

Computing Science
2021-2022

perfectpapers

Higher PAPER B

1. An algorithm is used in a program as follows.

```
Line 30 SET size TO LENGTH(values)
Line 31 SET counter TO 0
Line 32 RECEIVE target FROM (INTEGER) KEYBOARD
Line 33 FOR elements FROM 0 TO size DO
Line 34     IF values[elements] = target THEN
Line 35         SET counter TO counter + 1
Line 36     END IF
Line 37 END FOR
```

(a) Name the standard algorithm shown above.

Count occurrences **(1 mark)**

(b) Explain the purpose of Line 30.

Calculates the size of the array values **(1 mark)** so that the algorithm can loop from the start to the end of the array **(1 mark)**

2. A criminal gang have attacked the systems of a security company. During the attack, the gang obtained the security plans for a bank which they plan to steal from.

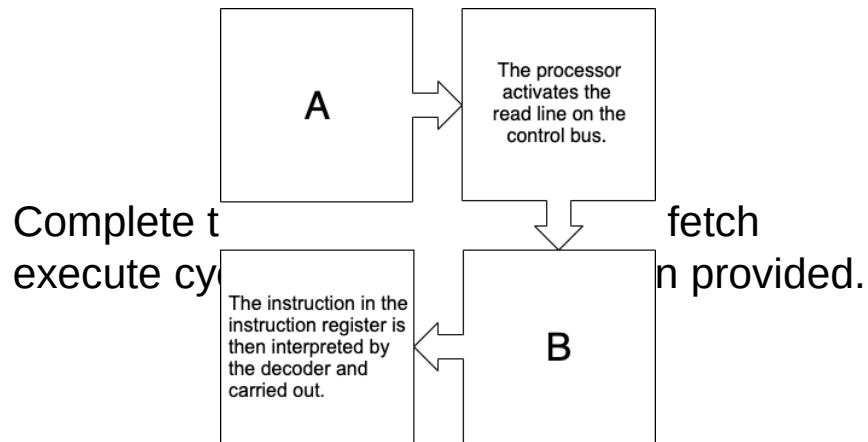
Identify the offence that has been committed according to the Computer Misuse Act 1990.

unauthorised access with intent to commit a further offence **(1 mark)**

3. Convert the following denary number into 8-bit two's complement.

4. An instruction to be executed is held in memory location 8211.

Some of the steps required to fetch and execute this instruction are shown below.



1001 1010 **(1 mark)**

A. The processor sets up the address bus with the address 8211. **(1 mark)**

B. An instruction is fetched from the memory location 8211 using the data bus and stored in the instruction register **(1 mark)**.

5. A digital certificate is used when securing data transmission through encryption.

State the purpose of a digital certificate in encrypted data transmission.

6. The decimal number 12.875 converted to binary is 1100.111

Convert 1100.111 to floating point representation. There are 16 bits for the mantissa (including the sign bit) and 8 bits for the exponent.

A digital certificate contains the public key of the digital signature **(1 mark)**

It confirms that the digital signature is legitimate (belongs to the entity it is associated with) **(1 mark)**

Mantissa:

Sign-bit: 0 **(1 mark)**

Remaining 15 bits:

1100 1110 0000 0000 **(1 mark)**

Exponent: 0000 0011 **(1 mark)**

7. A Scottish Candidate Number (SCN) is used to identify candidates sitting examinations. It consists of eight integers followed by an integer check digit.

Scottish Candidate Number: 11023021 4

When an SCN is entered into a computer system, the check digit is calculated and compared to the one entered as part of the number. If the two match, then the SCN has been entered correctly.

The check digit is calculated by multiplying each digit by a weight and adding it to a total. The modulus of total divided by 11 is then subtracted from 11 to give the check digit. For example:

Digit	Weight	Example SCN	Digit x Weight
1	3	1	3
2	2	1	2
3	7	0	0
4	6	2	12
5	5	3	15
6	4	0	0
7	3	2	6
8	2	1	2

The total of the digit x weight column is 40.

40 divided by 11 gives a remainder of 7 (the modulus).

$11 - 7 = 4$, 4 is the check digit.

(a) Using a programming language of your choice, write code to show how the modulus of total divided by 11 would be calculated and stored in result.

