DeZign by Datanamic
Tutorials

Written by Robin Beaumont robin@organplayers.co.uk

Revised Monday, 13 December 2004

Contents

You can obtain a free evaluation version of DeZign from:

http://www.datanamic.com/download/index.html (1.33Mbytes)

Each time you open DeZign an evaluation message comes up. Just click the OK button.

1. Introduction

These three tutorials have been designed to let you discover a few of the capabilities of a typical CASE (Computer Assisted Systems Engineering) tool. You should be able to complete all three tutorials within two hours.

1.1 Learning outcomes

After you have completed these tutorials you should come back to these points ticking off those you feel happy with.

Learning outcome	Tick box
Be able to change various 'options' within DeZign such as the drawing surface background colour	❑
Be able to create projects within DeZign	❑
Be able to create, edit and delete entity types within DeZign	❑
Be able to create, edit and delete relationships within DeZign	❑
Be able to create, edit and delete attributes within DeZign	❑
Be able to create, edit and delete foreign keys within DeZign	❑
Be able to select and run reports from within DeZign	❑
Be aware of the capability to be able to generate a number of types of databases from a DeZign project	❑
Be aware of some of the limitation of using the Trial version of DeZign	❑

1.2 Assumed prior knowledge / Skills

These tutorials assume:

- You understand the following concepts: Relational Database, Tables, Fields, Foreign Key, Attributes, and ERD,
- You have created Tables and other database objects within a DBMS such as Access

If you are unsure of any of the above I suggest that you work through the material at:

http://www.robin-beaumont.co.uk/rbeaumont/virtualclassroom/chap7/s1/default.htm

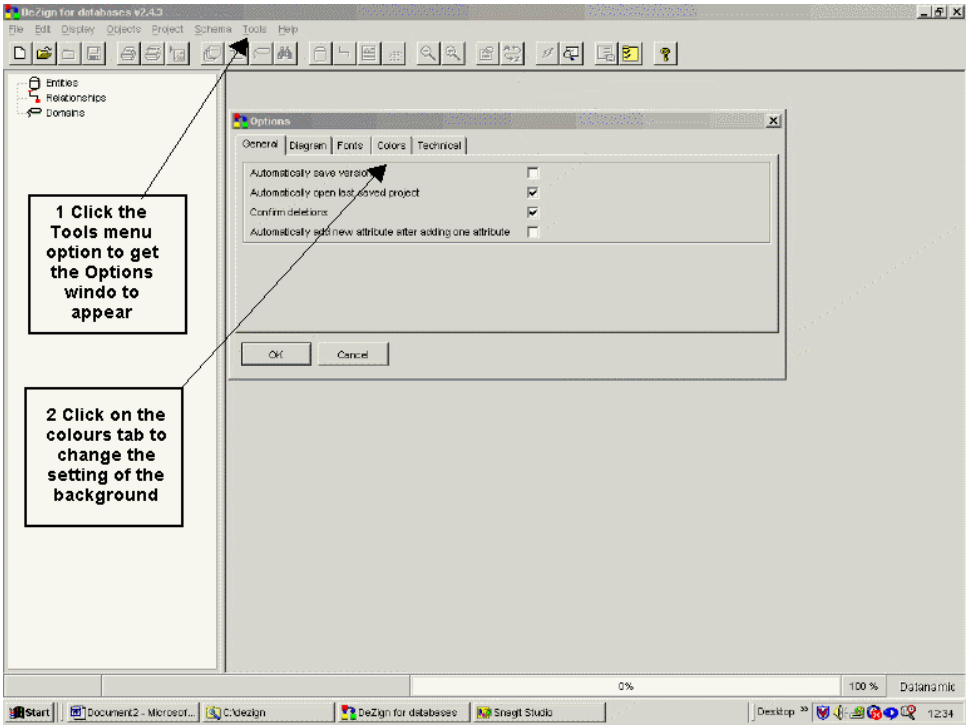
1.3 Additional material

More advanced CASE Tool tutorials for ERD diagramming and Object Oriented Methods (UML) using System Architect can be found in section 11 at: http://www.robin-beaumont.co.uk/rbeaumont/virtualclassroom/contents.htm

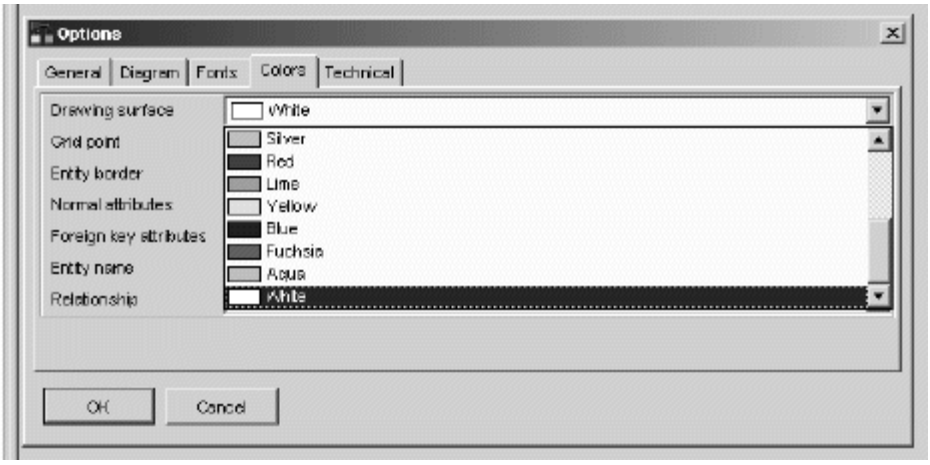
2. Tutorial 1 Changing Options and Creating Entity Types

In this tutorial we will change the background colour of the drawing surface and create several Entity Types.

