



STUDENT NUMBER

Letter

Figures

Words

SOFTWARE DEVELOPMENT

Written Examination

Sample exam

Reading time: 15 minutes

Writing time: 2 hours

QUESTION AND ANSWER BOOK

Structure of book

<i>Section</i>	<i>Number of questions</i>	<i>Number of questions to be answered</i>	<i>Number of marks</i>
A	20	20	20
B	10	10	20
C	12	12	60
			Total 100

- Students are permitted to bring into the examination room: pens, pencils, highlighters, erasers, sharpeners, rulers, an approved graphics calculator (memory cleared) and/or one scientific calculator.
- Students are NOT permitted to bring into the examination room: blank sheets of paper and/or white out liquid/tape.

Materials supplied

- Question and answer booklet of 18 pages with detachable insert containing a case study for Section C in the centrefold.
- Answer sheet for multiple choice questions.

Instructions

- Remove the insert containing the case study during reading time.
- Write your **student number** in the space provided above on this page.
- Check that your **name** and **student number** as printed on your answer sheet for multiple-choice questions are correct, **and** sign your name in the space provided to verify this.
- All written responses must be English.

Students are NOT permitted to bring mobile phones and/or any other electronic communication devices into the examination room.

SECTION A – Multiple choice questions

Instructions for Section A

Answer **all** questions in pencil on the answer sheet provided for multiple-choice questions.

Choose the response that is **correct** or that **best answers** the question.

A correct answer scores 1, an incorrect answer scores 0.

Marks will **not** be deducted for incorrect answers.

No marks will be given if more than one answer is completed for any question

Question 1

NIC stands for

- A. Non Intel CPU
- B. Network Interface Card
- C. Non Internet Connecting
- D. Network Integrated Connect

Question 2

The stage of the Problem Solving Methodology in which an algorithm can be written is

- A. Design
- B. Analysis
- C. Evaluation
- D. Development

Question 3

A non functional requirement of a software solution is

- A. one that performs a task
- B. one that allows the user to enter data
- C. one that is related to the way the solution works
- D. one that requires the user to register the software

Questions 4 and 5 relate to the material below:

15	20	A5	3	C17	19	27	
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Question 4

The data structure shown above is

- A. a 1D array of strings
- B. a 1D array of integers
- C. a 2D array of integers
- D. a collection of numerical information

SECTION A – continued
TURN OVER

Question 5

The data structure shown could be used to implement

- A. a stack
- B. a database
- C. a testing table
- D. a user interface

Question 6

In a Use Case Diagram, a system boundary represents

- A. the confines of the system
- B. the physical size of the system
- C. what security methods are used
- D. how complex the new system will be

Question 7

Which of the following is **not** an example of qualitative data?

- A. Customer feedback on an item
- B. A list of possible improvements that can be made
- C. How many of an item has been purchased in March
- D. A video recording of employees performing their work

Question 8

How well a software solution responds to poor use or bad input is known as

- A. portability
- B. robustness
- C. user interface design
- D. non functional requirements

Question 9

Which of the following is **not** a component of an information system?

- A. data
- B. people
- C. procedures
- D. architecture

Question 10

Max finds some code on the Internet and decides to use it in a program that he has been contracted to write for an employer. On hearing about this, an appropriate response would be:

- A. to call the police as it is breaking the law
- B. to call Max's employer as it is an unethical act
- C. to notify the Federal Privacy ombudsman as it is a breach of Privacy
- D. to seek more information as it is unclear whether Max has sought permission or not

Question 11

TCP/IP is best described as:

- A. a method of communication
- B. a protocol used for packet transmission
- C. two protocols used for packets transmission on a network
- D. an item of network hardware that prevents unauthorised access

SECTION A – continued
TURN OVER

Question 12

A number of students are debating the merits of different programming languages that they are using. Habib says that the language that he is using is really easy to use as it performs iteration very simply. What does Habib mean by this?

