System Maintenance

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0.1 System Overview

This is a system designed for a small swimming club to allow them to remove the current paper based system for ordering kit and instead go entirely paper-less. This system allows customers to place orders using a web form which is then passed into a database, and then allows the Kit Coordinator to view all of these entries, as well as generate the order form for the suppliers. The system retains the customer details for future reference, if people need to know what they ordered previously.

A new customer can be created by the customer accessing the order form and filling in their details (string/int) which is then passed to a MySQL database. A new item order is created by them submitting their details and then redirecting to the next page, filling in the order form there and submitting it. This is again passed to the MySQL database. A new connection is created by calling the getConnection function in the Java program, which gets the connection details from kitorder.xml, and then Driver_Manager to create a connection to the database. The search function in the Java program gets the search string (string) typed in from the MainMenu and the order (string) and inputs these into an SQL statement with wildcards, returning the ResultSet as part of a dynamic JavaFX TableView. This is also how the TableView function works, just lacking the search string. To generate an order form, a Python script is called from the Java code, which then connects to the database, retrieves the relevant details for each item as a ResultSet and then inputs them into the spreadsheet using openpyxl, which can then be sent to the printers. In this, each item has its own sheet for clarity. The final non-trivial process in this program is the database dump feature, which makes a backup of the contents of the database in CSV files, then calls Mybatis, which executes a SQL script, dropping all of the tables in the database and then recreating them as new blank tables. Following this it calls a CSVReader function which reads a CSV file to recreate the items table of the database, as this never needs to change.

This program is connected to a MySQL database. The Customer, Order and Items are stored in separate, related tables which use foreign keys to ensure accuracy of data. When a new order is created, an appropriate SQL statement is generated and the order is inserted into the database.

0.2 Algorithms

Due to the nature of the code, for reasons explained Section 2.6 of the main report, there are no data manipulation algorithms in this report, although there are four quite complex SQL statements that are used in the program. They are given as follows, and discussed:

```
select o . ID , o . Orders , o . CustomerID , c .Name, c .
    Email_Address , c . Squad , o . OrderSize , o . OrderNumber
    , o . PaymentMethod , i . Item from INNER JOIN Items i ON i .
    idItems=o.Order where o.ID like ? or o.CustomerID like ? or
    c.Name like ? or c.Email_Address like ? or c. Squad like ?
    or o.Orders like ? or o.OrderSize like ? or o.OrderNumber
    like ? or o.NameOnGarment like ? or o. PaymentMethod like ?
    or i . Item like ? ORDER BY ?;
```

This is the search algorithm for the DBSearch.java function. This is set up as a prepared statement so that a SQL injection is impossible to undertake. Each of the question marks in this case represents the same thing, the search string. In the Java code this has % appended to the beginning and end to act as wild cards. The source code for this is as follows:

```
switch (ordering){
    case "Name␣A–Z":      order = "Name␣ASC";
                          break;
    case "Name␣Z–A":      order = "Name␣DESC";
                          break;
    case "Item":          order = "Order";
                          break;
    case "Order␣ID":      order = "ID";
                          break;
    case "Squad":         order = "Squad";
                          break;
    case "Customer␣ID:":order = "CustomerID";
                          break;
    case "Payment␣Method":   order = "PaymentMethod";
        break;
    default:              order = "ID";
}
PreparedStatement statement = c.prepareStatement("select␣o.
   ID,␣␣o" +
        ".CustomerID,␣c.Name,␣c.Email_Address,␣c.Squad,␣o.
           Orders," +
        "␣o.OrderSize,␣o.OrderNumber,␣o.NameOnGarment,␣o.
           PaidFor,␣" +
        "o.PaymentMethod,␣i.Item␣from␣Orders␣o␣INNER␣JOIN␣"
            +
        "Customers␣c␣ON␣o.CustomerID␣=␣c.ID␣INNER␣JOIN␣
           Items␣i␣ON" +
        "␣i.idItems=o.Orders␣where␣o.ID␣like␣" +
        "?␣or␣o.CustomerID␣like␣?␣or␣c.Name␣like␣?␣or␣c" +
        ".Email_Address␣like␣?␣or␣c.Squad␣like␣?␣or␣o.
           Orders␣like" +
        "␣?␣or␣o.OrderSize␣like␣?␣or␣o.OrderNumber␣like␣?␣
           or␣␣o" +
        ".NameOnGarment␣like␣?␣or␣o.PaymentMethod␣like␣?␣or
           ␣i" +
        ".Item␣␣like␣?␣ORDER␣BY␣"+ order +";");

statement.setString(1, "%" + token + "%");
statement.setString(2, "%" + token + "%");
statement.setString(3, "%" + token + "%");
statement.setString(4, "%" + token + "%");
statement.setString(5, "%" + token + "%");
statement.setString(6, "%" + token + "%");
```

```
36            statement.setString(7, ”%” + token + ”%”);
37            statement.setString(8, ”%” + token + ”%”);
38            statement.setString(9, ”%” + token + ”%”);
39            statement.setString(10, ”%” + token + ”%”);
40            statement.setString(11, ”%” + token + ”%”);
```