2.1 Changing the background colour



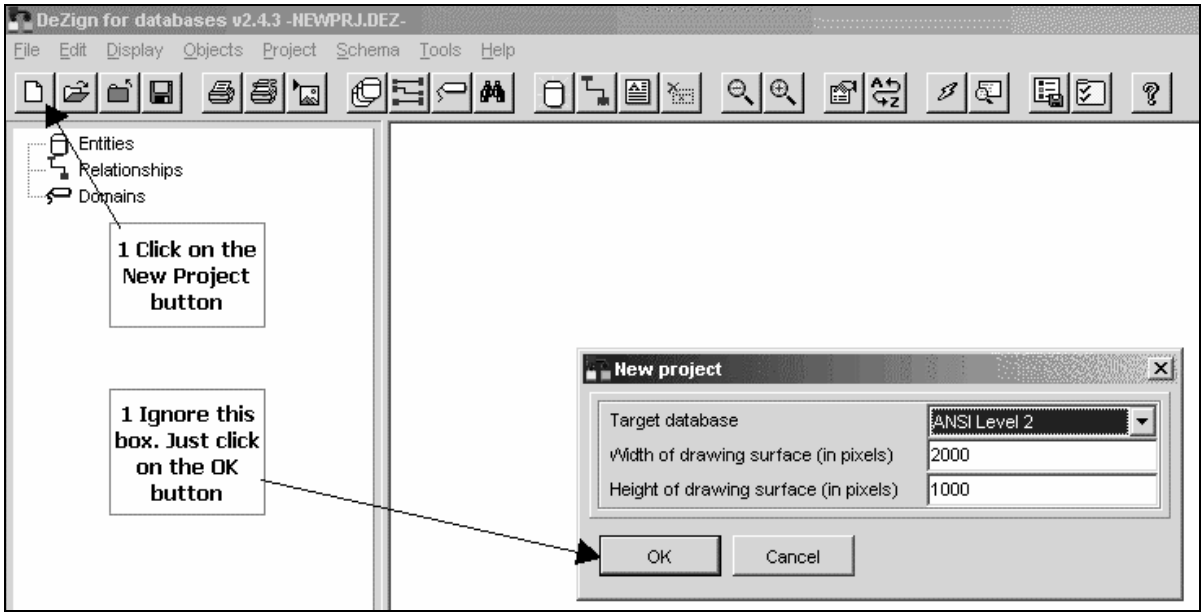
When you select the above COLOURS tab a drop down list box appears:



Exercise: Change the drawing surface colour to “white”.

2.2 Creating a new project

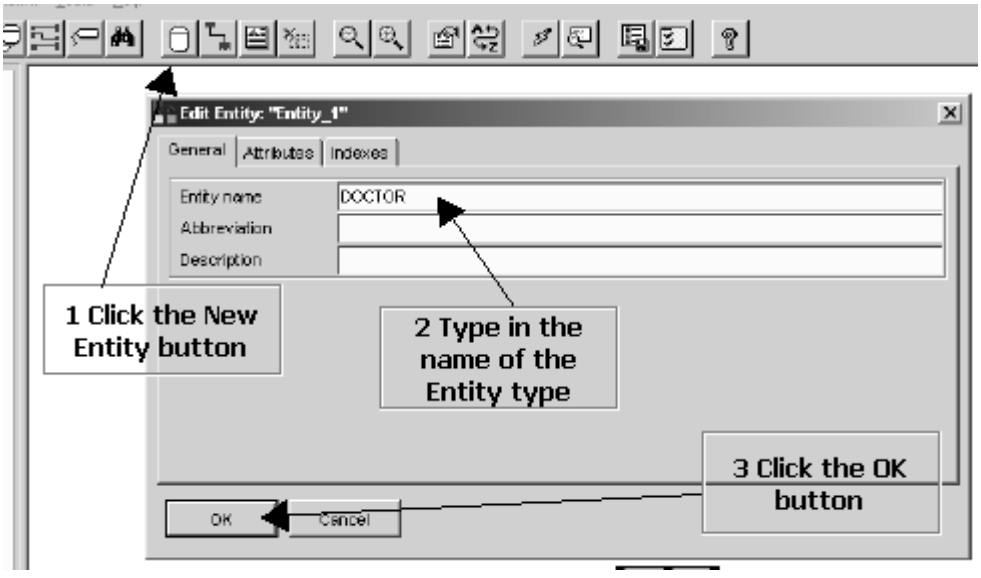
Before you can actually draw an ERD you first need to create a new Project:



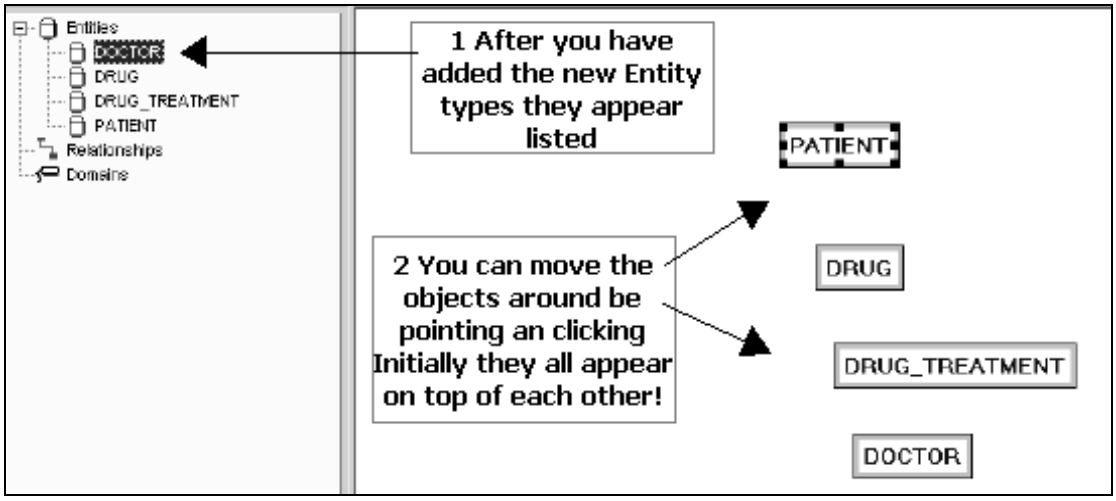
Exercise: Carry out the two steps above.

