1   Introduction

This is a manual for the installation and use of the delivery software application 'DeliverySoftware2'. The program is a Windows application, for creating, loading and manipulating a database for weekly deliveries, of either a regular order or a weekly amended order. A particular feature of the application is the ability to set an individual price for a good for a customer. This could be useful in situations such as where there is a difficult drop off point, a special service has been provided, or for discretionary offers etc.

The program builds on the 'MyDatabases' and 'DeliverySoftware' applications, also available from MathematicalServices Limited. Indeed, it is possible to perform all functions available in these two applications using this application. Thus, the application represents very good value. The bespoke feature of this application is the 'Email' tab for sending invoices to a customer of a delivery schedule.

You are licensed to install this application on one device and to do this you must register the application on the device.

2   Pre-requisites.

1. A PC running Windows 7 or above.

2. A USB stick or optical drive containing the program setup files, together with this manual (available online).

3. An installation of an instance of Microsoft SQL Server.

   This application is normally installed while Microsoft SQL Server is installed. It is particularly important to note the name of the Server for the first connection to the Server.

It will be necessary to ensure that Microsoft Sql Server is configured as a Windows service and that it runs automatically when the computer is turned on. Occasionally these services stop and must be restarted before this application will work. This can be done within this application. Installation/Removal:

The application is installed by inserting the supplied stick or disc into the PC and running the 'setup.exe' program on it. The application was developed on a Windows 11 platform using SQL Server 2019, and Microsoft Visual Studio 2022.
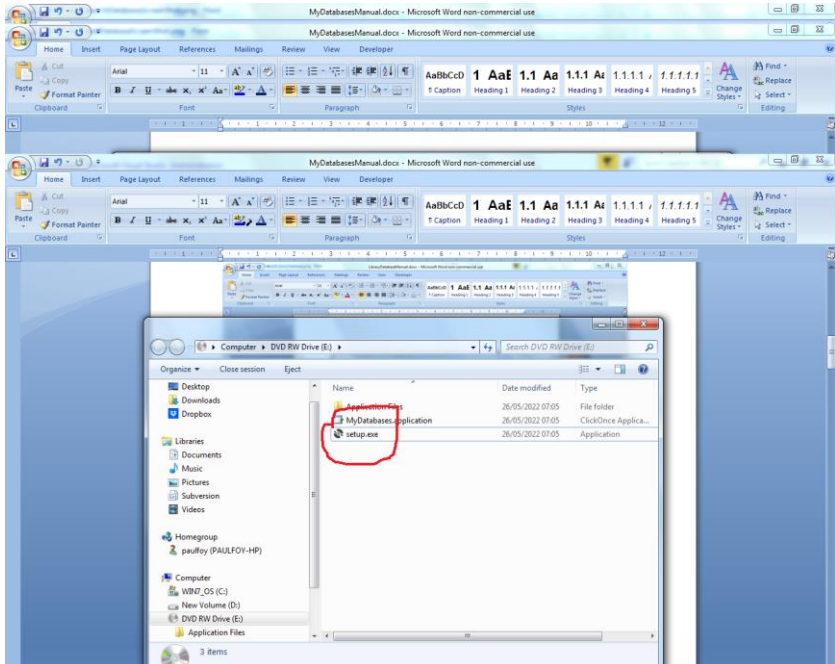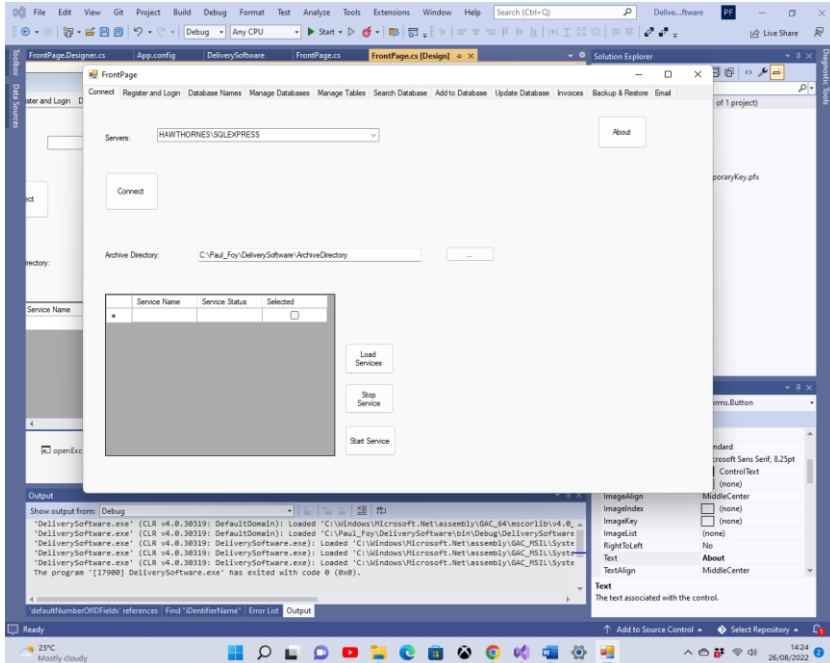
The program can be removed from the PC, by using the
'Program & Features' menu from within Control Panel.
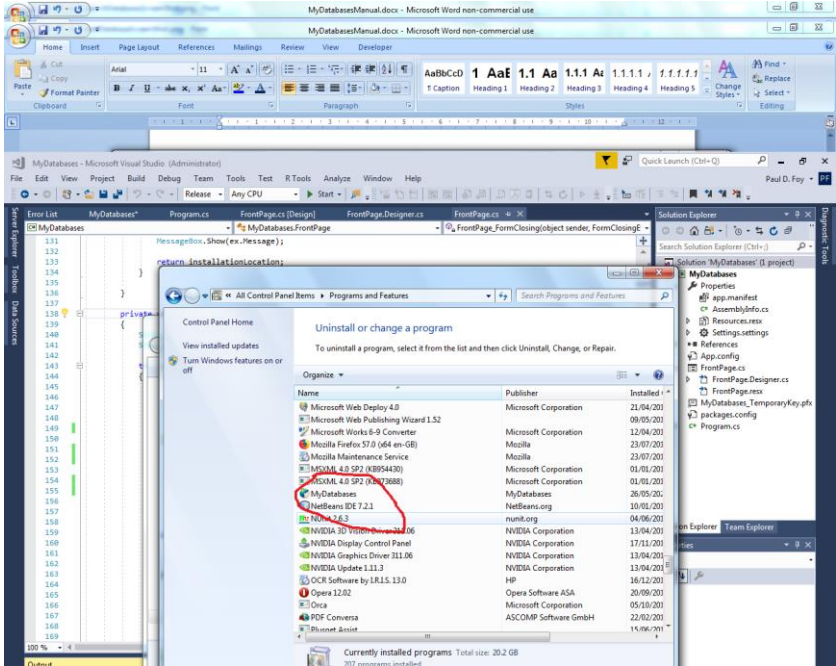
3 Use

