C2P
Optician's System Specification

Optician's System

Introduction

This is a specification for a second year computing project based on an Optician's system. The project involves designing the interface and coding the functionality of the set of forms specified in this document. Details of the project time scale etc. are available from your tutor.

The Optician's System caters for the following:

- Recording eye test results
- Sales of spectacles
- Sales of contact lenses
- Sales of other items e.g. cleaning fluid for spectacles
- Ordering and delivery of new stock
- Inserting, deleting, viewing and amending customer details
- Inserting, deleting, viewing and amending stock details
- Inserting, deleting, viewing and amending supplier details
- Changing system password

The forms in this document are only used to demonstrate the required functionality. They are definitely <u>not</u> intended to suggest how the system should look. It is the task of the team to design a user interface, which is as user-friendly as possible while still providing the required functionality.

It is the team's responsibility to ensure that only valid data is keyed-in and stored. Therefore, appropriate prompts, warnings and error messages must be supplied by the system so that the user is made aware of the exact type of input that is required, its correct format, etc.

On each data entry form (any form in which the user is asked to supply data), it must be possible for a user to change his / her mind about using the form even after supplying data. Therefore, there must be some way of abandoning the form without any changes being made to the stored data.

Once a user has finished entering data on a data entry form, he/she must be asked to confirm that the details supplied are correct. If so, the relevant database tables are updated as appropriate. If not, the user is given the opportunity to edit fields on the form.

In the case of Amend and Delete forms, a list box or a "Find" option should be used to provide fast access to the required record, rather than having to browse through a long list of records.

It is regarded as good programming practice to provide Help with all forms.

Note: For simplicity, some obvious functionality has been omitted from this system. For example, supplier accounts are not handled at all.

Start-Up Form

The opening form provides a welcome message and prompts the user for a login name and a password. The user is given three attempts at the correct password after which the system is exited (if the correct password has not yet been supplied).

Assuming that the correct password has been entered, a Change Password option appears on the form. If the user decides to use this option, the Change Password Form appears.

Change Password Form

In this form, the user is firstly asked to enter the old password. If this is correctly done, the user is asked to enter a new password and then to immediately re-enter it. For security purposes, password characters must never echo on the form. If both attempts at the new password are identical, then the Password Table is updated to reflect the new situation.

If the old password is incorrectly entered, the user is not invited to enter a new password. Furthermore, if the two attempts at the new password do not match, then an appropriate error message must be displayed and the process may be repeated.

Main Menu

All processing carried out by the system is ultimately achieved by moving through the menu structure (starting with the Main Menu) and eventually choosing the appropriate option either on the Main Menu or on one of its sub-menus.

Main Menu
Counter Sales
Contact Lens Sales
Spectacles Sales Menu
Eye Test Menu
Stock Control Menu
File Maintenance Menu
Quit

The Quit option closes the application.

Counter Sales

Choosing the first option on the Main Menu causes this form to appear. It is required when a customer wishes to purchase item(s) other than spectacles or contact lenses. For example, he/she may want to buy a new case for spectacles.

The user selects the item to be purchased and keys in the quantity desired. Cost is determined automatically by the system. The user should be able to repeat this process for as long as is required since the customer may wish to purchase several different items. When finished, the total cost of all items purchased should appear on the form.

The Stock Table is updated to reflect the items sold. A record of the sale is added to the Sales Table and one or more records are added to the Sales Item Table.

Contact Lens Sales

This form is used when a customer wishes to purchase a supply of disposable contact lenses.

You may assume that the customer has had his eyes tested recently by the resident optician and that these details are stored in the system.

Firstly, the user selects the appropriate customer from a list box of all customers or search based on the customer name. The customer's name, address and date of birth are then displayed for confirmation purposes.

When the correct customer has been selected, the following details are displayed regarding the customer's most recent eye test:

- left eye measurement
- right eye measurement
- date of eye test

These vision details are required in order to ensure that the customer is given contact lenses of the correct prescribed strength.

The customer is now asked how many days supply he/she wishes to purchase. Disposable contact lenses come in boxes containing 30, 60 or 90 days supply of every possible lens strength. If the customer requires more than 90 days supply, then he/she must purchase more than one box. For example, if a customer wants 210 days supply, he/she may ask for two boxes of 90 days supply and one box of 30 days supply, all of the appropriate strength.

The user selects the appropriate size box of the required strength (from a list box of all size and strength combinations) and keys in the quantity being purchased (i.e. number of boxes). The user may need to repeat this process because:

- boxes of various sizes may be purchased (as already explained)
- boxes of different strengths may need to be purchased since the left and right eyes could have different requirements

Detail lines are displayed showing the cost of the individual items, together with the total cost of the sale. The customer is required to pay immediately as it is company policy never to give credit.

