



Semester 2 Examination, 2019

Question/Answer Booklet

COMPUTER SCIENCE ATAR Year 11 Units 1 & 2

Student Name: _____

Student Number:

Teacher's Name: Ms Radzi

Time allowed for this paper

Reading time before commencing work: 10 minutes

Working time for paper: 3 hours

Materials required/recommended for this paper

To be provided by the supervisor

This Question/Answer Booklet

To be provided by the candidate

Standard items: pens, pencils, eraser, correction fluid/tape, ruler, highlighters

Special items: non-programmable calculators satisfying the conditions set out by the Curriculum Council for this course

Important note to candidates

No other items may be taken into the examination room. It is **your** responsibility to ensure that you do not have any unauthorised notes or other items of a non-personal nature in the examination room. If you have any unauthorised material with you, hand it to the supervisor **before** reading any further.

Structure of this paper

Section	Number of questions available	Number of questions to be answered	Suggested working time (minutes)	Marks available	Percentage of exam
Section One: Multiple-choice	20	20	20	20	12
Section Two: Short Answer	20	20	80	70	44
Section Three: Extended answer	8	8	80	70	44
Total				160	100

Instructions to the Candidate

1. Answer the questions according to the following instructions.

Section One: Answer all questions on the Question/Answer Booklet. For each question, circle the letter to indicate your answer (either a, b, c or d). If you make a mistake, place a cross through that letter, do not erase or use correction fluid, and circle your new answer. No marks will be given if more than one answer is completed for any question.

Section Two and Three: Write your answers in this Question/Answer Booklet.

2. When calculating numerical answers, show your working or reasoning clearly unless instructed otherwise.
3. You must be careful to confine your responses to the specific questions asked and to follow any instructions that are specific to a particular question.

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SECTION ONE - MULTIPLE CHOICE 20 MARKS

Circle the letter of the best answer.

Question 1.**(1 mark)**

11010011₂ is an example of what type of number?

- a. Decimal number.
- b. Octal number.
- c. Binary number.
- d. Machine number.

Question 2.**(1 mark)**

Which of the following is a hexadecimal number?

- a. AS39.
- b. 1M4B.
- c. 90HJ.
- d. 3B9E.

Question 3.**(1 mark)**

Software licensing that allows the user to modify the code is known as

- a. Commercial.
- b. HTML.
- c. Open source
- d. Shareware.

Question 4.**(1 mark)**

Which of the following lists the order of program language evolution from lowest to highest?

- a. Assembler, non-procedural, procedural, object-oriented, machine code.
- b. Object-oriented, non-procedural, procedural, machine code, assembler.
- c. Machine code, assembler, object-oriented, non-procedural, procedural.
- d. Machine code, assembler, procedural, non-procedural, object-oriented.

Question 5.**(1 mark)**

The code below is an example of what programming language?

```
MOV EAX, 1
SHL EAX, 5
MOV ECX, 17
SUB EAX, ECX
```

- a. Assembler.
- b. Non-procedural.
- c. Object oriented.
- d. Procedural.

Question 6.**(1 mark)**

The following IF statement needs to be tested in a desk check.

```
If Number > 12 and Number < 18 then
    Output (Number)
End IF
```

The best set of test data to use for Number, so as to check the algorithm, is:

- a. 12, 13, 15, 19, 20.
- b. 12, 13, 14, 16, 18.
- c. 11, 12, 15, 18, 19.
- d. 14, 15, 16, 17, 18.

Question 7.**(1 mark)**

Which of the following is not an example of internal documentation?

- a. Leaving a blank line between inputs and calculations.
- b. Using logical names for variables and modules.
- c. Creating a user manual to explain how to install the software.
- d. Using comments to explain what the next section of code does.

Question 8.**(1 mark)**

A desk check (also known as trace table) is used to find what type of error?

- a. Compile.
- b. Logic.
- c. Runtime.
- d. Syntax.

