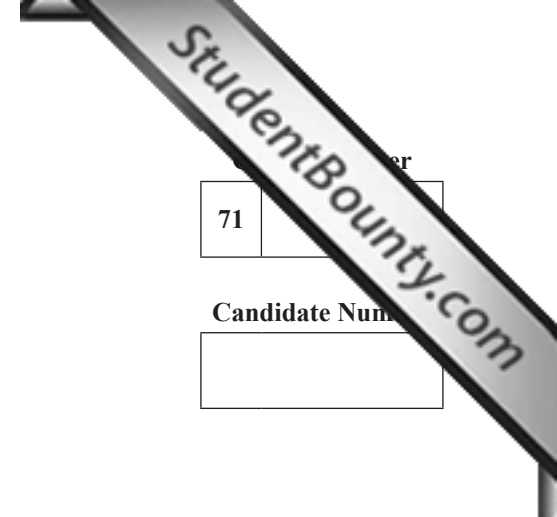




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71	
Candidate Number	



## Applied Information and Communication Technology

Assessment Unit A2 7

*assessing*

Unit 7: Investigating Systems

[A6J11]



MONDAY 16 JANUARY, AFTERNOON

### TIME

2 hours.

### INSTRUCTIONS TO CANDIDATES

Write your Centre Number and Candidate Number in the spaces provided at the top of this page.  
Answer **all ten** questions.

### INFORMATION FOR CANDIDATES

The total mark for this paper is 100.  
Quality of written communication will be assessed in **questions 1, 4, 5 and 7**.  
Figures in brackets printed down the right-hand side of pages indicate the marks awarded to each question or part question.  
This paper is accompanied by a Case Study. You must **not** use your own annotated copy of this Case Study.

### ADVICE TO CANDIDATES

You are advised to take account of the marks for each part question in allocating the available examination time.

For Examiner's use only			
Question	Marks available	Marks	Remark
1	7		
2	5		
3	8		
4	8		
5	14		
6	10		
7	18		
8	16		
9	8		
10	6		
<b>Total</b>	<b>100</b>		



- 1 Terry and Fiona are considering the implementation of a computer system at their company, Y CLEAN. They advertised in local newspapers inviting companies to bid for the system. Three companies replied and their details are summarised below:

**Company A**

Cost: £17,500

Established in 2006. Ten employees with a range of software and hardware skills.

Previous experience of system development and support for many local companies (contact details are available). Most recent project was for a local catering company.

Maintenance contract for first year included.

**Company B**

Cost: £15,000

Newly opened company. Two employees – one a recent graduate and the other a Web designer.

Previous experience of web development for radio station.

Based in Belfast.

Available immediately.

**Company C**

Cost: £22,000

UK based company. 100+ employees. Extensive range of skills and expertise across a wide range of applications and platforms.

Maintenance and upgrades at additional cost.



2 Employees at SQUEAKY CLEAN have been told that current practices and procedures in the company are to be investigated. The employees are not happy about this and Terry and Fiona want the chosen consultants, ABSOLUTE ANSWERS, to provide them with reasons why the investigation should proceed. Identify with a tick (✓) **five** reasons for investigating the current practices and procedures.

Reasons for Investigation	
To attract new clients	
To obtain a thorough understanding of the current system	
To redesign all the forms	
To see if there are any problems in the company	
To work out a new discount system	
To develop new cleaning kits for the cleaners	
To make recommendations for improvement	
To help Harry do his job	
To reduce the number of employees	
To source new machinery for the business	
To identify ICT solutions that would benefit the company	
To help determine user requirements	

[5]

- 3 ABSOLUTE ANSWERS intend to use a range of techniques to gather information about the company.

Indicate which technique is best suited in each of the following cases. Give reasons for your answer, identifying the people involved, where appropriate.