2.3 Adding Entity Types

We can now begin to add some entity types to the new project. For this example we will add the following entity types: PATIENT, DOCTOR, DRUG_TREATMENT, DRUG



Exercise: Create the four entity types listed above.



2.4 Saving your Work

This is just like any other windows program. Go to the File menu and choose the Save Project option.

> **Exercise:** Save your work as demi1

2.5 Additional Exercises

Create a set of entity types for the following scenarios. Remember to save each as a different project:

1. An operating theatre in a hospital.
2. A project manager for a new building development.
3. A Garden nursery
4. Community Healthcare
5. A museum
6. One of your choice

It may help to write down an imaginary narrative description first of all. For example a description of an operating theatre in a hospital might be something like this:

"The operating theatre is open 24 hours a day 7 days a week. It actually consists of four theatres. One of the theatres is designated as 'dirty' to carry out operations on possible infected patients. Which theatre is designated as dirty is changed every few months.

Each theatre has a list of planned (elective) operations. In addition two or more theatres are 'on call' for emergencies at any one time (this always includes the designated dirty theatre).

The theatres have a variety of staff, Nurses, Surgeons,. ODAs (operating Assistants), Cleaning, and Anaesthetists each of which can possess a variety of grades and in some cases functions (i.e. two RNs may be designated as floor and scrub nurse for a procedure).

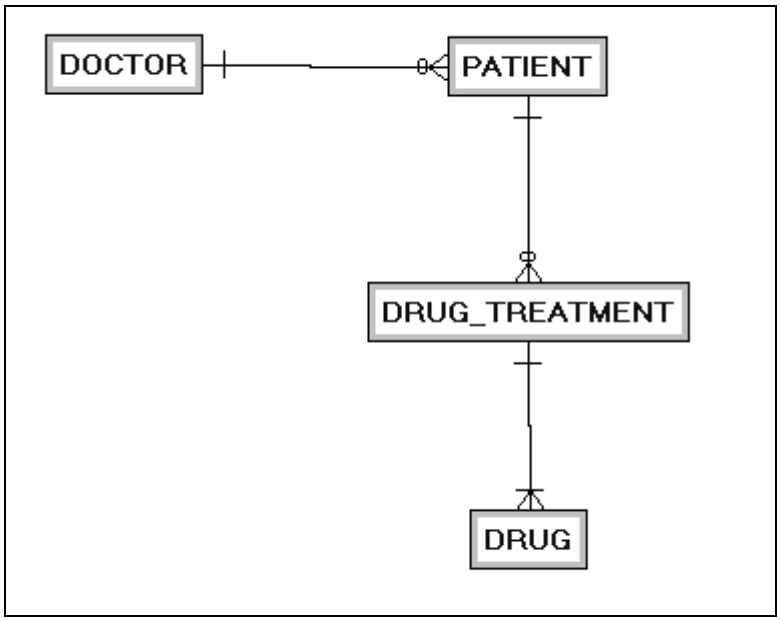
An operation may consist of one or more procedures each of which may be carried out by a different surgeon, however the same anaesthetist always stays for the whole operation"

3. Tutorial 2 Creating Relationships

In this tutorial we are going to add several relationships to the entities we created in the previous tutorial. To achieve this it is often a good idea to get clients to write down their thoughts about each of the entity types. This is what a doctor came up with:

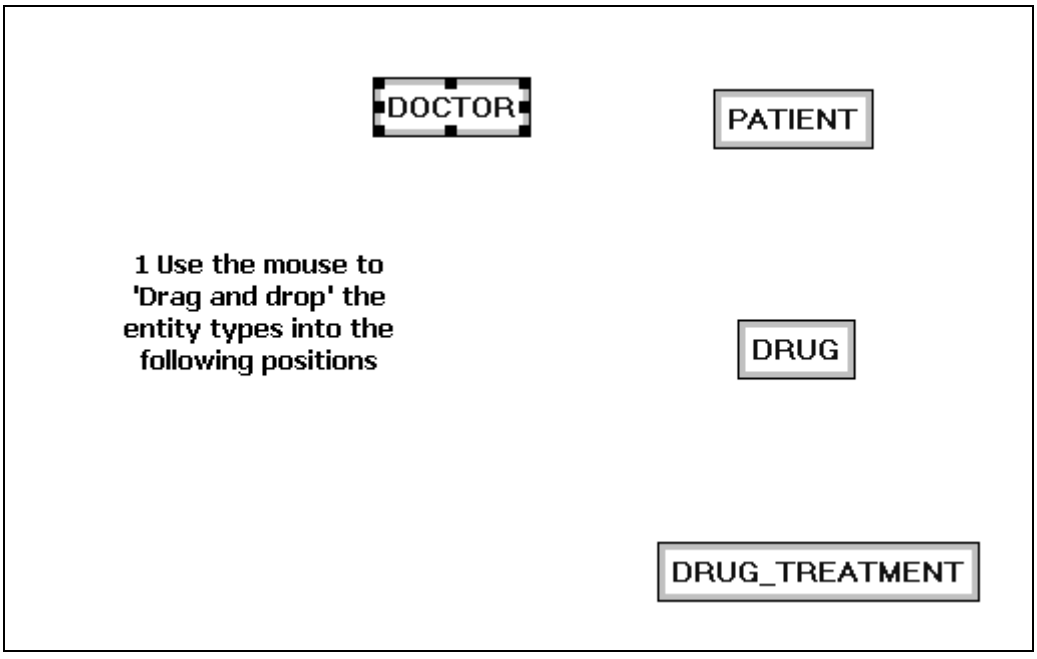
"The practice consists of several doctors each of which has several patients. A patient can only belong to one doctor. Each patient may have zero or more prescriptions for a variety of drugs"

