

James Valles
Homework 6

1. Reading done.

2.

1.

Check to ensure 3 or less students can enroll in each class – assertion check

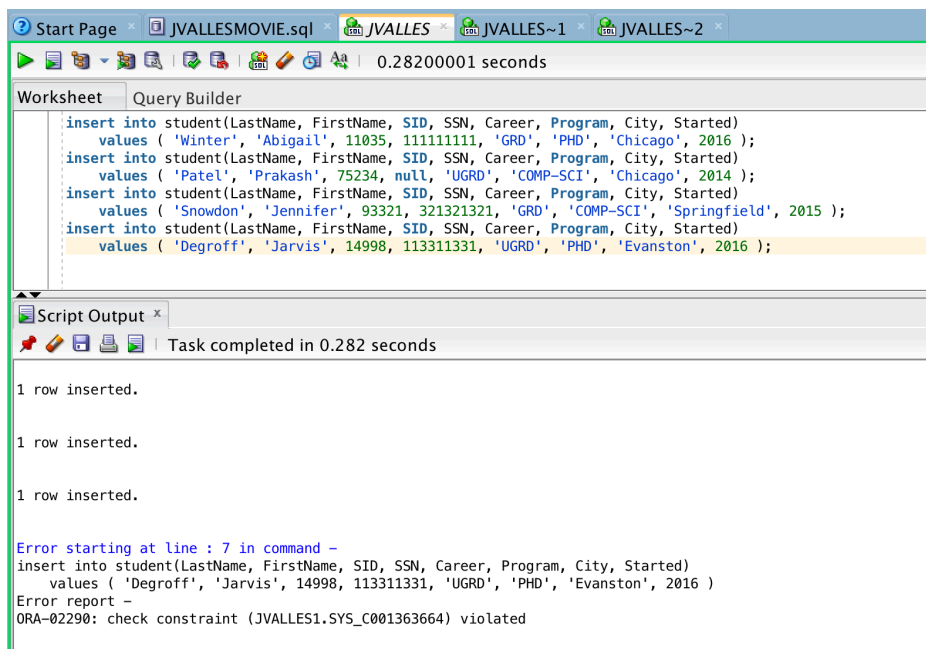
```
CREATE ASSERTION enrollCheck
CHECK (NOT EXISTS (SELECT COURSEID, COUNT(STUDENTID)
FROM ENROLLED
GROUP BY COURSEID
HAVING COUNT(*) > 3));
```

2.

Check ensure every phd student has 'GRD' as career – tuple level check

```
create table student (
  LastName   varchar(40) not null,
  FirstName  varchar(40),
  SID        number(5),
  SSN        number(9),
  Career     varchar(4),
  Program    varchar(10),
  City       varchar(40),
  Started    number(4),

  primary key (SID),
  unique(SSN),
  CHECK(PROGRAM <> 'PHD' OR CAREER = 'GRD')
);
```



```
Start Page | JVALLESMOVIE.sql | JVALLES | JVALLES~1 | JVALLES~2 | 0.28200001 seconds
Worksheet | Query Builder
insert into student(LastName, FirstName, SID, SSN, Career, Program, City, Started)
values ( 'Winter', 'Abigail', 11035, 111111111, 'GRD', 'PHD', 'Chicago', 2016 );
insert into student(LastName, FirstName, SID, SSN, Career, Program, City, Started)
values ( 'Patel', 'Prakash', 75234, null, 'UGRD', 'COMP-SCI', 'Chicago', 2014 );
insert into student(LastName, FirstName, SID, SSN, Career, Program, City, Started)
values ( 'Snowdon', 'Jennifer', 93321, 321321321, 'GRD', 'COMP-SCI', 'Springfield', 2015 );
insert into student(LastName, FirstName, SID, SSN, Career, Program, City, Started)
values ( 'Degroff', 'Jarvis', 14998, 113311331, 'UGRD', 'PHD', 'Evanston', 2016 );

Script Output | Task completed in 0.282 seconds

1 row inserted.

1 row inserted.

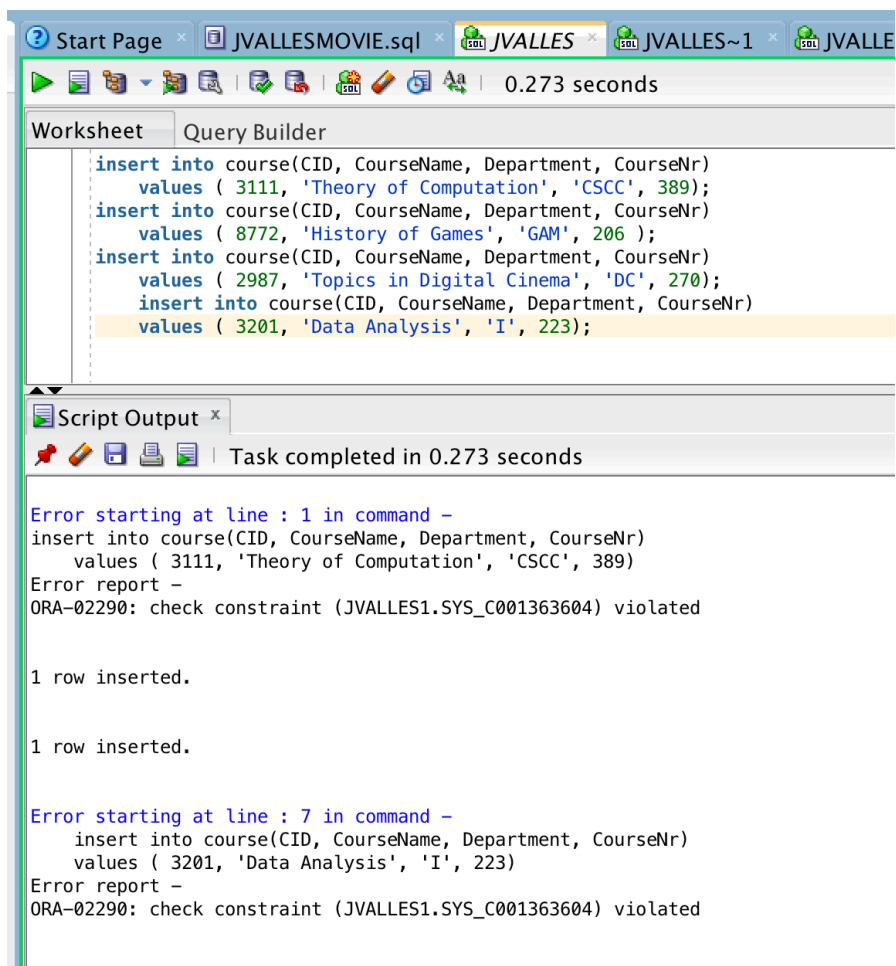
1 row inserted.

Error starting at line : 7 in command -
insert into student(LastName, FirstName, SID, SSN, Career, Program, City, Started)
values ( 'Degroff', 'Jarvis', 14998, 113311331, 'UGRD', 'PHD', 'Evanston', 2016 )
Error report -
ORA-02290: check constraint (JVALLES1.SYS_C001363664) violated
```