This code also shows how the program deals with setting the ordering, i.e. it takes a variable from the MainMenu and uses a switch case to convert it into a form that MySQL will understand. However the important bit is lines 30-40, where the input is mapped to each of the question marks in the SQL statement in order. This allows the user to put in anything, even a SQL statement and absolutely nothing will happen, as the special characters in the statement are being ignored and so are inserted into the database verbatim.

The next SQL statement is very similar to the previous one, it just doesn't have any of the prepared statement as it doesn't take directly user-editable inputs. This means that it takes a value selectable from a drop-down menu and uses that to order the results, but the user can't put their own string in its place. It goes thusly:

```
select o.ID, o.CustomerID, c.Name, c.Email_Address, c.Squad, o.
    Orders, o.OrderSize, o.OrderNumber, o.NameOnGarment, o.
    PaidFor, o.PaymentMethod, i.Item from Orders o INNER JOIN
    Customers c ON o.CustomerID = c.ID INNER JOIN Items i ON i.
    idItems=o.Order ORDER BY ?;
```

The code for how this part of the program deals with ordering is exactly the same as the previous one.

The third SQL statement is called when the database is remade. This dumps the contents of the Customers and Orders tables into two CSV files which can then be used for further reference or to repopulate the database after it has been wiped clean. It follows as such:

```
SELECT * FROM Customers INTO OUTFILE /Users/tsmoffat/
    kitordersystem/kitordersystem/kitordersystem/Customers.csv
    FIELDS ENCLOSED BY '”' TERMINATED BY ';' ESCAPED BY '”'
    LINES TERMINATED BY '\r\n'; SELECT * FROM Orders INTO
    OUTFILE /Users/tsmoffat/kitordersystem/kitordersystem/
    kitordersystem/Orders.csv FIELDS ENCLOSED BY '”' TERMINATED
    BY ';' ESCAPED BY '”' LINES TERMINATED BY '\r\n';
```

This statement is actually two almost identical statements acting one after the other. First everything is taken from the Customers table and put into a CSV file where each item is enclosed with "", each line is finished with a semi-colon and then a carriage return is performed to input the next row of data. This is exactly the same with the second statement except that takes all the values from the orders table.