The finished ERD for the tutorial will look like this:



We will begin by adding the relationship between DOCTOR and PATIENT. The first stage is to move the entity types to the appropriate position on the diagram.

3.1 Positioning Entity types



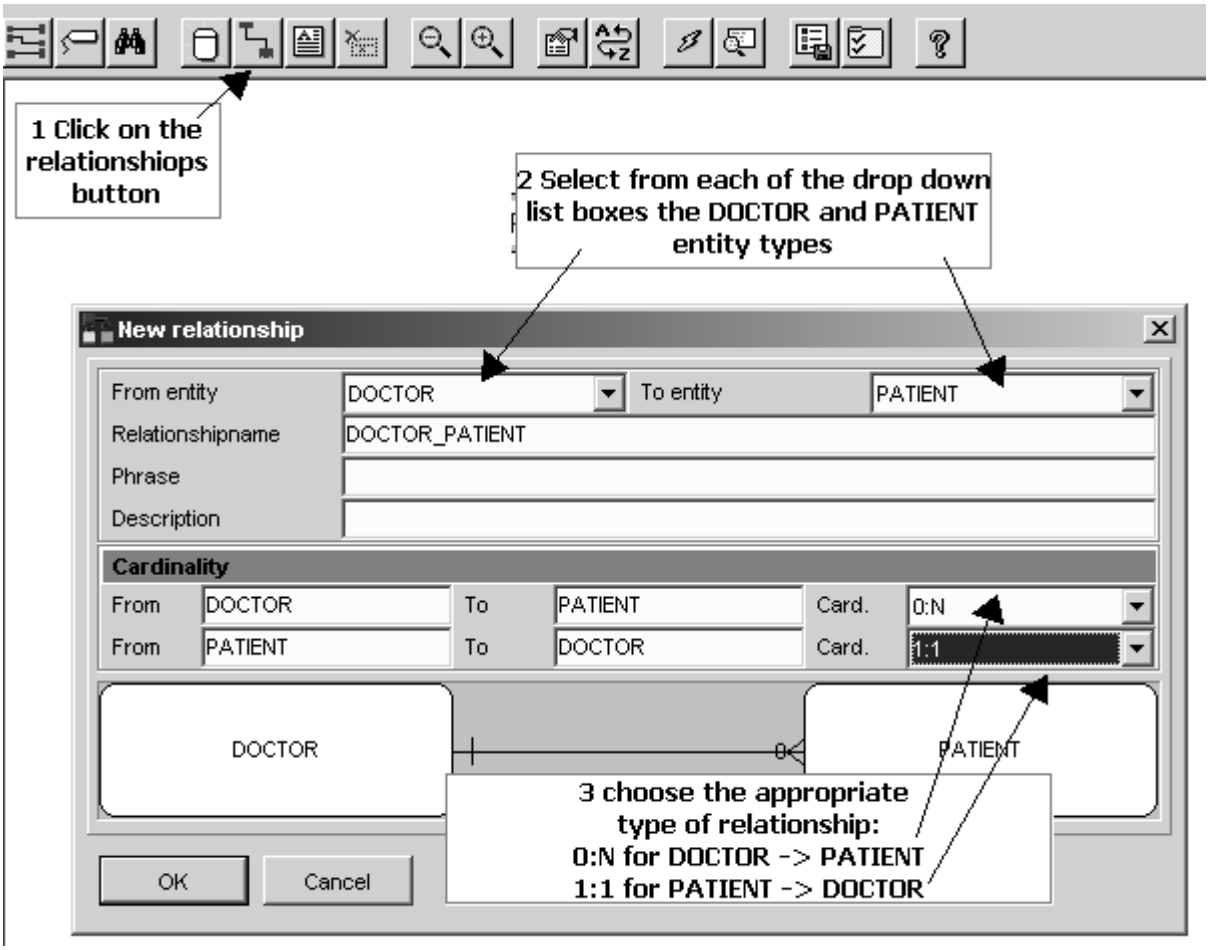
3.2 Creating a relationship

To create a relationship you need to click on the 'relationships' button. This brings up the relationships dialogue box were you select the Entity types and the type of relationship (called 'card' short for cardinality). You can also choose a large number of other options but we will not concern ourselves with them at this stage.