3.

Check to ensure Department length two or three – attribute level check

```
create table course (  
  CID number(4),  
  CourseName varchar(40),  
  Department varchar(4)  
    CHECK (LENGTH(DEPARTMENT) = 3 OR LENGTH(DEPARTMENT) = 2),  
  CourseNr char(3),  
  
  primary key (CID)  
);
```



The screenshot shows the SQL Developer interface with a worksheet containing a SQL script. The script attempts to insert four rows into the 'course' table. The first three rows are successfully inserted, but the fourth row, which has a department 'I' (length 1), causes an ORA-02290 error because it violates the CHECK constraint that requires the department length to be 2 or 3.

```
insert into course(CID, CourseName, Department, CourseNr)  
  values ( 3111, 'Theory of Computation', 'CSCC', 389);  
insert into course(CID, CourseName, Department, CourseNr)  
  values ( 8772, 'History of Games', 'GAM', 206 );  
insert into course(CID, CourseName, Department, CourseNr)  
  values ( 2987, 'Topics in Digital Cinema', 'DC', 270);  
insert into course(CID, CourseName, Department, CourseNr)  
  values ( 3201, 'Data Analysis', 'I', 223);
```

Script Output x
Task completed in 0.273 seconds

Error starting at line : 1 in command -
insert into course(CID, CourseName, Department, CourseNr)
 values (3111, 'Theory of Computation', 'CSCC', 389)
Error report -
ORA-02290: check constraint (JVALLES1.SYS_C001363604) violated

1 row inserted.

1 row inserted.

Error starting at line : 7 in command -
insert into course(CID, CourseName, Department, CourseNr)
 values (3201, 'Data Analysis', 'I', 223)
Error report -
ORA-02290: check constraint (JVALLES1.SYS_C001363604) violated

3.

1.

Trigger automatically set joined year to current year, when student added

```
CREATE OR REPLACE TRIGGER newmember  
BEFORE INSERT ON MEMBEROF
```

