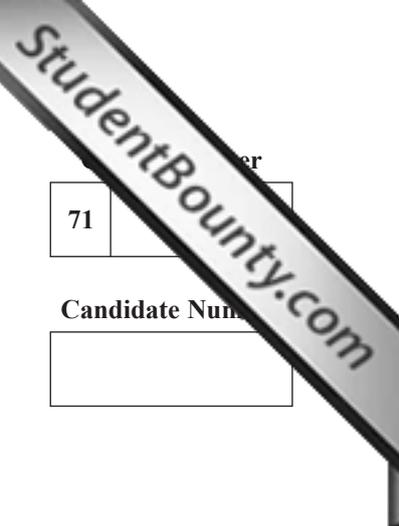




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2010



er
71
Candidate Number

Applied Information and Communication Technology

Assessment Unit A2 7
assessing
Unit 7: Investigating Systems
[A6J11]



TUESDAY 18 MAY, 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 eleven** questions.

INFORMATION FOR CANDIDATES

The total mark for this paper is 100.
Quality of written communication will be assessed in **questions 5, 7, 10 and 11**.
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	5		
2	4		
3	6		
4	10		
5	8		
6	9		
7	17		
8	7		
9	8		
10	16		
11	10		
Total	100		

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- 1 Janet Legg, the owner of TIP TOP TOES, has employed the services of DYNAMIC DESIGNS to assist with the introduction of a computer system for her business. DYNAMIC DESIGNS has a policy of encouraging clients to clearly identify and explain their reasons for initiating a systems project. DYNAMIC DESIGNS has provided Janet with the following reasons for computerisation.

Complete the table below to give specific examples from TIP TOP TOES.

Reason	Explanation of reason
Reduce paperwork	
Competitive advantage	
Improved communication	
Accuracy	
Protection of data	

[5]

2 The analysts are ready to start their investigative activities and Janet has suggested that, to save time, she can provide all the necessary information.

(a) Suggest **two** reasons that Chris Smith, the senior systems analyst, could give as to why this is not a good idea.

Reason 1

[1]

Reason 2

[1]

(b) During the interview, Chris looks at a copy of the appointment book. Suggest **two** pieces of information that he could obtain from this source, other than client name and appointment time.

[2]

- 3 An analyst must communicate with a range of people during the systems development process. Complete the missing information in the table below.

Person	Phase(s)	Reason for communication
	Throughout the whole project	System owner. Has an understanding of the whole process and knows what the system must do for the business. Has ultimate responsibility for making decisions regarding costs and time scales.
	Implementation	Need to source hardware to meet the requirements identified in the system specification.
Programmers		
Users		

[6]

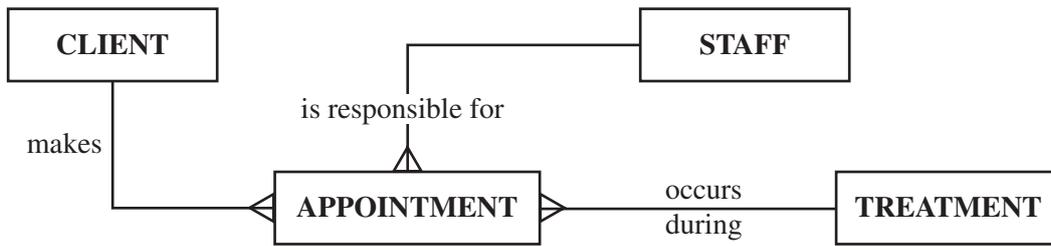
- 4 Chris has asked a junior analyst to ensure that all the necessary paperwork is in place. As the project progresses, documents may be referred to and must be returned to their correct location.

Complete the table below by inserting a tick (✓) to show to which document each item belongs.

Item	Document			
	Feasibility study	System specification	Technical guide	User guide
Implementation plan				
Terms of reference				
Entity relationship models				
Adding new hardware				
Test data				
Creating a new user account				
Adding a new supplier				
Data flow diagrams				
Cost benefit analysis				
Problems with current system				

[10]

5 The analysts must test that their proposed design will meet the requirements of TIP TOP TOES. The database structure shown below has been suggested.



Janet Legg has asked for a report which she can use to see how popular treatments are. This report will be produced once a month. A sample is shown below.