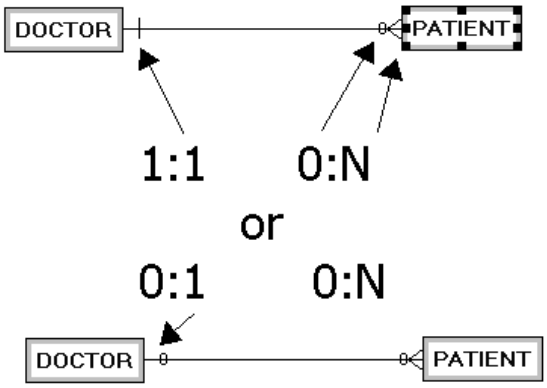
In the picture below I have created a relationship between DOCTOR and PATIENT were the relationship is that a:

DOCTOR entity instance is associated with zero or more PATIENT entity instances

PATIENT entity instance is associated with one DOCTOR entity instance



The relationship line changes depending upon the type of relationship you choose:



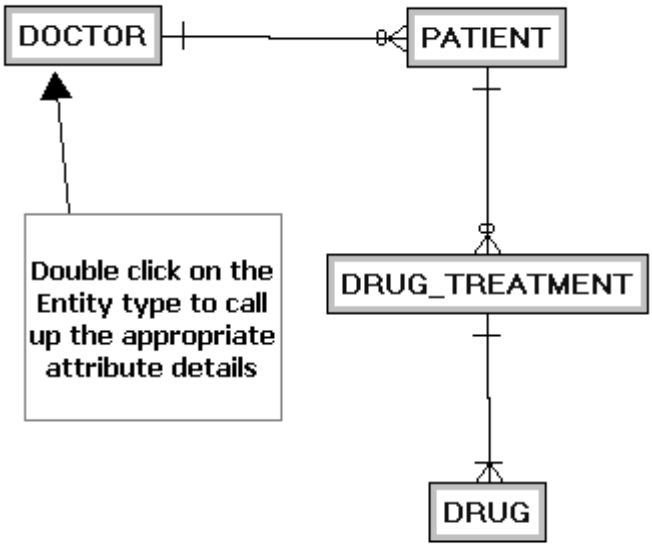
Exercise: Create the relationships described at the beginning of this tutorial to create the ERD shown there. Start with the relationship described above.

4. Tutorial 3 Adding attributes to entities.

In this tutorial we will add several entities to the DOCTOR entity type. The table below provides details:

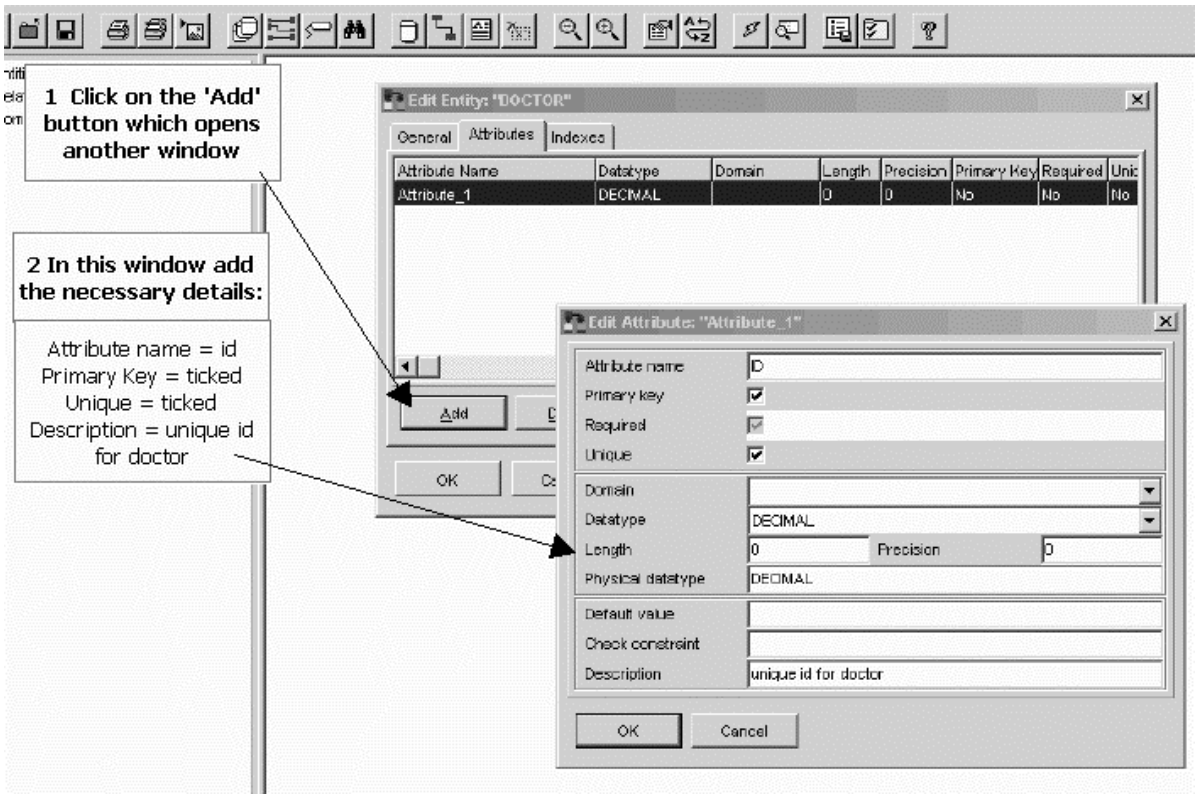
Field Name	Description
ID [Primary key]	Unique ID for doctor
FIRST_NAME	First name of doctor
SURNAME	Surname of doctor
GENDER	Male / female etc.
DATE_REG	Date qualified
ADDRS_TITLE	name of house/practice
ADDRS_ST_NAME	name of st
ADDRS_ST_NO	number of st. Note could be 2a etc.
CITY	name of city
POSTCODEA	first part of post code
POSTCODEB	second part of post code
PHONE_NO.	Note: Need to decide formatting

To be able to add, edit or delete attributes from a entity type you need to call up the entity details window. You do this by double clicking on the appropriate entity type. In the example below we have chosen the DOCTOR entity type.