- A. the language that Habib is using plays music
- B. the language that Habib is using repeats tasks easily
- C. the language that Habib is using tests conditions well
- D. the language that Habib is using contains very simple syntax

Questions 13 and 14 relate to the algorithm shown below:

Sub Calculate_BoostTemp

```
Read Tank_Temp
Boost ← False
Optimal_Temp ← 35
If Tank_Temp < Optimal_Temp and Boost = False Then
    Boost ← True
    Call Boost_Temp_Process
Else
    Display "Water is too hot – cooling now"
    Call Cooling_Process
End If
```

End Sub

Question 13

The variable 'Boost' is of type:

- A. String
- B. Integer
- C. Boolean
- D. Character

Question 14

When a desk check of the algorithm is performed with the 'Tank_Temp' set to '38' and Boost set to 'False', the result is:

- A. nothing happens
- B. Boost_Temp_Process is executed
- C. Cooling_Process is executed and cooling message displayed
- D. A water too hot message is displayed and Boost_Temp_Process is executed

SECTION A – continued
TURN OVER

Question 15

John is discussing a possible solution to a problem with his colleagues. He has decided that he wants to implement a data structure that will behave in a 'first in – last out' fashion but is unsure what sort of data structure will meet his needs. The data structure John is thinking of is:

- A. a stack
- B. an array
- C. a binary search
- D. a two dimensional list

Question 16

Julie has decided that it will be easiest if she uses the Tax File Number of her companies clients to organize data within a software solution she is creating. This is a breach of Privacy legislation because:

- A. the Tax File Number may not be known
- B. she should ask the permission of the clients first
- C. she is not allowed to use an external identifier for this purpose
- D. the Privacy legislation has a section specifically mentioning Tax File Numbers

Question 17

A VPN is

- A. a method of transfer
- B. a virtual technology for networking
- C. a method of providing a secure remote connection
- D. a network type that is wired in nature and on one site location

Question 18

Which of the filenames below best demonstrates the use of a file naming convention?

- A. Meeting
- B. Resume_Jack
- C. M_150310_GW
- D. VITTA_Committee_Minutes_231011

Question 19

Which of the following would be a criterion of effectiveness of a software solution?

- A. is it functional?
- B. is the output complete?
- C. is the information calculated quickly?
- D. is the software solution very easy to use?

Question 20

A threat to data within an organization can originate from:

- A. inside the organisation
- B. outside the organisation
- C. malware that is unintentionally introduced into the network
- D. all of the above

END OF SECTION A

SECTION B – Short-answer questions

Instructions for Section B

Answer **all** questions in the spaces provided.

Question 1

What is the OSI model?

1 mark

Question 2

Steve sends an email to some work colleagues of his in an attempt to sell them some items that he has imported from China and is selling via an Ebay store that he has established. Lucinda is cross that she has been sent the email from Steve and accuses him of sending her spam. Steve believes that he has not sent spam as he sent the email to less than 10 people and one of those that received the email bought some items and was very happy.

Discuss whether Steve has sent spam or not and what both Lucinda and Steve should do in this situation.

2 marks

Question 3

Collecting data about a system via observations has its advantages and disadvantages. List **one** advantage and **one** disadvantage of collecting data via observations.

2 marks

SECTION B – continued
TURN OVER

Question 4

From the table of characteristics of users shown below, describe how **three** can influence the design of a software solution.

User Characteristic	Description
Age	
Vision Impaired	
Language	
Education / Profession	
Experience	

3 marks

Question 5

Philip has decided to use on-line training for his staff of 12 as other types of training are too expensive for him to consider. List one advantage and one disadvantage of on-line training.

2 marks

Question 6

Joel and Mary are debating the merits of including internal documentation in a program they are writing that will only be used by them. Mary thinks that it will add too much time to include it. Give one reason why including internal documentation will be of benefit.

1 mark

SECTION B – continued
TURN OVER

Question 7

Jeremy has been programming a sort routine which is not working properly. Julie thinks that the problem is with the 'swap' algorithm that Jeremy has written which is shown below.

```
subroutine swap(item1, item2)
begin
    item1 ← item2
    item2 ← item1
end
```

- a. What is the general name for the variables 'item1' and 'item2' in the context of the subroutine?

1 mark

- b. Describe the error with the 'swap' algorithm as shown.

1 mark

- c. Write a new swap algorithm fixing the problem that you have identified.

1 mark

SECTION B – continued
TURN OVER

Question 8

Clive needs to access his computer at home while he is overseas. His original idea was to open some of the ports on his router to allow him access but you have some concerns about this.

a. What is a port?

1 mark

b. What could happen to Clive's computer if he leaves some ports open on his router?

1 mark

Question 9

Nhat and Monique are debating whether to use an incremental or differential backup procedure at their firm. Monique says that incremental backup is better as it is faster to restore and does not use much backup media, while Nhat says that differential backup is better as only two backups are needed for a full restore.

Who is correct and why?

2 marks

Question 10

Explain why it is logical to perform an existence check before a type check?