SET result = total MOD 11

1 mark for use of modulo operator

An array, called scn, is used to store the digits of a Scottish Candidate Number ,as shown below. The last digit in the array is the check digit.

	1	2	3	4	5	6	7	8	9
scn	0	7	0	1	6	1	4	0	0

The weights used to calculate the check digit are also stored in an array.

	1	2	3	4	5	6	7	8
weight	3	2	7	6	5	4	3	2

(b) Using a design technique of your choice, design a solution that will calculate the check digit for an SCN and then check this against the one entered.

The program should display a message with the SCN stating if it is valid or not e.g.
070161400 is a valid SCN

- Initialise total and message string
- Loop for each element in array (not check digit)
- Multiple by weight and add to total
- Generate SCN to display
- Check digit validated and suitable message sent to display.

1 mark each bullet, max 5 marks

```
SET total TO 0
SET scnText TO ""
FOR place FROM 1 TO 8 DO
    SET total TO total + scn[place] * weight[place]
    SET scnText TO scnText + scn[place]
END FOR
scnRemainder = total MOD 11
checkDigit = 11 - scnRemainder
IF scn[9] = checkDigit THEN
    SEND scnText + " is a valid SCN" TO DISPLAY
ELSE
    SEND scnText + " is NOT a valid SCN" TO DISPLAY
END IF
```

(c) A focus group is held with candidates who make use of the SCN to sit exams. The output of the focus group is to inform a software development project to make examination results and personal data more accessible.

The group have been discussing the requirements of a new system.



Use the information above to identify an input, a process and an output in terms of functional requirements.

Inputs (any one from below for 1 mark)

Login information

Enter personal information

Select to download results

Select to view qualifications

Processes (any one from below for 1 mark)

Update personal information

Create download file of results

List all qualifications

List incomplete qualifications

Output (any one from below for 1 mark)

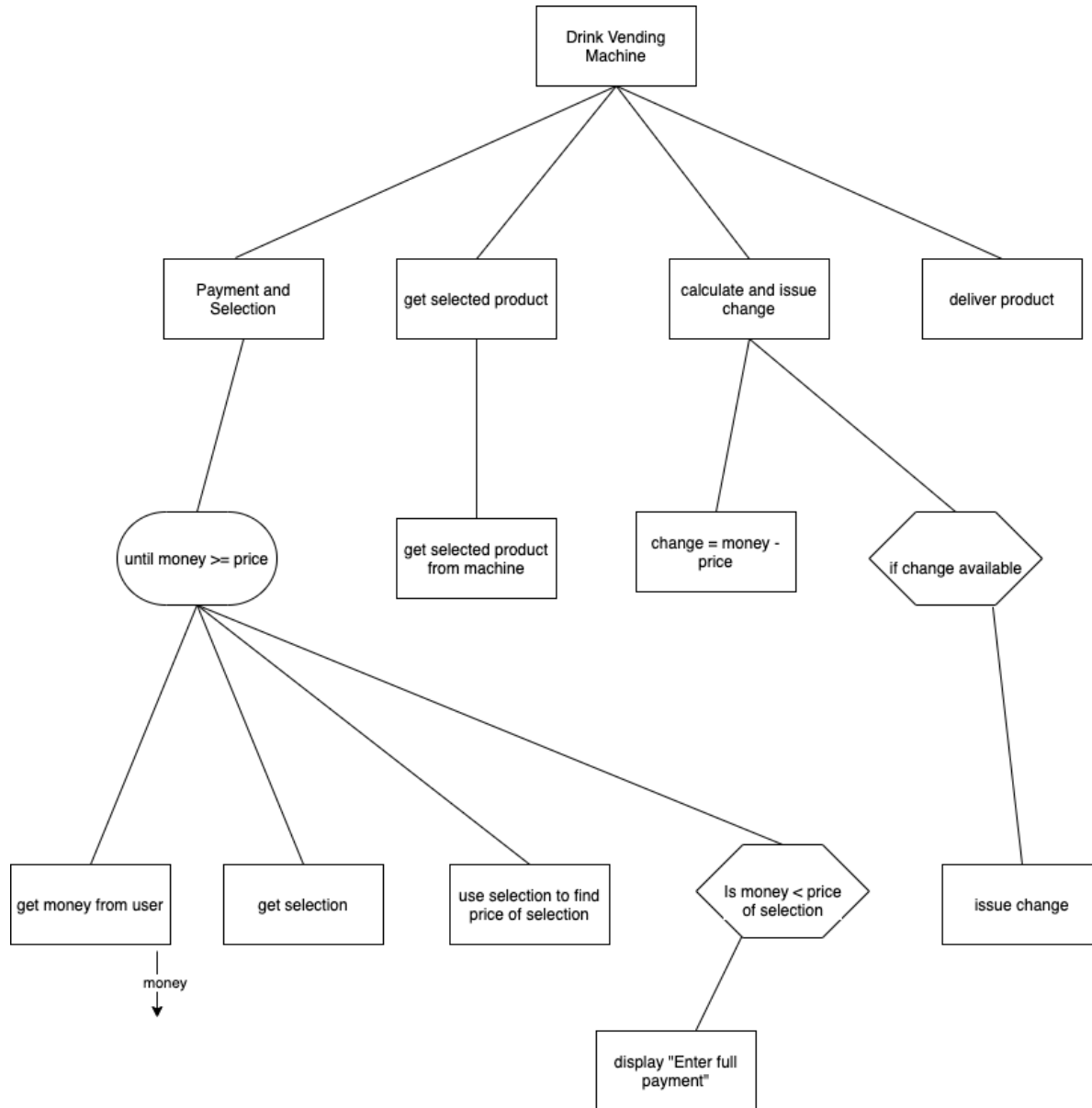
Confirmation of updated personal information