A new record is added to the Sales Table, one or more new records are added to the Sales Item Table, and the Stock Table is updated.

[**Hint**
Assume that each possible combination of lens strength and box size is a separate record in the Stock Table. In other words, there is a stock record with '–3 strength, 30 days supply', in its description field, a separate record with '–3 strength, 60 days supply', a separate record with '–3 strength, 90 days supply', a separate record with '–3.25 strength, 30 days supply', etc.]

Spectacles Sales Menu

Basically, this menu handles everything related to the sale of spectacles to a customer. It covers the recording of the customer's requirements, the printing of a covering letter to accompany the frames to the lens laboratory, the return of the spectacles from the lens laboratory and their subsequent collection by the customer. A spectacles sales report is also available.

Spectacles Sales Menu

Selection of Spectacles

Receipt of Spectacles

Collection of Spectacles

Spectacles Sales Report

Selection of Spectacles

You may assume that the customer has had his eyes tested recently by the resident optician and that these details have been stored in the system (using the Add a New Eye Test form).

The user first selects the appropriate customer from a list box of all customers or searches based on the customer name. The customer's name, address and date of birth are now displayed for confirmation purposes.

When the correct customer has been selected, the following details are displayed concerning his / her most recent eye test.

- most recent left eye measurement
- most recent right eye measurement
- date of most recent eye test

The user now keys in the stock number of the frames that the customer has chosen.

The customer is asked whether he/she requires:

- glass or plastic lenses
- scratch resistant coating
- u-v filter

At this point, the cost of the order appears on the form and the customer is asked for a deposit that has been calculated by the system as 20% of the cost. When the customer pays the deposit, the remaining balance is displayed.

This form also has a Print button. When clicked, a covering letter (see below), which will be sent with the frames to the lens laboratory, is printed.

A new record is added to the Spectacles Sales Table.

Letter to Lens Laboratory

Specs World,
Main Street,
Carlow
System Date

Clear View Lens Laboratory,
O'Connell Street,
Dublin 1.

Our Reference: *spectacles sales number*

Please supply and fit lenses in the enclosed frames, as per the details below:

Left eye:	*left eye measurement*
Right Eye:	*right eye measurement*
Lens Material:	*glass / plastic*
U-V Filter:	*yes / no*
Scratch Coating:	*yes / no*

Yours sincerely,

xxxxxxxxxxxxxxxxxxxxxxxx,

Optician.

Note: Fields shown in italics will be replaced by actual data.

Receipt of Spectacles

This form is used to record the fact that spectacles (glazed according to the customer's requirements) have been received back from the lens laboratory.

The user browses down through the list of frames (together with their corresponding spectacle sales numbers and other details) that have been sent for glazing and that have not yet been returned.

When the correct frames have been located, the user indicates that they have now been returned, fully glazed. This can be done by clicking a 'Received' button.

The system stores the fact that the spectacles have been received from the lens laboratory (and are awaiting customer collection) by inserting the 'date received' into the Spectacles Sales Record.

Collection of Spectacles

This form is used to record the fact that spectacles have being collected by the customer.

Firstly, the user selects the appropriate customer from a list box of all customers or searches based on the customer's name. The customer's name, address and date of birth are displayed for confirmation purposes.

When the correct customer has been selected, information is displayed about whether the customer's spectacles have arrived back from the lens laboratory (and so are ready for collection) or not.

If the spectacles have been returned, the balance due from the customer is displayed. It is company policy that goods are never handed out without the balance being cleared. When the customer pays the balance, that fact is keyed in, and the spectacles are handed over to the customer.

The Spectacles Sales Table is updated including the date of collection.

Spectacles Sales Report

This report gives a screen listing of all fully completed spectacles sales. Spectacles that have not yet been collected by the customer are not included.

The following details are shown:

Date of Sale	Date of Collection	Customer Name	Address	Total Cost

The detail lines in this report may be presented in the following order:

1. **Spectacles Sales in Reverse Chronological Order (default)**

   By default, the information is initially presented in reverse chronological order i.e. with the top line referring to the most recent sale and working backwards.

2. **Spectacles Sales in Alphabetical Order of Customer**

   This means that all spectacles sold to one customer are shown before any spectacles sold to another customer. For the same customer, the sales are displayed in reverse chronological order.

The order of information may be altered by means of two buttons:

- Date button (initially disabled)
- Customer button

Depending on how the information is currently presented, the corresponding button will be disabled. There will always be one enabled button and one disabled one.

Lens Strength Button

An additional feature of this form is a Lens Strength button. To use this button, a specific sale must first be highlighted. Clicking the Lens Strength button causes a window to appear giving the following details about the spectacles:

- Right lens strength
- Left lens strength

Eye Test Menu

This is a menu that contains options to add, delete and amend or view eye test measurements.