2 marks

END OF SECTION B

SECTION C – Case Study

Instructions for Section C

Answer **all** questions in the spaces provided.

Remove the case study and read **all** the information provided before you answer these questions.

Question

1

Lucy, a software developer, is beginning to examine what needs to be accomplished in constructing a software solution for Kevin's business. She has begun to plan out the tasks that will need to be completed, based on the Problem Solving Methodology. List the **two** tasks that Lucy has omitted from the list below.

1. What does Gilchrist Catering need?
2. Constraints and scope?
3. _____
4. Construct evaluation criteria for the software solution
5. Write the code (including validation)
6. _____
7. Document the software solution
8. How will the software solution be implemented?

2 marks

Question 2

Lucy intends to gather data on the system but is unsure of the best sources that she should use.

From each of the sources listed below, describe two types of relevant data that Lucy may be able to gather about the system.

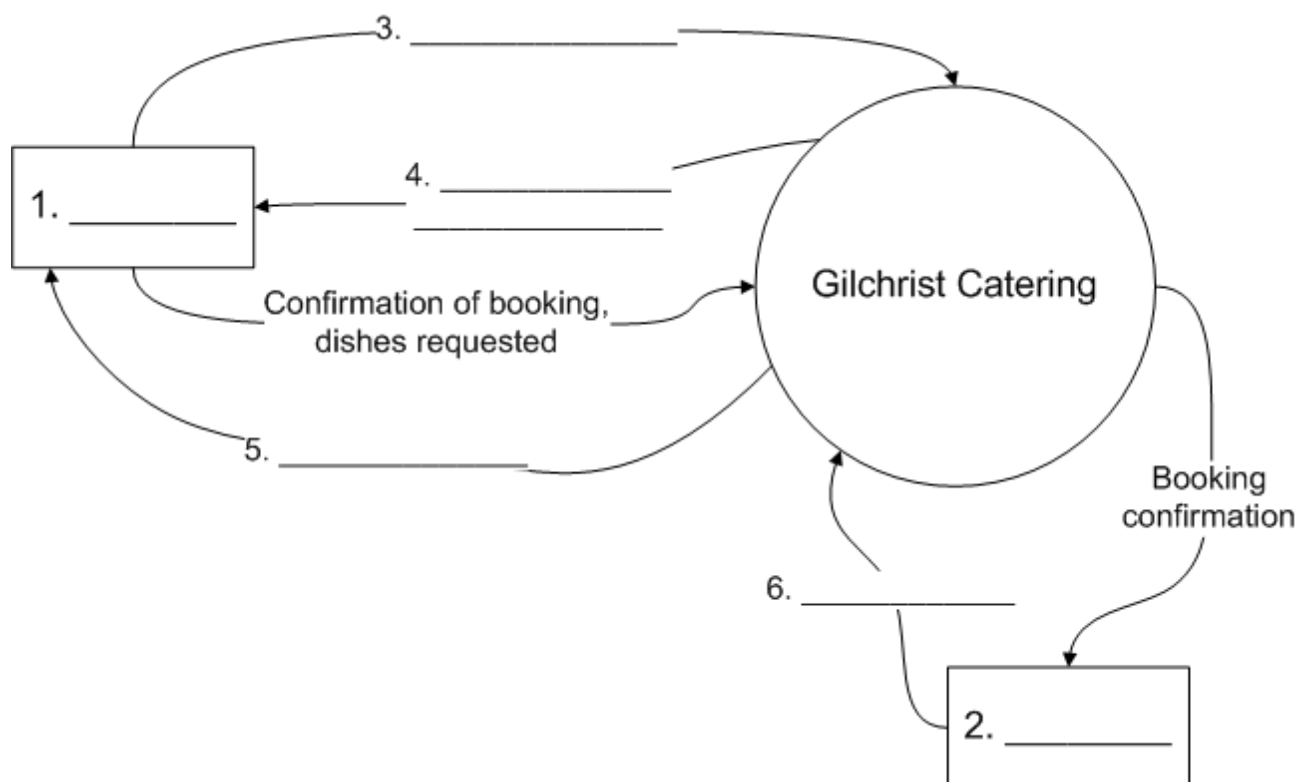
Sources of data	What Lucy may learn
Previous clients	1. 2.
Contract chefs	1. 2.
Kevin	1. 2.

6 marks

SECTION C – continued
TURN OVER

Question 3

Lucy begins to construct a context diagram to better understand the flow of data into and out of Gilchrist Catering. Her incomplete context diagram is shown below. Complete the context diagram by filling in the missing numbered labels.



