



Rewarding Learning

ADVANCED SUBSIDIARY (AS)
General Certificate of Education
2024

Centre Number

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Candidate Number

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Digital Technology

Assessment Unit AS 1

assessing

Approaches to
System Development

MV18

[SDT11]

FRIDAY 17 MAY, AFTERNOON

Time

1 hour 30 minutes, plus your additional time allowance.

Instructions to Candidates

Write your Centre Number and Candidate Number in the spaces provided at the top of this page.

You must answer the questions in the spaces provided.

Do not write on blank pages.

Complete in black ink only. Answer **all five** questions.

Information for Candidates

The total mark for this paper is 100.

Figures in brackets printed at the end of each question indicate the marks awarded to each question or part question.

Quality of written communication will be assessed in

Questions **4(d)** and **5(d)**.

1 (a) One of the reasons for the 'software crisis' was that software projects were running over budget.

Identify three other reasons for the 'software crisis'.
[3 marks]

1. _____
2. _____
3. _____

(b) A computer system contains a user interface.

Explain what is meant by the user interface. [3 marks]

One of the responsibilities of the project manager for a software project is to allocate resources.

(c) Identify three resources which will be allocated.
[3 marks]

1. _____
2. _____
3. _____

(d) Identify two other responsibilities of a project manager.
[2 marks]

1. _____

2. _____

(e) The project manager uses project management tools.

Compare the use of Gantt charts and critical path analysis in the management of a software project.
[6 marks]

Gantt charts

Critical path analysis

2 (a) Document sampling is one method of fact-finding.

(i) Identify three other fact-finding techniques.

[3 marks]

1. _____

2. _____

3. _____

(ii) Identify two examples of documents which might be sampled during the development of a computerised hotel reservation system. [2 marks]

1. _____

2. _____

(b) The following table shows some of the user requirements for a billing system. [4 marks]

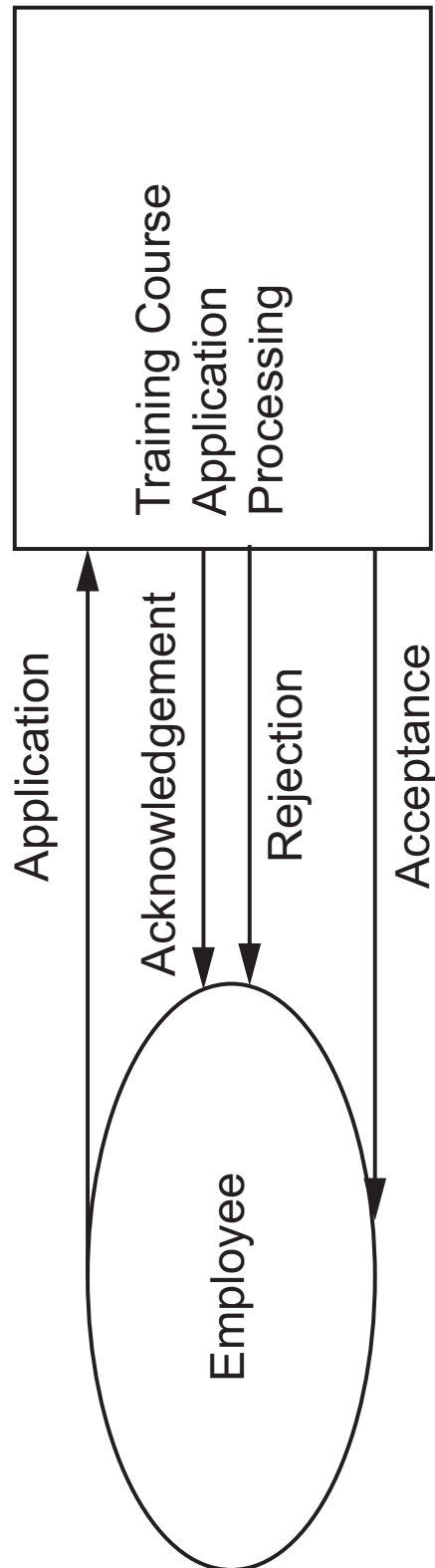
Ref	User requirement
UR101	Daily backup of data
UR102	Username and password access to system
UR103	Automatic daily and weekly sales reports

By referring to the table, explain what is meant by

A functional requirement

A non-functional requirement

(c) The following context level Data Flow Diagram (DFD) shows how an application from an employee to enrol on a training course is processed.



Details of applications are held in the Applications file.
Details of enrolments are held in the Enrolments file.

Each application is processed as follows

- The application is logged, an acknowledgement sent to the employee and the Applications file is updated
- The application is reviewed and accepted or rejected and the Enrolments file updated

(i) Describe how a context level DFD is used to create a level 1 DFD. [4 marks]

(ii) In the box below, produce a level 1 DFD for this system. [8 marks]

3 In the waterfall model of systems development, the Systems Design stage is followed by the Implementation and Testing stages.

(a) Prototyping can be used in the design of the user interface.

Explain how prototyping can be used in the design of the user interface. [3 marks]

(b) Describe the purpose of the Implementation Stage. [4 marks]

(c) A test plan includes test data for the reference number of a product.

A valid **RefNo** is an integer in the range 1000 to 9999 inclusive.

The table below shows part of the test plan.

Complete the table. [6 marks]

Test item: **RefNo**

Test data	Type of test data	Purpose of test data
5000	Valid/normal	RefNo within the range processed correctly
-1		
1000		
500		

(d) System testing and acceptance testing were used with a stock control system.

Compare the purpose of each of these types of testing.
[6 marks]

System testing

Acceptance testing

4 (a) An organisation has developed a disaster recovery plan for its computerised information system.

(i) Explain why the organisation needs a disaster recovery plan. [3 marks]

(ii) The disaster recovery plan describes the backup method to be used.

Explain the difference between a differential backup and an incremental backup. [4 marks]

Differential backup

Incremental backup

(b) A computer system requires software maintenance so that it can continue to run with new technology.

Name and describe this type of software maintenance.
[4 marks]

Name _____

Description _____

(c) Technical documentation is produced during system development.

Discuss how technical documentation will be used during software maintenance. [3 marks]

(d) Agile and the waterfall model are different approaches to systems development.

Compare these two approaches with respect to the time taken to develop a system. [6 marks]

Quality of written communication will be assessed in this question.

(e) Describe one benefit and one drawback of the parallel changeover method. [4 marks]

Advantage

Disadvantage

- 5 (a)** Explain each of the following programming terms.
[4 marks]

Algorithm

Syntax

(b) Part of the algorithm for calculating student grades is shown below.

Input the student mark
If the mark exceeds 40 the grade is a pass,
otherwise the grade is a fail
Output the grade

By referring to this part of the algorithm, explain what is meant by each of the following.

Sequence [2 marks]

Selection [3 marks]

(c) State the difference between a count-controlled loop and a condition-controlled loop. [4 marks]

Count-controlled loop

Condition-controlled loop

(d) Code reusability is an important aspect of object-oriented programming (OOP).

Evaluate the use of inheritance in supporting code reusability. [6 marks]

Quality of written communication will be assessed in this question.

This is the end of the question paper

For Examiner's use only	
Question Number	Marks
1	
2	
3	
4	
5	
Total Marks	

Examiner Number