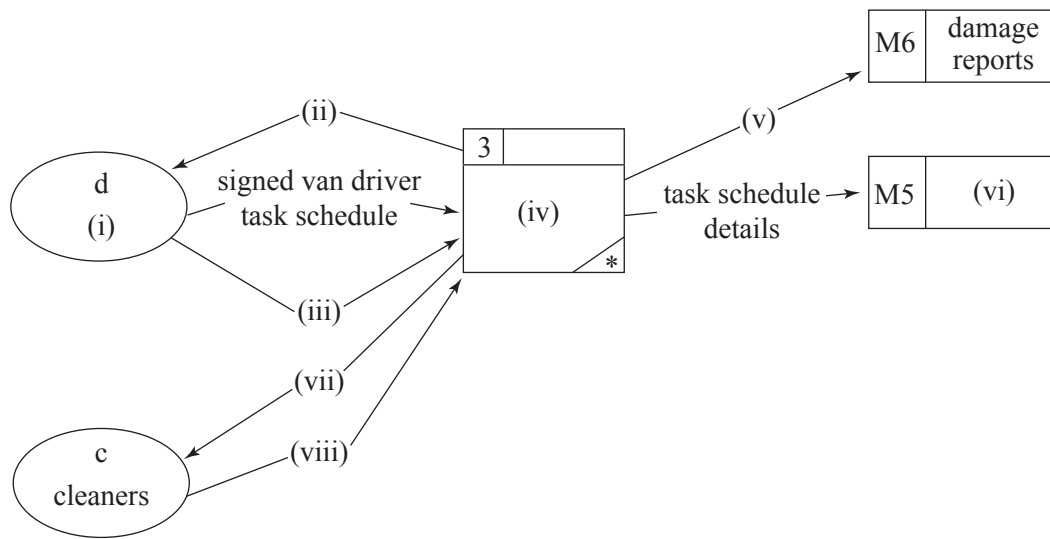
Information needed	Technique	Reason
How the invoicing process is managed		
The strategic aims of the company		
The forms used in the company		
Client views on the service		

[8]





(b) James has given the trainees a partially completed fragment of the level-1 diagram as shown below.



Complete the missing details shown in the diagram.

- |             |              |
|-------------|--------------|
| (i) _____   | (v) _____    |
| (ii) _____  | (vi) _____   |
| (iii) _____ | (vii) _____  |
| (iv) _____  | (viii) _____ |

[8]



6 ABSOLUTE ANSWERS will generate documentation in the course of their work. James has asked the trainee analysts to indicate which of the items listed below each piece of documentation. Identify with a tick (✓) which document contains each

ITEM	Feasibility Study	System Specification	Technical Guide	User Guide
Budget				
Entity relationship models				
Adding new hardware				
Test data				
Creating a new contract				
Adding a new employee				
Data flow diagrams				
Cost benefit analysis				
Problems with current system				
Proposed outputs				

[10]

Examiner Only	
Marks	Remark

- 7 The trainee analysts have been asked to use project management techniques to schedule the development of the new system. They have identified the following activities associated with the development of the database.

Activity	Description	Predecessor	Duration (hours)
A	Create tables	–	3
B	Establish relationships	A	1
C	Create queries	A	5
D	Create forms	A	3
E	Create reports	C	3
F	Create user interface	D,E	2
G	Produce documentation	F	4
H	Test queries, forms and reports	E	4
I	Test user interface	F	2
J	Test full application	I	2

(a) Complete the GANTT chart below to show all activities from the table

<b>Activity</b>	<b>A</b>																					
	<b>B</b>																					
	<b>C</b>																					
	<b>D</b>																					
	<b>E</b>																					
	<b>F</b>																					
	<b>G</b>																					
	<b>H</b>																					
	<b>I</b>																					
	<b>J</b>																					
		<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>15</b>	<b>16</b>	<b>17</b>	<b>18</b>	<b>19</b>	<b>20</b>	<b>21</b>
<b>Duration (hours)</b>																						

[10]

(b) What is the shortest time needed to complete the project?

\_\_\_\_\_ [1]

(c) Identify an area of slack within the plan.

\_\_\_\_\_ [1]

Examiner Only	
Marks	Remark



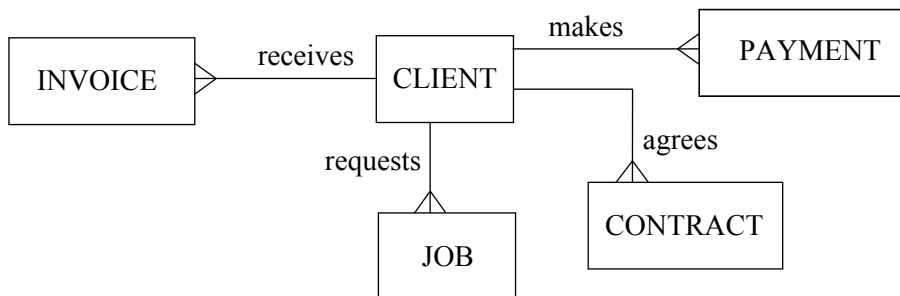
8 On initial review of the requirements, James has suggested to Terry that SQUEAKY CLEAN needs a database system.