The final complex SQL statement is actually a script, which is called when the database is reset. This drops every table in the database then remakes them blank. It is given here:

```
SET @OLD_UNIQUE_CHECKS=@@UNIQUE_CHECKS, UNIQUE_CHECKS=0;
SET @OLD_FOREIGN_KEY_CHECKS=@@FOREIGN_KEY_CHECKS, FOREIGN_KEY_CHECKS=0;
SET @OLD_SQL_MODE=@@SQL_MODE, SQL_MODE='TRADITIONAL,ALLOW_INVALID_DATES
    ';
```

```
SET @OLD_CHARACTER_SET_CLIENT=@@CHARACTER_SET_CLIENT;
SET @OLD_CHARACTER_SET_RESULTS=@@CHARACTER_SET_RESULTS;
SET @OLD_COLLATION_CONNECTION=@@COLLATION_CONNECTION;
SET NAMES utf8;
SET @OLD_TIME_ZONE=@@TIME_ZONE;
SET TIME_ZONE='+00:00';
SET @OLD_UNIQUE_CHECKS=@@UNIQUE_CHECKS, UNIQUE_CHECKS=0;
SET @OLD_FOREIGN_KEY_CHECKS=@@FOREIGN_KEY_CHECKS, FOREIGN_KEY_CHECKS=0;
SET @OLD_SQL_MODE=@@SQL_MODE, SQL_MODE='NO_AUTO_VALUE_ON_ZERO';
SET @OLD_SQL_NOTES=@@SQL_NOTES, SQL_NOTES=0;
CREATE SCHEMA IF NOT EXISTS `mydb` DEFAULT CHARACTER SET utf8;
USE `mydb`;
DROP TABLE IF EXISTS `mydb`.`Customers`;
CREATE TABLE IF NOT EXISTS `mydb`.`Customers` (
  `ID` INT NOT NULL AUTO_INCREMENT,
  `Name` VARCHAR(45) NOT NULL,
  `Email_Address` VARCHAR(45) NOT NULL,
  `Squad` VARCHAR(45) NOT NULL,
  PRIMARY KEY (`ID`),
  UNIQUE INDEX `ID_UNIQUE` (`ID` ASC))
ENGINE = InnoDB;
DROP TABLE IF EXISTS `mydb`.`Items`;
CREATE TABLE IF NOT EXISTS `mydb`.`Items` (
  `idItems` INT NOT NULL AUTO_INCREMENT,
  `Item` VARCHAR(45) NOT NULL,
  PRIMARY KEY (`idItems`),
  UNIQUE INDEX `idItems_UNIQUE` (`idItems` ASC))
ENGINE = InnoDB;
DROP TABLE IF EXISTS `mydb`.`Orders` ;
CREATE TABLE IF NOT EXISTS `mydb`.`Orders` (
  `ID` INT NOT NULL AUTO_INCREMENT,
  `Orders` INT NOT NULL,
  `OrderSize` VARCHAR(45) NOT NULL,
  `OrderNumber` VARCHAR(45) NOT NULL,
  `CustomerID` INT NULL,
  `NameOnGarment` VARCHAR(45) NULL,
  `PaidFor` TINYINT(1) NOT NULL,
  `PaymentMethod` VARCHAR(45) NOT NULL,
  PRIMARY KEY (`ID`),
  INDEX `Order1_idx` (`Orders` ASC),
  INDEX `CustomerID_idx` (`CustomerID` ASC),
  CONSTRAINT `Order1`
    FOREIGN KEY (`Orders`)
    REFERENCES `mydb`.`Items` (`idItems`)
    ON DELETE NO ACTION
```

```
      ON UPDATE NO ACTION,
    CONSTRAINT `CustomerID`
      FOREIGN KEY (`CustomerID`)
      REFERENCES `mydb`.`Customers` (`ID`)
      ON DELETE NO ACTION
      ON UPDATE CASCADE)
ENGINE = InnoDB;
SET SQL_MODE=@OLD_SQL_MODE;
SET FOREIGN_KEY_CHECKS=@OLD_FOREIGN_KEY_CHECKS;
SET UNIQUE_CHECKS=@OLD_UNIQUE_CHECKS;
```

This is obviously a very long series of statements but we shall go through the important parts one by one. To begin with, it tells MySQL to drop the Customers table and then create again, with all the columns remade, with ID auto-incrementing, the length of Squad, Name and Email_Address set to 45 and set to not be null, then sets the primary key and the unique index. Following this it repeats the process with the Items table. Then the orders table undergoes the same process, with a couple of differences. As this is the primary table of this database, it has a couple of foreign keys, the item ID from the items table and the customer ID from the Customers table. This is for a bit of error checking, so that no orders can point to a customer or item that don't exist, which would obviously create some errors.

0.3 Procedure and Variable Lists

Table 1: Procedure Listings

Procedure	Description
MainMenu	Shows the main menu of the program, allows every other function in the program to be called in one way or another
getConnection	Opens a connection to the database
SetProperties	Sets the properties of the connection from kitorder.xml that is used by getConnection
DBReset	Resets the database after pulling all of the contents of the database to CSV files
CSVReader	Reads the CSV file that contains the data for the items table and inserts it into said table after a reset
TableViewTest	Shows all of the database contents
DBSearch	Same as TableViewTest except this also takes a search string
DocWriter	Calls a python script to output the relevant contents of the database to an Excel file
docdump	Python script that outputs all of the contents of the database to an Excel file
dbcustomerupdate	Takes the values from the HTML customer page and inserts them into the database
dborderupdate	Takes the values from the order form and inserts them into the database
WebInputpasstophp	Passes the values from the HTML customer details form to the PHP script via post, then redirects to the order page
WebOrderInput passtophp	Passes the values from the HTML to the dborderupdate PHP script

Table 2: Variable Listing

Procedure	Global/Local Variable	Variable Name	Data Type	Description
MainMenu	Global	token	String	Stores the search token for the DBSearch class
	Global	ordering	String	Stores the ordering for the DBSearch and TableViewTest classes
	Local	remakeButton	Button	Creates a button instance