:

When you double clicked the following windows appear were you add the various details, at the moment we will just add the bare bones, name and description to each attribute. We will just accept the default data type (i.e. decimal) for each:

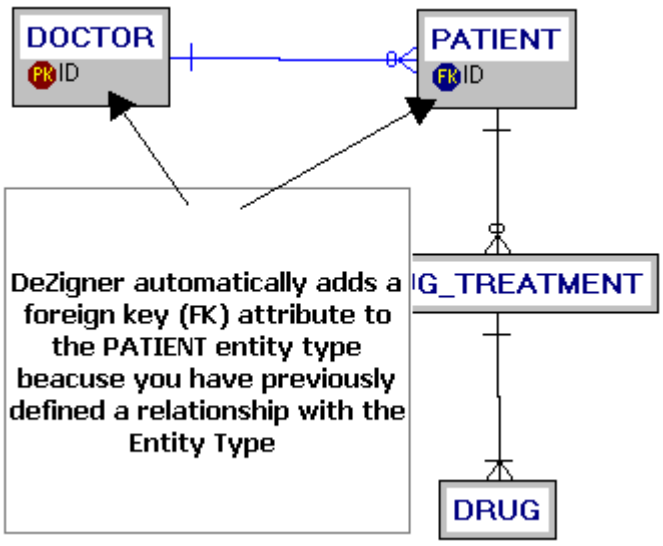


Click the 'OK' button to save the changes.

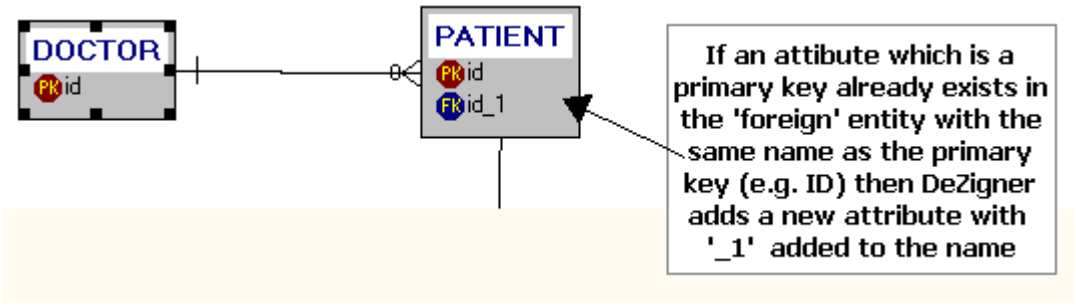
> **Exercise**: Carry out the steps described above to add the first six attributes listed at the beginning of this tutorial to the DOCTOR entity type. Unfortunately you can only add up to six attributes to each entity type in the evaluation copy.

4.1 Automatically generated Foreign Key attributes

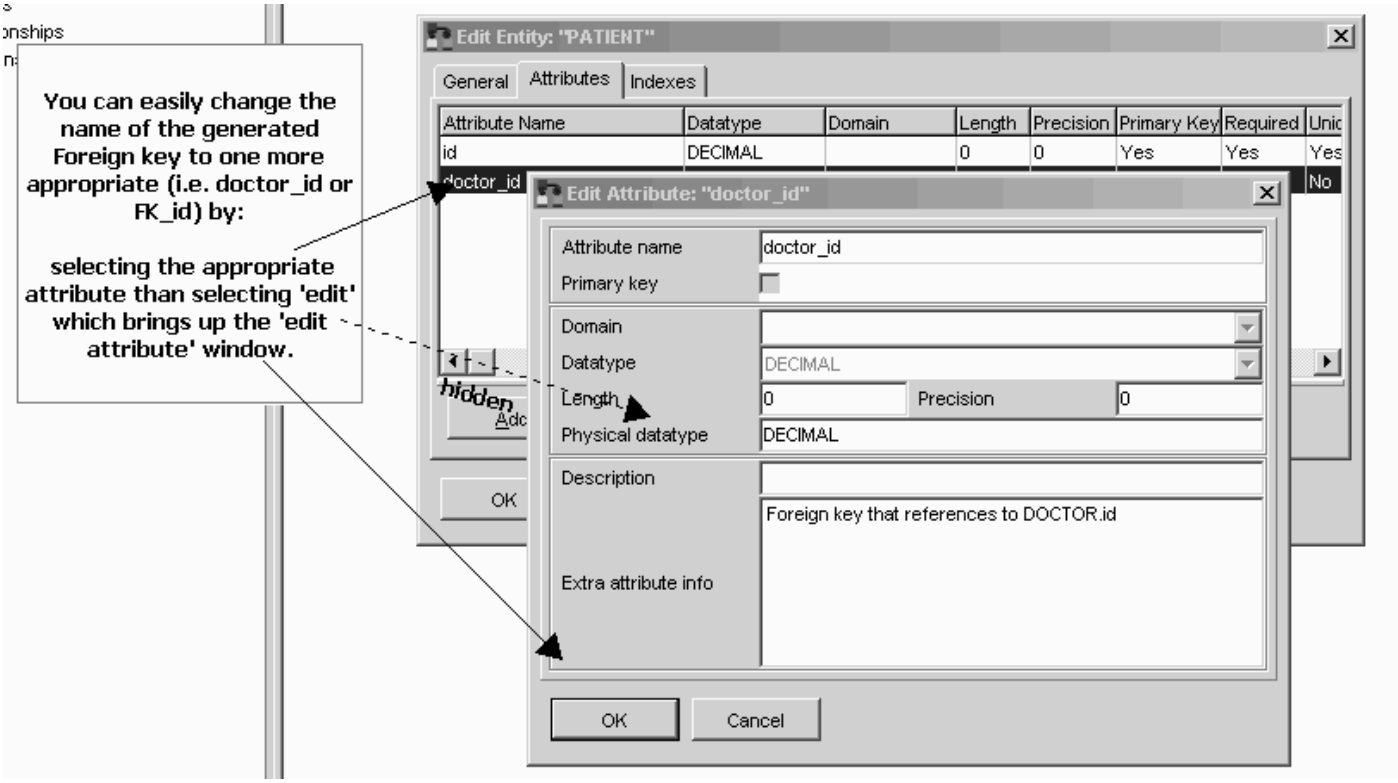
You may have noticed that DeZigner automatically added a foreign key attribute to the PATIENT entity type. Unfortunately it chooses the same name as the primary key value (i.e. ID).