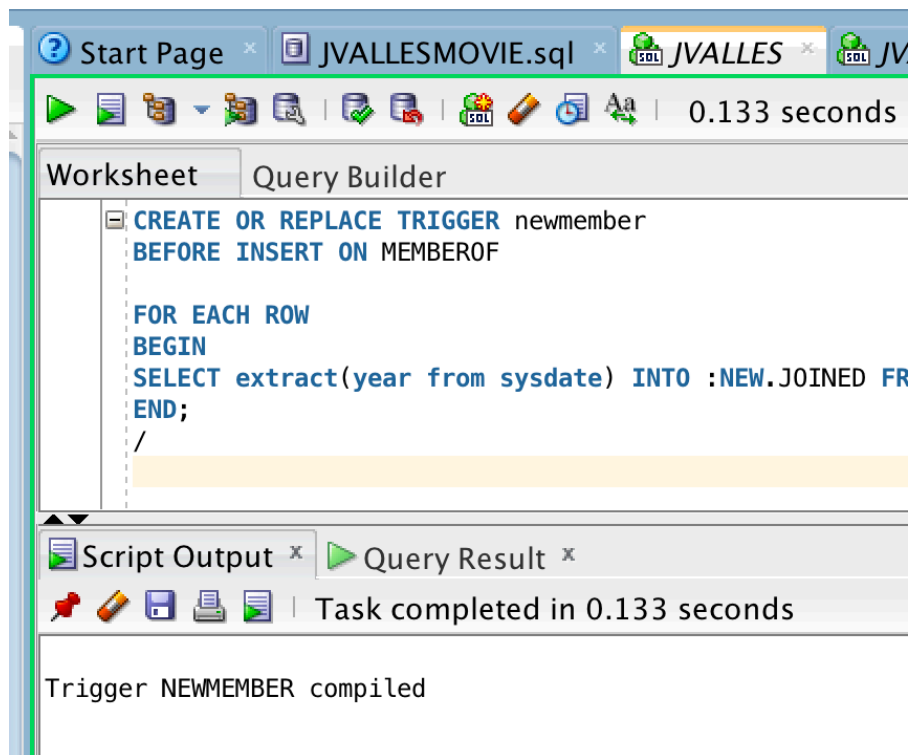
```
FOR EACH ROW
```

```
BEGIN
```

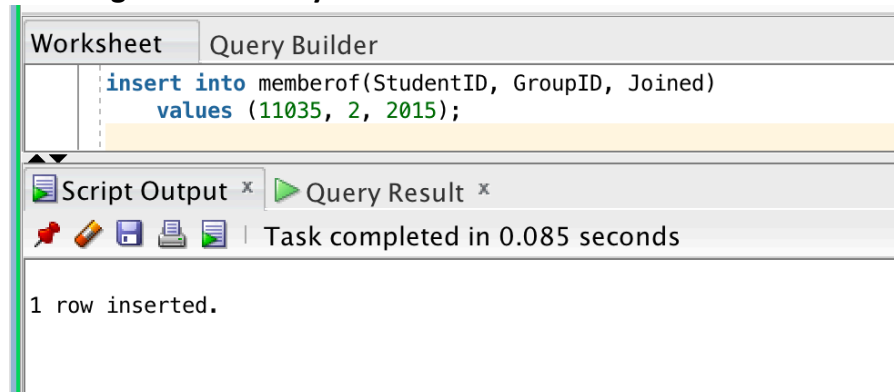
```
SELECT extract(year from sysdate) INTO :NEW.JOINED FROM DUAL;
```

```
END;
```

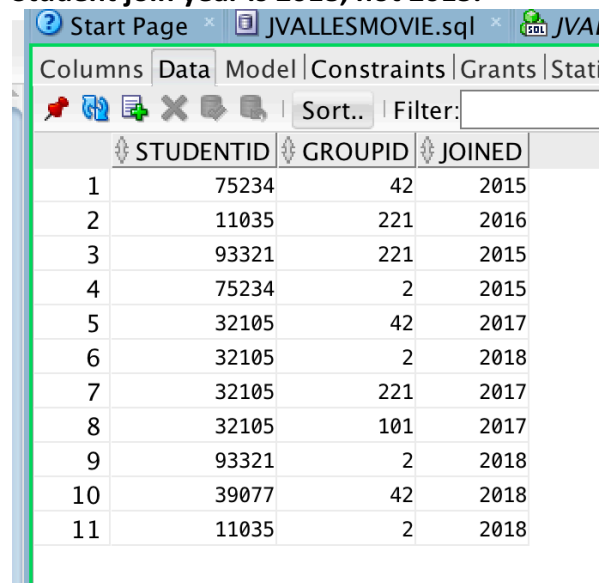
```
/
```



Inserting student with year 2015



Student join year is 2018, not 2015.



	STUDENTID	GROUPID	JOINED
1	75234	42	2015
2	11035	221	2016
3	93321	221	2015
4	75234	2	2015
5	32105	42	2017
6	32105	2	2018
7	32105	221	2017
8	32105	101	2017
9	93321	2	2018
10	39077	42	2018
11	11035	2	2018

2.

Print warning if students program is changed from PHD to anything other than PHD

Trigger:

```
CREATE OR REPLACE TRIGGER phdwarning
AFTER UPDATE OF PROGRAM ON student
FOR EACH ROW
WHEN (new.program <> 'PHD' AND old.program = 'PHD')
BEGIN
DBMS_OUTPUT.PUT_LINE('Student ' || :new.FirstName || ' ' || :new.LastName || ', ' ||
:new.SID || ', was changed from ' || :old.program || ' to ' || :new.program);
END;
/
```

SID	FirstName	LastName	PROGRAM	LOCATION	JOINED
57923	Dwayne	Kubik	UGRD	Springfield	2015 (null)
58992	Trinity	Skelly	UGRD	Springfield	2015 (null)
60973	Angelo	Krol	UGRD	Springfield	2015 (null)

Changed Trinity Skelly from PHD to INFO-TECH and trigger worked. Also tested Dwayne Kubik from COMP-SCI to PHD, change made without any warning.