Table 2: Variable Listing

Procedure	Global/Local Variable	Variable Name	Data Type	Description
	Local	dbViewButton	Button	Creates a button instance
	Local	emailButton	Button	Creates a button instance
	Local	searchButton	Button	Creates a button instance
	Local	searchField	TextField	Creates a text field instance
	Local	orderComboBox	ComboBox	Creates a combo box instance
	Local	label	Label	Creates a label instance
	Local	dialog	TextInputDialog	Creates a text input dialog instance
	Local	result	Optional ¡String¿	Stores the input result from dialog
	Local	result1	String	Stores result as a string
	Local	reset	DBReset	Creates a new DBReset instance
	Local	reader	CSVReader	creates a new CSVReader instance
	Local	e	One of a number of exceptions	stores the exception thrown
	Local	alert	Alert	Creates a new dialog box
	Local	sw	StringWriter	writes a stack trace to a string
	Local	pw	PrintWriter	prints stack trace to pw
	Local	textArea	TextArea	creates a new TextArea
	Local	expContent	GridPane	creates a new GridPane

Table 2: Variable Listing

Procedure	Global/Local Variable	Variable Name	Data Type	Description
	Local	writer	DocWriter	Calls a new instance of the DocWriter class
	Local	grid	GridPane	Creates a new GridPane instance
	Local	scene	Scene	Creates a new scene
getConnection	Global	dbms	String	Stores the dbms
	Global	dbName	String	Stores the database name
	Global	userName	String	Stores the username for the database
	Global	password	String	Stores the password for the database
	Global	portNumber	private int	Stores the port number to access the database
	Local	conn	Connection	stores the connection to the database
	Local	dbFactory	DocumentBuilder Factory	Creates a new instance of a documentbuilderfactory
	Local	dBuilder	DocumentBuilder	Creates a new DocumentBuilder instance
	Local	doc	Document	Creates a new document instance
	Local	nList	NodeList	Creates a new node list to store XML
	Local	database	Element	Stores the database element from the XML file
DBReset	Local	SQLFilePath	String	Stores the file path to the SQL script

Table 2: Variable Listing

Procedure	Global/Local Variable	Variable Name	Data Type	Description
	Local	sqlExport	String	Stores the SQL command to output the contents of the database file to CSV files
	Local	conn	Connection	Stores a connection from getConnection
	Local	sr	ScriptRunner	Creates a new ScriptRunner instance
	Local	reader	Reader	Creates a new reader that reads the file from SQLFilePath
	Local	e	One of a number of exceptions	stores the exception thrown
	Local	alert	Alert	Creates a new dialog box
	Local	sw	StringWriter	writes a stack trace to a string
	Local	pw	PrintWriter	prints stack trace to pw
	Local	textArea	TextArea	creates a new TextArea
	Local	expContent	GridPane	creates a new GridPane
CSVReader	Local	reader	BufferedReader	Creates a new reader to read a CSV file
	Local	c	Connection	Gets a connection from getConnection
	Local	st	Statement	Creates a SQL statement
	Local	line	String	Stores the current line of the CSV

Table 2: Variable Listing

Procedure	Global/Local Variable	Variable Name	Data Type	Description
	Local	item	String[]	Stores the contents of the current line as an array
TableViewTest	Global	tableview	TableView	Creates a new tableview instance
	Local	c	Connection	Stores connection
	Local	data	ObservableList¡ObservableList¿	Creates a new list of type ObservableList¡ObservableList¿
	Local	SQL	String	Stores SQL statements
	Local	ordering	String	Stores the ordering from the main menu
	Local	order	String	Stores the ordering in a MySQL-friendly format
	Local	rs	ResultSet	Creates a new ResultSet to store data from the database in
	Local	col	TableColumn	Creates a new TableColumn
	Local	row	ObservableList ¡String¿	Creates a new list of type ObservableList¡String¿
	Local	e	One of a number of exceptions	stores the exception thrown
	Local	alert	Alert	Creates a new dialog box
	Local	sw	StringWriter	writes a stack trace to a string
	Local	pw	PrintWriter	prints stack trace to pw
	Local	textArea	TextArea	creates a new TextArea

Table 2: Variable Listing

Procedure	Global/Local Variable	Variable Name	Data Type	Description
	Local	expContent	GridPane	creates a new GridPane
DBSearch	Local	data	ObservableList ¡ObservableList¿	Creates a new list of type ObservableList ¡ObservableList¿
	Local	c	Connection	Stores connection
	Local	SQL	String	Stores SQL statements
	Local	token	String	Stores the search string from the main menu
	Local	ordering	String	Stores the ordering from the main menu
	Local	order	String	Stores the ordering in a MySQL-friendly format
	Local	rs	ResultSet	Creates a new ResultSet to store data from the database in
	Local	col	TableColumn	Creates a new TableColumn
	Local	row	ObservableList ¡String¿	Creates a new list of type ObservableList ¡String¿
	Local	e	One of a number of exceptions	stores the exception thrown
	Local	alert	Alert	Creates a new dialog box
	Local	sw	StringWriter	writes a stack trace to a string
	Local	pw	PrintWriter	prints stack trace to pw
	Local	textArea	TextArea	creates a new TextArea

