

James Valles
CSC 453
Homework #1

1. (Reading). Complete

2. Relational Schema

Authors(Last_Name: string, First_Name: string, Author_ID: integer)

Ebooks(ISBN: string, Title: string, Price: integer, Author_ID: string, Newest_ISBN: string)

Customers (Name: string, Customer_ID: integer, CCard_Number: integer)

Ereaders (Device_ID: integer, Type: string, Customer_ID: integer)

Orders (Order_ID: integer, Customer_ID: integer, GiftRecipient_ID: integer, ISBN: string, Purchase_Date: string)

3.

a. Added a field called **short_title** to store an alternative short name for each course. To do that I entered the following :

```
ALTER TABLE course  
ADD short_title VARCHAR(12);
```

I did VARCHAR(12) to reduce the number of characters by almost half, since it is the short title. It appears this was correct as I see the field short_title in the Course table.

The screenshot displays the Oracle SQL Developer interface. On the left, the 'Connections' pane shows the 'JVALLES' database. The 'Tables (Filtered)' list includes COURSE, ENROLLED, MEMBEROF, STUDENT, and STUDENTGROUP. The 'Worksheet' pane shows the executed SQL command: `ALTER TABLE course ADD short_title VARCHAR(12);`. The 'Script Output' pane confirms the success: 'Task completed in 0.1' and 'Table COURSE altered.'.

On the right, the 'Data Model' tab shows the 'COURSE' table structure with columns: CID, COURSENAME, DEPARTMENT, COURSENR, and SHORT_TITLE. Below this, a table view shows the data for the COURSE table:

	CID	COURSENAME	DEPARTMENT	COURSENR	SHORT_TITLE
1	1020	Theory of Computation	CSC	489	Theory Comp
2	1092	Cryptology	CSC	440	(null)
3	3201	Data Analysis	IT	223	(null)
4	9219	Databases Technologies	CSC	453	(null)
5	3111	Theory of Computation	CSC	389	Theory Comp
6	8772	History of Games	GAM	206	(null)
7	2987	Topics in Digital Cinema DC		270	(null)

At the bottom, the 'Messages' pane shows the execution log, including the command: `UPDATE 'JVALLES1'."COURSE" SET SHORT_TITLE = 'Theory of Comp' WHERE ROWID = 'AA-12899';` and the error message: `ORA-12899: value too large for column 'JVALLES1'."COURSE"."SHORT_TITLE' (actual: 14,`

b. Cross-listing courses. Adding a new field called **xlist_course** which is foreign key referencing **CID**.