6 marks

Question 4

Lucy sits down with Kevin and discusses her analysis of the current information system at Gilchrist Catering. Amongst the problems that Lucy has identified are the following:

1. It is only after a client confirms their booking, that Kevin checks the availability of chefs.
2. Kevin's chefs never receive a list of the dishes that they will be preparing for the event.
3. As ingredients can be used in a variety of dishes, they are often listed multiple times in the shopping list template.

For each of these problems, describe what the consequences currently are and propose a method of solving them.

	Current consequences	Proposed solution
1.		
2.		
3.		

6 marks

**SECTION C – continued
TURN OVER**

Question 5

Lucy decides that the best way for the software solution to operate is for Kevin (or one of his staff members) to enter the dishes and the number being catered for and for the software to then produce a shopping list for the client (which can be emailed or printed and sent). For the following items, identify the data type that should be used to represent them in the software solution.

Item to be represented	Data Type (Integer, Decimal, Boolean, String, Date/Time)
Recipe name	
Client has selected dish?	
Event date	
Event time	
Ingredient	
Ingredient unit quantity	

6 marks

Question 6

Lucy has begun to construct an algorithm for the adding together of all of the ingredients in the dishes that the client has selected, so that a shopping list can be created. Part of the algorithm that she has written is shown in the ‘extra material’ section following the case study.

- a. What type of data structure is ‘**Ingredient[Dish_Number, Ingredient_Count]**’?

1 mark

- b. In desk-checking this algorithm, Lucy has found that all of the ingredients are added to their total except the last one for each recipe. Which line of code is causing this to occur and what can Lucy do to fix this problem?

2 marks

- c. Lucy has also found that the algorithm does not cope with different amounts of ingredients from one recipe to another. For example, one recipe may require 1 egg while another may require 6 eggs per person. Identify the line of code that is responsible for this and describe a method that could be used to fix this.

2 marks

SECTION C – continued
TURN OVER

Question 7

The screen capture below represents a functional prototype that Lucy is working on. She is **not** concerned with the design of the user interface or validation at this stage. On clicking 'save', the program generates a text file in the client's name that contains a list of all of the dishes requested and a tally of all of the ingredients for their shopping list.

Client Recipe Manager

Client Name

Event date

Client address

Risotto Bianco
Meatballs with Pasta
Canapes
Sausage Rolls
Meat Pies
Pasties
Salmon Fingers
Lettuce Rolls
Fried Rice
Crab Cakes
Fishman's Delight
Lemon Tart
Liver Pate

listBox2

trash

save

Identify two pieces of information that are missing from the interface shown and explain why they need to be included.

Item 1: _____

Reason for inclusion: _____

Item 2: _____

Reason for inclusion: _____

4 marks

SECTION C – continued
TURN OVER

Question 8

Lucy needs to select a suitable mobile computing device that the chefs will take to each event that they are catering for. The devices will be preloaded with the courses that have been chosen for the event and the chefs will be able to cycle through them and view the recipes in detail.

From the list of characteristics of mobile computing devices listed below, select **four** and explain why the characteristic will be an important one for Lucy to include in her requirements of the device.

Wi-Fi, 3G, long battery life, touch screen, large display, in-built speakers, Bluetooth, light-weight, fast processor, internal HDD.

Characteristic 1: _____

Reason for choice:

Characteristic 2: _____

Reason for choice:

Characteristic 3: _____

Reason for choice:

Characteristic 4: _____

Reason for choice:

8 marks

SECTION C – continued
TURN OVER

Question 9

Lucy wants to ensure that the client receives a shopping list that is in sorted order. She is having a coffee with a friend of hers, Seamus, who says that she should code a quick sort routine to ensure that her software solution runs as efficiently as possible. Lucy disagrees and explains that she has planned to code a bubble sort, even though she knows that this is not the most efficient sorting algorithm available.

Discuss the merits of Lucy's decision over the suggestion from Seamus.

4 marks

Question 10

Kevin would like documentation to be created to support the software solution but is unsure of what forms it should take. He would however, like documentation produced for himself, the chefs that work for Gilchrist Catering and for his clients.

What form of documentation would suit each of these groups and what information would it contain?

Group	Form of user documentation	Information it would contain
Kevin		
Clients		
Chefs		

6 marks

SECTION C – continued
TURN OVER

Question 11

A friend of Seamus, Lindsay, hears about the project that Lucy is working on and thinks that it is a really good idea. Over coffee, Lindsay convinces Lucy that she should market the software solution as her own product once her work with Gilchrist Catering is concluded.