Start Page | JVALLES | STUDENT | COURSENRTRIGGER | 0.29100001 seconds

Worksheet | Query Builder

```

SET SERVEROUTPUT ON;

update student
SET PROGRAM = 'INFO-TECH'
WHERE SID = 58992;

update student
SET PROGRAM = 'PHD'
WHERE SID = 57923;

BEGIN
DBMS_OUTPUT.PUT_LINE('FLUSHING! FLUSHING! ');
END;

```

Script Output x | Task completed in 0.291 seconds

1 row updated.

1 row updated.

Student Trinity Skelly, 58992, was changed from PHD to INFO-TECH
FLUSHING! FLUSHING!

PL/SQL procedure successfully completed.

7	Patel	Prakash	75234	(null)	UGRD	COMP-SCI	Chicago	2015 (null)	
8	Snowdon	Jennifer	93321	321321321	GRD	COMP-SCI	Springfield	2015 (null)	
9	Degroff	Jarvis	14998	113311331	GRD	INFO-TECH	Evanston	2015 (null)	
10	Kubik	Dwayne	57923	979797979	UGRD	PHD	Springfield	2015 (null)	
11	Skelly	Trinity	58992	555222555	UGRD	INFO-TECH	Springfield	2015 (null)	
12	Krol	Angelo	60973	(null)	UGRD	PHD	Springfield	2015 (null)	
13	Bellard	Jane	20077	(null)	GRD	TEST240	Springfield	2015 (null)	

3.

If course inserted or update and not within the range of 100 – 699 trigger warning error and set CourseNr to null.

Trigger:

CREATE OR REPLACE TRIGGER courseNrTrigger
BEFORE INSERT OR UPDATE ON course

FOR EACH ROW

WHEN (new.CourseNr < 100 OR new.CourseNr > 699)

BEGIN

SELECT null into :new.CourseNr from dual;

DBMS_OUTPUT.PUT_LINE('CourseNr is not in the range of 100 to 699 please enter valid CourseNr');

END;

/

Start Page JVALLES COURSE COURSENRTRIGGER

0.40900001 seconds

Worksheet Query Builder

```

SET SERVEROUTPUT ON;

insert into course(CID, CourseName, Department, CourseNr)
values ( 3000, 'Databases Tech Accelerated', 'CSC', 99);
insert into course(CID, CourseName, Department, CourseNr)
values ( 3001, 'Theory of Comp 10-week', 'CSC', 700);
insert into course(CID, CourseName, Department, CourseNr)
values ( 3002, 'History of Games 10-week', 'GAM', 699 );
insert into course(CID, CourseName, Department, CourseNr)
values ( 3003, 'Topics in Digital Cinema 10-week', 'DC', 100);
insert into course(CID, CourseName, Department, CourseNr)
values ( 3004, 'Topics in Digital Cinema 10-week', 'DC', 400);

BEGIN
DBMS_OUTPUT.PUT_LINE('FLUSHING! FLUSHING!');
END;

```

Script Output x

Task completed in 0.409 seconds

1 row inserted.

1 row inserted.

1 row inserted.

1 row inserted.

1 row inserted.

CourseNr is not in the range of 100 to 699 please enter valid CourseNr
CourseNr is not in the range of 100 to 699 please enter valid CourseNr
FLUSHING! FLUSHING!

Courses out of range triggered warning and set CourseNr to null CID 3000, 3001.