Eye Test Menu
Add a New Eye Test
Delete an Eye Test
Amend / View an Eye Test

Add a New Eye Test

For this form, you should assume that the customer is already on file.

If a completely new customer (i.e. not on file with us) wants to have his eyes tested, the user must first go to the File Maintenance Menu and choose the Add a New Customer option. The user then returns to this form to enter the results of the new eye test.

Firstly, the user selects the appropriate customer from a list box of all customers or search based on the customer name. The customer's name, address and date of birth are displayed for confirmation purposes.

The customer's most recent eye test measurements (if any) are now shown for information purposes:

- left eye measurement from most recent eye test, if applicable
- right eye measurement from most recent eye test, if applicable
- date of most recent eye test, if applicable

Next the user enters details of the <u>new</u> eye test i.e.

- left eye measurement
- right eye measurement
- date (default is system date)

The user is asked to confirm details, following which a new record is added to the Eye Test Table.

Delete an Eye Test

Firstly, the user selects the appropriate customer from a list box of all customers or search based on the customer name. The customer's name, address and date of birth are displayed for confirmation purposes.

All eye tests that have ever been done for this customer are now displayed in reverse chronological order. For each eye-test, the following details are displayed:

- eye test id
- left eye measurement
- right eye measurement
- date of eye test

Once the correct eye test has been located, the user clicks the Delete button. You should include some kind of a double check to ensure that an eye test isn't inadvertently deleted. This could be a simple question such as:

'Are you sure you want to delete this eye test (Y/N) ?'

Once the user responds positively, the appropriate record is flagged for deletion on the Eye Test Table, and a message is displayed confirming that the deletion has taken place.

Note: If there are spectacles on order for these eye test details, alert the user with a message to that effect and do not delete the eye test record.

Amend / View an Eye Test

Firstly, the user selects the appropriate customer from a list box of all customers or search based on the customer name. The customer's name, address and date of birth are displayed for confirmation purposes.

All eye tests that have ever been done for this customer are now displayed in reverse chronological order. For each eye-test, the following details are displayed:

- eye test id (not editable)
- left eye measurement
- right eye measurement
- date of eye test

If the user decides to alter details of a particular eye test, he/she must first select it and then press the Amend button. A cursor now appears and editing can take place.

Having made the changes, the user indicates that they are to be saved. A standard double check (e.g. 'Are you sure (Y/N)'?) should be implemented by your system. If confirmation is received, the Eye Test Table is updated.

Stock Control Menu

This is a menu with options for ordering stock and for recording deliveries.

Stock Control Menu
Orders
Deliveries

Orders

Initially, the user can view any stock item by selecting it from a list box or using a 'Find' option.

Details displayed are:

- stock number
- description
- quantity in stock
- reorder quantity
- supplier's stock code
- supplier name

When the user is ready to place an order, he/she first selects a supplier from a list box of all suppliers. Only stock items supplied by this supplier are now available for ordering (all stock items could be viewed up until this point).

Next, the user selects one of the stock items. He/she is then asked to enter the quantity required. This may be quite different to the suggested reorder quantity for the item.

If more than one stock item is required from the same supplier, they should obviously appear on the same order letter. Therefore, the user may continue to select stock items and enter order quantities.

When no further items are required from this supplier, the 'Print' button is clicked. This causes an order letter to be printed (see below), a new record to be added to the Order Table and one or more new records to be added to the Order Item Table.

The user may now select a different supplier and repeat the above process as often as required.

Order Letter to Supplier

SpecsWorld,
Main Street,
Carlow
System Date

Supplier Name,
Street,
Town,
County.

Order Number: *order number*

Please supply the following stock:

Quantity	**Stock Item Description**	**Your Stock Code**
quantity	*stock item description*	*supplier's stock code*
quantity	*stock item description*	*supplier's stock code*
.....	………….	…………

Yours sincerely,
xxxxxxxxxxxxxxxxxxx,
Optician.

Note: Fields shown in italics will be replaced by actual data.

Deliveries

When a delivery arrives from a supplier, its receipt must be recorded. For simplicity, you may assume that an order is always delivered in full i.e. all items on the order are delivered at the same time.

Firstly, the user browses through all pending orders (i.e. orders which have not yet been delivered) until the correct one is found. Details displayed about the order include:

- order number
- order date
- supplier name
- for <u>each</u> stock item on the order
    - stock number
    - description
    - quantity ordered

Having selected the correct order, the secretary now indicates that it has been delivered. This could be done by clicking a 'Delivered' button.

The Stock Table and Order Table are updated.

File Maintenance Menu

This is a menu with options to insert a new customer, delete an existing customer and amend (or just view) an existing customer's details. There are also options to carry out similar processing for suppliers and stock items.