Discuss this idea with reference to any relevant legislation.

4 marks

Question 12

Lucy has devised a strategy to evaluate her software solution, but is determined to perform a complete quality assurance and acceptance testing process first.

a. What might acceptance testing involve in this case?

1 mark

b. Lucy has planned to begin the evaluation of the software solution one month after it has started being used. Why is this time period not appropriate?

1 mark

c. What would be a more appropriate period of time to wait before starting the evaluation?

1 mark

END OF QUESTION AND ANSWER BOOK


CASE STUDY INSERT

Please remove from the centre of this book during reading time.

Gilchrist Catering is a small catering firm that is run by Kevin Gilchrist, who has worked as a chef in some of Melbourne's best restaurants. He has established a catering firm that involves the hire of a chef for a function and the preparation of a menu from a selection of available dishes.

When a client contacts Gilchrist Catering, Kevin sends them a list of the available dishes and a 'fees and conditions' document that outlines how the process works and the fees. If the client wants to proceed, they contact Kevin once more and the date is booked (as long as Kevin has chefs that are available for the date in question and it is at least 1 week away). The client lets Kevin know which dishes they wish to have cooked during the event and he calculates the total time that the chef will be required and constructs a shopping list template that the client needs to fill in. The time taken to do this can be long (both for Kevin and the client) and the task is a tedious one.

The shopping list is constructed using a hard copy printed template that Kevin sends to the client. The template contains the dishes the client has already indicated to Kevin they want to have at their event. Below each dish is a unit quantity of each ingredient, which the client then multiplies by the number they wish to cater for – to construct their shopping list. An example of the shopping list template is shown below.



Gilchrist Catering!

Client template

Risotto Bianco (unit ~~quans~~ below):

100g Arborio Rice x = ..

10g Butter x = .

Pinch salt x = .

$\frac{1}{2}$ cup white wine x = .

10g Parmesan cheese x = .

1 litre chicken stock x =

TURN OVER

The courses for the event as well as the recipes for each will then be placed onto a mobile computing device that the chef will refer to.

END OF CASE STUDY INSERT

Extra material for Question 6

Below is a section of an algorithm that will calculate the total amounts of the ingredients that a client will need to purchase. Note that this is a part of an algorithm only and not a full algorithm.

```
While Client_Dishes > 0
    Read Dish_Number
    Ingredient_Count  $\leftarrow$  1
    Num_Ingredients  $\leftarrow$  Ingredients[Dish_Number]
    Repeat
        Next_Ingredient_Number  $\leftarrow$ 
            Ingredient[Dish_Number, Ingredient_Count]
        Client_Shopping_List[Next_Ingredient_Number]  $\leftarrow$ 
            Client_Shopping_List[Next_Ingredient_Number] + 1
        Ingredient_Count  $\leftarrow$  Ingredient_Count + 1
    Until Ingredient_Count = Num_Ingredients
End While
```



Sample Exam Paper: Solutions and Study Notes

SECTION A – Multiple choice questions

Question 1

Answer: B

Other options are not valid. Always try to eliminate those choices that do not make sense first.

Question 2

Answer: A

All 4 stages of the PSM are listed so no choices can be eliminated for this question. Writing an algorithm is part of the design process.

Question 3

Answer: C

Responses A and B are functional requirements and response D is silly.

Question 4

Answer: A

Notice that some of the data elements are strings while others are numbers. In this case, a string is the correct response as a string can store both alphanumeric characters and numbers.

Question 5

Answer: A

Question 6

Answer: A

Question 7

Answer: C

*One way to easily remember the difference between quantitative and qualitative data is to think of **quantities** for **quantitative** data. Qualitative data is descriptive data as opposed to numeric data.*

Question 8

Answer: B

There are a number of terms mentioned in the study design and the glossary that are very important to know the definition of. They can and will be used in the exam.

Question 9

Answer: D

Although a very small definition from early in the course, the definition of an information system is an important one as the term is used so often.

Question 10

Answer: D

It is not clear whether Max has broken the law or behaved unethically as there is simply not enough information. For all we know, Max has sought permission from the author of the code and included a statement of authorship in his own code.

Question 11

Answer: C

The main point of this question is to determine if you understand that TCP/IP is in fact a pair of protocols used for packet transmission. The term is often used as if there is only one protocol.

Question 12

Answer: B

Iteration is another word for repetition.

