select max(age) from player);



**Multiple row:**

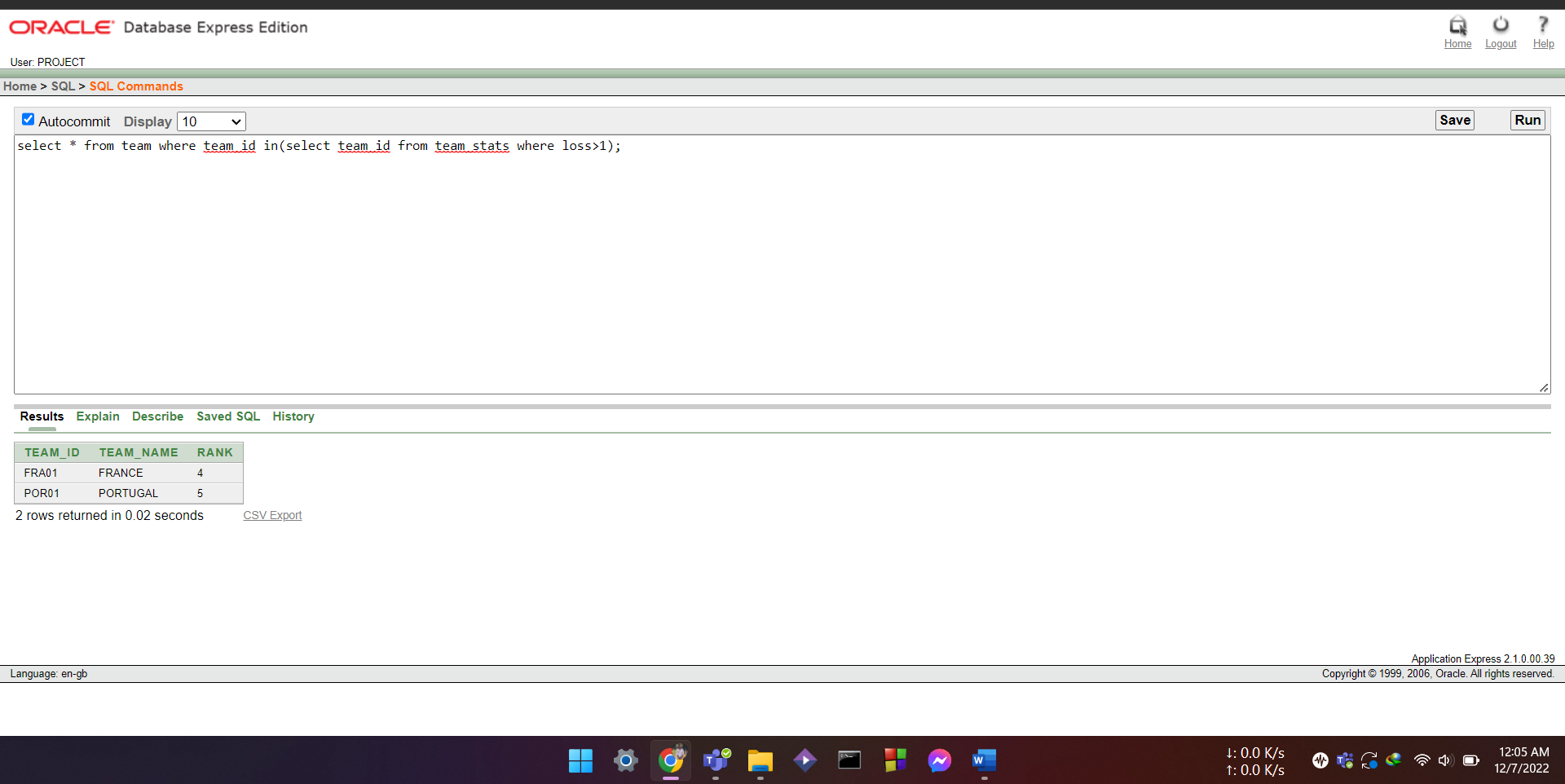
* Write a query to display information of player who scored less than 5 goals;

select \* from player where player\_id in(select player\_id from player\_stats where goals<5);



* Write a query to display the team information who lost more than one match

select \* from team where team\_id in(select team\_id from team\_stats where loss>1);