The application currently has 11 tabs:

3.1 Connect

This tab allows you to select the instance of SQL Server that you are using for your database. The last choice made is automatically presented to you. If this has not been previously chosen you may supply it, either via selecting it, or typing in it's name. It is also possible to see information about the software using the 'About' button. You must connect to the Sql Server using the 'Connect' button. An archive directory, used internally by the program, for storing information about many of the flex grids can be selected. Until a valid archive directory is set by the user the program will not remember databases created.

Information about the various Sql services available may be obtained, and then these services may be stopped or started.

3.2 Register and Login
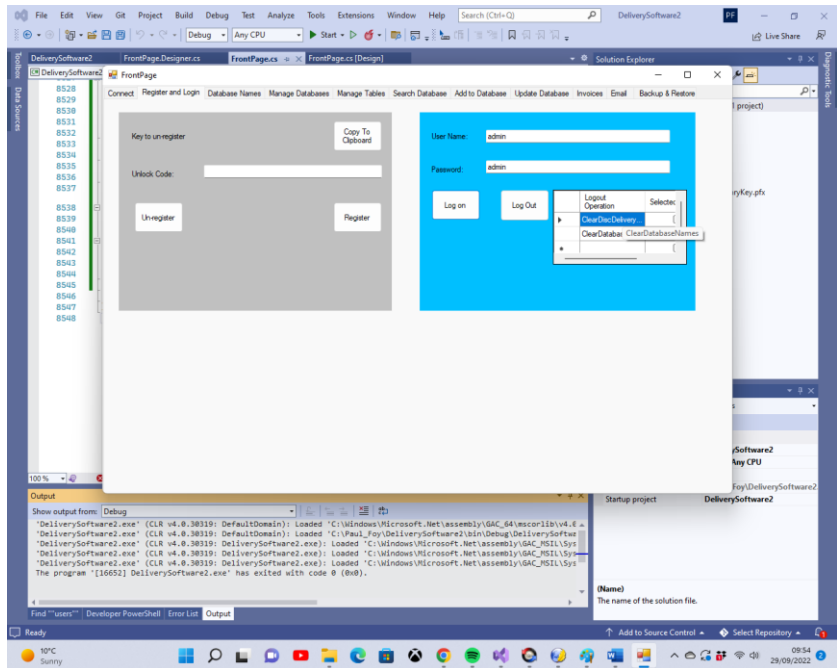
Before this application can be used on a device it must be registered on the device. This is the role of the controls on the left hand panel.

The presented key to register must be sent to 'paulfoy@mathematicalservices.co.uk'. It can be copied using the 'Copy to Clipboard' button. In return you will be sent an unlock code, which is unique to that device. On inserting that into the textbox the application is registered using the 'Register' button.

