# Activity 4 | Aims

1. to understand foreign key constraints and know how to implement them use ADD CONSTRAINT…FOREIGN KEY in an ALTER TABLE command
2. to understand the importance of integrity order and how to implement it
3. to understand check constraints and know how to implement them in SQL
4. to apply good practice and standards

# Adding Foreign key constraints

**Aim:** to understand foreign key constraints and know how to implement them.

ADD CONSTRAINT…FOREIGN KEY is be used in an ALTER TABLE command

To add a foreign key the following structure is use:

ALTER TABLE*child***\_***tablename*

ADD CONSTRAINT *fk\_constraintname*

FOREIGN KEY (*columnname, columnname2*)

REFERENCES *parent\_tablename* (*columnname, columnname2*)**;**

**Note**: the additional references lines

* Consider the skeleton tables for your database
* Open your ‘*create….txt’* file
* Write the command to create the *courses* table (see workbook1) with appropriate datatypes
* Return to the SQL> prompt and paste in your create *courses* command
* Consider the *courses* table and choose a primary key
* Open your ‘*alters….txt’* file
* In the editor enter the command to alter the *courses* table by adding a primary key
* Return to the SQL> prompt and paste in your command
* Consider the ER of your database and choose foreign key(s) for courses
* Return to your ‘*alters….txt’* file, below your primary keys
* Enter the command to alter the *courses* table by adding foreign keys
* Return to the SQL> prompt and paste in your command
* *What is a foreign key? What integrity is it concerned with*

A foreign key is a column or group of columns in a relational database table that provides a link between data in two tables. It is concerned with referential integrity.

* At the SQL> prompt enter a command to view the *courses* table
* *Is your foreign key shown?*

It is not shown.

* Open your ‘*drop….txt’* file
* Enter the command to drop the new table and constraints
* No need to run the drop
* Tidy up your *‘drop….txt’* script file
* Use the following headings
* -- Table drops, -- Primary Key Drops, -- Foreign Key Drops
* Consider the skeleton tables for your database
* In your ‘*create….txt’* file enter the command to create *course\_runs* table (see workbook1 )
* Return to the SQL> prompt and paste in your command
* Consider the *course\_runs* table and choose a primary key
* In your ‘*alters….txt’* file enter the command to alter the *course\_runs* table to add a primary key
* Return to the SQL> prompt and paste in your command
* Consider *attendances* in the skeleton tables (see workbook1) and choose a primary key
* *What type of primary key is it?*

It is composite key.

* In your ‘*create….txt’* file enter the command to create the *attendances* table
* Return to your ‘*alters….txt’* file
* Enter the command to alter the *attendances* table to add a primary key
* Return to the SQL> prompt and paste in your commands
* Consider the ERM and choose foreign key(s) for the *attendances* table
* Return to your ‘*alters….txt’* file
* Enter the command to alter the *attendances* table by adding foreign keys
* Return to the SQL> prompt and paste in your commands
* *What error do you get and why?*

The error was the duplication of primary key as it cannot be set twice.

* Consider the ERM and choose foreign key(s) for the *course\_runs* table
* Return to your ‘*alters….txt’* file
* Enter the command to alter the *course\_runs* table by adding foreign keys
* Return to the SQL> prompt and paste in your command
* Re enter the commands for the *attendances* foreign keys

# Integrity Order

**Aim:** to understand the importance of integrity order and how to implement it

* Think about the order of the; creates, constraints, drops
* *What order should they be in?*

|  |  |  |
| --- | --- | --- |
| Order   * *Why are they in this order?*   They are in these orders to  maintain the integrity. | **Constraints** | **Drops** |
| 1st | pk\_trainer\_id  pk\_subject\_id  pk\_site\_id  pk\_company\_id |  |
| 2nd |  |  |
| 3rd |  |  |
| 4th |  |  |

* Return to your ‘*drop….txt’* file
* In the editor enter the command to drop the new tables and constraints

# Adding Check constraints

**Aim:** to understand check constraints and know how to implement them in SQL.

ADD CONSTRAINT…CHECK is used in an ALTER TABLE command

To add a check constraint the following structure is use:

ALTER TABLE*tablename*

ADD CONSTRAINT *ck\_constraintname*

CHECK (*clause*);

* Return to your ‘*alters….txt’* file, below you foreign keys
* Enter the heading - - Check Constraints
* In the editor enter the command to alter the *students* table
* Add an UPPER case check for both *name* fields

eg CHECK (*column\_name* = UPPER(*column\_name*))

* Return to the SQL> prompt and paste in your command
* Return to your ‘*alters….txt’* file
* Enter the command to alter the *course*s table
* Add a CHECK IN for the *duration* column of 3 or 5 days

eg CHECK (*column\_name* IN (‘*value*’,’ *value*’))

* Return to the SQL> prompt and paste in your command
* At the SQL prompt> enter the command to view your *students* and *courses* table

Return to your ‘*create….txt’* file

* Enter the command to create the *invoices* table (see workbook1) with appropriate datatypes
* Return to the SQL> prompt and paste in your create *invoices* command
* Use the DESC command to view your *invoices* table
* In your ‘*drop*….txt’ script file enter the command to drop the new table
* Consider the *invoices* table and choose a primary key
* Return to your ‘*alters….txt’* file
* In the editor enter the command to alter the *invoices* table by adding a primary key
* Return to the SQL> prompt and paste in your command
* Consider the ER of our database and choose foreign key(s)
* Return to your ‘*alters….txt’* file
* In the editor enter the command to alter the *invoices* table by adding foreign keys
* Return to the SQL> prompt and paste in your command
* *What error message do you get and why?*

Table didn’t exist was the error message that I got. This is because we deleted the table.

**Check** your file and folder structure, you should have:

CSY1026 (Folder)

-create\_login.txt (file)

-drop\_login.txt (file)

-alter\_login.txt (file)

**Check** your files are tidy and clearly commented

* in the correct order
* well commented and spaced
* include a run command

Your files should contain the following tables:

sites, subject\_areas, trainers, students, courses, course\_run, attendence

* Save your files
* Commit and Exit SQL ☺