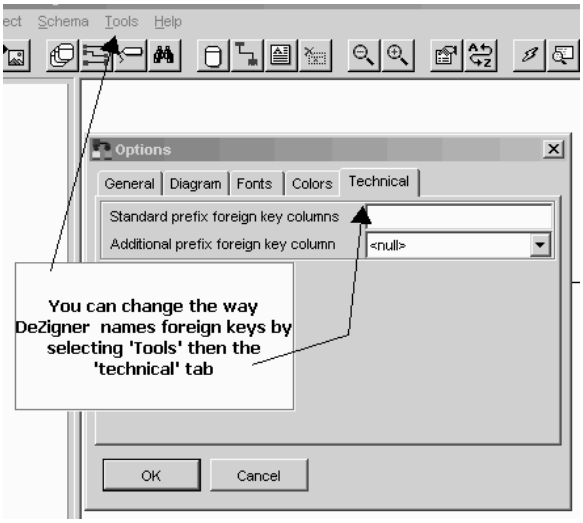
A similar thing happens if the Child entity type already possesses a primary with the same name:



However you can easily change the inappropriate name to one of your choice:



You can also change the way DeZigner generates the foreign key names by clicking on the meu option 'tools' then selecting the 'technical' tab.



Exercise: Add the following attributes to the various entity types. . Unfortunately you can only add up to six attributes to each entity type in the evaluation copy.

PATIENT entity type details

Field Name	Description
PATIENT_ID	The unique patient identifier
DOC_ID	Doctor ID foreign key
TITLE	Mr, Miss, Ms, Dr or Prof.
DATE_ON_LIST	Date put on list
GENDER	Male / female etc.
NO CHILDREN	Number of children
FIRST_NAME	First name of patient
SURNAME	Surname of patient
DOB	date of birth
ADDRS_TITLE	Name of house
ADDRS_ST NAME	Name of st
ADDRS_ST_NO	Number of st. Note could be 2a etc.
CITY	Name of city
POSTCODEA	First part of post code
POSTCODEB	Second part of post code

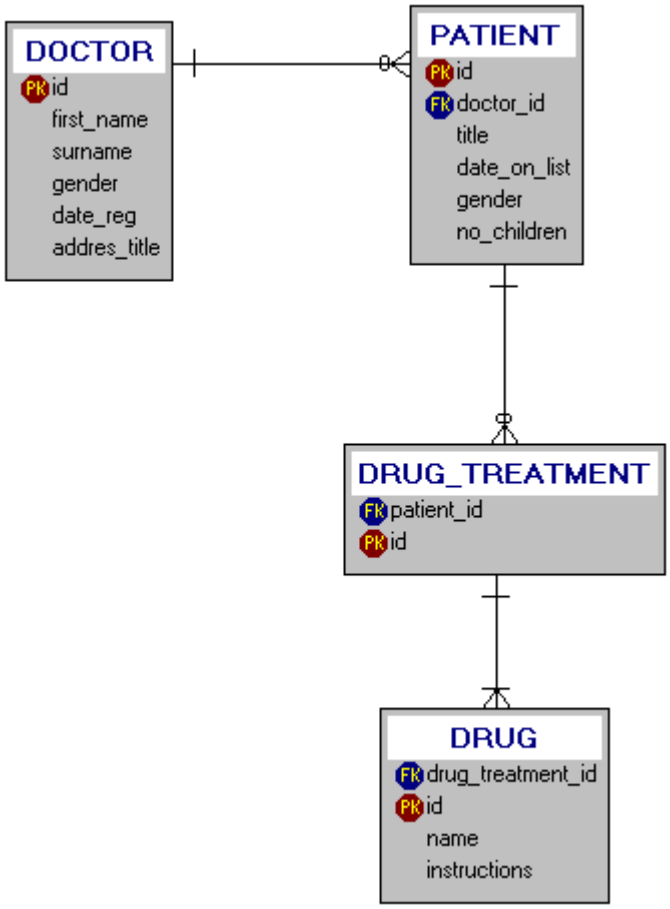
DRUG_TREATMENT entity type details

Field Name	Description
ID	The unique drug treatment identifier
PATIENT_ID	Foreign key to PATIENT

