Team 18 Project A

Course: CIS 4338

Submitted to University of Houston

College of Technology

Information and Logistics Technology

by

Team 18

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Task 1: Team Communication

Team 18 used the following tools to communicate and manage the deliverables for the project. GroupMe (figure 1.) was used to communicate and update group members on the progress of the deliverables while Google Drive (figure 2.) was used to organize documents for every group member.

Figure 1. *GroupMe chat for Team 18*

Figure 2. *Google drive for Team 18.*

Task 2: Database schema creation in Oracle SQL Developer

For this following task, Team 18 was instructed to construct a bare bones version of the database schema based on the ERD provided to us. Fields have been adjusted to match Oracle's data types and specifications along with the specifications the professor required.

Each team member wrote CREATE commands to implement the given schema. Since there were 14 tables total each team member wrote 3-4 commands. Contributions of Table Creation of each Individual Member are as follows:

Ahmad Al Saadi: 4 create commands

```
create table IT_Asset
(
        asset_id Number(10) not null
        asset_type_id number(10) not null
        asset_make varchar2(100 byte) not null
        asset_model varchar2(100 byte) not null
        other_details varchar2(200 byte)
        changed_by_user varchar2(20 byte)
        date_updated date
        constraint it_asset_pk
                Primary Key (asset_id),
        constraint it_asset_fk_asset_type
                foreign key (asset_type_id)
                references asset_type(asset_type_id)
)

create table servers
(
        asset_id number(10) not null
        server_details varchar2(200 byte) not null
        changed_by_user varchar2(20 byte)
        date_updated date
        constraint servers_pk
                primary key (asset_id)
        constraint servers_fk_it_asset
                foreign key (asset_id)
                references it_asset(asset_id)
)

create table computers
(
        asset_id number(10) not null
        computer_details varchar2(200 byte) not null
        changed_by_user varchar2(20 byte)
        date_updated date
        constraint computers_pk
                primary key (asset_id)
)

create table services
```

These were not to be created. See IT_Asset_Pgm Mgmt.pdf in the section about Implementation Tasks.

Not Null does not have to be set for fields in the PK since the PK constraint enforces it.

Task 3: Database created on class server

The following figure shown below shows Team 18's database creation on the class server in Oracle SQL Developer.

Worksheet | Query Builder

```
SELECT * FROM all_tables WHERE owner='T18';
```

Query Result

SQL | All Rows Fetched: 14 in 0.264 seconds

	OWNER	TABLE_NAME	TABLESPACE_NAME	CLUSTER_NAME	IOT_NAME	STATUS	PCT_FREE	PCT_USED
1	T18	EMPLOYEE_ASSET	T18	(null)	(null)	VALID	10	(null)
2	T18	ASSET_STATUS	T18	(null)	(null)	VALID	10	(null)
3	T18	EMPLOYEE	T18	(null)	(null)	VALID	10	(null)
4	T18	DEPARTMENT	T18	(null)	(null)	VALID	10	(null)
5	T18	APPLICATIONS	T18	(null)	(null)	VALID	10	(null)
6	T18	REL_TYPE	T18	(null)	(null)	VALID	10	(null)
7	T18	IT_ASSET	T18	(null)	(null)	VALID	10	(null)
8	T18	ASSET_TYPE	T18	(null)	(null)	VALID	10	(null)
9	T18	RELATED_ASSETS	T18	(null)	(null)	VALID	10	(null)
10	T18	IT_ASSET_INVENTORY	T18	(null)	(null)	VALID	10	(null)
11	T18	IT_ASSET_INV_SUMMARY	T18	(null)	(null)	VALID	10	(null)
12	T18	COMPUTERS	T18	(null)	(null)	VALID	10	(null)
13	T18	SERVICES	T18	(null)	(null)	VALID	10	(null)
14	T18	SERVERS	T18	(null)	(null)	VALID	10	(null)

Figure 3. *T18 database on the class server*

Task 4: Grant Privileges

Once the database was created the owner had become T18, but each team member needed to be granted privileges in order to do things such as SELECT, INSERT, UPDATE, and DELETE to the objects and data that exist within the schema.
The following figures show each team member being granted privilege.

```
-- Ahmad Al Saadi
BEGIN
FOR R IN (SELECT TABLE_NAME FROM USER_TABLES) LOOP
 EXECUTE IMMEDIATE 'GRANT SELECT, INSERT, DELETE, UPDATE ON '||R.TABLE_NAME||'
 to aalsaadi';
 END LOOP;
 END;
```