Start Page JVALLES COURSE COURSENRTRIGGER

Columns Data Model Constraints Grants Statistics Triggers Flashback De

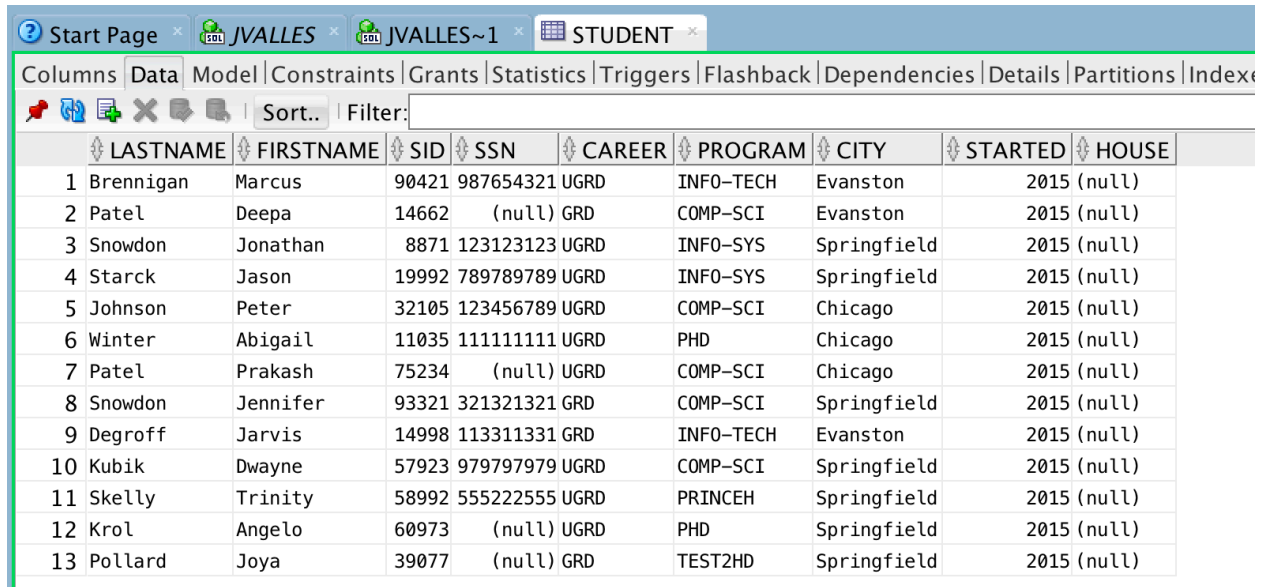
Sort.. Filter:

	CID	COURSENAME	DEPARTMENT	COURSENR
1	1020	Theory of Computation	CSC	489
2	1092	Cryptology	CSC	440
3	3201	Data Analysis	IT	223
4	9219	Databases Technologies	CSC	453
5	3111	Theory of Computation	CSC	389
6	8772	History of Games	GAM	206
7	2987	Topics in Digital Cinema	DC	270
8	3000	Databases Tech Accele...	CSC	(null)
9	3001	Theory of Comp 10-week	CSC	(null)
10	3002	History of Games 10-week	GAM	699
11	3003	Topics in Digital Cin...	DC	100
12	3004	Topics in Digital Cin...	DC	400

4.

Add a field called house to student table

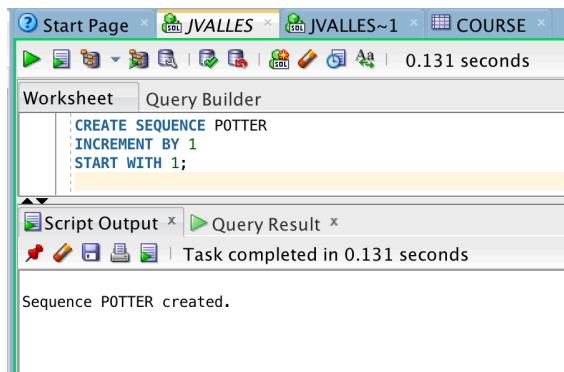
```
ALTER TABLE student  
ADD house varchar2(45);
```



The screenshot shows the SQL Developer interface with the 'STUDENT' table selected. The table has columns: LASTNAME, FIRSTNAME, SID, SSN, CAREER, PROGRAM, CITY, STARTED, and HOUSE. The data is as follows:

	LASTNAME	FIRSTNAME	SID	SSN	CAREER	PROGRAM	CITY	STARTED	HOUSE
1	Brennigan	Marcus	90421	987654321	UGRD	INFO-TECH	Evanston	2015	(null)
2	Patel	Deepa	14662	(null)	GRD	COMP-SCI	Evanston	2015	(null)
3	Snowdon	Jonathan	8871	123123123	UGRD	INFO-SYS	Springfield	2015	(null)
4	Starck	Jason	19992	789789789	UGRD	INFO-SYS	Springfield	2015	(null)
5	Johnson	Peter	32105	123456789	UGRD	COMP-SCI	Chicago	2015	(null)
6	Winter	Abigail	11035	111111111	UGRD	PHD	Chicago	2015	(null)
7	Patel	Prakash	75234	(null)	UGRD	COMP-SCI	Chicago	2015	(null)
8	Snowdon	Jennifer	93321	321321321	GRD	COMP-SCI	Springfield	2015	(null)
9	Degroff	Jarvis	14998	113311331	GRD	INFO-TECH	Evanston	2015	(null)
10	Kubik	Dwayne	57923	979797979	UGRD	COMP-SCI	Springfield	2015	(null)
11	Skelly	Trinity	58992	555222555	UGRD	PRINCEH	Springfield	2015	(null)
12	Krol	Angelo	60973	(null)	UGRD	PHD	Springfield	2015	(null)
13	Pollard	Joya	39077	(null)	GRD	TEST2HD	Springfield	2015	(null)