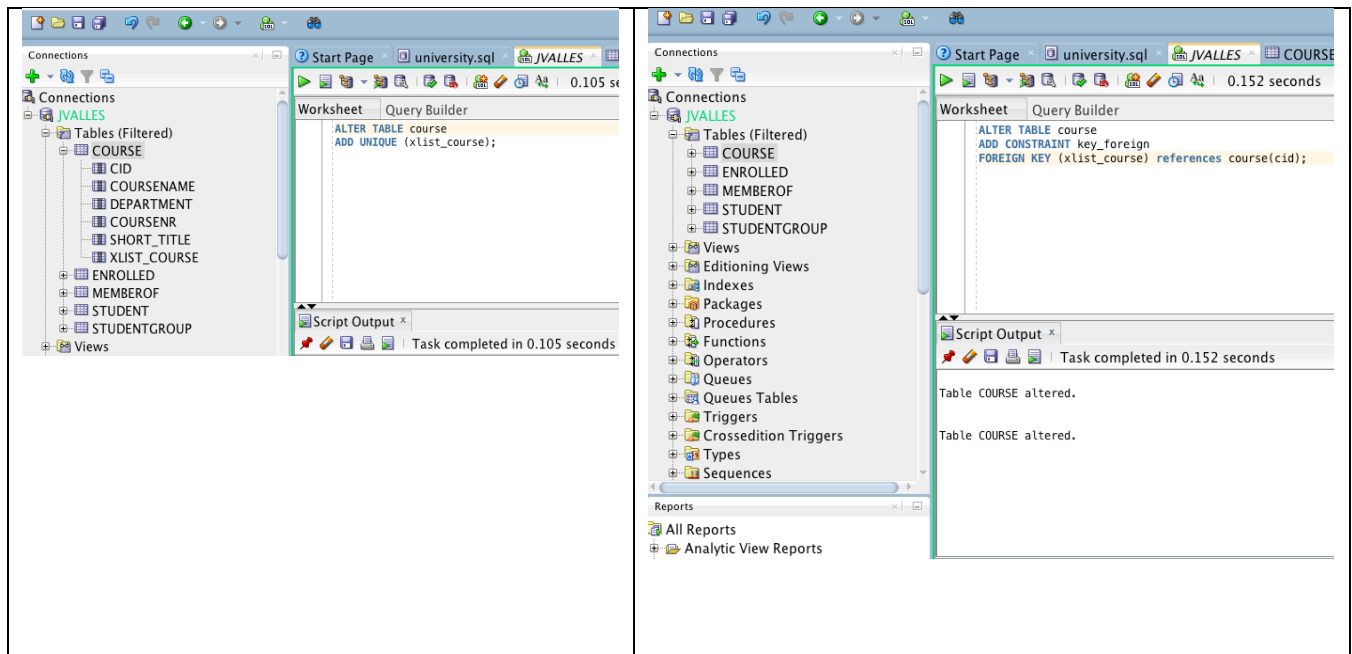
ALTER TABLE course

ADD xlist_course NUMBER(4,0);

ALTER TABLE course

ADD CONSTRAINT key_foreign

FOREIGN KEY (xlist_course) references course(cid);

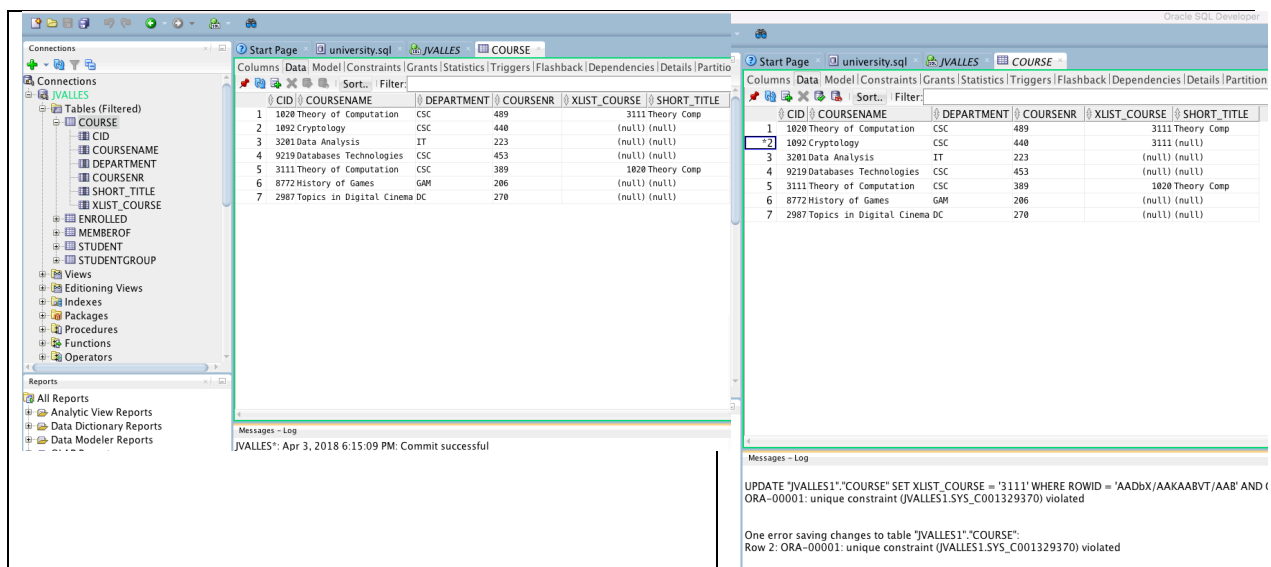


Will set Unique constraint to allow only at most one cross list per course. By default, if no cross list, null can be used.