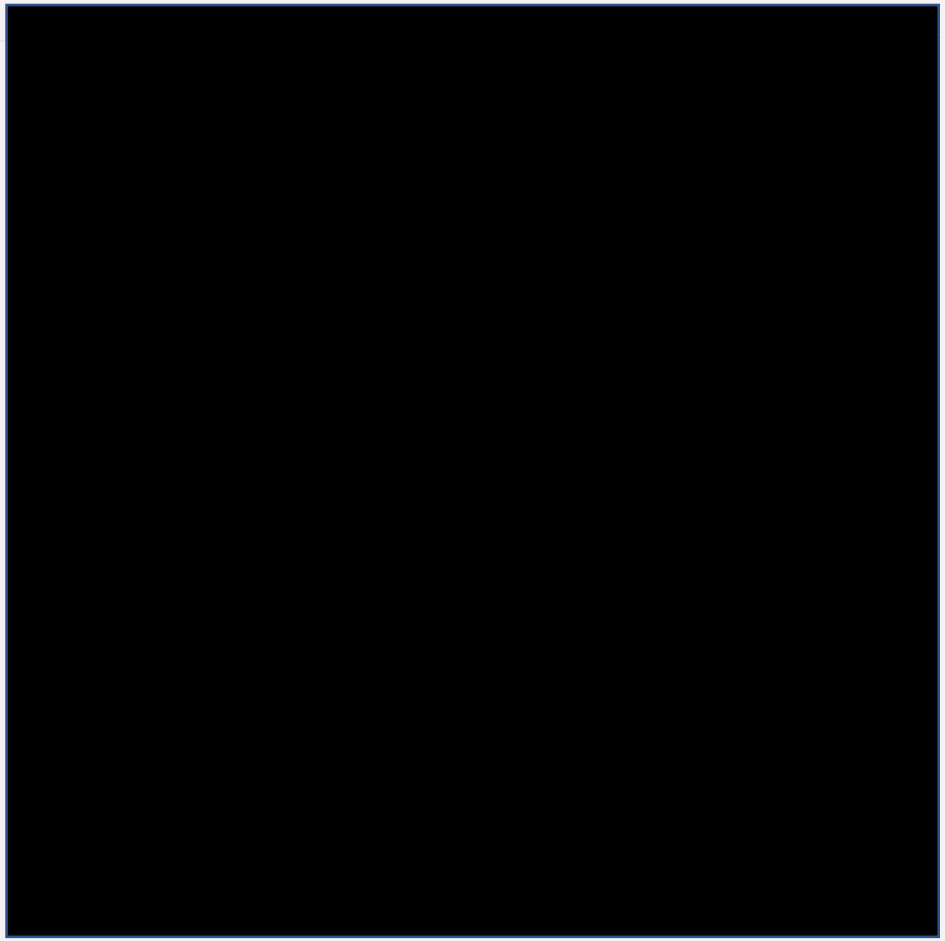
```
PL/SQL procedure successfully completed.
```

Figure 4. *Grant privileges to aalsaadi (Ahmad Al Saadi)*

Task 6: Data Scenarios

Data Scenario A-

Shirlene Macshirie from Finance previously discontinued Mozilla Firefox as her designated browser and decided to instead use Google chrome. The employee returned an operational Firefox license back in July 10, 2019, however the status of the asset is still documented as unknown. There are currently employees eager to have their own Firefox license, and since this license is still operational, it is worth updating the asset status to available and then issue it.



Task 7C: Team members work to bulk load data

```
load data
 infile 'H:\Schemas\second_inventory_set.csv'
 append into table t18.it_asset_inventory
 fields terminated by ","
 optionally enclosed by '"'
 ( it_asset_inv_id, asset_id, purchase_or_rental, asset_acquired_date,
 asset_status_code, asset_disposed_date, other_details )
```

Figure 9. *IT_ASSET_INVENTORY SQL*LOADER Control file (Ahmad Al Saadi)*

File Edit View Insert Format Data Tools Add-ons Help Last edit was made yesterday at Working...