Download file

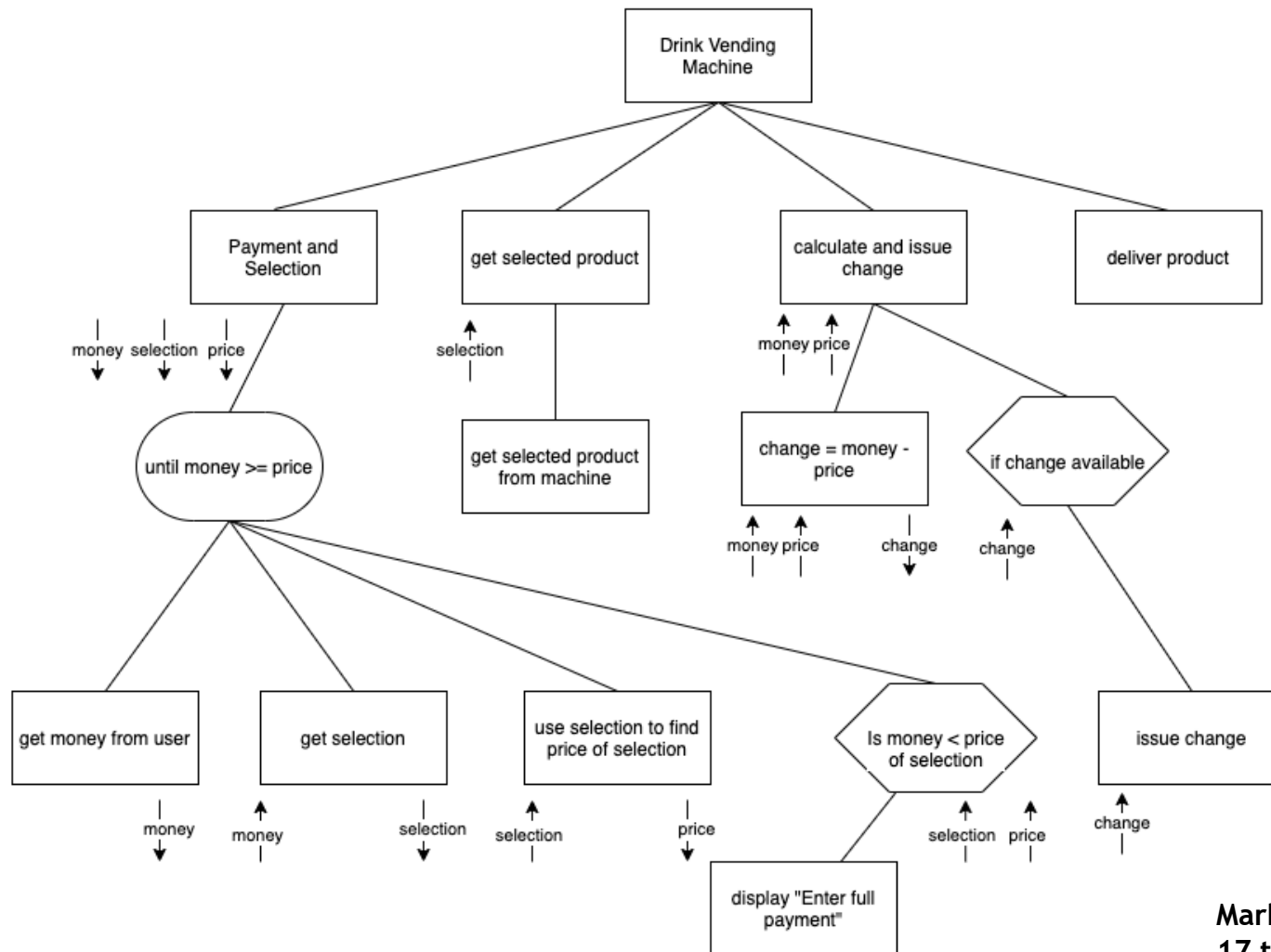
Display all qualifications

Display incomplete qualifications

8. The software for a drinks vending machine has the following design.



(a) Mark all data flows on the diagram above. The first one, money passed out from the step get money from user, has been done for you.



Marks awarded for correct data flows:

17 to 18 data flows - 5 marks

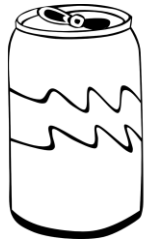
15 to 16 data flows - 4 marks

13 to 14 data flows - 3 marks

11 to 12 data flows - 2 marks

9 to 10 data flows - 1 mark

(b) The machine holds the details of products.



Product: Citrus Spring
Selection: D8
Price: 1.70
Stock: 12

(i) The details of a product are held in a record structure.

Using a programming language of your choice, define a suitable record data structure for the data above.

(ii) Using a programming language of your choice, define the variable which can store the details of 40 products held in the vending machine. Your answer should use the record data structure created in part (i).

```
RECORD drink IS {  
    STRING product,  
    STRING selection,  
    REAL price,  
    INTEGER stock  
}
```

1 mark for use of record structure

1 mark for correct data types.

Max 2 marks

```
DECLARE drinks AS ARRAY OF drink * 40
```

1 mark for array of record from (i)

1 mark for correct size of array

(c) Use selection to find price is a module from the structure diagram.

Using your data structures from (b)(i) and (b)(ii) and a design technique of your choice, design an efficient solution to find the price of a drink based on the selection entered.

If the selection is not found the price should be set to -99.

1 mark for use of conditional loop

1 mark for suitable condition in loop using OR (or equivalent)

