Systems Development: Structured Design Methods

HIGHER NATIONAL DIPLOMA

系统开发：结构化设计方法

【英】苏格兰学历管理委员会（SQA）

Unit Student Guide

COMPUTING: Software Development D77F 35

中国时代经济出版社

SCOTTISH QUALIFICATIONS AUTHORITY

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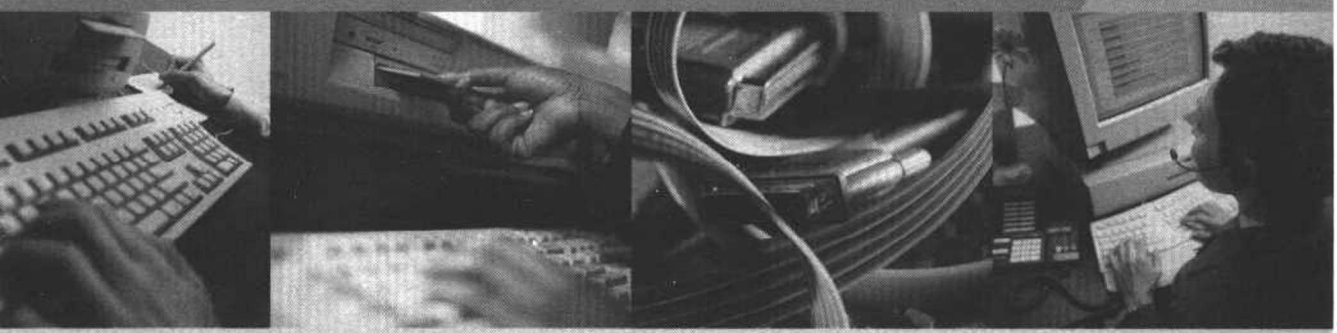

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Systems Development: Structured Design Methods

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Contents

1 Introduction to the Scottish Qualifications Authority

This Unit, **D77F 35 Systems Development: Structured Design Methods** has been devised and developed by the Scottish Qualifications Authority (SQA). Here is an explanation of the SQA and its work:

The SQA is the national body in Scotland responsible for the development, accreditation, assessment and certification of qualifications other than degrees.

Its website can be viewed on: www.sqa.org.uk.

SQA's functions are to:

- devise, develop and validate qualifications, and keep them under review
- accredit qualifications
- approve education and training establishments as being suitable for entering people for these qualifications
- arrange for, assist in, and carry out the assessment of people taking SQA

qualifications

- quality assure education and training establishments which offer SQA qualifications

- issue certificates to candidates.

In order to pass SQA Units, students must complete prescribed assessments. These assessments must meet certain standards.

The Unit Specification outlines the **five** Outcomes that students must complete in order to achieve this Unit. The Specification also details the knowledge and/or skills required to achieve the Outcome or Outcomes. The Evidence Requirements prescribe the type, standard and amount of evidence required for each Outcome or Outcomes.

2 Introduction to the Unit

2.1 What is the Purpose of this Unit?

The purpose of this Unit is to help you develop an awareness of the different approaches that can be taken to system development and apply current structured techniques. This Unit should develop awareness of important issues such as project management, people management, quality assurance and documentation. It is primarily intended to prepare candidates who expect to gain employment in the field of IT or computing.

2.2 What are the Outcomes of this Unit?

There are 5 Outcomes

1. Compare and evaluate the strengths and weaknesses of systems development methodologies
2. Plan for systems analysis and design
3. Perform structured systems analysis
4. Perform structured systems design
5. Plan a testing, training and implementation strategy.

Further details can be found in Appendix 1 — Unit Specifications.

2.3 What do I Need to be Able to do in Order to Achieve this Unit?

Section 3 outlines the assessment requirements for the unit.

2.4 Approximate Study Time for This Unit

The notional study time for this Unit is 80 hours but actual time allocated is at the discretion of the centre.

2.5 Equipment/ Material Required for this Unit

No special equipment is needed for this Unit.

2.6 Symbols Used in this Unit

The various Learning Materials sections are designed so that you can work at your own pace, with tutor support. As you work through the Learning Materials (see Section 5), you will encounter symbols. These symbols indicate that you are expected to do a task. **These tasks are not Outcome Assessments**. They are exercises designed to consolidate learning or encourage thought, in preparation for the Outcome Assessment (see Section 3 — Assessment Information for this Unit).

Activity

This symbol indicates an Activity. Usually, Activities are used to improve or consolidate your understanding of the subject in general or a particular feature of it.

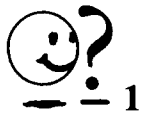
In this Unit, you are asked to undertake the analysis and documentation of an existing computer system.

Everything is provided for you to check your own responses. Answers to the Activities are to be found at the back of the Unit Student Guide. Where suggested responses to Activities are provided in the Unit Student Guide, **you are strongly discouraged from looking at these responses before you attempt the Activity**. The Activities throughout the Unit Student Guide will help you to prepare yourself for the formal

assessments, and to identify topic areas in which you will require clarification and additional tutor support. The Activities will not serve this purpose if you look at the answers before trying them!

Activities are designed to be checked by you. No tutor input is necessary at this stage unless special help is requested, although from time to time your tutor may wish to view your responses to Activities to see how you are progressing.

Self-Assessed Question



This symbol indicates a Self-Assessed Question. Using a Self-Assessed Question helps you check your understanding of the content that you have already covered. The Self-Assessed Questions in this guide will often take the form of practical exercises.

3 Assessment Information for this Unit

3.1 What Do I Have to Do to Achieve This Unit?

Outcome 1

An essay or extended response questions covering the areas of evaluating and describing several system development methodologies.

Outcomes 2–5

These can be assessed using a case study covering the analysis, design and implementation of a system.

4 Suggested Lesson Plan

The Learning Materials (see Section 5) are designed to lead you through a series of Activities, which will allow you to consolidate your learning and check on your own progress.

1. Structured Design Methodologies
2. The System Development Life Cycle
3. Requirements Specification
4. Data Flow Modelling
5. Logicalisation
6. Entity Modelling
7. Normalisation
8. Creating the Data Dictionary
9. System Testing
10. System Implementation

5 Learning Materials

5.1 Section 1

In this section we compare the strengths and weaknesses of current system development methodologies.

5.1.1 Structured Design Methodologies

Introduction

What is a methodology?

A **methodology** is a collection of:

- procedures
- tools
- documentation aids.

So what is Structured Design?

This simply means that the design process follows a path through several stages, which can be incremental or sequential in nature.

In the last 30 years a number of methodologies, incorporating a variety of techniques, has been developed to make the analysis and design stages more manageable. Almost every methodology has at its heart at least one modelling technique. There are several of these methodologies in existence, but perhaps the best known is the one called SSADM — Structured Systems Analysis and Design Methodology, developed in the early 1980s. Some of the others include:

- IE (Information Engineering)
- SSADM (Structured Systems Analysis and Design Methodology)
- JSD (Jackson Systems Development)
- SSM (Soft Systems Methodology).

They all more or less follow the same process:

- Document the current system
- Specify the requirements of the required system
- Create the required system.