Sometimes it is necessary to transfer the licence of an application from one device to another (say you have a problem with the hard disc on a PC and it becomes unusable). This application permits that. The process is: Click the 'Un-register' button and send the code displayed in the text box to 'paulfoy@mathematicalservices.co.uk'. The application from that point on will not be able to be used on that device but can be re-registered on a different device by following the procedure as before.

Only users that have logged in can use this application. This is the role of the right-hand panel. To log in it is necessary to supply a valid username and password.

The database of valid usernames and password is called 'MyDatabasesDeliveryUsers'. It has one table named 'users' with the following columns:

1. username
2. password
3. administrator
4. logintime
5. logouttime
6. createaccesses
7. loadaccesses
8. deleteaccesses
9. addaccesses
10. updateacces
11. bacupaccesses
12. restoreaccesses
13. searchaccesses
14. guid
15. dateOfEntry

The names of these columns are self-explanatory and are used to log what operations have been performed by the current user between logging in and logging out. Column 3 determines

whether the current user is an administrator or not. It is a string which can have only the values 'yes' or 'no', depending upon whether the user is an administrator or not respectively. Only an administrator can load and perform operations on the 'MyDatabasesDeliveryUsers' database. Thus, only an administrator can control which users have access to this application. This database itself is loaded upon the first invocation of this application, when one entry is added having username 'admin' and password 'admin' and administrator being set to 'yes'. Thus, this user and this user only can begin to use the application and to set things up, including establishing other users.

It is better to formally logout of the application, to control the tidying up of resources etc. The disc can be cleared, with respect to the delivery software resources, by selecting the option 'ClearDiscDeliveryData' from the flex-grid adjacent to the logout button. The databases loaded by this application can be cleared by selecting the 'ClearDatabaseNames' option.

3.3 Database Names
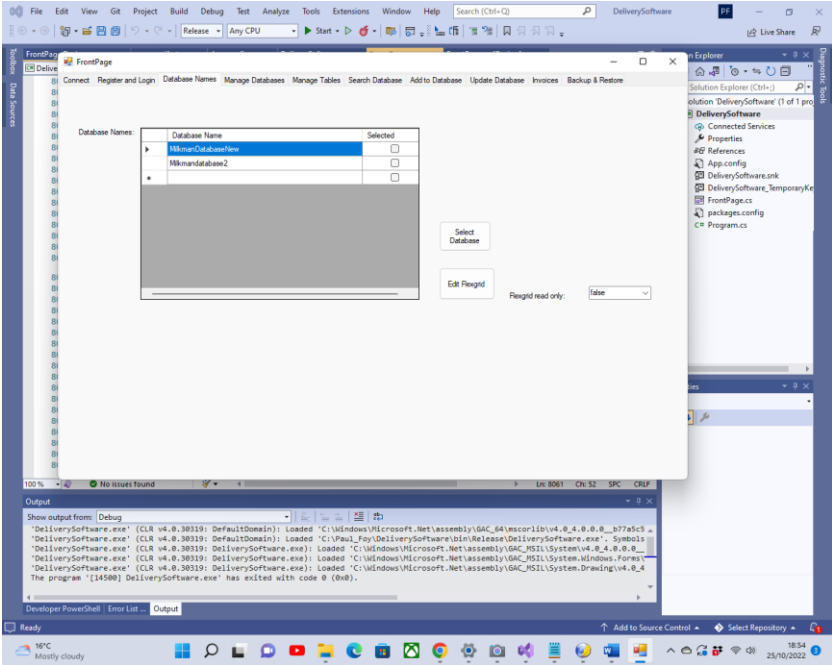
This tab lists the databases created by and available to this application. Only databases listed here can be loaded and manipulated by this application, including delivery databases created by this application. The 'MyDatabasesDeliveryUsers' database is not listed here. It is possible for an administrator to edit this flex grid, for reasons beyond the control of this application. The select database button may be used to populate some fields of the application with the selected database.