1 mark for IF statement to match selection

1 mark for setting price

1 mark for setting price to -99 if not found

```
SET counter TO 1
SET found TO False
REPEAT
    IF selection = can.selection THEN
        SET found TO True
        SET price TO can.price
    END IF
    SET counter TO counter + 1
UNTIL found OR counter > 40
IF found = false THEN
    SET price TO -99
END IF
```

(d) A programmer, in the team writing the software has suggested that Unicode should be used to store the details of the selections available. Another programmer in the team says they should use Extended ASCII.

Explain why using Unicode may not provide any benefit when compared with Extended ASCII for this program.

Unicode provides support for a wider range of characters **(1 mark)** but those characters are not required in this program so Extended ASCII is sufficient to meet the requirements **(1 mark)**

OR

Unicode generally uses 16-bits whereas Extended ASCII is 8-bit, **(1 mark)** Unicode would increase the storage requirements for the program when compared with Extended ASCII **(1 mark)**.

9. Adcord is an online discussion forum that allows players of computer games to chat together in different rooms. The rooms are named after computer games. Details of which players are members of which rooms are stored in a text file. The number of times that a player has commented in each room is also stored.

Part of the file is shown below.

```
jaarnial@optonline.net,Control,79
jaarnial@optonline.net>HelloEngineer,100
jaarnial@optonline.net,Driver2,30
melnik@optonline.net,OneHundredDays,5
scarolan@hotmail.com,Driver2,17
scarolan@hotmail.com>HelloEngineer,24
scarolan@hotmail.com,Control,81
jugalator@verizon.net,Control,27
jugalator@verizon.net,Driver2,19
...
```


(a) The data will be stored in parallel 1D arrays.

