

**ECU178 Computer Science:  
220CT Data and Information Retrieval  
Coursework**

Due on March 13th 2015

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## Task 1 Database Design

This task in Database Design consists of four activities. The first three involve normalising the given data to third normal form, and the fourth is to produce an Entity Relationship diagram of the normalised relations. For each activity I will give a detailed step by step explanation of how I came to this conclusion.

### Activity 1 First Normal Form

To put this data into First Normal Form (1NF), I need to:

1. Identify any repeating redundant data and remove it from the current Entity
2. Place the data into a new Entity
3. Create a relationship with a primary key from one Entity as a foreign key in the other.

#### Step 1: Identify Redundancy

On inspecting the data, I can see that there are multiple instances of repeating data.

Orders' ID: *CON-2237*, *CON-2356* and *CON-1234* all have repeating data entries for fields: *Equipment*, *Qty*, and *Unit Price*.

#### Step 2: Create New Entity

Removing the *Equipment*, *Qty*, and *Unit Price* fields and placing them in a new entity, leaves me with two entities as shown below.

*Items Purchased* entity

Equipment	Qty	Unit Price
Butterfly Valve	2	£5.00
3/4" Locknut	6	£1.50
Sch 40 Blk Pipe	4	£20.00
Thin Stranded Copper Wire	6	£6.00
Sch 40 Blk Pipe	3	£20.00
4x8x3/4 Cos Plywood	2	£10.00
3/4" EMT	2	£50.00
Duplex Ivy Rec	1	£100.00
Sch 40 Blk Pipe	1	£20.00
3/4" Locknut	2	£1.50

*Order* entity

Order ID	Supplier ID	Client Name	Client Address	Date	Total Price
CON-2237	168	Coventry Building Services Ltd	Units 2-4, Binley Industrial Estate, CV3 2WL	14-Dec-14	£99.00
CON-3664	527	Allied Construction Ltd	34, Lythalls La Industrial Estate, CV6 6RG	16-Jan-15	£36.00
CON-2356	169	Rioh Builds Ltd	Unit 12, Stoneleigh Park, CV8 2UV	12-Feb-15	£280.00
CON-1234	032	Grand Design Ltd	32-34, Bilton Industrial Estate, CV3 5YB	16-Apr-15	£23.00

**Step 3: Relationship**

In the *Items Purchased* entity, no one attribute can be used to identify a single record