Question 13

Answer: C

Question 14

Answer: C

This question is simply a case of determining where the condition in the if statement is true or not.

Question 15

Answer: A

Question 16

Answer: C

Question 17

Answer: C

The emphasis with a VPN is on security.

Question 18

Answer: D

Question 19

Answer: B

Other options are efficiency based.

Question 20

Answer: D

SECTION B – Short-answer questions

Question 1

Answer: The OSI model is a model that describes the ways in which data moves between computers on a network.

Being a '1' mark question, only a very simple definition is required.

Question 2

Answer: Steve has sent spam to Lucinda as the email was an unsolicited sale promotion. Steve should allow those that he is sending the email to, to nominate not to receive these sorts of emails from Steve. Lucinda should notify Steve of her wish to not be contacted in this manner again – and Steve should make a note of this.

Not many marks, so only a short explanation needed.

Question 3

Answer:

Advantage: The observer may pick up habits or faults in the process that those performing the process may not be able to (or willing to) describe.

Disadvantage: The act of observing can change the way that those being observed act – and in this way an incorrect view of the system could be formed.

Question 4

Answer:

Age: Users may not be very experienced with 'modern' user interfaces, may have difficulty with fine motor skills and may have reading content presented in tiny fonts.

Vision impaired: Users could be colour blind or the software solution could be being designed for those who have very poor eyesight or are blind.

Language: Users may not speak English.

Education / Profession: A software solution for a certain profession may need to use professional terms in a certain context. At the other end of the scale, a software solution for early childhood use would need to have very simple language and be very visual.

Experience: Similar to age, experienced users will be used to particular ways of interfacing with a solution, whereas those that are new to computers, will need particular prompts and clear direction.

Question 5

Answer:

Advantage: employees can complete the training at a time convenient to them and at their own pace.

Disadvantage: some employees may not take it seriously and may skip content.

Question 6

Answer:

Internal documentation can very beneficial in the long term – as it is easy to forget what your intentions were with a section of code some months after writing it.

This question tries to address one of the biggest negative arguments against internal documentation – being: ‘if I am the only person going to read my code, then what use is internal documentaion’. In actual fact, it is very hard to read your own code some amount of time after you have finished or stopped working on it.

Question 7

Answer:

- a. parameters
- b. ‘item2’ is copied over ‘item1’ before ‘item1’'s value can be retrieved.\
- c.
temp \leftarrow item1
item 1 \leftarrow item2
item2 \leftarrow temp

A swap routine is a very common routine to write / use – especially when coding sorting algorithms.

Question 8

Answer:

- a. a port is a virtual access point through which information flows
- b. he could be susceptible to attack from outside if the port is not well (or correctly) managed

Question 9

Answer:

Making backups with an incremental backup is quicker as each backup (after the initial full backup) consists only of those changes since the last incremental backup. A differential backup is the quickest one to restore, as each differential backup consists of all the changes that have been made since the initial first full backup. To restore, the full backup is restored followed by the latest differential backup. Therefore Nhat is correct.

Question 10

Answer:

An existence check must be performed before a type check, otherwise there may not be any data on which to perform the type check at all.

SECTION C – Case Study

Question 1

Answer:

3. Design the software solution for Gilchrist Catering
6. Test the software solution (at GC and on location)

Both of these points are directly from the PSM and so students should be able to answer this question easily. As a general rule, students need to link all of their answers in Section C (in particular) to the case study. With a question like this one, it is difficult to do so – but students should still try to link their answer even if they simply mention the name of the company or name/s of key people involved.

Question 2

Answer:

Previous clients:

1. satisfaction with the communication / flow of data in general
2. accuracy of the shopping list and the ease of use of the list

Contract chefs:

1. Accuracy of the estimated time of events
2. communication within the system – flow of data

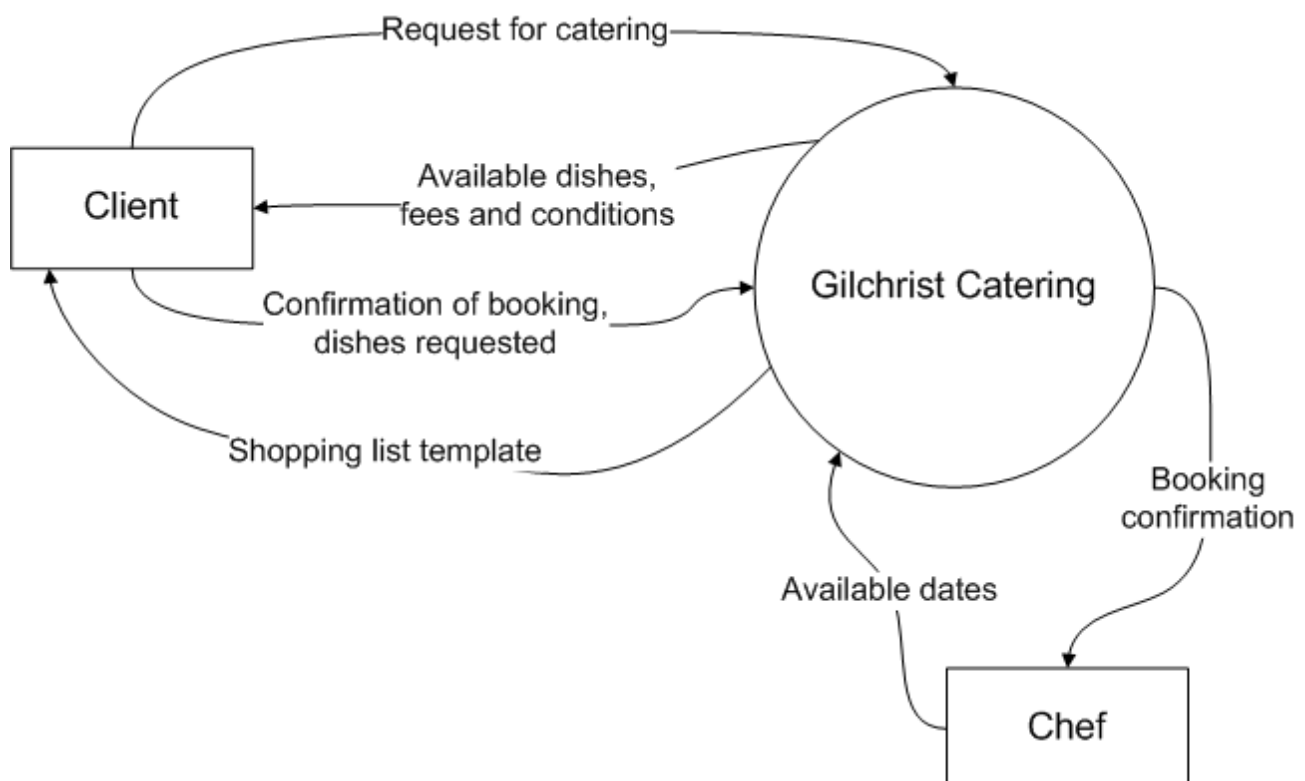
Kevin

1. complaints from chefs or clients about the system and the issues involved
2. difficulties in constructing the shopping list

There are other possible and acceptable responses for this question.

Question 3

Answer:



Exact wording on the data flows may vary slightly from what is shown above. There are certainly problems with this flow of data, but this tool is being used for analysis and so it is very important to only represent the data flows as described in the case study and not make any assumptions.

Question 4

Answer:

	Current consequences	Proposed solution
1.	Kevin may need to cancel the client's booking leading to very negative opinions of GC amongst the public.	Kevin should check and update his chef availability regularly and should notify clients of available days when they first call.
2.	Chefs may not be as familiar with some dishes as others – and may also have specialities. It may lead to some chefs feeling negative about their employment.	The list of dishes from the client should be sent to the chef as soon as it is received by Kevin.
3.	The client may find it very frustrating and may simply miss buying additional quantities of some ingredients as they have bought them for other dishes.	The proposed software solution should combine all like ingredients into a total that needs to be purchased.

6 marks

Common sense type question although it is seeing what your understanding of the case study / context diagram is. Once again, responses need to be very specific to the case study.

Question 5

Answer:

Recipe name: string

Client has selected dish?: Boolean

Event date: Date/Time

Event time: Date/Time

Ingredient: String

Ingredient unit quantity: Decimal (could also be string)

Often when examiners construct questions like this one, they give students a list of the types (as the names of these types vary from language to language). In general, the types used here are generally accepted to be well understood and have been used by the examiners before.

Question 6

Answer:

a. A 2D array

b. $\text{Ingredient_Count} \leftarrow \text{Ingredient_Count} + 1$

Although this line of code is (strictly speaking) not the cause of the error, the line does increment 'Ingredient_Count' just before the end of the loop which means that when the 'Ingredient_Count' is compared to the number of ingredients 'Num_Ingredients', it will indicate that these are equal when the last one has not yet been processed.