100% $ % .0 .00 123 Arial 10

fx 251

	A	B	C	D	E	F	G	H
1	251	41	purchase	30-Jan-20	1		security application	
2	252	41	rental	27-Aug-19	1		security application	
3	253	41	rental	8-Dec-19	1		security application	
4	254	41	rental	10-Oct-19	1		security application	
5	255	41	purchase	19-Jan-20	1		security application	
6	256	41	rental	2-Mar-20	1		security application	
7	257	41	purchase	11-Jan-20	1		security application	
8	258	41	rental	4-Dec-19	1		security application	
9	259	41	purchase	13-Nov-19	1		security application	
10	260	41	rental	20-Oct-19	1		security application	
11	261	41	purchase	29-Feb-20	1		security application	
12	262	41	rental	7-Jan-20	1		security application	
13	263	41	purchase	21-Dec-19	2		security application	
14	264	41	purchase	29-Feb-20	2		security application	
15	265	41	rental	2-Sep-19	2		security application	
16	266	41	purchase	14-Dec-19	2		security application	
17	267	41	rental	21-Jan-20	2		security application	
18	268	41	rental	19-Oct-19	2		security application	
19	269	41	purchase	24-Oct-19	2		security application	
20	270	41	rental	27-Feb-20	2		security application	
21	271	41	purchase	13-Dec-19	2		security application	
22	272	41	purchase	3-Dec-19	2		security application	
23	273	41	purchase	18-Nov-19	2		security application	
24	274	41	purchase	8-Jan-20	2		security application	

Figure 10. *IT_ASSET_INVENTORY source file (Ahmad Al Saadi)*

any 2015 applications?

```
H:\>sqlldr CONTROL =H:\Schemas\second_inventory_set_control.ctl
LOG = H:\Schemas\second_inventory_set_mylogB.log
Username:aalsaadi@ (DESCRIPTION=(ADDRESS=(PROTOCOL=tcp)(HOST=cot
-cis4338-01)(PORT=1521))(CONNECT_DATA=(SID=orcl)))
Password:

SQL*Loader: Release 12.1.0.2.0 - Production on Sat Mar 7 17:08:3
4 2020

Copyright (c) 1982, 2014, Oracle and/or its affiliates.  All rig
hts reserved.

Path used:      Conventional
Commit point reached - logical record count 64
Commit point reached - logical record count 128
Commit point reached - logical record count 192
Commit point reached - logical record count 250

Table T18.IT_ASSET_INVENTORY:
  250 Rows successfully loaded.

Check the log file:
  H:\Schemas\second_inventory_set_mylogB.log
for more information about the load.
```

Figure 11. *IT_ASSET_INVENTORY SQLLDR Command (Ahmad Al Saadi)*

Task 7D: Bulk loading using Oracle SQL Devloper:

Worksheet | Query Builder

```
--Ahmad Al Saadi
Select * From it_asset_inventory
WHERE it_asset_inv_id
BETWEEN 251 and 500;
```

Query R... | SQL | Fetched 50 rows in 0.044 seconds

	IT_ASSET_INV_ID	ASSET_ID	PURCHASE_OR_RENTAL	ASSET_ACQUIRED_DATE	ASSET_STATUS_CODE	ASSET_DISPOSED_DATE
1	251	41	purchase	30-JAN-20	1	(null)
2	252	41	rental	27-AUG-19	1	(null)
3	253	41	rental	08-DEC-19	1	(null)
4	254	41	rental	10-OCT-19	1	(null)
5	255	41	purchase	19-JAN-20	1	(null)
6	256	41	rental	02-MAR-20	1	(null)
7	257	41	purchase	11-JAN-20	1	(null)
8	258	41	rental	04-DEC-19	1	(null)
9	259	41	purchase	13-NOV-19	1	(null)
10	260	41	rental	20-OCT-19	1	(null)
11	261	41	purchase	28-FEB-20	1	(null)
12	262	41	rental	07-JAN-20	1	(null)
13	263	41	purchase	21-DEC-19	2	(null)
14	264	41	purchase	29-FEB-20	2	(null)
15	265	41	rental	02-SEP-19	2	(null)

Figure 21. *Bulk loading using SQL Developer for IT_ASSET_INVENTORY (Ahmad Al Saadi)*

Task8: Executing Oracle system commands/views

The following table showcases some commands and system views that were extracted via Oracle system views. This data helps to support running the database.

Oracle Command	Description of Information Returned
DESCRIBE name_of_table; DESC name_of_table; --name_of_table must be replaced with the name of an actual table that is part of your interesting business process	The DESCRIBE command returns each field within the table along with its data type and whether the field can be null or not.
DESCRIBE user_tables; --user_tables is an Oracle system view	user_tables include all the relational tables owned by the current user (team 18). This query gives a description of the data type of the relational tables as well as if they can be null or not.
SELECT * FROM user_tables;	Showcases all the tables that the user has access to
SELECT owner, table_name, round((num_rows*avg_row_len)/(1024)) size_in_KB FROM all_tables WHERE OWNER = USER ORDER BY size_in_KB DESC -- Biggest first. ; --all_tables is an Oracle system view	Returns tables within the database, and who the owner is while sorting the tables in terms of MB size with the biggest to smallest size.
User_tables versus all_tables	all_tables: describes the relational tables accessible to the current user. user_tables: describes the relational tables owned by the current user.