3.4 Manage Databases
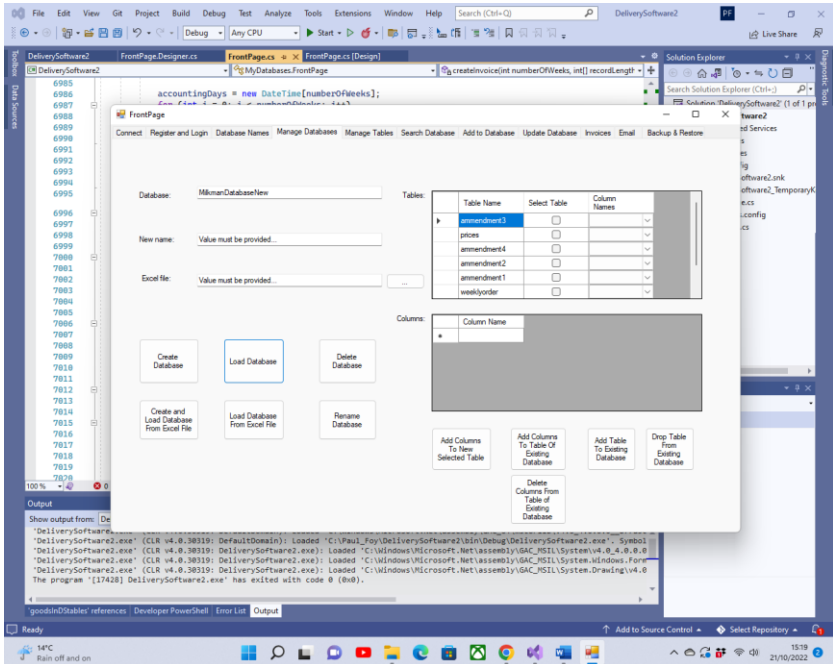
This tab allows you to manipulate a database, its tables and their columns: There various buttons behave as follows:

Create Database: Allows the creation of a new database. The tables of the database are listed in the 'Tables' Flex grid. To add the columns to a table, prior to creating a database, list the columns in the 'Columns' Flex grid and press the **'Add Columns To New Selected Table'** button. Once this is done for each table of the database, the database can be created.

One of the distinguishing feature of this application is that each record of a table is unique and distinguished by it's GUID. This GUID is supplied by the application, upon creation of the database, and cannot be selected by the user. It's sole purpose is to maintain the unique identity of each record of the table.

This permits, for example, the inclusion of two or more copies of the same book, which are identical in all respects (i.e. other fields) apart from the GUID. Each record is also labelled with the date on which it was created. This date is supplied by the application and cannot be selected by the user.

Load Database: A database previously created by this application may be loaded. The table and columns of the database appear in the 'Tables' flex grid. Only databases created by this application can be loaded.

Delete Database: An existing database may be deleted provided it is not being used. Only databases created by this application may be deleted. You should be careful using this button as all records will be permanently deleted, including backup records.

Rename Database: The existing database is renamed with the database in the New name text box. All tables, columns and data with the database remain unchanged.

Add Columns To Table Of Existing Database: The columns specified in the 'Columns' flexgrid may be added to an existing table of an existing database in the 'Tables' flex grid. Only different column names may be added.

Add Table To Existing Database: A new table may be added to an existing database using this button. The table is constructed as when creating a database from scratch.

Drop Table From ExistingDatabase: An existing table and its columns may be deleted from an existing database using this button.

Delete Columns From Table Of Existing Database: The columns specified in the 'Columns' flexgrid may be deleted from an existing table of a database.

Create and Load Database From Excel File: A database with the name specified in the top textbox is created by loading the Excel file specified. Only the name of a database which has not been created before can be newly created in this way. If there is a name of a database which has been created before by this application, then it must be loaded via the button '**Load Database**'. The sheets of the Excel file must not contain a column labelled 'guid' or 'dateOfEntry'. The tables of the database are the worksheets of the workbook, with their names. Each record of the database is a line of a worksheet. The first line of the worksheet has to be specified as being the name of each column in a table.

Load Database From Excel File: A database with the name specified in the top textbox is created and loaded from the Excel file specified. The tables of the loaded database are the worksheets of the workbook, with their names. Each record of the database is a line of a worksheet. This Excel file is one that has been used to export a previous database, created by this application. The name specified for this database must not be that of one previously created by this application. Hence each record will contain the reserved column names 'guid' and 'dateOfEntry'.

Note, that for all these operations names must begin with a letter.

3.4.1 Delivery Databases

When specifying a delivery database there are some constraints on the structure which must be currently adhered to, in order for this software to function correctly.

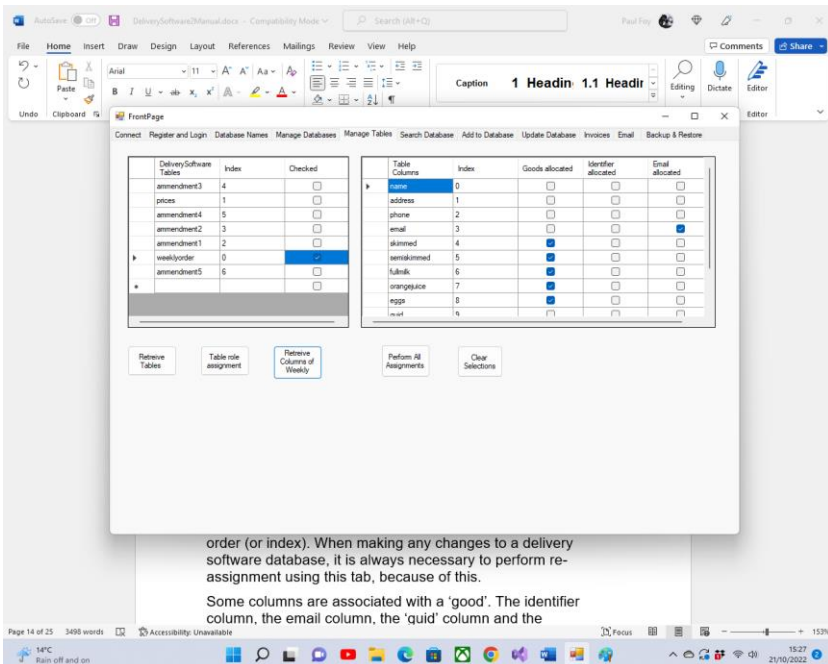First of all the structure of the tables:

1. There must be a table that specifies the weekly order. These are the items which the customer will receive as a regular delivery. There is no limit to the number of items.
2. There may be up to 5 or zero tables which specify an amendment to the weekly order. There are 5, because the accounting period for this software is monthly and for any particular, selected, accounting day, there may be 4 or 5 such days in the month.
3. There must be a table to specify the prices of each good offered. This price is unique to the customer, and indeed may be different, for each customer.

Secondly structure of the fields (columns) within each table:

1. A 'good' is specified by a string of 7 integers (including zero), separated by a comma, ',', representing the quantity of each good on each day of the week. The order of the days is Monday to Sunday. Either 7 integers are specified or none at all – otherwise an error results. Thus for example to specify 2 bottles of milk on Monday, 1 on Wednesday and 2 on Friday the string '2,0,1,0,2,0,0', would be created. The name of each unique good, must be present in each table and must be the same across each table.
2. An amendment to a good is specified the same way as in 1, with the understanding that it is an addition to the weekly order. Thus, to add an extra bottle of milk on Wednesday the string '0,0,1,0,0,0,0', would be added. To cancel the bottle of milk delivery on Wednesday the string '0,0, -1,0,0,0,0' would be added.
3. The price of a good (including 0.0) is a single decimal number (in the currency of your area, which does not need to be specified). All goods must be priced. It is not currently possible to have a different price for a different delivery day.

4. As with all records of all tables of all databases created by this application, each record is distinguished by a GUID assigned by the application. But in order to link the weekly order, the amendments and the prices' tables, there must be a column known as the identifier, to each table which must have the same value for each customer. Otherwise, his software will not function correctly. The name of the identifier must be the same across each table.
5. There must be a column, in the weekly order table, which holds a valid email address for each customer.

3.5 Manage Tables

This tab is responsible for managing the tables and columns of a delivery database. There are 2 flex grids, tables flex grid on the left and a columns flex grid on the right.

Because the order of storage of tables and tables' columns on storage on the disc (that is the indexing) may vary from one table to another, and there is no control over this, it is necessary for this application, to specify a common and known order (or index). When making any changes to a delivery software database, it is always necessary to perform re-assignment using this tab, because of this.

Some columns are associated with a 'good'. The identifier column, the email column, the 'guid' column and the 'dateOfEntry' column, cannot be associated with a good.

Indexing and associations are made by the two flex grids as follows:

Tables flex grid:

Retrieve tables: This button loads the tables of the delivery software into the flex grid.

Table role assignment: The tables must be supplied with the following index numbers:

  i.   The weekly order: 0
  ii.   The prices   : 1
  iii. Amendment 'n' : 1+n n= {1,   , 5}
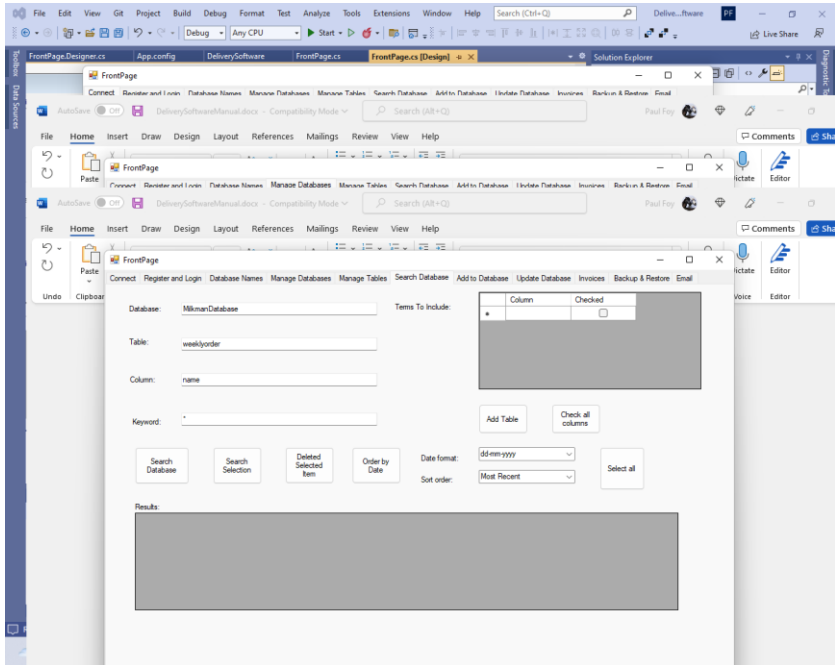
Retrieve Columns: The columns of the weekly order are listed in the right hand flexgrid.