Treatment Popularity Report – May 2010				
Treatment Ref	Treatment Description	Cost	Number of treatments	Income
10011	Basic pedicure	£12.50	45	£562.50
10012	Bunion removal	£17.00	60	£1020.00
10014	Shape up for summer	£22.50	32	£720.00
10015	Wax pedicure	£19.00	28	£532.00
10016	Verruca treatment	£9.00	19	£171.00
10017	In-grown toenail treatment	£12.00	29	£348.00
10018	Toenail shape and polish	£15.00	105	£1575.00
Total income:				£4928.50

(a) In order to develop this report, the analysts will initially have to design a query.

Which tables should be included in the query?

[2]

Part of the query output is shown below:

Treatment ref	Treatment description	Cost	Ap
10011	Basic pedicure	£12.50	1009
10012	Bunion removal	£17.00	10092
10014	Shape up for summer	£22.50	10097
10011	Basic pedicure	£12.50	10095
10016	Verruca treatment	£9.00	10096
10011	Basic pedicure	£12.50	10094
10018	Toenail shape and polish	£15.00	10099
10011	Basic pedicure	£12.50	10202
10011	Basic pedicure	£12.50	10205
10014	Shape up for summer	£22.50	10207
10015	Wax pedicure	£19.00	10208
10011	Basic pedicure	£12.50	10211
10017	In-grown toenail treatment	£12.00	10213
10018	Toenail shape and polish	£15.00	10218
10011	Basic pedicure	£12.50	10219
10012	Bunion removal	£17.00	10222
10014	Shape up for summer	£22.50	10225
10011	Basic pedicure	£12.50	10227
10016	Verruca treatment	£9.00	10228
10017	In-grown toenail treatment	£12.00	10226
10018	Toenail shape and polish	£15.00	10330
10011	Basic pedicure	£12.50	10332
10012	Bunion removal	£17.00	10335
10011	Basic pedicure	£12.50	10440
10015	Wax pedicure	£19.00	10543
10011	Basic pedicure	£12.50	10556
10011	Basic pedicure	£12.50	10889
10018	Toenail shape and polish	£15.00	10600

6 TIP TOP TOES needs to record details of all sales. Customers may buy one stock item or several different stock items. This data should be linked to the stock control part of the database.

(a) Complete the following data dictionary for the SALE and SALE ITEM tables.

SALE

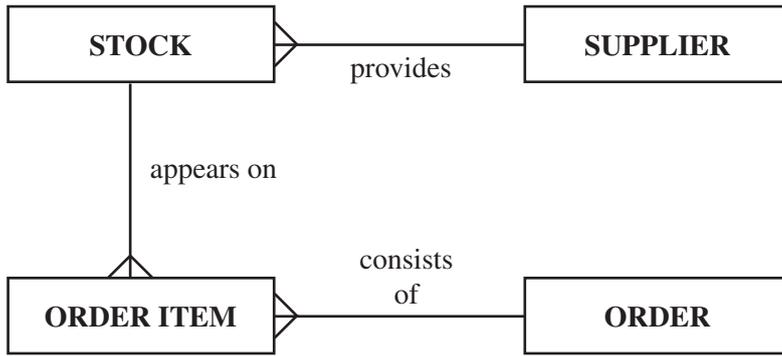
Field name	Data type	Description	Sample data
Sale ref	Autonumber	Primary key	P002
Sale date		Default to today's date	
Payment method		Cash, cheque, credit card	Cash

SALE ITEM

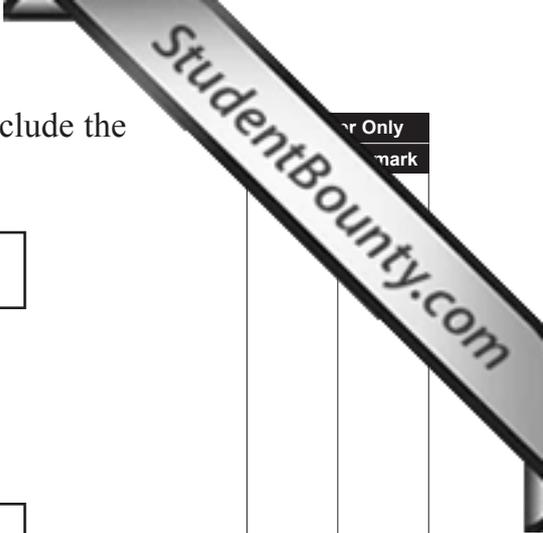
Field name	Data type	Description	Sample data
Sale ref			P002
Stock no	Text, 4		S-05
Quantity		Number of items required	1

[7]

(b) Complete the entity relationship model shown below to include the additional two tables.