(a) In the table below, identify with a tick (✓) **three** valid reasons for using a database.

REASONS FOR USING A DATABASE	
Employees will be able to set the system up themselves.	
Data will all be stored in one central location.	
Data duplication will be minimised.	
Employees will be able to amend their task schedules.	
Management reports can be produced easily.	
Client contracts can be approved.	

[3]

As part of the detailed investigation, a document is being created which summarises output requirements. The tables needed to produce each of these outputs are shown in the proposed database structure below.



- (b) A new table is to be added to the database to store staff details.  
Complete the following partial data dictionary for the STAFF table:

Field Name	Data Type/ Size	Comments	Sample Data
StaffID	Text, 6		EMP001
Forename	Text, 15	First name of staff member	FRED
Surname		Surname of staff member	SMITH
Telephone		Staff home telephone	091 3334592
Start Date		Date employee began work in SQUEAKY CLEAN	

[5]

- (i) To which table in the existing database structure should the STAFF table be related?

\_\_\_\_\_ [1]

- (ii) Explain how this relationship will be established.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_ [2]

(c) Complete the table below by including the missing tables.

OUTPUT	PROCESS	TABLE(S)
Client List	List of all clients.	1. CLIENT
Invoice	Based on a client contract, calculate the amount due for a certain time period.	1. 2. JOB 3.
Client statement	Display the outstanding payment details for each client.	1. 2. 3.

[5]

9 SQUEAKY CLEAN is considering the possibility of providing an on-line reservation service for clients. The analysts are keen to ensure that the interface is easy to use and includes all necessary fields. In the table below, identify with a tick (✓), **four** fields which should be entered by a new client wishing to make a reservation.

(a)

Date service required	
Bank account details	
Client Name	
Client Number	
Contract Number	
Service type required	
Time service required	
National Insurance Number	

[4]

(b) State **two** benefits of providing an on-line reservation service for clients.

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[2]

(c) Identify **two** ways in which employees could benefit from the on-line system.

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[2]



- 10 Terry and Fiona are anxious to have continuous support for the system once it is implemented.

Identify **two** ways in which support can be provided for the new system at SQUEAKY CLEAN giving an advantage and disadvantage in each case.

Support System 1

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---

Advantage

---

---

Disadvantage

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---

Support System 2

---

---

Advantage

---

---

Disadvantage

---

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[6]

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**THIS IS THE END OF THE QUESTION PAPER**

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**Applied Information and  
Communication Technology**

Case Study  
Assessment Unit A2 7

*assessing*

Unit 7: Investigating Systems

[A6J11]

**MONDAY 16 JANUARY, AFTERNOON**

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You must use **this** clean copy of the Case Study in the examination and not your own annotated copy.

## Squeaky Clean

Squeaky Clean is a thriving company formed three years ago by two solicitors, Terry and Fiona Duffy. Tired of juggling the needs of their young families with busy professional careers, they realised that there was a definite market for cleaning services. Both had previously considered getting some domestic help at home, but found difficulty in getting help at the right time and at the right price.

Aware that for many people, the cost of getting domestic help would be well outside the normal family budget, Terry and Fiona considered carefully how this kind of service could be made accessible to the public. It took quite a while to work everything out but with professional advice and their own legal knowledge, Terry and Fiona started a domestic cleaning company, "Squeaky Clean". They agreed financial terms and conditions and Terry initially decided to manage the company on a full time basis while Fiona would currently retain her legal career. As well as being co-owner of the company, she would have responsibility for dealing with all contracts generated in the business as she is an expert in this particular aspect of the law.

Squeaky Clean is fully committed to delivering an excellent service to the public. All staff are fully vetted; they are fully trained and must comply with all company rules regarding the conduct of their work. Apart from the directors, Terry and Fiona, Squeaky Clean currently employs a manager, a secretary and 20 full time staff including a driver. The company retains a bank of part time staff who can be called on if necessary. The company also owns a van for transporting equipment to particular jobs. Sometimes industrial cleaning machines are required and the van is used to deliver these to the premises on the night before and to collect them on the day after a scheduled job.