Columns flex grid:

Perform All Allocations: The associations made by the selections in the above text grid are made.

The button **Clear Selections**, is one of convenience to clear all selected entries.

3.6 Search

This tab allows you to search via a key word from a column within a table within a database. The results of the search are displayed. The buttons features are:

Search Database: Search the column of the table of the database specified by the keyword specified. If the wildcard character '*' is specified all records are displayed.

Search Selection: In the same way it is possible to search from within the 'Results' flex grid.

Delete Selected Items: Deletes the records selected.

**Select All:** Selects all items in the 'Results' flex grid.

Order By Date: Orders the records of the 'Results' flex grid, according to date. The order may be least or most recent. Various date formats may be used for the date.

Add Table: Adds the specified table to the 'Terms to Include' flexigrid. Terms to include in the 'Results' flex grid may then be selected, either individually or all at once using the **'Check all Columns'** button.

Each record is distinguished by (i) a unique Global Identification Number (Guid) and (ii) The date and time of creation, both provided on creation of the record. It is not possible to alter these two fields. They are automatically displayed in the 'Results' flex grid. A selected record may be updated on a subsequent tab.
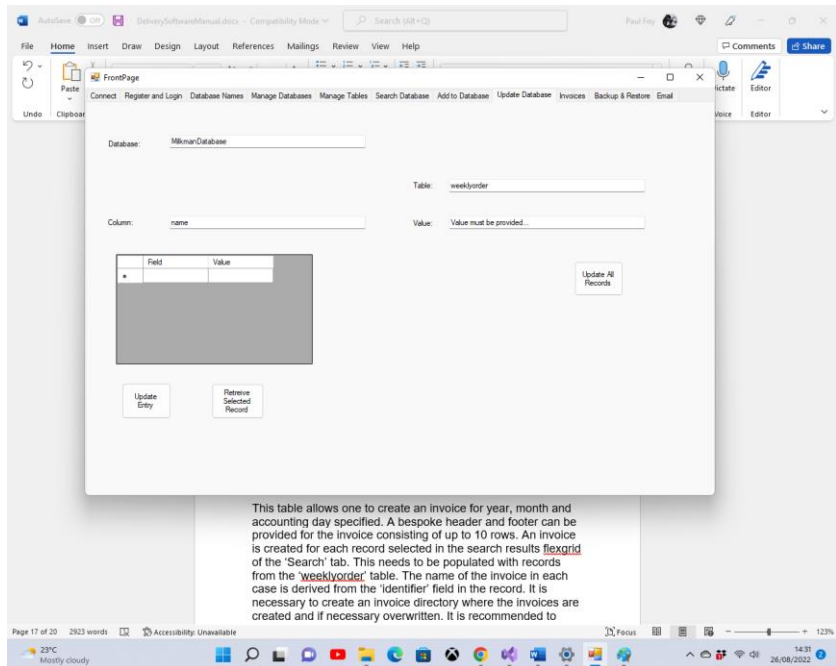
A search may be made amongst the previously selected items themselves.

3.7 Add
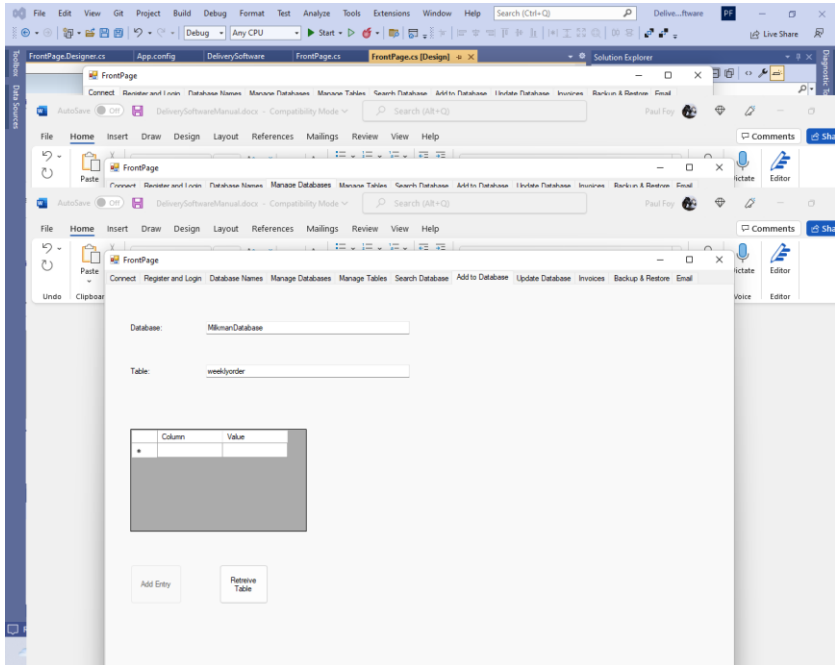
This tab allows an entry to be added to a table of the selected database. A Guid will be assigned automatically. Once a Guid has been assigned it exists for the lifetime of that record irrespective to any other alterations to the other fields. The date and time of creation will also be assigned automatically. It is not possible to subsequently change this either.