Use the Visual Basic code below to answer questions 9 and 10.

```
Dim Length As Single
Dim Width As Single
Dim Area As Single
Dim TotalArea As Single
Dim Room As Integer

TotalArea= 0
For Room = 1 to 4
    Length = Inputbox ("Enter the length of room " & Room)
    Width = Inputbox ("Enter the width of room " & Room)
    Area = Length * Width
    TotalArea = TotalArea + Area
Next Room
Output ("The total area of the 4 rooms is " & TotalArea & " m2.")
```

Question 9.

(1 mark)

There is an error in writing the output statement in the VB Express code above. What should the correct output statement be?

- Msgbox ("The total area of the 4 rooms is " & TotalArea & " m².")
- Msgbox = ("The total area of the 4 rooms is " & TotalArea & " m².")
- Output ("The total area of the 4 rooms is ", TotalArea, " m².")
- Output = ("The total area of the 4 rooms is " & TotalArea & " m².")

Question 10.

(1 mark)

The source code given above includes examples of which control structures

- Repetition and assignment.
- Repetition and sequence.
- Selection and repetition.
- Selection and sequence.

Question 11.

(1 mark)

Two or more computers connected together so that they can share resources and data is known as what?

- shareware.
- bandwidth.
- SMTP.
- network.

Question 12.**(1 mark)**

What is the network protocol that describes how nodes access the network by first "listening" to see if the cable is free? If two nodes transmit data at the same time, a collision occurs.

- a. TCP/IP.
- b. SMTP.
- c. FTP.
- d. Ethernet.

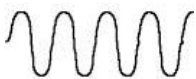


Question 13.**(1 mark)**

In networking there are a number of different types of communication media. A list of wireless communication media is

- a. cellular, microwave, fibre optic.
- b. twisted pair, cellular, fibre optic.
- c. satellite, Bluetooth, microwave.
- d. twisted pair, coaxial cable, fibre optic.

Question 14.**(1 mark)**

Which diagram shows an analogue transmission signal?

- a. 
- b. 
- c. 011001010100
- d. 

Question 15.**(1 mark)**

In networking there are a number of different types of communication media. A list of **wired** communication media is

- a. cellular, microwave, fibre optic.
- b. twisted pair, cellular, fibre optic.
- c. satellite, Bluetooth, microwave.
- d. twisted pair, coaxial cable, fibre optic.

Question 16.**(1 mark)**

Advantages of using a wired network instead of a wireless network include the wired network is:

- a. faster and more portal.
- b. faster and more secure.
- c. more secure and portal.
- d. easier to set up and cheaper.

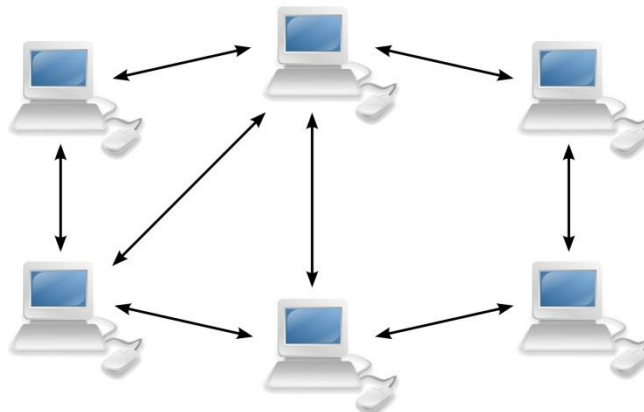
Question 17.**(1 mark)**

Antivirus software

- a. needs to be installed only when your computer is connected to the network.
- b. needs to be installed once you have detected a virus on your computer.
- c. needs to be updated regularly to ensure protection from newly created viruses.
- d. works quickest when you have installed four antivirus programs from different companies.

Question 18.**(1 mark)**

The diagram below shows what type of network architecture?



- a. Peer to peer.
- b. Client - server.
- c. Client - client.
- d. Peer to server.

Question 19.**(1 mark)**

The maximum amount of data that can be transmitted over a network during a given time is known as:

- a. frequency.
- b. broadband.
- c. twisted pair.
- d. bandwidth.