[2]

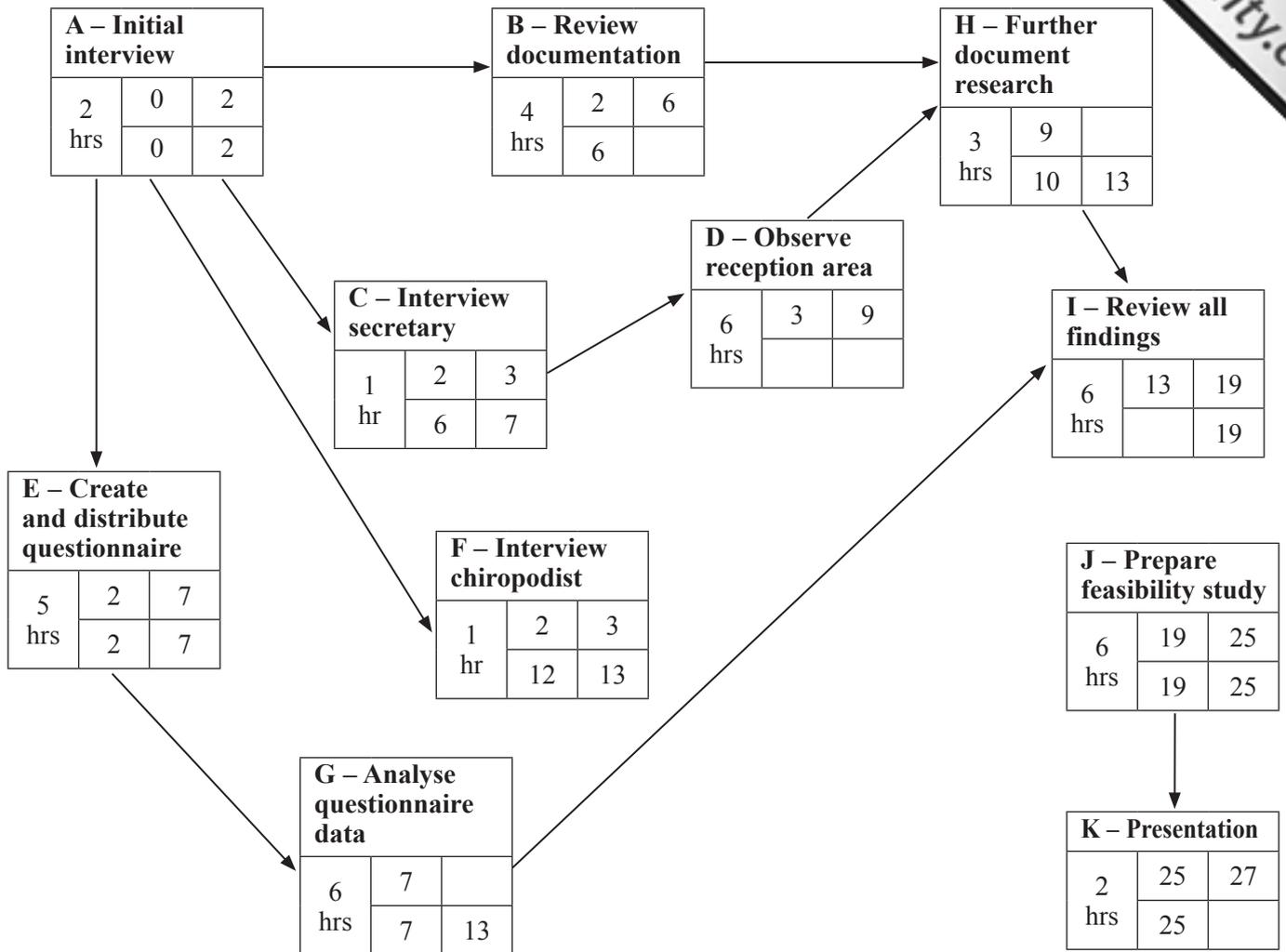


For Only
mark

- 7 The following schedule has been drawn up for the investigation phase of the project.