3.8 Update

This tab allows 2 operations to be performed:

(1) an entry selected on the 'Search' tab can be retrieved and updated corresponding to the table searched for (or provided on this tab - they must be the same). It is not possible to alter the 'guid' and 'dateOfEntry' column values.

(2) A value can be assigned to the column of all records in the table, except the two reserved ones - this is the function of the right hand button on the tab.

3.9 Invoices
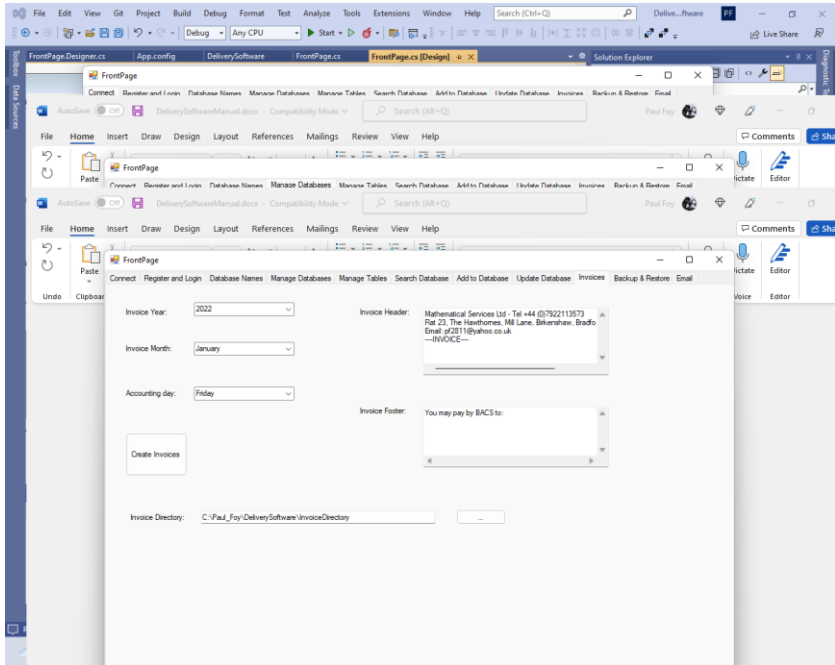
This table allows one to create an invoice for year, month and accounting day specified. A bespoke header and footer can be provided for the invoice consisting of up to 10 rows. An invoice is created for each record selected in the search results flex grid of the 'Search' tab. This needs to be populated with records from the 'weeklyorder' table. The name of the invoice in each case is derived from the 'identifier' field in the record. It is necessary to create an invoice directory where the invoices are created and if necessary overwritten. It is recommended to create a new directory for each accounting month.

The button **Create Invoices** is responsible for creating the selected invoices.

The contents of an invoice are (for each week in the accounting month), taking into account the weekly order and any week amendment:

i. The number of items on each day of the week of each good.
ii. The total number of each item for the week.
iii. The price of each good.
iv. The total cost of each good for the week.
v. The total bill for the week, for all goods

And finally, there is the total for the month, together with the account identifier and the date of the invoice.