Question 20.**(1 mark)**

The code below is a sample of high level language written as:

```
Private Sub btnGreetings_Click(ByVal sender As System.Object, ByVal e As System.EventArgs) Handles btnGreetings.Click
    'Declare variables and data types
    Dim Name As String

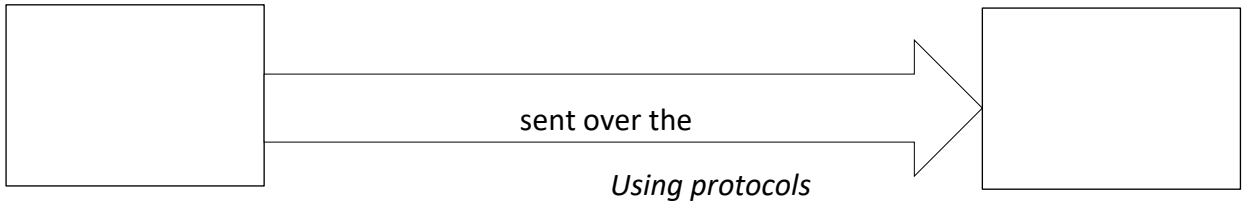
    Name = InputBox("Enter your name")
    MsgBox("Hello " & Name & ", I hope you have a lovely day!")
End Sub
```

- a. Executable code.
- b. Machine code.
- c. Pseudo-code.
- d. Source code.

SECTION TWO - SHORT ANSWER 70 MARKS

Question 21. (4 marks)

Complete the diagram below to show the interaction of components in a communication system.



Question 22. (3 marks)

Fill in the term that would be the most appropriate for each description.

Description	Term
A set of computer programs that controls the hardware and acts as an interface with application programs.	
Software downloaded at no cost that requires some payment to be registered for continued use. Users are encouraged to pass the unregistered version on to their friends.	
A set of rules for exchanging data between two computers. For example: TCP/IP	

Question 23. (2 marks)

Describe each of the following communication networks.

Wide Area Network (WAN)

Personal Area Network (PAN)

Question 24.

(1 mark)

How does encryption provides security of information over the Internet.

Question 25.

(4 marks)

For each of the following examples of software, indicate whether it is an “application” or “operating system” or “utility”.

Software example	Software Type
<i>Linux</i>	<i>Operating system</i>
Windows 10	
Microsoft Access	
Minecraft	
Norton AntiVirus 2019	

Question 26.

(3 marks)

Complete the table below by writing in the most appropriate communication protocol for each definition. The first one is done for you.

Protocol	Definition
<i>HTTPS</i>	<i>Protocol developed with secure, safe Internet transactions</i>
	A standard for the exchange of program and data files across a network
	A protocol for accessing information over a mobile wireless network, no matter what type of wireless technology is being used
	A data transmission format used to send and receive e-mail

Question 30.

(5 marks)

List an example of an activity that would be completed in the following stages of the software development process.

Stage	Activity
State the problem	
Plan and design	
Develop	
Test	
Evaluate	

Question 31.

(3 marks)

Identify the **error type** for each of the situations: The first one has been done for you.

Situation	Error type
<i>The program will not compile</i>	<i>Syntax/compile</i>
Entering 2m instead of 2, which causes the program to stop	
Instead of displaying $3 + 10 = 13$, the program displays $3 + 10 = 30$	
Source code is missing a closing bracket in a msgbox statement	

Question 32.

(3 marks)

Give an example of a variable that could be used to store a value with each data type listed in the table below. The first one has been done for you.

Data type	Example
<i>Boolean</i>	<i>Response</i>
Integer	
String	
Currency	

Question 33.**(8 marks)**

In the table below, explain the programming terms and give an example of each using the pseudo-code.