Lucy can fix this problem by setting Ingredient_Count' to '0' and moving the line of code above to just under the 'repeat' (that is, the start of the loop).

c. $\text{Client_Shopping_List}[\text{Next_Ingredient_Number}] \leftarrow$

$\text{Client_Shopping_List}[\text{Next_Ingredient_Number}] + 1$

Instead of adding '1', the program could add a variable based on another array that could hold the quantity needed of each ingredient for the recipe.

Question 7

Answer:

Item 1: A function to move a recipe out of the list (and back into the list of available dishes).

Reason for inclusion: At present, if the client makes a mistake in selecting their dishes, the only option available to them is to 'trash' the entire order (although the function of this button is not obvious).

Item 2: If 'listbox2' is going to be displaying the selected dishes (only) – which seems to be the case, then another box or list needs to display the ingredients that are being added up.

Reason for inclusion: This would also be useful as the client can get an idea of how much shopping they will need to do as they are working through the selection process.

Question 8

Answer:

Characteristic 1: 3G – as the devices will be used around a client's kitchen (moving with the chef), as they travel from function to function.

Characteristic 2: touch screen – a stylus may become lost in the kitchen.

Characteristic 3: large display – so that the chefs can easily view the recipes while standing (with the device resting on a bench). They need to be able to read them while using their hands to cook or mix ingredients.

Characteristic 4: light-weight – so that the chefs can easily move it around the kitchen as well as transport it with all of their other cooking utensils to and from functions.

Wi-Fi is not important as the devices will be used in non-work / non-home environments. It is unclear whether a client will have wi-fi and even if they do, it will be a bit presumptuous to ask to gain access to it.

Long battery life is not really a factor (although it is desirable) as the length of a function will typically be of the order of a few hours.

In-built speakers – nothing in the case study indicates that the recipes have audio – although again, have the facility for audio would be good in case they wish to do this in the future

Bluetooth – not needed.

Fast processor – again, desirable (always), but considering what the device will be doing – not essential.

Internal HDD – desirable yes, but the recipes could easily be accessed via a server or the cloud.

Question 9

Answer:

Lucy's decision to code a bubble sort is reasonable considering that the amount of data to be sorted is small and the time to sort it (compared to using a quick sort) will be negligible. Seamus is correct in saying that a quick sort is a better sorting routine – but while it is quicker, it is more complicated to code and the gains that will result will not be particularly visible.

Discuss is a keyword used by VCAA in higher order questions. When students encounter this keyword, they need to remember to relate both sides of the argument and not simply mention one. As a general rule, if there are two choices (and the question is 4 marks), then a correct response should really include the pros and cons of both choice (a single mark for each).

Question 10

Answer:

Kevin: Installation / quick start guide – Kevin will probably be setting up the mobile devices and so will need to know how to do this.

Clients: tutorial – how to enter choices of recipes, view totals of ingredients, print the shopping list (the process from start to end)

Chefs: online user guide – instructions explaining how to access the recipes, etc and use the menus

There are a few different options that could be selected for each of these categories of user. When marking this, you should be flexible – however there are obviously choices which are incorrect, such as a quick start guide for the chefs or a technical reference for the clients.

Question 11

Answer:

The question implies that Lucy is working under a contract for the task of producing this software solution. In this case, the product of her work belongs to Gilchrist Catering and Lucy cannot market the product as her own work at the conclusion of her contract. She would be breaking copyright law. However, Lucy does ‘own’ the intellectual property which consists of the ideas that she has used in coding the solution, and could create another solution using this knowledge – as long as it wasn’t exactly the same as the one that she coded for Gilchrist Catering. This would possibly be unethical – but would not be illegal.

Questions involving legislation only require a reference to the act by students – and not a quote from a specific clause (for example).

Question 12

Answer:

- a. In this case, acceptance testing would probably involved Kevin using and installing the software solution on a mobile device, some of the chefs using the recipe access features and perhaps some other employees (or friends of Kevin’s) acting as clients to test this aspect.
- b. One month is too short a time for the chefs (in particular) to get used to using the system. It would be a suitable time to evaluate the client usage – as clients will (more than likely) be using the system for the first time each time they use it (provided they are new clients).
- c. 3-6 months would be more appropriate – depending on how much the system is being used. If the chefs are mostly catering functions on weekends, it may be that they have only used the system 12 times in 3 months (for example).

a. You would never use actual clients to do acceptance testing in case the system was really bad – or exposed sensitive data.