3.10 Email
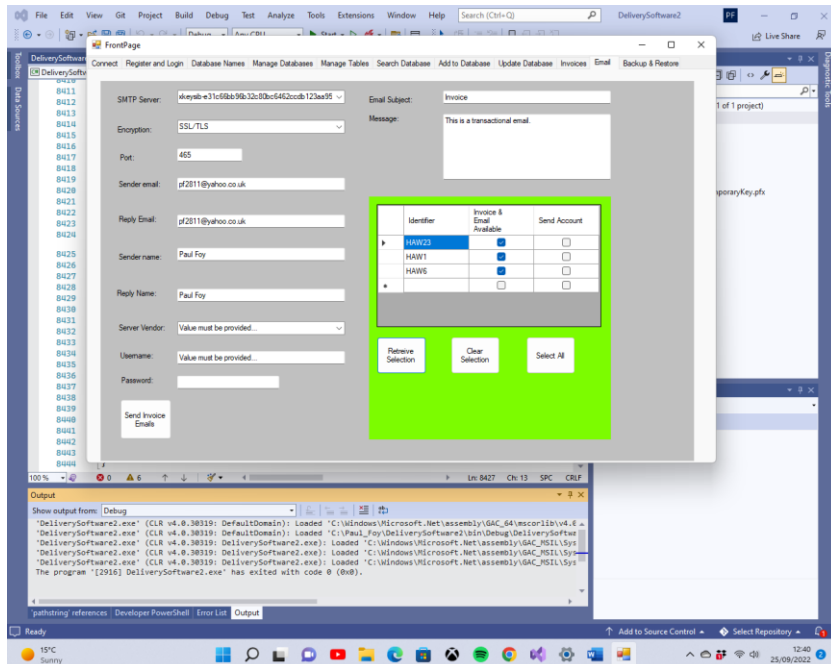
The contents of this tab are a little different from the rest of the application in that you will have to register and maintain an account with a third-party vendor, in order to send batch emails of the invoices created by this application. This is a simple process, but there is a cost implication, which generally increases as the number of emails which you wish to send each month increases. The main reasons for the segregation of this functionality are threefold: (1) In order not to rely on the email address and email servers of Mathematical Services Limited the user of this application needs to provide his own email address and server. (2) Apart from this tab's functionality there is no online requirement for this application. (3) It is not possible for Mathematical Services Limited to determine the scale of use

(i.e. number of emails sent per month) of the application, and hence, because of what was mentioned previously, it's price.

Currently the email service provider Company is **sendinblue**, 'www.sendinblue.com'. It is the transactional emails section of their offering which is being used. The fields used on this tab relating to the offering of this Company are described here. The others are currently not used but are retained for future developments including a choice of email service providers.

SMTP Server: this contains the 'api-key', provided by sendinblue, upon registering an account, and requesting it.

Sender Email: The email address which is registered by sendinblue, and from which all emails of this application will originate.

Sender Name: The name to appear on the originating email.

Reply Email: The email address to which the receiver should reply.

Email Subject: The text to appear in the subject of the email.

Message: The text to appear in the body of the email, which also contains the invoice as an attachment.

The flex-grid on the right is populated with the identifiers of the customers selected in the search grid of the previous tab, along with an indication of whether an invoice file is available or not. This file can then be selected. The files to send can be selected or deselected at once.

Send Invoice Emails button: Each invoice of each customer selected via the flex grid on the right, is sent to the email address specified.

3.11 Backup and Restore
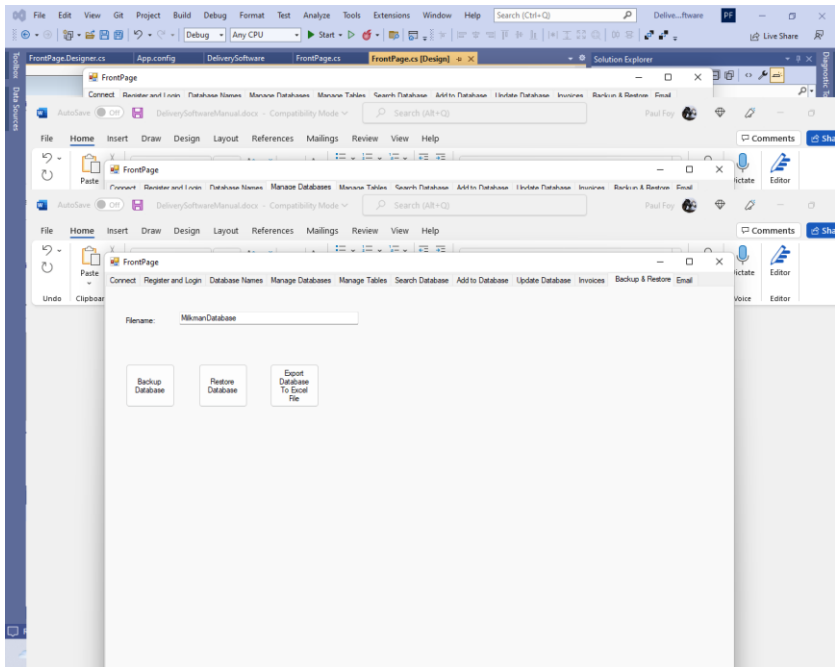
Backup Database:

It is possible to back up the entire contents of a previously loaded database. The backup is stored in the supplied archive directory with a filename which is the database name supplied in the text box and an extension of '.bak'.

Restore Database:

It is possible to restore a previously backed up database, with a name that of in the textbox. The database name is added to the database names flex grid on another tab.

Export Database To Excel File:

It is also possible to export a database to an Excel file. The name of the Excel file is the database file with the extension '.xlsx'. Any existing Excel file with this filename and extension is overwritten. The file is stored in the archive directory specified on the Setup tab. If a file does not exist it is created, and if it exits it is overwritten.

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