Module CalculateTotalPassed

TotalPassed \leftarrow 0

For Student \leftarrow 1 to 15

 Input(TestScore)

 If TestScore \geq 50 then

 TotalPassed \leftarrow TotalPassed + 1

 End If

End For

 Output(TotalPassed)

End Module

Initialisation statement _____

Example:

Variable _____

Example:

Control structure _____

Example:

Output statement _____

Example:

Question 34.

(5 marks)

Desk check the following algorithm using the test data: 6, no; 9, no; 18, no; 45, yes.

Module CalculateTotalSales

TotalSalesValue \leftarrow 0

Repeat

Input (SaleValue)

TotalSalesValue \leftarrow TotalSalesValue + SaleValue

Output("Have you finished entering sales yet?")

Input (Response)

Until Response = "yes"

Output (TotalSalesValue)

End Module

Question 35.

(4 marks)

Name 4 high-level programming languages.

Question 36.**(2 marks)**

What is the difference between a low-level programming language and a high-level programming language?

Question 37.**(2 marks)**

Define secondary storage and give an example.

Question 38.**(4 marks)**

Complete the following table to describe the characteristics of different transmission media.

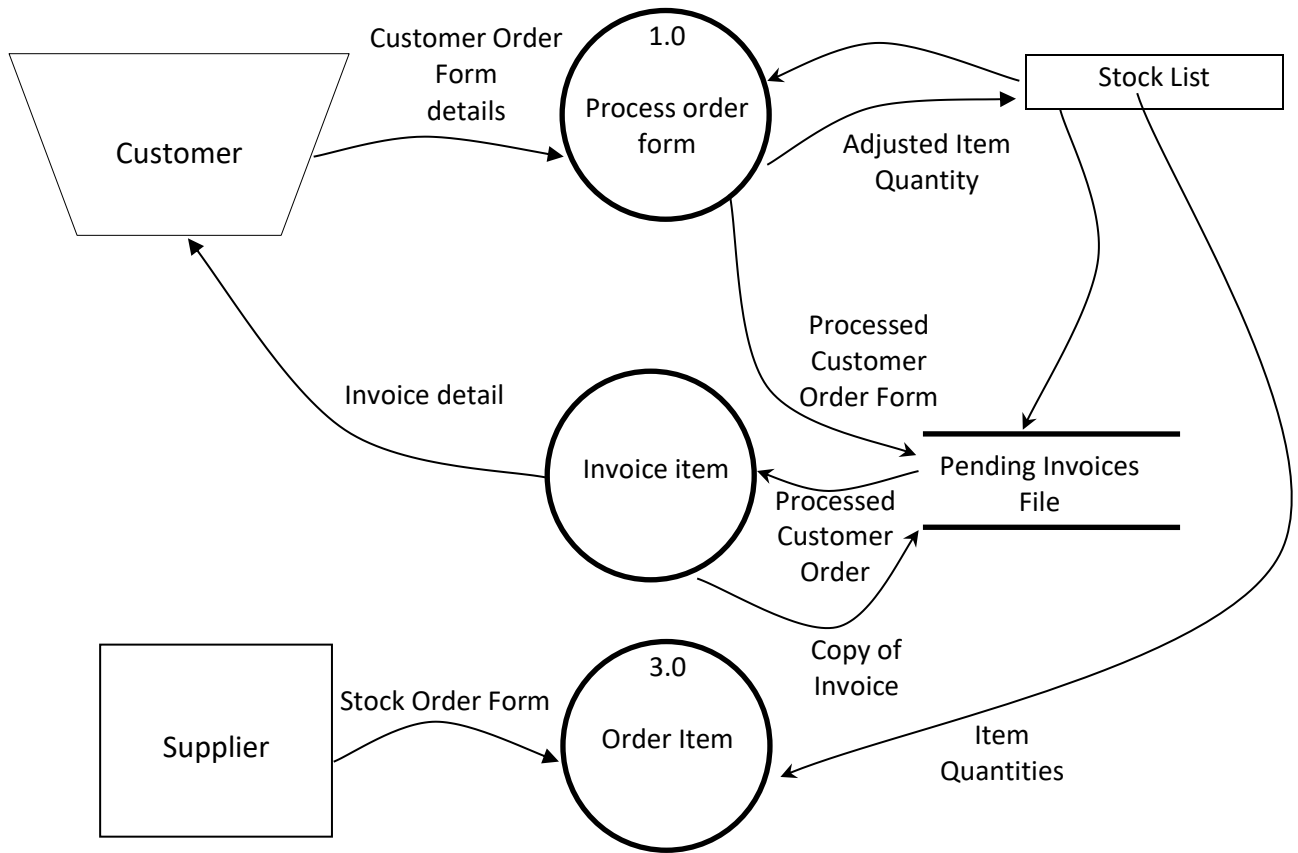
Media name	Description
Satellite	
	A type of cable that consists of two independently insulated wires twisted around one another. The use of two wires twisted together helps to reduce <i>noise</i>
Fibre optic	
	A broadcast radio form that is used widely for mobile phone communications.