Activity	Description	Predecessor	Duration (hours)
A	Initial interview with Janet Legg	–	2
B	Review documentation obtained during interview	A	4
C	Interview secretary	A	1
D	Observe reception area	C	6
E	Create and distribute customer questionnaire	A	5
F	Interview chiropodist	A	1
G	Analyse questionnaire data	E	6
H	Further document research	B, D	3
I	Review all findings	D, F, G, H	6
J	Prepare feasibility study	I	6
K	Presentation	J	2

(a) Use the table to complete the network diagram which has a range of elements including connections between activities.



[10]

Examiner Only	
Marks	Remark

[Turn over

(b) Which activities in this project are on the critical path?

_____ [1]

(c) Chris feels that he should save some time on the project. Explain how the allocation of an additional analyst will impact on the overall project plan. Provide specific examples in your answers.

_____ [6]

8 Chris has provided some guidelines concerning the development of story boards for the junior analyst.

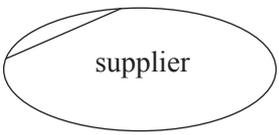
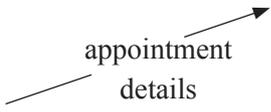
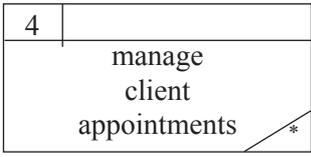
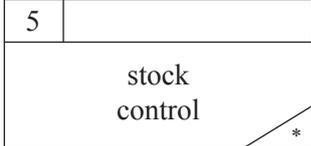
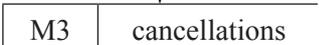
Each of the following statements is either true or false. Place the word TRUE or FALSE into the space opposite each statement.

The same font size should be used for all text.	
The users should be consulted regarding colour choices.	
Graphics must be included on all screens.	
Data should be easily entered.	
Navigation is not needed on every screen.	
Screens should use a similar layout to current paper based documentation.	
Chris Smith will make the final decision regarding screen layout.	

[7]

9 Data flow diagrams are created by an analyst to show how the current system operates and to plan how the new system should operate.

The table below shows some data flow diagrams components. Complete the table by inserting a tick (✓) to show which diagram(s) each component would be part of.

Component	Context	Level 1	Neither
			
			
			
			
			
			
			
 			

[8]

10 As part of the testing phase, the analysts have asked one of the chiropodists to enter some data through a proposed input screen.

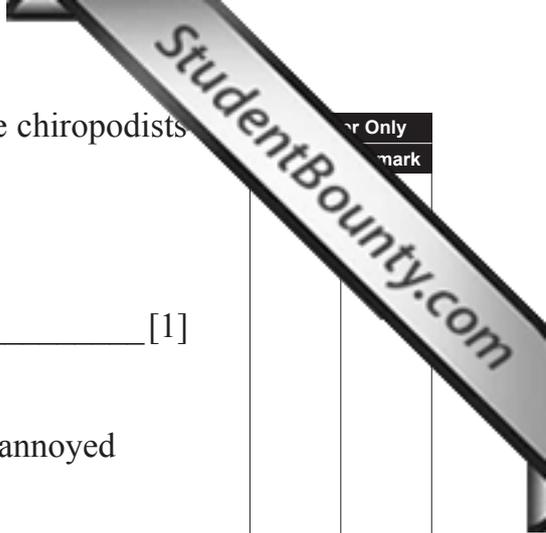
(a) What type of testing is this?

_____ [1]

The chiropodist is quite happy with the interface, but Chris is annoyed when he sees an incorrect calculation on the screen.

(b) Give **two** reasons why Chris might be annoyed.