A major objective for Terry and Fiona was to provide a good value quality service. Research into the provision of domestic cleaning services in the area, found little evidence of any kind of reasonable service. They did find advertisements for individuals charging over £20 an hour for very basic cleaning with no guarantee of any kind of quality control. However, there was no company at that time providing what they thought they could offer.

Terry and Fiona realised that they had to come up with a range of options that would attract potential customers and create loyalty to the company. They decided to offer a range of contract options that would have different associated discounts. All services carry a minimum time of one hour. It would not be cost effective to place a member of staff at a location for any less time since travel time and transport must also be considered. These options include the following:

- Option 1      **"One off service"** Specific customer requirements are costed on an hourly basis based on a minimum time allocation of one hour with one cleaner present.
- Option 2      **"Four week contract"** Specific customer requirements are costed on an hourly basis based on a minimum time allocation of one hour each week over a four week period. The first week is charged at the full rate and then a discount of 5% is applied to the following three weeks.

- Option 3 **“Twelve week (three month) contract”** Specific customer requirements are costed on an hourly basis based on a minimum time allocation of one hour each week over a twelve week period. The first week is charged at the full rate and then a discount of 5% is applied to the following three weeks. For the remaining eight weeks, a discount of 7% is applied.
- Option 4 **“Twenty six week (six month) contract”** Specific customer requirements are costed on an hourly basis based on a minimum time allocation of one hour each week over a twenty six week period. The first week is charged at the full rate and then a discount of 5% is applied to the following three weeks. For the next eight weeks, a discount of 7% is applied. For the remaining fourteen weeks, a discount of 10% is applied.
- Option 5 **“Fifty two week (one year) contract”** Specific customer requirements are costed on an hourly basis based on a minimum time allocation of one hour each week over a fifty two week period. The first week is charged at the full rate and then a discount of 5% is applied to the following three weeks. For the next eight weeks a discount of 7% is applied. For the next fourteen weeks, a discount of 10% is applied and for the remaining twenty six weeks, a discount of 12% is applied.

**All contracts must be renewed on expiry before any further service can be provided.**

Terry oversees the overall day to day running of the company. The secretary deals with all enquiries relating to new clients. He is required to get the new client to complete a “job enquiry” form. This form requests the client contact details and allows the client to select particular services that the company provides. This is mainly done by ticking boxes but there is space on the form for the client to add additional information regarding requirements. Terry and Fiona sometimes review these forms and get new ideas for extending their range of services.

The secretary provides limited information to the client and then passes the “job enquiry” forms to the manager Caroline Smyth. Caroline visits every new client and assesses the job. This is a very time consuming activity and because of the growing number of clients, Caroline is sometimes not able to visit for up to two weeks. Some clients are unhappy with the delay and do not proceed with the enquiry and so potential customers are lost.

Caroline defines the exact client requirements, recording them on a “client requirement” form and then costs the range of options available. Caroline prepares a “costing summary” form which is sent out to the client for consideration. She passes copies of all forms to Harry who sorts them in date order and files them. When the client provides a response to the costing, whether by calling into the office or by telephone, Caroline will get the “client contract” drawn up. All contracts must be copied and posted to Fiona for approval before being sent out to the client. Fiona calls into the office once a week to indicate approval and sign new contracts.

Once approved, the contract is sent to the client and should be signed and returned before any service can be supplied. Once the signed contract has been returned, they must be filed. The secretary, Harry James, is responsible for this. These procedures also apply to renewal of contracts. The whole process is very labour intensive and time consuming. It depends on Harry

getting everything done on time and because of the volume of work he has to do, happens. Clients are not pleased when they have to contact the office to see what is delay.

Sometimes because of other commitments, Fiona cannot visit the office and there can be a two week delay. Harry is aware that an increasing number of customers have said they will not be back. Renewal customers are particularly dissatisfied as they feel they have shown commitment to the company.