Table 2: Variable Listing

Procedure	Global/Local Variable	Variable Name	Data Type	Description
	Local	expContent	GridPane	creates a new GridPane
DocWriter	Local	pythonScriptPath	String	Stores the path to the python script
	Local	cmd	String[]	An array that stores details to execute the python script
	Local	rt	Runtime	Creates a new runtime
	Local	pr	Process	Creates a new process
docdump	Local	tree	ElementTree	Stores the whole XML tree
	Local	root	ElementTree	Gets the root element of tree
	Local	dbms	String	Gets the dbms from the root
	Local	database_name	String	Gets the database name from the root
	Local	user_name	String	Gets the username from the root
	Local	password	String	Gets the password from the root
	Local	port_number	String	Gets the port number from the root
	Local	server_name	String	Gets the server IP address from the root
	Local	db	Connection	Gets a connection to the database
	Local	cur	Cursor	Creates a cursor to navigate the database
	Local	wb	Workbook	Creates a new Excel workbook

Table 2: Variable Listing

Procedure	Global/Local Variable	Variable Name	Data Type	Description
	Local	ws1	Worksheet	Creates a new worksheet in the workbook
	Local	x	int	Stores how many times the cycle has been iterated through
	Local	xstring	String	Stores x in a string
	Local	item	String	Stores the current item
	Local	row	Row	Stores the current row from the resultset
	Local	d	Cell	Stores a cell
	Local	e	Cell	Stores a cell
	Local	f	Cell	Stores a cell
	Local	i	int	Stores which row the pointer is on
dbcustomerupdate	Local	$xml	simplexml	Stores XML tree
	Local	$dbms	String	Stores dbms from XML
	Local	$dbname	String	Stores database name from XML
	Local	$user_name	String	Stores username from XML
	Local	$password	String	Stores password from XML
	Local	$port_numberraw	String	Stores the string port number from XML
	Local	$port_number	int	Stores the port number as an int
	Local	$servername	String	Stores server IP address from XML
	Local	$conn	Connection	Stores connection to the database

Table 2: Variable Listing

Procedure	Global/Local Variable	Variable Name	Data Type	Description
	Local	$name	String	Stores name from web form
	Local	$email	String	Stores email from web form
	Local	$squad	String	Stores squad from web form
	Local	$paymethod	String	Stores payment method from web form
	Global	$_SESSION ["paymethod"]	String	Stores paymethod as a Session variable
	Local	$stmt	SQL Statement	Stores SQL statement to be executed
	local	$sql	SQL Statement	Stores SQL statement to be executed
	Local	$result	String	Stores user ID
	Global	$_SESSION["ID"]	String	Stores User ID as a global variable
DBOrderUpdate	Local	$xml	simplexml	Stores XML tree
	Local	$dbms	String	Stores dbms from XML
	Local	$dbname	String	Stores database name from XML
	Local	$user_name	String	Stores username from XML
	Local	$password	String	Stores password from XML
	Local	$port_numberraw	String	Stores the string port number from XML
	Local	$port_number	int	Stores the port number as an int
	Local	$servername	String	Stores server IP address from XML
	Local	$conn	Connection	Stores connection to the database

Table 2: Variable Listing

Procedure	Global/Local Variable	Variable Name	Data Type	Description
	Local	$item	String	Stores item ordered from form
	Local	$quantityraw	String	Stores quantity ordered from form, was originally used for manipulation but not now
	Local	$quantity	String	Stores quantity ordered from form
	Local	$size	String	Stores size ordered from form
	Local	$nameonback	String	Stores name to be printed on item ordered from form
	Local	$haspaidraw	String	Stores whether customer has paid, was originally used for manipulation but not now
	Local	$haspaid	String	Stores whether customer has paid
	Local	$paymethod	String	Stores payment method from dbcustomerupdate
	Local	$stmt	SQL Statement	Creates SQL Statement
	Local	$idraw	String	Stores customer ID from dbcustomerupdate, was originally used for manipulation but not now
	Local	$id	String	Stores customer ID from dbcustomerupdate