_____ [2]



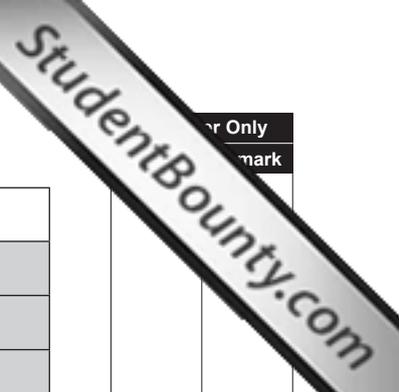
Question	Mark
10	

The file below is the data that has been entered by the chiroprapist.

Appointment date	Category	Client no
07/04/10	CHIROPODY	0023
07/04/10	B	0098
05/04/10	BEAUTY	0023
05/04/10	BEAUTY	0100
06/04/2010	BEAUTY	0100
06/04/10	CHIROPODY	0023
06/04/10	BEAUTY	0871
06/04/10	CHIROPODY	0923
07/04/10	CHIROPODY	0102
07/04/10	BEAUTY	0032
07/04/10	BEAUTY	0103
08/04/10	BEAUTY	0204
09/04/2010	BEAUT	0023
09/04/10	CHIROPODY	0023
09/04/2010	BEAUTY	0100
09/04/10	CHIROPODY	0100
05/04/10	CHIROPODY	0009
05/04/10	CHIROPODY	0101
09/04/10	BEAUTY	0900
09/04/10	BEAUTY	0998
07/04/10	CHIROPODY	0034
08/04/10	BEAUTY	0039
08/04/10	CHIROPODY	0011
07/04/10	CHIROPODY	0034
30/02/10	BEAUTY	0100
10/04/10	CHIROPODY	0901

This data is being used to create a report that Janet has requested. The report was run on 14 April 2010. The report is shown opposite.

Treatment Summary Report – Week Commencing 5 April 2010



For Only
mark

	Beauty		Chiropody
Monday – 5th	2		2
Tuesday – 6th	3		2
Wednesday – 7th	2		3
Thursday – 8th	2		1
Friday – 9th	3		2
Total appointments for week	22		22

Report date 16 April 2010

(c) Chris has discovered errors with the data entry and with the report. These are to be summarised in the table below. Complete the missing information in the table below.

	Error	Possible reason	Expected result
1	Total appointment calculation not correct		
2			14 April 2010
3	Does not reject invalid date value		Any valid date
4		Validation rule not defined properly	

[7]

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]

TUESDAY 18 MAY, AFTERNOON



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

TIP TOP TOES

TIP TOP TOES provides the ultimate in foot care for the public. Opened in Bangor in 2002, the TIP TOP TOES private clinic has now more than 1000 clients. The owner of the business Janet Legg, a highly qualified chiropodist, came up with the idea of providing more than just a chiropody service to the public. Along with all of the normal facilities offered by this kind of practice, she decided to make a total range of foot care available to the public. The services include chiropody services, foot therapies and treatments. A full range of foot care products is also available for purchase.

Janet put a great deal of effort and money into launching the business and there is no doubt that it is hugely successful. The clinic is open Monday to Friday from 8am until 8pm. Janet believed that this would be very helpful to people who would have to make arrangements to leave work to attend appointments. This has proved to be absolutely correct and is one of the many advantages the clinic offers. The clinic also provides a home visit service which is of particular benefit to elderly clients. Home visits are conducted in the mornings on Monday, Wednesday and Friday and in the afternoons on Tuesday and Thursday. Janet is also considering the possibility of Saturday opening.

The clinic is staffed by Janet and four other fully trained chiropodists as well as a therapist, two secretaries and two cleaning staff. The secretaries work either from 8am until 2pm or from 2pm until 8pm. At any one time there are at least two trained chiropodists working in the clinic with a third one doing the home visits. The therapist is available every day from 2pm until 8pm.

There is a huge demand on the resources of the clinic because of its popularity. The staff are stretched to the limit and on a day when someone is sick it is sometimes necessary to reschedule times by trying to fit clients in with one of the other chiropodists or to just cancel the appointment. The secretary will first of all try to accommodate the client with another chiropodist and if that does not work will try to cancel the appointment and agree an alternative one over the phone. This is not very satisfactory for the client and there have been occasions when it has not been possible to contact a client and they have turned up. This is not good for the business and if this happens, Janet allows the next appointment free of charge.

When the therapist is off, there is no alternative other than to reschedule the appointment.