Question 39.

(6 marks)

Identify 6 errors in the following Data Flow Diagram.

Level 0 Data Flow Diagram



Error 1:

Error 2:

Error 3:

Error 4:

Error 5:

Error 6:

Question 40.**(4 marks)**

List down the steps to complete a project in project management..

i. _____

ii. _____

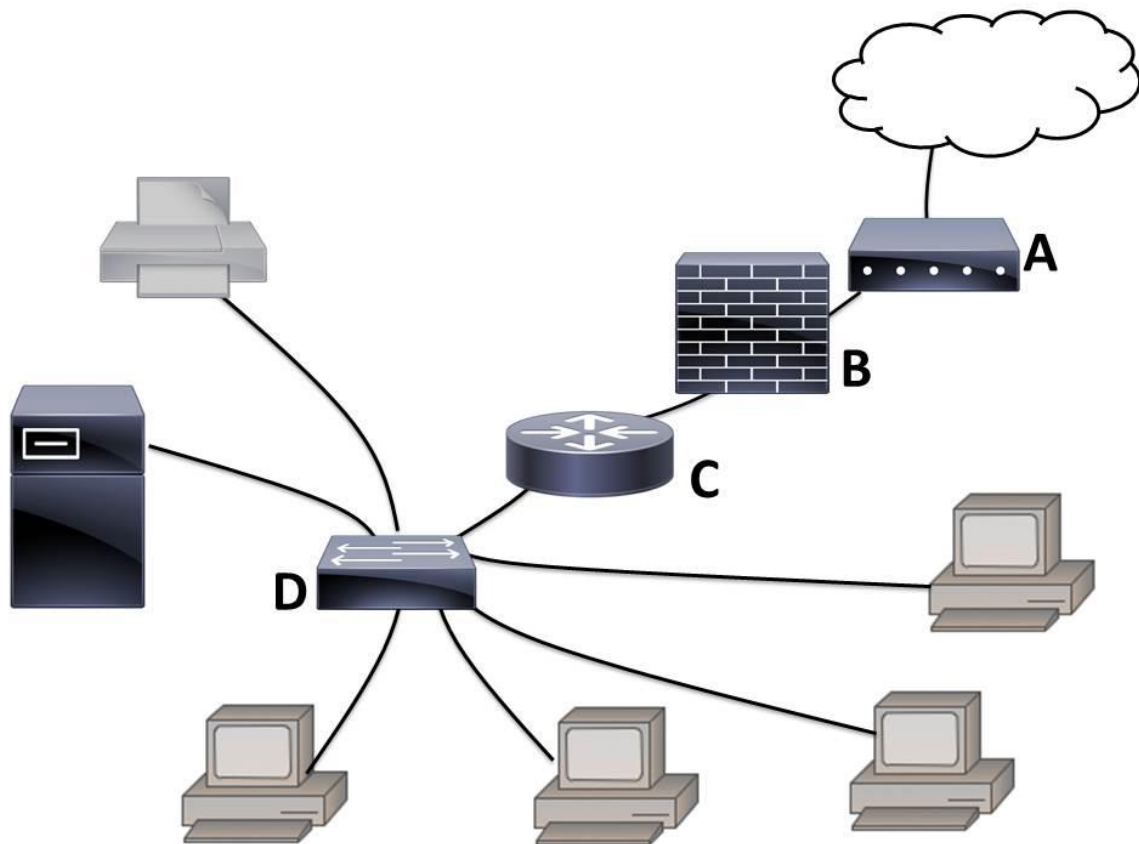
iii. _____

iv. _____

SECTION THREE - EXTENDED ANSWER 70 MARKS

Question 41. (15 marks)

Morley Accountant is a small accounting business located in Morley Galleria. It currently has the following network layout.



a. (3 marks)

Complete the table below by entering the names of each of the labelled devices shown in the network diagram. The first one has been done for you.

Label	Device Name
A	<i>Modem</i>
B	
C	
D	

b. (3 marks)

State the function of each of these devices. The first one has been done for you.

Label	Function
A	<i>Converts a computer's digital signal into an analogue signal needed for transmission over the standard telephone line (and vice versa).</i>
B	
C	
D	

c. (1 mark)

Currently the business uses a wired network. Describe **one advantage** of using unshielded twisted pair (UTP) rather than a wireless medium.