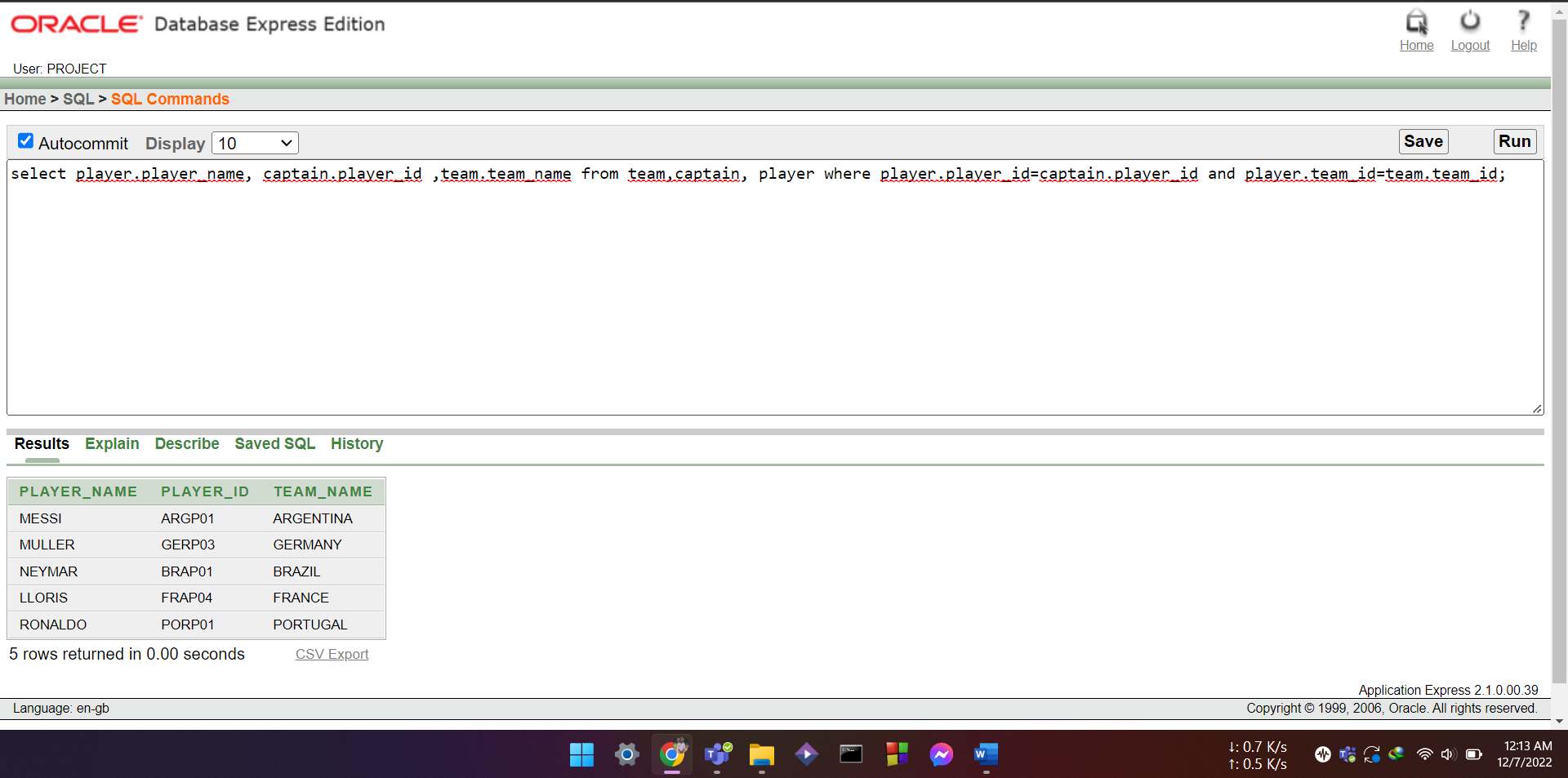


**Joining:**

**Equi-joining:**

* Write a query to show the captain name, captain id and team name;

select player.player\_name, captain.player\_id ,team.team\_name from team,captain, player where player.player\_id=captain.player\_id and player.team\_id=team.team\_id;



Outer-joining:

* Write a query to show the name of coaches and referee older than the coaches