Discuss how potential errors in the design and construction of a database can be avoided

When working on databases, a common issue that you get is accidentally deleting fields in a table. For example, if a user were checking over their database and editing some fields, it is easy to accidentally re-write over some fields, not noticing the mistake, and once the error is spotted, it may be hard to retrieve what has been lost, or even if intentionally deleting data, if the user deleted the wrong field and saves the database closing it, once realising the error, they would have lost the data deleted permanently. A way to avoid deletion of fields firstly, to make sure to check over the spreadsheet if any changes have been made before saving and exiting, so that you can always undo the deletion. Another way is to make sure to create more than one backup file of the database, ensuring that if anything like this goes wrong, you can always be able to retrieve any deleted data ensuring that you can always copy and paste them into the currently updated database you are working on. A more secure may of preventing deletion is to lock the database so that only you are able to use it, for example by doing this if another user were to try and access the database and would want to make changes to it, they will not be able to do so because only you as the creator of the database has permission to use, edit and save the database.

One error that may occur and can possibly also be frustrating is when you enter “null values”. When you have fields that don’t always require any values, for example if a customer were to be inserting their personal details into an application form, and were to leave a field blank, it may cause errors in the database, as it will not be able to work with the information properly unless the field is filled in. The only solution to the problem is to suggest that there is a null value so that the field that is left blank can be filled in. In order to prevent this error from happening, you would have to make use of the validation rule. For example, you would have to set the validation rule to have an error message appear, notifying the applicant to fill in all fields available, so that they can be able to submit their form, just like in the image, it is notifying users that the primary key field cannot be left empty. This would be stopping the null value problem from occurring.

Validation is used to check if data entered is valid. In a database, users will set validation rules for when people are entering in information in forms, and they have filled in incorrect data, they would need to be notified that what they haven entered is not valid. Without validation, people entering information into a database would get getting away with entering false information, and when the database would try to work with the information that it is given, for example a query, it will not function properly due to the fact that the information given isn’t correct. So for example, social networking sites like Twitter and Facebook require for you to be over the age of 13 to create an account, so when filling in the online application form, in their databases they would have set a validation to only allow people that are aged 13 and over to click continue and successfully create an account on their website, otherwise is a younger person were to try and continue making an account, an error message would occur and notify them that they are too young to have an account on their website. Therefore by having validation rules, it ensures accuracy of data, that only valid and necessary data is entered from users.

****Another common error that can occur in databases is entering incorrect data types. For example, in the image below, the database requires that in the column with the field name “DOB” requires only numbers to be used to fill in the information, and if text is entered, it will not allow the user to submit anything unless the enter their data numerically. The main solution to this error is to have input masks set so that when entering data into these type of fields, that it will only allow numbers to be entered. Another way of preventing this error from happening is to that if a user tried to input text into this field then an error message should appear letting them know that the information that they have tried to enter is invalid, and that they should insert the correct data type in order to proceed. Another way of avoiding this error would be the use of drop down lists, in this case for the DOB you would have to have a drop down list for each section in the DOB (the date, the month and the year), this would lessen the chances of any errors that could occur if the wrong data types were entered in this field.