d. (1 mark)

Describe **one disadvantage** of using unshielded twisted pair (UTP) rather than a wireless medium.

e. (1 mark)

The business wants to replace 2 desktop computers with 2 wireless laptops. What extra device will need to be purchased so that the laptops can connect to the file server and printer?

f. (6 marks)

Redraw the network diagram to show the new **layout of the altered section of the network** based on Question 41e above.

Question 42.

(20 marks)

Morley Accountant needs to guard itself from the malicious software. It has two methods of data protection applied to its business. Answer the following questions:

a. (2 marks)

Describe two ways that the company could use to prevent their computer from being infected by a virus.

b. (4 marks)

Describe each of the following malware:

Virus

Worm

Trojan

Spyware

c. (1 mark)

What is data protection?

d. (4 marks)

Name and describe the two main methods of data protection?

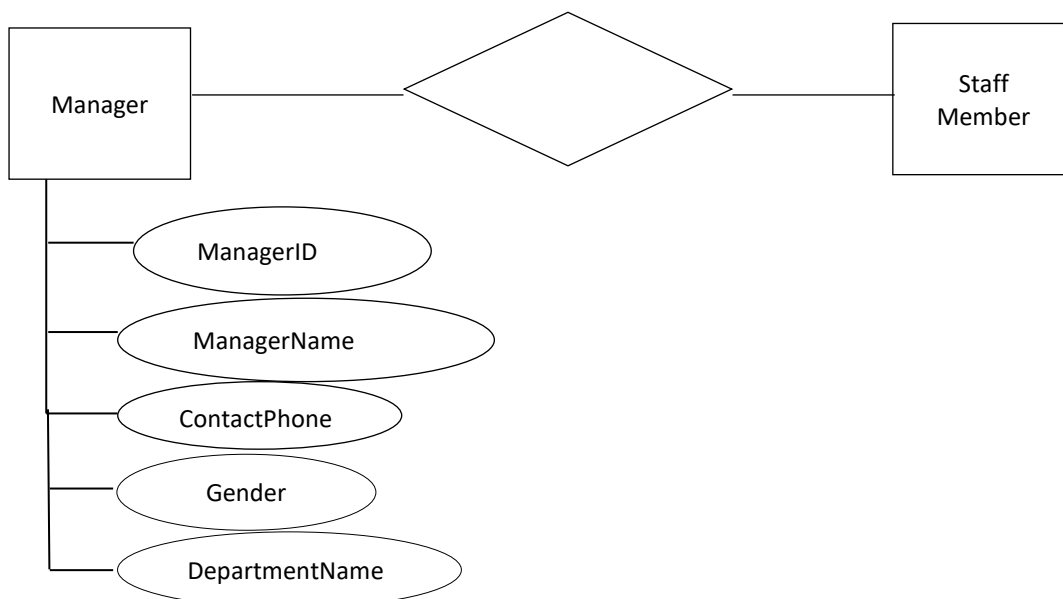
Method 1: _____

Method 2: _____

e. (5 marks)