ALTER TABLE course

ADD unique (xlist_course);

Output below:



c. Adding **enroll_cap** field to the course table. Setting default to 40. Adding check constraints to place a cap on enrollments ≤ 50 .

ALTER TABLE course

ADD enroll_cap NUMBER(2,0) DEFAULT(40)

ADD CONSTRAINT enroll_constraint

CHECK(enroll_cap ≤ 50);

The screenshot shows the Oracle SQL Developer interface. On the left, the 'Connections' pane shows the 'JVALLES' database. The 'Tables (Filtered)' pane shows the 'COURSE' table. The 'Worksheet' pane contains the following SQL command:

```
ALTER TABLE course
ADD enroll_cap NUMBER(2,0) DEFAULT(40)
ADD CONSTRAINT enroll_constraint
CHECK(enroll_cap <= 50);
```

The 'Script Output' pane shows the message: 'Table COURSE altered.' The 'Messages - Log' pane shows the following error:

```
UPDATE 'JVALLES1"."COURSE' SET ENROLL_CAP = '55' WHERE ROWID = 'AADBx/AAKAABVT/AA' AND ORA_ROWSCN = '252037'
ORA-02290: check constraint (JVALLES1.ENROLL_CONSTRAINT) violated
```

The 'Table' pane shows the data for the 'COURSE' table:

CID	COURSENAME	DEPARTMENT	COURSENR	XLIST_COURSE	SHORT_TITLE	ENROLL_CAP
1	1020 Theory of Computation	CSC	489		3111 Theory Comp	40
2	1092 Cryptology	CSC	440		(null) (null)	55
3	3201 Data Analysis	IT	223		(null) (null)	40
4	9219 Databases Technologies	CSC	453		(null) (null)	40
5	3111 Theory of Computation	CSC	389		1020 Theory Comp	40
6	8772 History of Games	GAM	206		(null) (null)	40
7	2987 Topics in Digital Cinema DC		270		(null) (null)	40

d.

Adding column **grade_basis**, setting default value to **CR**, adding constraint to not allow null values, and checking to making sure values entered can only be **PR**, **CR**, or **AU**.

ALTER TABLE enrolled

ADD grade_basis CHAR(2) DEFAULT('CR') NOT NULL

CONSTRAINT name_check CHECK(grade_basis='PR' OR grade_basis='CR' OR grade_basis='AU');

The screenshot shows the Oracle SQL Developer interface. On the left, the 'Connections' pane shows the 'JVALLES' database. The 'Tables (Filtered)' pane shows the 'ENROLLED' table. The 'Worksheet' pane contains the following SQL command:

```
ALTER TABLE enrolled
ADD grade_basis CHAR(2) DEFAULT('CR') NOT NULL
CONSTRAINT name_check CHECK(grade_basis='PR' OR grade_basis='CR' OR grade_basis='AU');
```

The 'Script Output' pane shows the message: 'Table ENROLLED altered.' The 'Messages - Log' pane shows the message: 'JVALLES*: Apr 3, 2018 1:54:34 PM: Commit successful'.

The 'Table' pane shows the data for the 'ENROLLED' table:

STUDENTID	COURSEID	QUARTER	YEAR	GRADE_BASIS
1	11035	1020 Fall	2017	CR
2	11035	1092 Fall	2017	CR
3	75234	3201 Winter	2017	CR
4	8871	1092 Fall	2018	CR
5	39077	1092 Fall	2018	CR
6	14998	9219 Winter	2018	CR
7	39077	9219 Winter	2018	CR
8	19992	3201 Winter	2018	CR
9	60973	8772 Spring	2018	CR
10	98421	8772 Spring	2018	CR
11	98421	2987 Spring	2018	CR
12	60973	2987 Spring	2018	CR

The screenshot shows the Oracle SQL Developer interface. On the left, the 'Connections' pane shows a connection to 'JVALLES'. The 'Tables (Filtered)' pane shows a tree view of the database schema, including tables like COURSE, ENROLLED, STUDENT, and STUDENTGROUP. The 'Worksheet' pane shows a query execution result for the 'ENROLLED' table. The query executed was:

```

insert into enrolled(StudentID, CourseID, Quarter, Year, Grade_Basis)
values (11035, 2987, 'Fall', 2017, NULL);

insert into enrolled(StudentID, CourseID, Quarter, Year, Grade_Basis)
values (11035, 2987, 'Fall', 2017, 'CA');

insert into enrolled(StudentID, CourseID, Quarter, Year, Grade_Basis)
values (11035, 2987, 'Fall', 2017, 'AU');

```

The 'Script Output' pane shows the execution results, including error messages and the number of rows inserted.

