**DATABASE DESIGN – EXERCISES**

1. You have been asked to create a music database with the following data attributes needing to be stored.

Artist name

Track number

Song title

Song duration

Album title

Album format

Record label

Come up with a recommended database design and draw an Entity Relationship diagram showing the names of the tables, the columns in each table and the primary and foreign key relationships between them. Record any assumptions you have made in coming up with your design.

Considerations for your design:

* An album can come in many different format (CD, Vinyl, Download)
* An artist can have more than one album
* A song could appear on more than one album
* Use ID values as the primary key for the table if there is no unique data attribute.

1. You have been asked to create a timetabling database for storing details about timetabled events, units, lecturers, rooms etc.

A sample unit timetable is shown overleaf. Come up with a database design and produce an entity relationship diagram showing the names of the tables, the columns in each table and the primary and foreign key relationships between them. Record any assumptions you have made in coming up with your design.

Considerations for your design:

* A unit leader can also teach on the unit
* Unit leaders and lecturers are both members of staff
* A member of staff can be a unit leader on more than one unit
* Cat Points for a unit cannot be > 30
* Contact hours per week can change if unit timetable events are added, deleted or changed in duration

Unit timetable

Unit Code: SWD406 Unit Name: Introduction to Databases Unit Cat Points : 20

Unit Leader Staff ID: 123456 Unit Leader First Name : Kenton Unit Leader Surname: Wheeler

Timetabled Events

Lecturer Lecturer Lecturer Room No Room Type Day Start Time End Time

Staff ID First Name Surname

123456 Kenton Wheeler JM310 Lab Thu 09:00 12:00

124456 Kenton Wheeler JM312 Lab Wed 13:00 16:00

134563 Anton Jenkins HC219 Lab Mon 11:00 14:00

124389 Darren Cunningham LT1 Lecture Theatre Thu 13:00 14:00

Total Contact Hours per week : 10

1. The Solent Art Gallery wishes to maintain data on their customers, artists and paintings. The following customer history form shows the data that needs to be stored in the database.

**Gallery Customer History Form**

Customer Name

Jackson, Elizabeth Phone 02382 044055

101 St Andrews Road

Southampton

Hampshire

SO14 0JK

Gallery Purchases Made

Artist Title Purchase Date Purchase Price

Carol Channing Purple Sunset 17/12/2015 6000.00

Jonathan Rigg Squirrel Chase 01/04/2017 4500.00

Customer Purchases Made

Artist Title Purchase Date Sales Price

Carol Channing Purple Sunset 17/09/2016 7000.00

Dennis Frings The Needles 11/05/2017 1800.00

Carol Channing High in the Sky 14/02/2018 5550.00

Dennis Frings Two Rivers Meet 15/07/2018 2200.00

Come up with a database design and produce an entity relationship diagram showing the names of the tables, the columns in each table and the primary and foreign key relationships between them. Record any assumptions you have made in coming up with your design.

Considerations for your design:

* There may be several paintings by each artist in the gallery at any one time.
* A painting in the gallery can be available for sale, unavailable for sale, reserved or sold.
* Paintings may be bought and sold several times. In other words, the gallery may buy a painting, sell it to one customer, then buy it back at a later date and then sell it to another customer
* More than one painting could be bought by a customer or sold to a customer at the same time
* A customer might sell a painting to the gallery and then buy it back at a later date.