Using a programming language of your choice, declare parallel 1D arrays that can store 5000 of these room memberships.

(b) The memberships of rooms are stored in a file called 'adcord.csv'. Using a programming language of your choice, show how this file would be opened.

Three arrays of 5000 elements **(1 mark)**

Email (String), Room (String) and Comments (Integer) **(1 mark)**

OPEN "adcord.csv"

Command to open file **(1 mark)**

Use of filename **(1 mark)**

(c) During development of the online forum software, a programmer wants to join two strings together. The operator for this is & but the programmer types the following:

```
fullname = firstname $ secondname
```

State the type of error that has occurred.

Syntax error **(1 mark)**

(d) The online forum software displays a rank for users based on the number of comments they have posted. A function for this purpose is shown below.

```
Line 55      FUNCTION userRank(INTEGER comment) RETURNS STRING
Line 56          IF comment < 100 THEN
Line 57              SET Rank TO "Bronze"
Line 58          ELSE
Line 59              IF comment > 100 AND comment < 200 THEN
Line 60                  SET Rank TO "Silver"
Line 61              ELSE
Line 62                  SET Rank TO "Gold"
Line 63              END IF
Line 64          END IF
Line 65          RETURN Rank
Line 66      END FUNCTION
```

(i) Complete the trace table using the test data shown.

	comment	Rank
Line 55	87	
Line 65		

	comment	Rank
Line 55	350	
Line 65		

	comment	Rank
Line 55	100	
Line 65		

	comment	Rank
Line 55	87	
Line 65		Bronze

	comment	Rank
Line 55	350	
Line 65		Gold

	comment	Rank
Line 55	100	
Line 65		Gold

1 mark for 87, 350
1 mark for 100

(ii) A comment value of 100 should return "Silver". Amend line 59 so that it functions as expected.

IF comment >= 100 AND comment < 200
THEN

(1 mark)

10. A “smart home” makes use of sensors and automation to manage heating, lighting, door locks, alarms and media devices such as speakers and televisions.

(a) The “smart home’ is managed by a computer system.



8 Core Processor

3.2 GHz Clock Speed

To improve system performance there are two options available. One is to increase the number of processor cores to 16 and the other is to increase the clock speed to 6.4 GHz.

(i) Describe an advantage of increasing the number of cores for the processor operating the smart home.

By increasing the number of cores, the system will be able to run more sets of instructions, at the same time **(1 mark)**

allowing it to operate more linked devices **(1 mark)**.

(ii) Compare the performance of a processor with 16 cores and a clock speed of 3.2 GHz with a processor of 8 Cores and a clock speed of 6.4 GHz.

(b) The smart home keeps a record of the temperature in the home based on readings that it takes every 5 minutes. These readings are stored in an array called temp.

temp	16.5	20.2	19.5	...	20.5	21.2	19.8
------	------	------	------	-----	------	------	------

There are 480 readings in a day.

Using a recognised design technique, design an algorithm to find the maximum temperature reading for a day.

A processor with 16 cores has additional core management to carry out **(1 mark)** so a processor with double the clock speed and 8 cores will likely be faster as it has less core management to do **(1 mark)**.

```
SET tempMax to temp[1]
FOR index = 2 TO 480 DO
    IF temp[index] > tempMax THEN
        SET tempMax TO temp[index]
    END IF
NEXT index
```

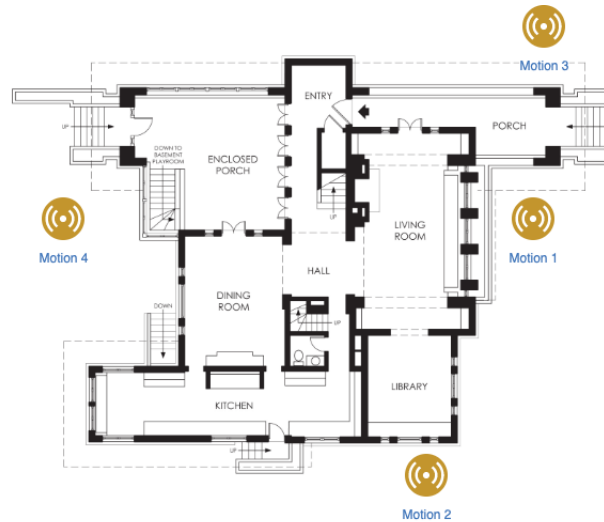
1 mark for initialise maximum

1 mark for looping through array

1 mark for comparison

1 mark setting new max if required

(c) The smart home monitors security sensors around the home.