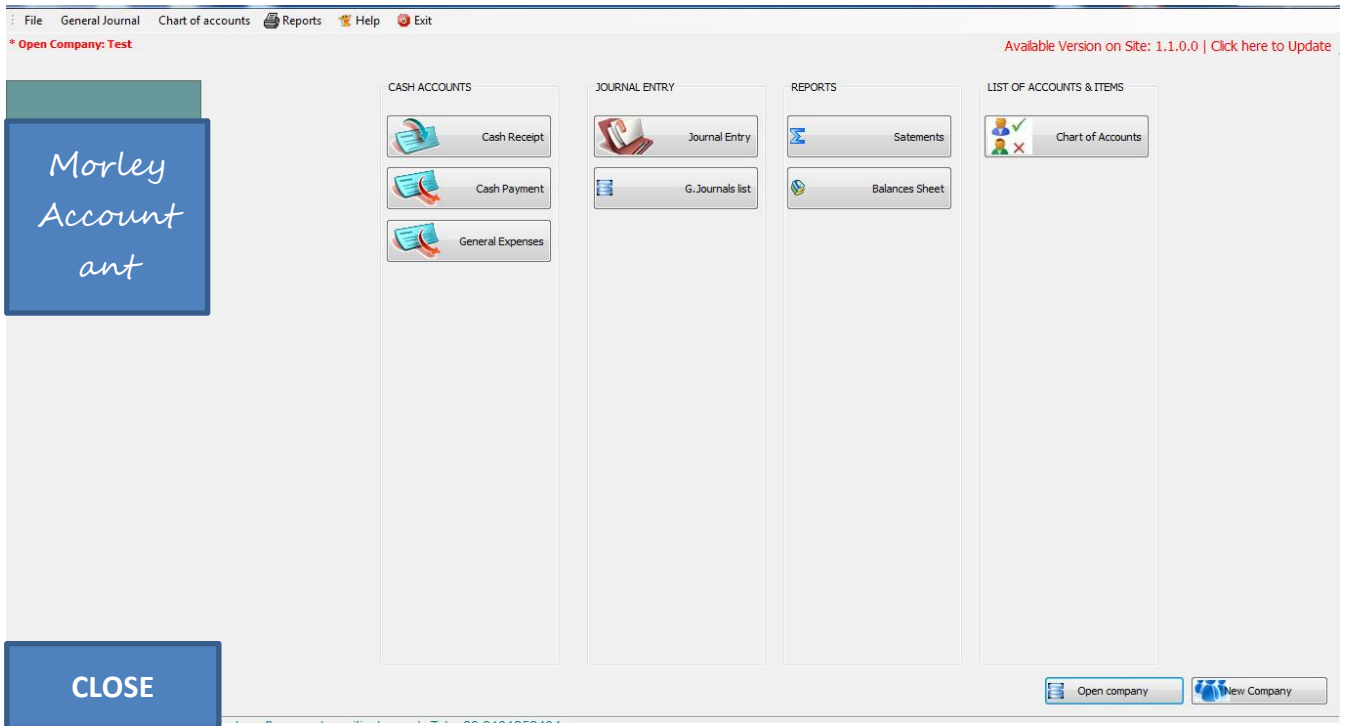
Complete the ERD to show a manager in Morley Accountant manages many staff members but the staff member only has one manager. You will need to add:

- The relationship and cardinality
- Add a primary key to Staff Member entity
- Two more attributes for each Staff Member entity
- Underline the primary keys
- Add the foreign key



f. (4 marks)

Below is a screen capture of Morley Accountant software.



i. Describe 2 features you like about the user interface design. (2 marks)

Feature 1:

Feature 2:

ii. Describe 2 features that **should be improved** with the user interface design. (2 marks)

Feature 1:

Feature 2:

Question 43. (6 marks)

Look at the following database that has 2 tables in it. Both tables have its own primary key. However, tblPlayer has a foreign key as well called ClubIDFK. Answer the following questions based on the database below.