On the right, the 'Table' view shows the 'ENROLLED' table with columns: STUDENTID, COURSEID, QUARTER, YEAR, and GRADE. The table contains 13 rows of data.

4.

a. I don't see any specific records from the Student table (such as LastName, SID, SSN, etc)
There is so much information: owner, constraint_name, c table_name, search condition, etc.
This is a table which displays all constraint metadata for the table. It is very hard to read, but
has information on owner of constraint, name of constraint, type of constraint, when a
constraint was last changed, etc. Very cool!

The screenshot shows the Oracle SQL Developer interface. On the left, the 'Connections' pane shows a connection to 'JVALLES'. The 'Tables (Filtered)' pane shows a tree view of the database schema, including tables like COURSE, ENROLLED, STUDENT, and STUDENTGROUP. The 'Worksheet' pane shows a query execution result for the 'COURSE' table. The query executed was:

```

SELECT *
FROM sys.all_constraints
WHERE table_name = 'STUDENT';

```

The 'Script Output' pane shows the execution results, including error messages and the number of rows inserted.

On the right, the 'Table' view shows the 'COURSE' table with columns: OWNER, CONSTRAINT_NAME, C TABLE_NAME, and C TABLE_NAME. The table contains 13 rows of data.

b.

Yes, I can see the constraints I added for 3c and 3d.

Worksheet Query Builder				
<pre>SELECT * FROM sys.all_constraints WHERE table_name = 'COURSE';</pre>				
Script Output x				
Task completed in 0.562 seconds				
MCHOU MSCHAEFER	SYS_C0012954 SYS_C0013018	C SELLER P SECRET	"SELLER_ID" IS NOT NULL	
OWNER	CONSTRAINT_NAME	C TABLE_NAME	SEARCH_CONDITION	R_0
JVALLES1	SYS_C001328030	U STUDENT		
JVALLES1	SYS_C001328029	P STUDENT		
JVALLES1	SYS_C001328028	C STUDENT	"LASTNAME" IS NOT NULL	

I see the enroll_cap (enrollment cap constraint) I set. Enroll_cap <= 50. Additionally, for 3d. I see NAME CHECK constraint for grade_basis='PF' OR grade_basis='CR' OR grade_basis='AU'. The metadata information shows the owner: me (jvalles1), the constraint name, the table affected, the search condition, etc.

OWNER	CONSTRAINT_NAME	C TABLE_NAME	SEARCH_CONDITION
JVALLES1	SYS_C001328030	U STUDENT	
JVALLES1	SYS_C001328029	P STUDENT	
JVALLES1	SYS_C001328028	C STUDENT	"LASTNAME" IS NOT NULL
JVALLES1	ENROLL_CONSTRAINT	C COURSE	enroll_cap <= 50
JVALLES1	SYS_C001329370	U COURSE	
JVALLES1	KEY_FOREIGN	R COURSE	
JVALLES1	SYS_C001328031	P COURSE	
JVALLES1	SYS_C001328034	R STUDENTGROUP	
JVALLES1	SYS_C001328033	U STUDENTGROUP	
JVALLES1	SYS_C001328032	P STUDENTGROUP	
JVALLES1	NAME_CHECK	C ENROLLED	grade_basis='PF' OR grade_basis='CR' OR grade_basis='AU'

OWNER	CONSTRAINT_NAME	C TABLE_NAME	SEARCH_CONDITION
JVALLES1	SYS_C001328031	P COURSE	
JVALLES1	KEY_FOREIGN	R COURSE	
JVALLES1	SYS_C001329370	U COURSE	
JVALLES1	ENROLL_CONSTRAINT	C COURSE	enroll_cap <= 50