The following code is used to monitor the security system.

```
FUNCTION activateAlarm() RETURNS BOOLEAN
  DECLARE motion1 AS BOOLEAN INITIALLY FROM <Motion 1 sensor>
  DECLARE motion2 AS BOOLEAN INITIALLY FROM <Motion 2 sensor>
  DECLARE motion3 AS BOOLEAN INITIALLY FROM <Motion 3 sensor>
  DECLARE motion4 AS BOOLEAN INITIALLY FROM <Motion 4 sensor>
  IF motion1 AND motion2 AND motion3 AND motion4 THEN
    SET activateAlarm TO True
  ELSE
    SET activateAlarm TO False
  END IF
  RETURN activateAlarm
END FUNCTION
```


Evaluate this code in terms of fitness for purpose.

The code requires that motion be detected at all the sensors before activating the alarm **(1 mark)**

This is not fit for purpose as the alarm should be sounded when any one of the motion sensors is try (OR rather than AND) **(1 mark)**

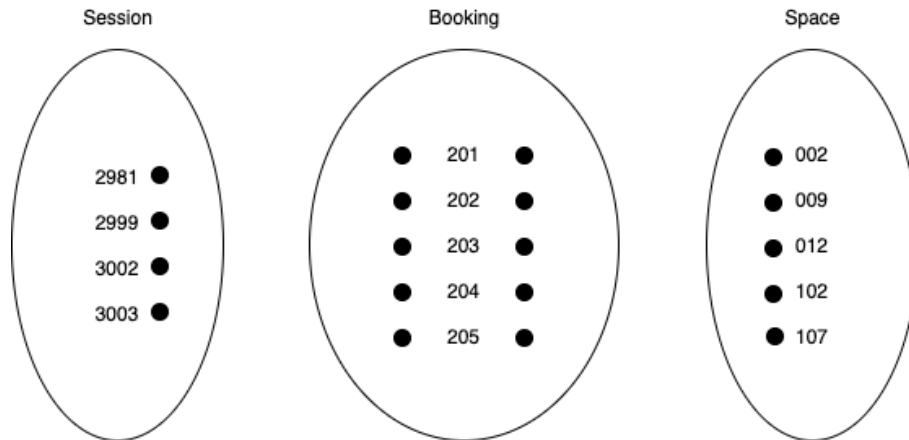
11. A system makes use of the following data.

Session		
SessionID	SessionTime	SessionDay
...	...	...
2981	10:00 – 10:50	Thursday
2999	11:00 – 11:50	Thursday
3002	12:30 – 13:20	Thursday
3003	16:00 – 17:00	Friday
...	...	...

Space		
SpaceID	SpaceName	Equipment
...	...	...
002	Weights Room	Kettlebells
009	Weights Room	Sandbells
012	Spin Studio 1	Cycles
102	Gym 1	Treadmill
107	Gym 2	Elliptical
...	...	...

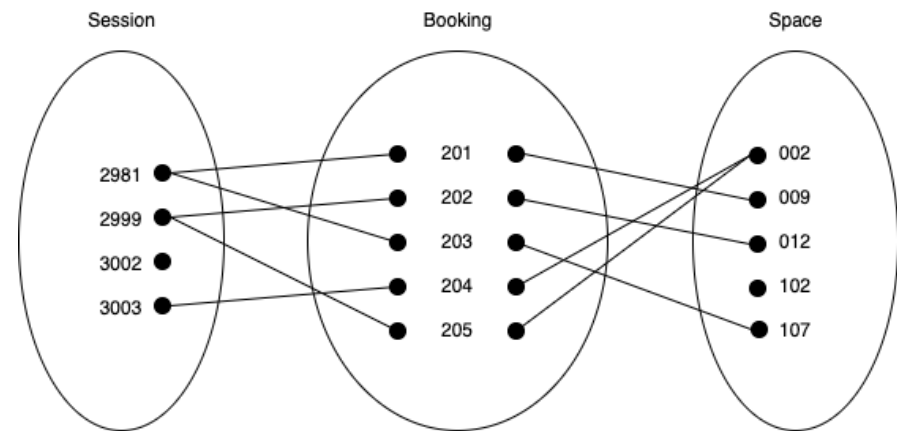
Booking		
Booking ID	SessionID	SpaceID
...	...	...
201	2981	009
202	2999	012
203	2981	107
204	3003	002
205	3003	107
205	2999	002
...	...	...