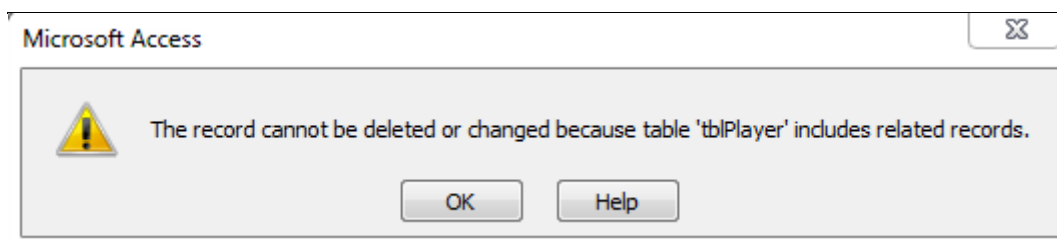
tblClub								
ClubID	ClubName	ClubStreet	ClubSuburb	ClubPostCode	ClubPhone	ClubFax	ClubIDFK	ClubStatus
1	Willetton	234 Holmes Rd	Willetton	6155	94571234	94574321		
2	Bentley	54 Marquis St	Bentley	6102	93505678	93509876		
* (New)								

tblPlayer								
PlayerID	Title	FirstName	Surname	HomePhone	WorkPhone	DOB	ClubIDFK	ClubStatus
1	Mr	Frank	Zaparelli	94581234	93212345	3/07/1977	1	
2	Mr	Adam	Hammer	94576721	92287822	7/10/1988	1	
* (New)								

- a. (1 mark)
Can you edit the number for PlayerID?

- b. (1 mark)
What happens to the data type AutoNumber when a record is deleted?

- c. (2 marks)
Explain why AutoNumber an efficient data type for entering ID numbers/primary keys?



- d. (2 marks)
Explain why you cannot delete the Bentley club from tblClub.

Question 44.

(4 marks)

Write an algorithm that will ask the user to enter the number of chocolates required then calculate and display the total cost of the chocolates. A chocolate costs \$3.75.

Question 45.

(5 marks)

Write an algorithm which will accept a height in centimetres and outputs that height in terms of metres and centimetres.

For example: 237 cm = 2 m and 37 cm.

Question 47.**(4 marks)**

Write an algorithm in pseudo-code asking the user to enter the number of days that they will be on holidays. Calculate the number of weeks and days and display a message showing the number of weeks and days. (4 marks)

Example: 23 days would be 3 weeks and 2 days

Hint: Use MOD and DIV

Question 48.**(8 marks)**

Convert the following pseudo-code to a flowchart on the next page. The first line has been done for you.

Module CalculateChocolateCost

Input (BoxCost)

Input (NumChocsInBox)

Input (NumStudents)

If NumStudents MOD NumChocsInBox = 0 then

 NumPacks \leftarrow NumStudents DIV NumChocsInBox

Else

 NumPacks \leftarrow (NumStudents DIV NumChocsInBox) + 1

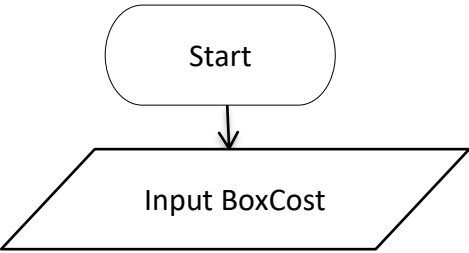
End If

TotalCost \leftarrow Numpacks * BoxCost

Output (TotalCost)

End Module

Flowchart:



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ANSWERS/ROUGH WORKING**

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