Table 2: Variable Listing

Procedure	Global/Local Variable	Variable Name	Data Type	Description
	Local Local	$itemidraw $itemid	String String	Gets ID of the item ordered, was originally used for manipulation but not now Stores item ID
WebInput	Local	str	String	Stores serialized data to go to dbcustomerupdate
WebInputOrder	Local	str	String	Stores serialized data to go to dborderupdate

0.4 System GUI and Output Samples

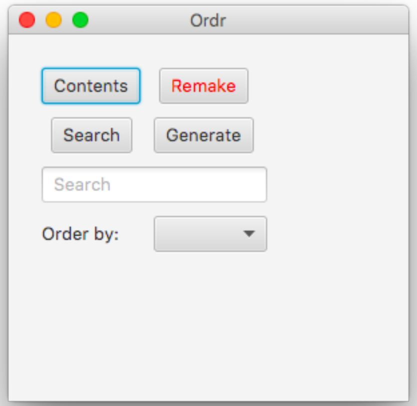
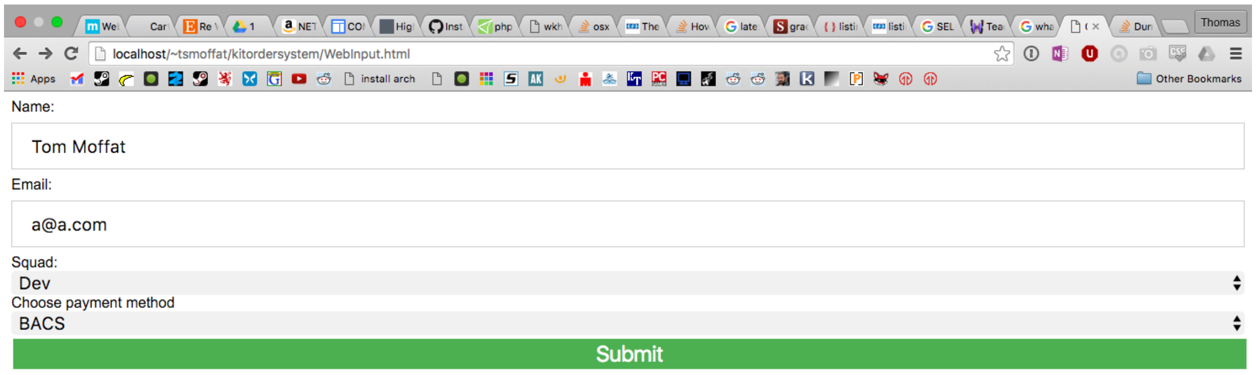


Figure 1: Main Menu

This is the main menu, where every other function can be called.


localhost/~tsmoffat/kitordersystem/WebInput.html

Name:

Tom Moffat

Email:

a@a.com

Squad:

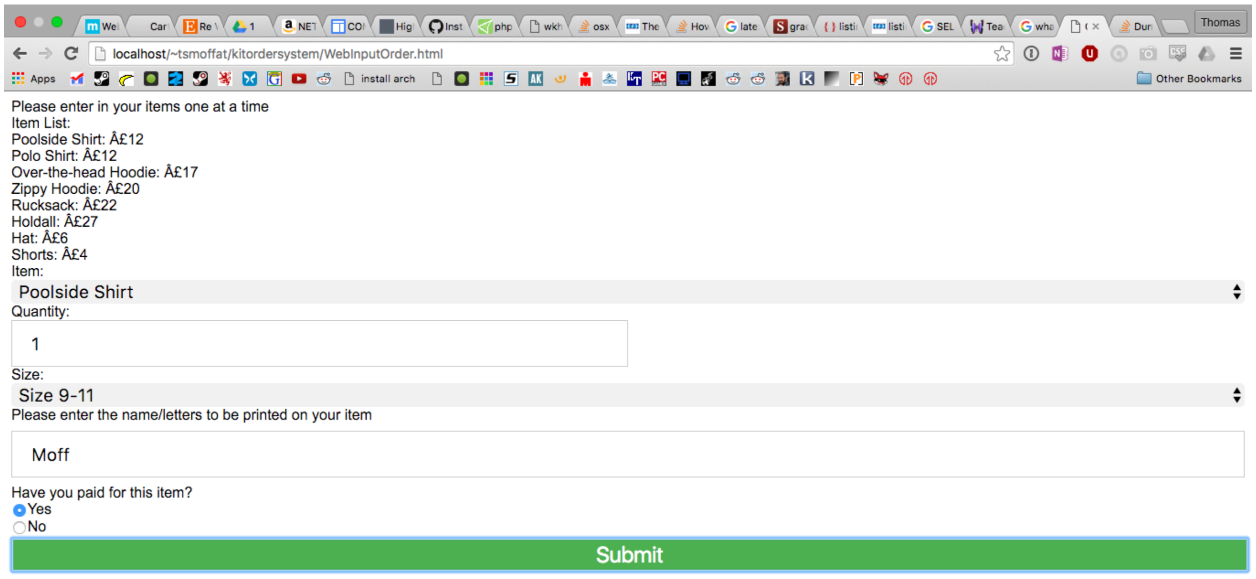
Dev

Choose payment method

BACS

Figure 2: Order Form

This is the form where the customer inputs their details. When the submit button is clicked it is inserted into the database.