Clients can make appointments for chiropody services (15 minute duration), foot treatment services (30 minute duration) or therapy services (30 minute duration). Sessions can be booked in multiples of these time slots if a double session or more is required for a particular service.

Appointment books are kept beside the telephone in the reception area. There is one book for Chiropody Treatment and one for Therapy services. Time is marked in 15 minute intervals on the left hand side of the page. The secretary has a weekly schedule on the notice board indicating which staff members are working in each time slot for that week. Every Monday, the secretary will blank out the times each staff member is not available for each day of that week and indicate who is doing the home visits for that week.

The secretary must also indicate the type of appointment by writing C (chiropractic treatment) or TH (therapy) after the name.

When a client first makes an appointment, usually by telephone, the name, address, telephone number and type of appointment is recorded in a 'New Client' notebook and an appointment card is sent out. The appointment is then recorded in the relevant appointment book.

Existing clients can book further appointments on the day of their treatment or by telephone. These are recorded in the same way.

When a new client attends for the first time, an extra 15 minutes is assigned to the appointment time. This is to allow time for a client history to be recorded as a file has to be created for each client. This file has to be updated each time the client attends thereafter. The secretary must have these records filed by either 2pm or 8pm each day. In addition, the files for the next day must be selected and placed in order of appointment time for each member of staff. The client history files must be updated by the staff member at the end of each appointment and left for filing by the secretary.

Clients can pay immediately after their appointment by cash, cheque, debit card or credit card. They are given a receipt of payment and the transaction is noted in a payment ledger book. This book is organised by date and the secretary records the client name, the amount and the transaction type (CA cash), (CH cheque), (D debit card), (CC credit card).

Alternatively, clients who are having a course of treatment receive an invoice at the end of their treatment. Payment may be made in person or by post using any of the methods noted already. The transactions are recorded in exactly the same manner and receipts are issued accordingly.

Clients wishing to purchase foot care products make their request and if the product is available, they pay the secretary by cash, cheque, debit card or credit card. Again these transactions are recorded in the payment ledger book (P – purchase) and a receipt issued. If the required product is not in stock, the secretary notes the item and places it on a stock out list. The secretary is responsible for ordering stock at the end of each month and must record the orders in a stock order book. The secretary must also take care of stock deliveries and ensure that the original orders match the delivery details. Sometimes this is not the case and the supplier must be notified. Invoices are also received from suppliers and the supplier payment issued. Supplier receipts are recorded.

Management of the stock is problematic because there is often quite a delay from when an item is out of stock until when it is replaced. Clients are generally not too happy about this especially since the chiropodists and therapist will frequently recommend particular products to them.

The secretaries find the whole process very tedious and time consuming. In addition to this, Janet is not keen to carry too much stock. Space is an issue as well as the unpredictability of sales and the worry of being left with a lot of expensive items.

The secretary must also deal with cancellations and clients who do not attend. When a cancellation is made, the secretary crosses out the client name in the appointment book and makes a note of the time slot and available staff member on a 'spare appointment' list. Often, clients will ring up looking for an immediate appointment. Their details are recorded on a 'waiting list'. The secretary tries to allocate the available cancellations on a 'first come first served' basis unless a genuine emergency arises.

Cancellations are accepted up to 24 hours before the appointment, otherwise a cancellation fee of £10 is imposed. This amount must be paid before any further appointments can be made. Clients who cancel without appropriate notice and clients who do not attend for an appointment are billed for this amount. Payments can be made in the same way and are recorded in the payment ledger book (B – bill). The client details are recorded in a Non Attendance book. When the payment is made, the client name is crossed off. Sometimes clients manage to make further appointments in spite of having an outstanding fee to pay because the secretary does not remember. This is unsatisfactory and can lead to some embarrassment for the secretary who has to request payment before the appointment can proceed. Some clients actually claim that they have made the cancellation payment and this is even more difficult to deal with.

Janet is facing a range of issues that must be addressed to ensure that her business continues to be successful. She is aware that there is significant manual effort involved in all of the administrative processes associated with the business. She is also very aware that the only way she can obtain any useful management information is by physically looking through records and files. She cannot generate useful reports. She cannot track client history, money or stock. Janet has decided to seek advice!

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