(a) Complete the entity-occurrence diagram below for the data provided above.



Occurrences mapped correctly from from Booking to Session **(1 mark)**

Occurrences mapped correctly from Booking to Space **(1 mark)**



(b) State the relationship between:

Session and Booking

Space and Booking

- Session and Booking: 1:M
- Space and Booking: 1:M

1 mark for each bullet, max 2 marks

12. A database table is shown below.

Product			
productName	category	price	quantity
PRIME TRX40-PRO	Motherboard	129.00	3
ROCK TRX40-PRO	Motherboard	189.99	2
ROG STRIX TRX30	Motherboard	103.50	2
AMD Ryzen 9 5900 X	Processor	499.99	1
AMD Ryzen 7 5800 X	Processor	480.00	1
Intel Core i9 S2066	Processor	539.99	2
Intel Core i5 S1066	Processor	230.99	4
ASUS Radeon RX 6900	Graphics Card	1799.99	2
ASUS Radeon RX 6800	Graphics Card	1099.99	1
ASRock Radeon RX	Graphics Card	744.98	2

Complete the table below showing the expected output from the following SQL statement.

```
SELECT category, MAX(price) AS  
'Most Expensive'  
FROM product  
WHERE quantity >=2  
GROUP BY category
```

category	Most Expensive
Graphics Card	1799.99
Motherboard	539.99
Processor	189.99

**2 marks for each correct row,
If 2 rows correct, then 1 mark
Otherwise, 0 marks**

13. A vet uses the following database about pets and their owners. Each pet has a unique microchip, which can be scanned if the pet is lost or stolen and then found. Where pets are insured by an insurance company, this is also stored.

Pet						
PetID	Name	Species	ChipID	Sex	Dob	OwnerID
668	Fluffy	cat	979603	f	2013-04-02	828
669	Claws	cat	324818	m	2014-03-17	828
670	Buffy	dog	782401	f	2019-05-13	830
671	Fang	dog	607059	m	2010-08-27	831
672	Bowser	dog	715053	m	2019-08-31	827
673	Chirpy	bird	508514	f	2020-11-09	828
674	Whistler	bird	584264	f	2020-09-12	828
675	Slim	snake	988321	m	2021-04-29	831
...	...	...	...	...	...	...

Microchip		
ChipID	MobileNumber	Status
979603	07700 900829	Lost or Stolen
324818	07700 900829	Not Lost or Stolen
782401	07700 900966	Not Lost or Stolen
607059	07700 900945	Not Lost or Stolen
715053	07700 900912	Not Lost or Stolen
508514	07700 900829	Not Lost or Stolen
584264	07700 900829	Not Lost or Stolen
988321	07700 900945	Lost or Stolen
...	...	...

Owner		
OwnerID	Firstname	Lastname
827	Harold	Walters
828	Gwen	Wilson
830	Benny	Hill
831	Diane	Keaton
...	...	...

InsuredPets	
PetID	InsuranceID
668	3
670	2
671	3
673	4
675	4
...	...

Company	
InsuranceID	Company
1	Direct Pet
2	Safe Care
3	MyPet.com
4	Direct Pet
...	...

(a) Draw an entity relationship diagram to show the relationships that exist in this database.

Your answer should show the entity names and cardinality. Attributes are not required on the diagram.