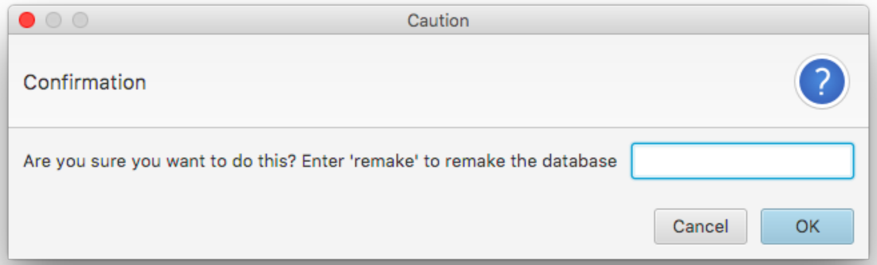
localhost/~tsmoffat/kitordersystem/WebInputOrder.html

Please enter in your items one at a time
Item List:
Poolside Shirt: Â£12
Polo Shirt: Â£12
Over-the-head Hoodie: Â£17
Zippy Hoodie: Â£20
Rucksack: Â£22
Holdall: Â£27
Hat: Â£6
Shorts: Â£4

Item: Poolside Shirt
Quantity: 1
Size: Size 9-11
Please enter the name/letters to be printed on your item: Moff
Have you paid for this item? [✓ Yes] No

Figure 3: Customer Form

This is the form where the customers input their orders. When the submit button is clicked the order details are passed to the database.