DRUG entity type details

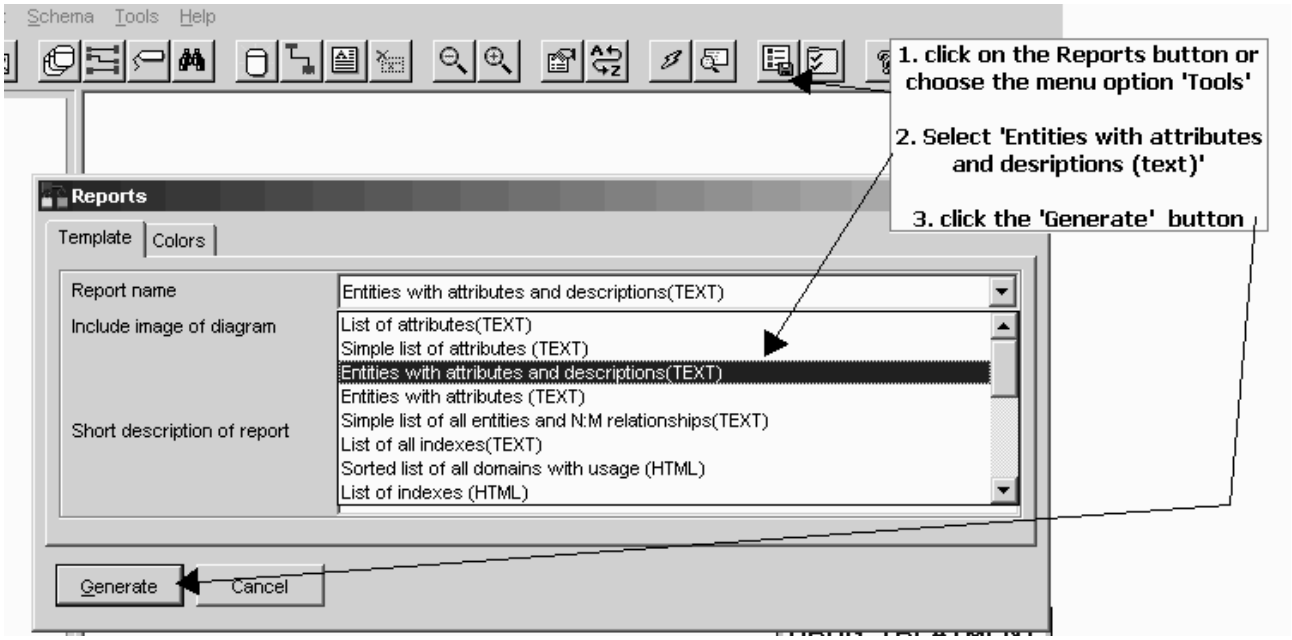
Field Name	Description
ID	The unique Drug identifier
DRUG_TREATMENT_ID	Foreign key to DRUG_TREATMENT
NAME	Pharmaceutical name
Instructions	Details of what, when and how to take it

The following page shows what you should end up with.



5. Creating reports

DeZign offers a number of reports (unfortunately some don't seem to work correctly. For example if you have an attribute with the same name in more than one Entity type it seems only to report it once?). You simply choose form a list of pre-defined reports:



From our ERD the following would have been generated:

Report: **Entities with attributes and descriptions (text)**

```
Project name            :Not yet specified
Author                  :Not yet specified
Description             :Not yet specified
Date of report          :29/06/2001
Title of report         :Entities with attributes and descriptions
+-------------------------------------------------------------------------
-----------------------------------+
Objectname              :DOCTOR
Description             :
attribute                       description
---------                       -----------
id                              unique identifier
first_name                      first name of the doctor
surname                         surname of doctor
gender                          male / female etc
date_reg                        Date qualified
addres_title                    name of house / practice
+-------------------------------------------------------------------------
-----------------------------------+
Objectname              :PATIENT
Description             :
attribute                       description
---------                       -----------
id                              unique id
doctor_id                       foreign key to DOCTOR
title                           mr, miss etc
date_on_list                    date put on list
gender                          male / female etc
no_children                     number of children
+-------------------------------------------------------------------------
-----------------------------------+
Objectname              :DRUG_TREATMENT
Description             :
attribute                       description
---------                       -----------
patient_id                      Foreign key  PATIENT
id                              unique key
+-------------------------------------------------------------------------
-----------------------------------+
Objectname              :DRUG
Description             :
attribute                       description
---------                       -----------
drug_treatment_id               Foreign key  to DRUG_TREATMENT
id                              unique id
name                            parmaceutical name
instructions                    instructions
```

Exercise: Experiment with the various reports.

6. Generating databases from DeZign

You can generate a database from the project you have created if you have included all the appropriate information. Obviously we have not done this in the three tutorials. For example all your attributes are defined as the default datatype.

To create a database you simply select the ‘Schema’ menu option and select the ‘generate schema/database option’. If you look in the ‘Project’ menu option you can change the target database even after you have started work on the project.

The generated file for your project to a Access2000 database produces the following file called 'create.sql' -

```
' - How to run this script in ms-access 2000?
' -
' - Open a new module and insert this file into module.
' - (In menu: Insert module, Insert file)
' - When the new module is visible, you're in the VBA editor.
' - Before you run this module, you need to check whether DAO
'    is installed.
' - See tools->references from the menu to see if DAO is
'   installed. If not, check DAO 3.51 or DAO 3.6 from the
'   list of libraries.
' - Run this script by pressing F5
' - The script will automatically run.
'
' ------------------------------------------------------------
'   constants
' ------------------------------------------------------------
Const ERR_PROPERTY_NONEXISTENT = 3270
Const MB_YESNOCANCEL = 3
Const MB_QUESTION = 32
Const DOYES = 6
Const DONO = 7
Const DOCANCEL = 2

' ------------------------------------------------------------
'   variables
' ------------------------------------------------------------
Dim wspc     As Workspace
Dim dtbs     As Database
Dim tabl     As tableDef
Dim coln     As DAO.Field
Dim refr     As Relation
Dim dtbName As String
Dim newLine As String
Dim retCode As Long

' ------------------------------------------------------------
'   Table exists
' ------------------------------------------------------------
Private Function DoCreateTable(tabName As String) As Integer
    Dim n As Integer, resp As Integer

    DoCreateTable = DOYES
    On Error Resume Next
    For n = 0 To dtbs.TableDefs.Count - 1
       If dtbs.TableDefs(n).Name = tabName Then
          resp = MsgBox("The Table '" & tabName & "' already exists in the Database. Do you
want to delete it and create again ?", MB_QUESTION + MB_YESNOCANCEL, "Confirmation")
          If resp = DOYES Then
             ' delete old Table
             DeleteATable tabName

….
….
…. Etc.
```