Creating Sequence increment



Create trigger that on insert will pick next house for student

```
CREATE OR REPLACE TRIGGER houseAssignment  
BEFORE INSERT OR UPDATE ON student  
FOR EACH ROW
```

```
DECLARE COUNTER NUMBER;  
BEGIN
```

```
IF INSERTING THEN  
    SELECT MOD(POTTER.NEXTVAL, 4)  
    INTO COUNTER  
    FROM DUAL;
```

```
CASE COUNTER
```

```
WHEN 1 THEN :new.house := 'Gryffindor';
WHEN 2 THEN :new.house := 'Hufflepuff';
WHEN 3 THEN :new.house := 'Ravenclaw';
WHEN 0 THEN :new.house := 'Slytherin';
END CASE;
```

ELSIF UPDATING THEN

```
:new.house := :old.house;
```

END IF;

END;

/

The screenshot shows a database query editor window with the following components:

- Top Bar:** Contains tabs for 'Start Page', 'JVALLES', 'STUDENT', and 'COURSENRTRIGGER'. Below the tabs is a toolbar with various icons and a timer showing '0.125 seconds'.
- Worksheet Tab:** The active tab, displaying a SQL script for creating a trigger named 'houseAssignment'.
- Script Content:**

```
CREATE OR REPLACE TRIGGER houseAssignment
BEFORE INSERT OR UPDATE ON student
FOR EACH ROW

DECLARE COUNTER NUMBER;
BEGIN

IF INSERTING THEN
SELECT MOD(POTTER.NEXTVAL, 4)
INTO COUNTER
FROM DUAL;

CASE COUNTER
WHEN 1 THEN :new.house := 'Gryffindor';
WHEN 2 THEN :new.house := 'Hufflepuff';
WHEN 3 THEN :new.house := 'Ravenclaw';
WHEN 0 THEN :new.house := 'Slytherin';
END CASE;

ELSIF UPDATING THEN
:new.house := :old.house;

END IF;
END;
/
```
- Script Output Tab:** Located at the bottom, it shows the message 'Task completed in 0.125 seconds' and 'Trigger HOUSEASSIGNMENT compiled'.

Testing with 13 students.

Start Page JVALLES STUDENT 0.85000002 seconds

Worksheet Query Builder

```

insert into student(LastName, FirstName, SID, SSN, Career, Program, City, Started)
values ( 'Brennigan', 'Marcus', 89202, 287654321, 'UGRD', 'INFO-TECH', 'Evanston', 2015 );
insert into student(LastName, FirstName, SID, SSN, Career, Program, City, Started)
values ( 'Patel', 'Deepa', 89203, null, 'GRD', 'COMP-SCI', 'Evanston', 2016 );
insert into student(LastName, FirstName, SID, SSN, Career, Program, City, Started)
values ( 'Snowdon', 'Jonathan', 89204, 223123123, 'GRD', 'INFO-SYS', 'Springfield', 2017 );
insert into student(LastName, FirstName, SID, SSN, Career, Program, City, Started)
values ( 'Starck', 'Jason', 89241, 389789789, 'UGRD', 'INFO-SYS', 'Springfield', 2014 );
insert into student(LastName, FirstName, SID, SSN, Career, Program, City, Started)
values ( 'Johnson', 'Peter', 89231, 423456789, 'UGRD', 'COMP-SCI', 'Chicago', 2017 );
insert into student(LastName, FirstName, SID, SSN, Career, Program, City, Started)
values ( 'Nnigan', 'Arcus', 82092, 387654321, 'UGRD', 'INFO-TECH', 'Evanston', 2015 );
insert into student(LastName, FirstName, SID, SSN, Career, Program, City, Started)
values ( 'Tel', 'Deepa', 82903, null, 'GRD', 'COMP-SCI', 'Evanston', 2016 );
insert into student(LastName, FirstName, SID, SSN, Career, Program, City, Started)
values ( 'Wdon', 'Jonathan', 82904, 623123123, 'GRD', 'INFO-SYS', 'Springfield', 2017 );
insert into student(LastName, FirstName, SID, SSN, Career, Program, City, Started)
values ( 'Tarck', 'Jason', 82341, 789489789, 'UGRD', 'INFO-SYS', 'Springfield', 2014 );
insert into student(LastName, FirstName, SID, SSN, Career, Program, City, Started)
values ( 'Hnson', 'Peter', 82931, 523456789, 'UGRD', 'COMP-SCI', 'Chicago', 2017 );
insert into student(LastName, FirstName, SID, SSN, Career, Program, City, Started)
values ( 'Kelly', 'Trinity', 85992, 495222555, 'GRD', 'PHD', 'Springfield', 2018 );
insert into student(LastName, FirstName, SID, SSN, Career, Program, City, Started)
values ( 'Rol', 'Angelo', 06973, null, 'UGRD', 'COMP-SCI', 'Springfield', 2013 );
insert into student(LastName, FirstName, SID, SSN, Career, Program, City, Started)
values ( 'Plard', 'Joya', 93077, null, 'GRD', 'COMP-SCI', 'Springfield', 2017 );

```

Script Output Query Result Task completed in 0.85 seconds

1 row inserted.