File Maintenance Menu
Add a New Customer
Delete a Customer
Amend / View a Customer
Add a New Supplier
Delete a Supplier
Amend / View a Supplier
Add a New Stock Item
Delete a Stock Item
Amend / View a Stock Item

Add a New Customer

The user supplies the following details about the new customer:

- surname
- first name
- Address
- Eircode
- date of birth
- telephone number

When the user confirms that the details are correct, a unique customer number is allocated and displayed on form, and a new record is added to the Customer Table.

Delete a Customer

Firstly, the user identifies the appropriate customer. This may be done by selecting the customer from a list box of all customers or searching based on the customer name.

Details now displayed are:

- customer id
- surname
- first name
- Address
- Eircode
- date of birth
- telephone number

Once the correct customer has been found, the user clicks the Delete button. It should not be possible to delete a customer for whom there are eye test records (all eye tests must first be deleted using the Delete an Eye Test form).

You should include some kind of a double check to ensure that a customer isn't inadvertently deleted. This could be a simple question such as:

‘Are you sure you want to delete this customer (Y/N) ?’

Once the user responds positively, the appropriate record is flagged as ‘deleted’ in the Customer Table and a message is displayed confirming that the deletion has taken place.

Amend / View a Customer

Firstly, the user identifies the appropriate customer. This may be done by selecting the customer from a list box of all customers or searching based on the customer name.

Details now displayed are:

- customer id
- surname
- first name
- Address
- eircode
- date of birth
- telephone number

If the user decides to alter some details, he / she must choose the Amend option. A cursor now appears and the user may commence editing.

Having made all the changes, the user indicates that they are to be saved. A standard double check such as:

‘Please confirm that the details are correct”

should be implemented by your system. Assuming that a positive response is given, the Customer Table is updated and all the fields are locked again.

Add a New Supplier

The user supplies the following details about the new supplier:

- supplier name
- Address
- Eircode
- email address
- website address
- telephone number

When the user confirms that the details are correct, a unique supplier number is allocated and displayed on form, and a new record is added to the Supplier Table.

Delete a Supplier

Firstly, the user identifies the appropriate supplier. This may be done by selecting the supplier from a list box of all suppliers or searching based on the supplier name.

Details now displayed are:

- supplier id
- supplier name
- Address
- eircode
- email address
- website address
- telephone number

Once the correct supplier has been found, the user clicks the delete button. The system should refuse to delete any supplier who currently supplies items of stock.

Assuming that this situation does not arise, your system should double check the deletion. This could be a simple question such as:

'Are you sure you want to delete this supplier (Y/N) ?'

Once the user responds positively, the appropriate record is flagged as 'deleted' in the Supplier Table and a message is displayed confirming that the deletion has taken place.

Amend / View a Supplier

Firstly, the user identifies the appropriate supplier. This may be done by selecting the supplier from a list box of all suppliers or searching based on the supplier name.

Details now displayed are:

- supplier id (not editable)
- supplier name
- street
- town
- county
- email address
- website address
- telephone number

If the user decides to alter some details, he / she must choose the Amend option. A cursor now appears and the user may commence editing.

Having all the changes, the user indicates that they are to be saved. A standard double check such as:

‘Please confirm that the details are correct”

should be implemented by your system. Assuming that a positive response is given, the Supplier Table is updated.

Add a New Stock Item

The user supplies the following details about the new stock item:

- description
- cost price
- retail price
- reorder quantity
- supplier's stock code
- supplier name (see below)

Since typing is an error-prone activity, it is better to select the supplier's name from a list of all suppliers known to the system.

When the user confirms that the details are correct, a unique stock number is allocated and displayed on screen, and a new record is added to the Stock Table.

Delete a Stock Item

Firstly, the user identifies the appropriate stock item. This may be done by selecting it from a list box of all stock items or searching based of the stock description.

Details now displayed are:

- stock number
- description
- cost price
- supplier name

Once the correct stock item has been found, the user clicks the Delete button. The system should refuse to delete a stock item for which the quantity in stock is greater than zero or if the item is currently on order.

Assuming that this situation does not arise, your system should double check the deletion. This could be a simple question such as:

'Are you sure you want to delete this stock item (Y/N) ?'

Once the user responds positively, the appropriate record is flagged as 'deleted' in the Stock Table and a message is displayed confirming that the deletion has taken place.

Amend / View a Stock Item

Firstly, the user identifies the appropriate stock item. This may be done by selecting it from a list box of all stock items.

Details now displayed are:

- stock number (not editable)
- description
- cost price
- retail price
- reorder quantity
- supplier name

If the user decides to alter some details, he / she must choose the Amend option. A cursor now appears and the user may commence editing.

Having made all the changes, the user indicates that they are to be saved. A standard double check such as “Please confirm that the details are correct” should be implemented by your system. Assuming that a positive response is given, the Stock Table is updated.