



**INTERNATIONAL DIPLOMA
IN
COMPUTER STUDIES**



**MODULE:
PROGRAMMING METHODS**

**ASSIGNMENT TITLE:
SPORTS SHOP**

DECEMBER 2009

Important Notes:

- ❖ Please refer to the Assignment Presentation Requirements for advice on how to set out your assignment. These can be found on the NCC Education *Campus*. Scroll down the left hand side of the screen until you reach Personal Support. Click on this, and then on Policies and Advice. You will find the Assignment Presentation Requirements under the Advice section.
- ❖ You must familiarise yourself with the NCC Education Academic Dishonesty and Plagiarism Policy and ensure that you acknowledge all the sources which you use in your work. The policy is available on *Campus*. Follow the instructions above, but click on Policies rather than Advice.
- ❖ You must complete the ‘**Statement and Confirmation of Own Work**’. The form is available on the Policies section of *Campus*. Scroll down the left hand side until you reach Personal Support. Click on this and then click on Policies and Advice.
- ❖ Please make a note of the recommended word count. You could lose marks if you write 10% more or less than this.
- ❖ You must submit a paper copy and digital copy (on disk or similarly acceptable medium). Media containing viruses, or media which cannot be run directly, will result in a fail grade being awarded for this module.
- ❖ All electronic media will be checked for plagiarism.

Marker's comments:

Moderator's comments:

Mark:

Moderated

Final

Mark:

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Introduction

The assignment allows the candidate to demonstrate the ability to use various modelling methods and techniques when developing computer programs.

This assignment is based on the analysis and design of a computerised stock control system for a sports shop that sells sports clothing and sports equipment.

Scenario

The sports shop requires a computerised record system for the monitoring and ordering of stock. The current system is a manual system for recording purchases made and for monitoring stock levels and determining when to order new stock and how much to order.

It is hoped that the computerised system will ensure that sufficient stock levels are maintained for clothing and sports equipment. The generation of reports will allow the manager to target the marketing of products to specific customers based on their previous purchases (for example, sports clubs may buy in bulk) and keep a close check on the financial performance of the shop.

The manager will have overall control of the system but the sales staff will be responsible for updating all records as new customers are added, as customers make new purchases, and as new stock is delivered. The sales staff will require access to view details of the customer records and stock records in order to check details of specific customers and stock items. The manager will want regular reports of total items bought in each month by customer and by stock item, and also the total stock in the shop at any time.

Task 1 – 24 Marks

The shop manager requires the following reports:

- Report 1 A list of all purchases made in the preceding month, by customer number, listing stock item, date, number purchased and amount paid.
- Report 2 A monthly list of the total number of items purchased, by stock item, listing number sold, purchase price and total cash received for each stock item.
- Report 3 A list of the total stock in the shop, by stock item, listing stock item and number in the shop. This list can be generated at any time for stocktaking purposes.

Using JSP techniques and methodology, analyse the requirements for all three reports. Produce diagrams for each report showing the step-wise progression, including logical data structure diagrams (DSDs) and preliminary program structures (PSDs) as well as the detailed program specification for each report.

Task 2 – 10 Marks

- a) Write the pseudocode for Report 3.
- b) Draw a flowchart for Report 3.

Task 3 – 20 Marks

The sales staff and manager will access this system via an initial system entry screen with a password – this will give access to a main menu screen. The main menu will provide a choice of access to the following screens:

- Add customer
- Update customer details
- View customer details
- View stock details
- Add sale of stock item
- Add delivery of stock item
- Update stock item (manager only)
- Print report (manager only)
- Exit

- a) Using pseudocode, write the top-level code for a module showing how the various screens can be accessed.

NOTE: the pseudocode for add, view, update, delete, print and exit procedures is not required.

- b) Draw a flowchart for the above module in part (a).

Task 4 – 10 Marks

Using appropriate test data, test the pseudocode written in Task 3a) by producing test plans, desk checks and dry runs.

Task 5 – 26 Marks

This Task involves using UML notation to model the stock system.

- a) Develop the top-level **class diagrams** and **activity diagrams** for the stock system.
- b) Develop **use case diagrams** for the following scenarios:
- Creating a new customer record.
 - The sale of a stock item.
 - Printing reports.
- c) Produce refined **class diagrams** showing any associations, generalisations and multiplicity. Also, develop the **classes** showing attributes and **operations**.
- d) Develop **sequence diagrams** and **collaboration diagrams**.

Task 6 – 10 Marks

In no more than 500 words, write a review of your work. Describe any assumptions you have made and any changes you could introduce to improve your work. For the different methods and techniques you have used in Tasks 1-5, suggest which methods would be appropriate for different programming languages.

Guidance

Work through each Task, making copies of the diagrams and code as you complete them. These will be required in your submission. The diagrams should be produced using appropriate tools.

Take regular backups of your work. This will enable you to recover quickly should the system fail and also allow you to backtrack if your development goes badly wrong.

Discuss your designs giving the reasons for the choices you are making with your tutor/lecturer, who may give advice. Document your choices as you progress. Update all your documentation as changes are made. Any refinement process should produce a series of improved designs.

For each Task write a brief commentary on your design explaining why you have designed it this way and discuss possible alternatives.

Submission Requirements

A word-processed document of approximately 4000 words that contains the solutions to the 6 Tasks. Documentation should include DSDs, PSDs, pseudocode, flowcharts, test results, UML diagrams, sample content and output, and the review.

Warning: All media must be virus free!

Media containing viruses, or media which cannot be run directly, will result in a FAIL grade being awarded for this module.

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your assignment.**