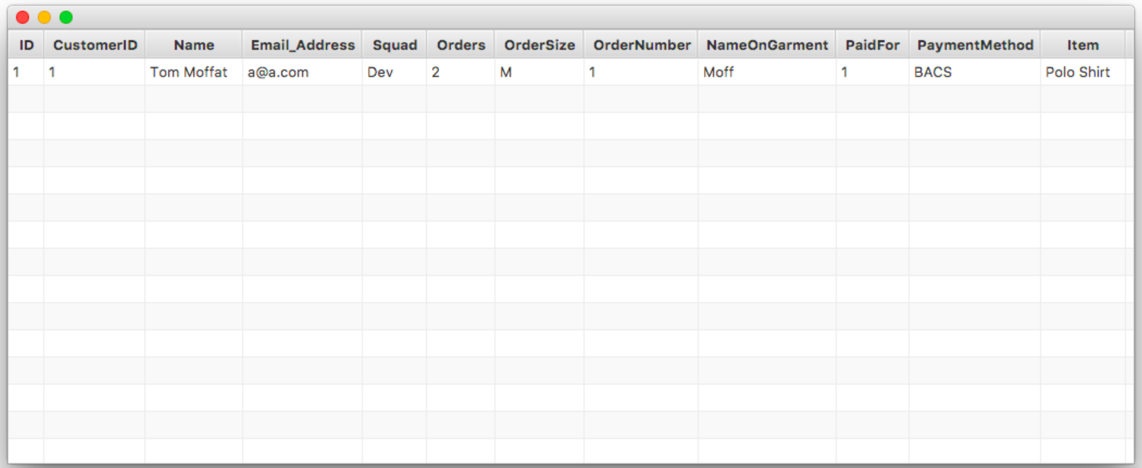
Caution

Confirmation

Are you sure you want to do this? Enter 'remake' to remake the database

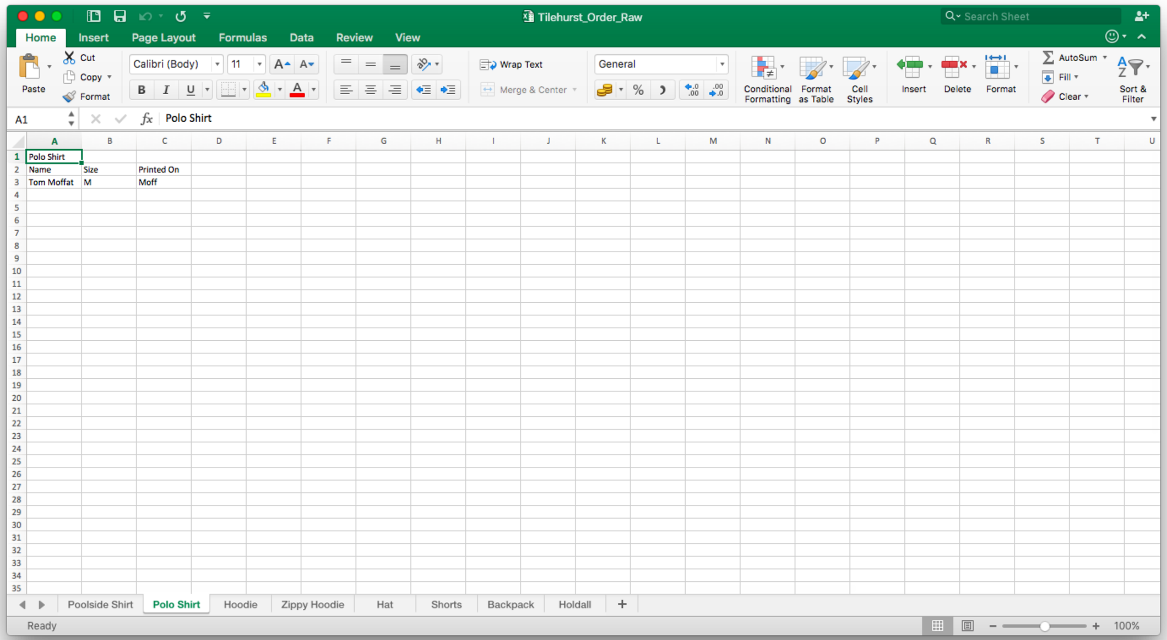
Figure 4: Confirmation Box

This is the confirmation box that appears when the Kit Coordinator clicks Remake, which makes sure they do actually want to remake the database



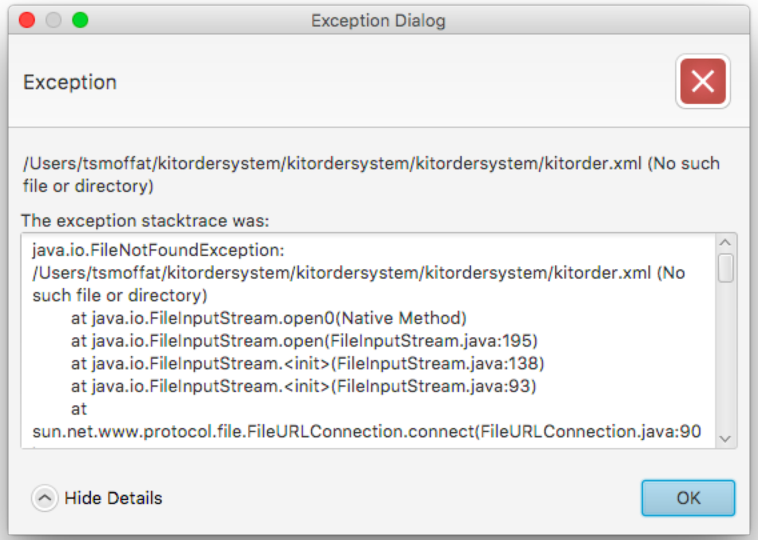
ID	CustomerID	Name	Email_Address	Squad	Orders	OrderSize	OrderNumber	NameOnGarment	PaidFor	PaymentMethod	Item
1	1	Tom Moffat	a@a.com	Dev	2	M	1	Moff	1	BACS	Polo Shirt

Figure 5: The table output when clicking on contents or search



A	B	C
Polo Shirt		
Name	Size	Printed On
Tom Moffat	M	Moff

Figure 6: The Excel Spreadsheet generated when Generate is clicked that will be sent off to the printer



/Users/tsmoffat/kitordersystem/kitordersystem/kitordersystem/kitorder.xml (No such file or directory)

The exception stacktrace was:

```
java.io.FileNotFoundException:
/Users/tsmoffat/kitordersystem/kitordersystem/kitordersystem/kitorder.xml (No
such file or directory)
	at java.io.FileInputStream.open0(Native Method)
	at java.io.FileInputStream.open(FileInputStream.java:195)
	at java.io.FileInputStream.<init>(FileInputStream.java:138)
	at java.io.FileInputStream.<init>(FileInputStream.java:93)
	at
sun.net.www.protocol.file.FileURLConnection.connect(FileURLConnection.java:90
```

Figure 7: The error dialog that appears when the program hits an exception