1 row inserted.

13 students assigned house based on triggered sequence. In order, Gryffindor, Hufflepuff, Ravenclaw, Slytherin.

Start PageJVALLESSTUDENT

ColumnsDataModelConstraintsGrantsStatisticsTriggersFlashbackDependenciesDetailsPartitionsIndex

Sort..Filter:

	LASTNAME	FIRSTNAME	SID	SSN	CAREER	PROGRAM	CITY	STARTED	HOUSE	
1	Brennigan	Marcus	90421	987654321	UGRD	INFO-TECH	Evanston	2015 (null)		
2	Patel	Deepa	14662	(null) GRD	COMP-SCI	Evanston	2015 (null)			
3	Snowdon	Jonathan	8871	123123123	UGRD	INFO-SYS	Springfield	2015 (null)		
4	Starck	Jason	19992	789789789	UGRD	INFO-SYS	Springfield	2015 (null)		
5	Johnson	Peter	32105	123456789	UGRD	COMP-SCI	Chicago	2015 (null)		
6	Winter	Abigail	11035	111111111	UGRD	PHD	Chicago	2015 (null)		
7	Patel	Prakash	75234	(null) UGRD	COMP-SCI	Chicago	2015 (null)			
8	Snowdon	Jennifer	93321	321321321	GRD	COMP-SCI	Springfield	2015 (null)		
9	Degroff	Jarvis	14998	113311331	GRD	INFO-TECH	Evanston	2015 (null)		
10	Kubik	Dwayne	57923	979797979	UGRD	COMP-SCI	Springfield	2015 (null)		
11	Skelly	Trinity	58992	555222555	UGRD	PRINCEH	Springfield	2015 (null)		
12	Krol	Angelo	60973	(null) UGRD	PHD	Springfield	2015 (null)			
13	Pollard	Joya	39077	(null) GRD	TEST2HD	Springfield	2015 (null)			
14	Brennigan	Marcus	89202	287654321	UGRD	INFO-TECH	Evanston	2015 Gryffindor		
15	Patel	Deepa	89203	(null) GRD	COMP-SCI	Evanston	2016 Hufflepuff			
16	Snowdon	Jonathan	89204	223123123	GRD	INFO-SYS	Springfield	2017 Ravenclaw		
17	Starck	Jason	89241	389789789	UGRD	INFO-SYS	Springfield	2014 Slytherin		
18	Johnson	Peter	89231	423456789	UGRD	COMP-SCI	Chicago	2017 Gryffindor		
19	Nnigan	Arcus	82092	387654321	UGRD	INFO-TECH	Evanston	2015 Hufflepuff		
20	Tel	Deepa	82903	(null) GRD	COMP-SCI	Evanston	2016 Ravenclaw			
21	Wdon	Jonathan	82904	623123123	GRD	INFO-SYS	Springfield	2017 Slytherin		
22	Tarck	Jason	82341	789489789	UGRD	INFO-SYS	Springfield	2014 Gryffindor		
23	Hnson	Peter	82931	523456789	UGRD	COMP-SCI	Chicago	2017 Hufflepuff		
24	Kelly	Trinity	85992	495222555	GRD	PHD	Springfield	2018 Ravenclaw		
25	Rol	Angelo	6973	(null) UGRD	COMP-SCI	Springfield	2013 Slytherin			
26	Plard	Joya	93077	(null) GRD	COMP-SCI	Springfield	2017 Gryffindor			

Trying to update, but updates are ignored (without warning)

The screenshot shows the SQL Developer interface with a worksheet containing the following SQL query:

```
update student
SET HOUSE = 'Ravenclaw'
WHERE SID = 89202;
```

Below the query, the 'Script Output' pane shows the message: '1 row updated.' The 'Query Result' pane is empty.

Marcus Brennigan house change to 'Ravenclaw' is rejected, Gryffindor stays.

The screenshot shows the 'STUDENT' table in SQL Developer. The table has the following columns: LASTNAME, FIRSTNAME, SID, SSN, CAREER, PROGRAM, CITY, STARTED, and HOUSE. The data is as follows:

	LASTNAME	FIRSTNAME	SID	SSN	CAREER	PROGRAM	CITY	STARTED	HOUSE
1	Brennigan	Marcus	90421	987654321	UGRD	INFO-TECH	Evanston	2015 (null)	
2	Patel	Deepa	14662	(null)	GRD	COMP-SCI	Evanston	2015 (null)	
3	Snowdon	Jonathan	8871	123123123	UGRD	INFO-SYS	Springfield	2015 (null)	
4	Starck	Jason	19992	789789789	UGRD	INFO-SYS	Springfield	2015 (null)	
5	Johnson	Peter	32105	123456789	UGRD	COMP-SCI	Chicago	2015 (null)	
6	Winter	Abigail	11035	111111111	UGRD	PHD	Chicago	2015 (null)	
7	Patel	Prakash	75234	(null)	UGRD	COMP-SCI	Chicago	2015 (null)	
8	Snowdon	Jennifer	93321	321321321	GRD	COMP-SCI	Springfield	2015 (null)	
9	Degroff	Jarvis	14998	113311331	GRD	INFO-TECH	Evanston	2015 (null)	
10	Kubik	Dwayne	57923	979797979	UGRD	COMP-SCI	Springfield	2015 (null)	
11	Skelly	Trinity	58992	555222555	UGRD	PRINCEH	Springfield	2015 (null)	
12	Krol	Angelo	60973	(null)	UGRD	PHD	Springfield	2015 (null)	
13	Pollard	Joya	39077	(null)	GRD	TEST2HD	Springfield	2015 (null)	
14	Brennigan	Marcus	89202	287654321	UGRD	INFO-TECH	Evanston	2015	Gryffindor
15	Patel	Deepa	89203	(null)	GRD	COMP-SCI	Evanston	2016	Hufflepuff
16	Snowdon	Jonathan	89204	223123123	GRD	INFO-SYS	Springfield	2017	Ravenclaw
17	Starck	Jason	89241	389789789	UGRD	INFO-SYS	Springfield	2014	Slytherin
18	Johnson	Peter	89221	123456789	UGRD	COMP-SCI	Chicago	2017	Gryffindor

One more insert test. Last insert performed prior was Joya Plard student id 93077, house Gryffindor. Adding new student, Jarvis Deg, house is Hufflepuff as expected.

The screenshot shows the SQL Developer interface with a worksheet containing the following SQL query:

```
insert into student (LastName, FirstName, SID, SSN, Career, Program, City, Started)
values ('Deg', 'Jarvis', 23998, 013311331, 'GRD', 'INFO-TECH', 'Evanston', 2016);
```

Below the query, the 'Script Output' pane shows the message: '1 row inserted.' The 'Query Result' pane is empty.

Start Page JVALLES STUDENT									
Columns Data Model Constraints Grants Statistics Triggers Flashback Dependencies Details Partitions Index									
Sort.. Filter:									
	LASTNAME	FIRSTNAME	SID	SSN	CAREER	PROGRAM	CITY	STARTED	HOUSE
1	Brennigan	Marcus	90421	987654321	UGRD	INFO-TECH	Evanston	2015	(null)
2	Patel	Deepa	14662	(null)	GRD	COMP-SCI	Evanston	2015	(null)
3	Snowdon	Jonathan	8871	123123123	UGRD	INFO-SYS	Springfield	2015	(null)
4	Starck	Jason	19992	789789789	UGRD	INFO-SYS	Springfield	2015	(null)
5	Johnson	Peter	32105	123456789	UGRD	COMP-SCI	Chicago	2015	(null)
6	Winter	Abigail	11035	111111111	UGRD	PHD	Chicago	2015	(null)
7	Patel	Prakash	75234	(null)	UGRD	COMP-SCI	Chicago	2015	(null)
8	Snowdon	Jennifer	93321	321321321	GRD	COMP-SCI	Springfield	2015	(null)
9	Degroff	Jarvis	14998	113311331	GRD	INFO-TECH	Evanston	2015	(null)
10	Kubik	Dwayne	57923	979797979	UGRD	COMP-SCI	Springfield	2015	(null)
11	Skelly	Trinity	58992	555222555	UGRD	PRINCEH	Springfield	2015	(null)
12	Krol	Angelo	60973	(null)	UGRD	PHD	Springfield	2015	(null)
13	Pollard	Joya	39077	(null)	GRD	TEST2HD	Springfield	2015	(null)
14	Deg	Jarvis	23998	13311331	GRD	INFO-TECH	Evanston	2016	Hufflepuff
15	Brennigan	Marcus	89202	287654321	UGRD	INFO-TECH	Evanston	2015	Gryffindor
16	Patel	Deepa	89203	(null)	GRD	COMP-SCI	Evanston	2016	Hufflepuff
17	Snowdon	Jonathan	89204	223123123	GRD	INFO-SYS	Springfield	2017	Ravenclaw

Extra Credit

CREATE SEQUENCE extracredit
INCREMENT BY 1
START WITH 1;

```
CREATE OR REPLACE TRIGGER student_id_trigger
BEFORE INSERT ON student
FOR EACH ROW
DECLARE SRESET NUMBER;
BEGIN
IF :new.sid is null then
    SELECT extracredit.nextval
    INTO :new.SID
    FROM DUAL;
ELSIF :new.sid is not null then
    SELECT (MAX(:new.SID) + 1) INTO SRESET FROM DUAL;
    EXECUTE IMMEDIATE 'ALTER SEQUENCE extracredit RESTART WITH SRESET';
    SELECT extracredit.nextval
    INTO :new.SID
    FROM DUAL;
END IF;
END;
/
```