SELECT owner, table_name, num_rows FROM all_tables WHERE OWNER = USER ORDER BY num_rows DESC;	The command returns a total number of rows within each tables of the database that the user has access to or owns.
DESCRIBE user_indexes;	The data that's included or returned is a description of the indexes owned by the current user, whether it's null or not as well as the data type.
SELECT * FROM user_indexes;	Although the command wasn't supposed to return any results or indexes, there were results returned displaying indexes, the type of indexes and etc. The indexes that were displayed are the list of primary keys that our group created. Reason for this is that Oracle automatically creates an index for primary/unique keys that users create.
SELECT * FROM user_constraints;	The selection reveals a list of constraints used by the database schema. Most of the constraints listed were the key constraints and the NOT NULL constraints.
Document the use of some other system view DESCRIBE	

Task 9: Queries for data scenarios

The following information and figures show the queries that were written for the data scenarios earlier in the project (task 6)

Data Scenario A:

```
-- Ahmad AL Saadi T18
create view employee_inventory_b as
SELECT inv.it_asset_inv_id, a.asset_type_id, a.asset_make, a.asset_model,
inv.other_details, st.asset_status_description, eas.user_or_support, eas.date_signed_out,
eas.condition_out, eas.date_returned, eas.condition_returned
from T18.asset_status st join t18.it_asset_inventory inv
on st.asset_status_code = inv.asset_status_code
join t18.employee_asset eas
on inv.it_asset_inv_id = eas.it_asset_inv_id
right join t18.it_asset a
on inv.asset_id = a.asset_id;

select * from employee_inventory_b
where it_asset_inv_id = 24;
```

Output | Query Result

All Rows Fetched: 1 in 0.039 seconds

IT_ASSET_INV_ID	ASSET_NAME	ASSET_STATUS_DESCRIPTION	DATE_SIGNED_OUT	CONDITION_OUT	DATE_RETURNED	CONDITION_RETURNED
24	Mozilla	Unknown	02-DEC-18	OPERATIONAL	10-JUL-19	OPERATIONAL

Figure 25. *Query for data scenario A with results shown*

```
-- Ahmad Al Saadi, Team 18
select em.emp_id, em.first_name, em.last_name, d.dept_name
from t18.employee em join t18.department d
on em.dept_code = d.dept_code
join t18.employee_asset ea
on em.emp_id = ea.emp_id
where ea.date_signed_out = '02-dec-18' and
ea.date_returned = '10-Jul-19';
```

Output | Query Result

All Rows Fetched: 1 in 0.046 seconds

EMP_ID	FIRST_NAME	LAST_NAME	DEPT_NAME
188	Shirlene	MacShirie	Finance

Figure 26. *Query for data scenario A with results shown*

Data Scenario B:

Task 10: Retrieval Queries

The following queries have been developed to support the business processes supported by the schema tables. These queries are designed to use multiple tables in order to collect all the needed data for a report.
Each query is accompanied by a description of its purpose within the business, as well as screenshots displaying both the query and results

Retrieval Query A:

```
/* Ahmad Al Saadi Team 18
This retrieval query shows us inventory counts less then 5,
which is considered a shortage that needs to be addressed */
select it_asset_inventory.asset_id, it_asset.asset_make,
it_asset.asset_model, count(*) as qty
from t18.it_asset_inventory
right join t18.it_asset
on it_asset_inventory.asset_id = it_asset.asset_id
group by it_asset_inventory.asset_id, it_asset.asset_make,
it_asset.asset_model
having count(*) <= 5;
```

Output | Query Result

SQL | All Rows Fetched: 36 in 0.11 seconds

ASSET_ID	ASSET_MAKE	ASSET_MODEL	QTY
10	Dell	I3583-3867BLK	4
25	Dell	PowerEdge T440	1
(null)	Zenefits HR/Payroll	18	1
(null)	In-house	hardware inspection, os update	3
(null)	In-house	monitor raid alarms, security scan	2
(null)	Amazon EC2	18	1
27	Lenovo	ThinkSystem SR635	1
(null)	HP	HPE ProLiant MicroServer Gen10 Plus	1
(null)	HP	14-DK0002DX)	3
(null)	Dell	PowerEdge R6525 Rack Server	1
(null)	AWS Lambda	18	1
(null)	HP	HPE ProLiant ML110 Gen10 Server	1
14	Lenovo	81TC000JUS	5
35	HPE	Proliant DL360	1
(null)	Microsoft Windows 10	21	5
(null)	PeopleSoft	16	1

Figure 30. *Retrieval query for shortage in inventory*