Caroline also prepares “task schedules” for the cleaners. All cleaners must collect their “task schedules” for the following week on a Friday afternoon before 6pm. Every job has an associated task schedule. The cleaner must sign the “task schedule”, indicating that the work has been completed and return it to the office before 4.30pm on the following Friday. This signed document is used by Harry to record that the work has been done so that invoice information can be generated. It is also used to calculate wages for the part time staff as they are paid by the hour rather than at the weekly full time rate. Sometimes staff members forget to sign the task schedule. If Harry is not available to check the schedules on Friday afternoons, payment authorisation for part time staff who have not signed the forms is not allowed. This has caused a lot of problems as there will be a delay of one week in payment to the staff. The staff believe that this is unacceptable.

The van driver is also given a weekly “task schedule”. He is responsible for checking the equipment before he delivers it and checking it after he collects it. Any damage must be recorded on a “damage report” form which is left in the office for Caroline who will decide if any action must be taken. This might include interviewing the staff involved or perhaps charging the client a breakage fee if the damage is their fault. This does not happen very often but if a client is considered responsible for damages, Caroline creates a “damages demand” which is sent to the client. A “damages payment” is expected within two weeks otherwise the normal demand procedures will follow.

The company provides all cleaning material and equipment for the services they provide. Cleaners are supplied with their cleaning kit comprising a whole range of cleaning products and portable cleaning gear. They must request replacement products and cleaning gear on a “cleaning kit request” form when they submit their signed task schedule forms on a Friday. Replacement supplies are available for collection the following Friday and each cleaner is required to sign a “cleaning kit receipt” so that a record is kept of their stock usage. Harry is responsible for managing this process and must file the “cleaning kit request forms” and the “cleaning kit receipts” for audit purposes.

Caroline reviews the “cleaning kit request” forms before Wednesday of each week. She is responsible for authorising replacement items for the cleaning staff. She monitors this very closely and will check the validity of the request by looking at the “task schedules” for the cleaner concerned.

Harry is required to maintain stock items for the cleaning staff. He tries to check the stock at least once a fortnight. Harry must complete “stock request” forms for low stock items. These must be approved by Caroline before Harry creates “stock orders” for the suppliers. He has to issue these, ensure that the subsequent deliveries are accurate and the stock updated, record the supplier invoices and then make sure that the suppliers are paid. Sometimes stock items are not available



for staff simply because Harry has not been able to complete the whole stock order procedure within the required timescale. This is problematic for the cleaners who either try to purchase materials themselves or ask the client. Some clients have complained to Caroline that they are not getting the full service they agreed in their contracts.

Invoices for Option 1 clients are created on the Monday following the completion of the work. All other clients are invoiced monthly. Invoices are posted out to clients and payment is expected within one week. Clients may pay by cash in person or credit or debit card over the phone. The company has discontinued the practice of payment by cheque in line with most other organisations. There is a considerable amount of work involved in generating the invoices. As Harry is responsible for answering the phone, dealing with clients as well as a whole range of other tasks, he finds it hard to get suitable uninterrupted time to do this. Some days, he either comes in very early in the morning or stays on later at night. He is very worried and under pressure at present as he realises that he is at least two weeks behind in creating the invoices.

Harry is also responsible for regularly checking that payment has been received for all invoices. With a growing number of clients, it is becoming impossible to keep up with this. He is also required to issue first, second and final "reminders" to clients. If a client fails to pay within two weeks of a final reminder, Harry is required to advise the manager who issues a "discontinuation of service" notice to the client. This notice also advises clients of the legal consequences of non payment. Terry and Fiona are sent copies of all discontinuation notices and deal with the legal aspects themselves.

Harry has on occasion not recorded client payments. This has resulted in clients being sent out reminders.

The business is very successful but the administrative processes are becoming totally unmanageable. The amount of paper generated is impossible to manage effectively. Caroline has proposed the appointment of at least two new staff to assist with all the work that must be done.

She believes that Harry could be a great help to her in the assessment and costing of new jobs if he could be released from some of his office duties.

She is also of the opinion that they could make good use of better computer facilities. At present, Caroline and Harry have standalone PCs and they have to share a printer. They have no Internet access and they have no means of sharing any data easily. They use basic application software and have no formal training at all.

Caroline is concerned at the growing number of clients who want an instant response to their requests and who are dissatisfied with the time it takes to generate the responses they receive. She is very aware that clients are not happy with the invoicing system. She is concerned that any bad publicity arising out of poor administration could affect new business. Clients might well look elsewhere for services.





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