1 mark for each correct named relationship:

Microchip 1:1 Pet

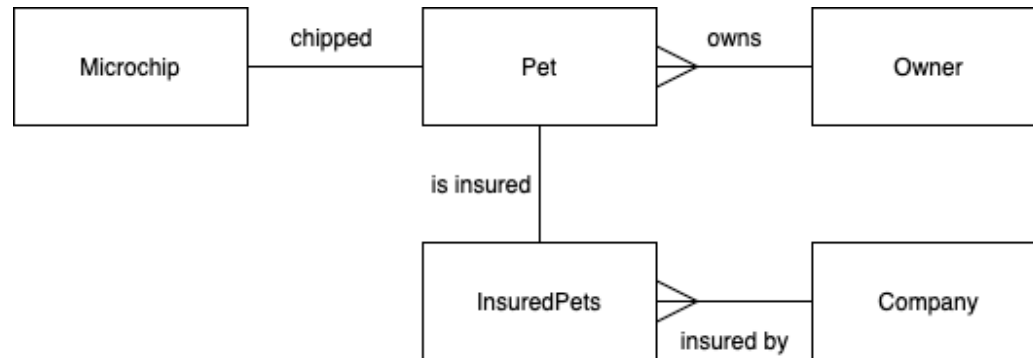
Owner 1:M Pet

Pet 1:1 InsuredPets

Company 1:M InsuredPets

All present without relationships named, 2 marks

All entities included must be named



(b) A list of pets with their insurance company is used by the vet.

Write the SQL statement to produce the output shown below.

Name	Company
Fluffy	MyPet.com
Buffy	Safe Care
Fang	MyPet.com
Chirpy	Direct Pet
Slim	Direct Pet

```
SELECT Pet.name,company.Company
FROM Pet, InsuredPets, Company
WHERE Company.InsurancelD =
InsuredPets.InsurancelD AND Pet.PetID =
InsuredPets.PetID
```

1 mark for FROM with three tables

1 mark for 1 EQUI-JOIN

1 mark for second EQUI-JOIN with AND

(c) A report is required to show the status of cats.

Status	Number of Pets	Species
Lost or Stolen	1	cat
Not Lost or Stolen	1	cat

The following SQL statement is executed.

```
SELECT Microchip.Status,  
SUM(Microchip.Status), Pet.Species  
FROM Microchip, Pet  
WHERE Microchip.ChipID =  
Pet.ChipID AND  
pet.Species = "cat"
```

When tested, the actual output did not match the expected output.

Identify the three errors in the above SQL Statement.

Error 1: Aggregate function used should be COUNT **(1 mark)**

Error 2: Alias of 'Number of Pets' not included for COUNT **(1 mark)**

Error 3: GROUP BY Microchip.Status is missing from statement, **(1 mark)**

Correct query is

```
SELECT Microchip.Status,  
COUNT(Microchip.Status) AS 'Number of  
Pets', Pet.Species  
FROM Microchip, Pet  
WHERE Microchip.ChipID = Pet.ChipID AND  
Pet.Species = "cat"  
GROUP BY Microchip.Status
```

14. A shop called "Digital Life" has a website that allows customers to place orders for the products the shop sells.

Details entered are stored in a relational database.

The shop owners can see the totals of sales for their products, see the value of orders that customers are placing and view their top customers. Customers can view each of the orders they have placed.

(a) State two functional requirements of the relational database.

- Report on total sales by product
- Report on value of orders
- Report on value of orders sorted by customer totals.
- Customer can view their own orders

1 mark each bullet, max 2 marks

(b) Some data stored in the database is shown in the four tables below.

customers				
custID	email	name	address	postcode
1	sally@happyshop.com	Sally Reid	3 Ebony Way, Dundee	DD6 7TQ
2	hamish@scottidog.net	Hamish McLeod	The Manse, Fordoun	AB16 1AW
3	azam@warmmail.org	Azam Mohamad	56 Walker Street, Edinburgh	EH54 1FD
4	const@lambwool.com	Constance Yule	12C Port Street, Inverness	IV23 7JD
...	...	...	...	...

orders		
orderNo	custID	orderDate
1001	1	2021-11-01
1002	2	2021-11-01
1003	3	2021-11-02
1004	2	2021-11-02
...	...	...

orderdetails			
orderdetailsID	orderNo	pID	quantity
1	1001	271	1
2	1001	321	1
3	1002	347	3
4	1002	341	1
5	1003	340	1
6	1004	300	2
...	...	...	...

products		
pID	product	price
271	Panda Pro 6 Phone	840.99
300	Panda 6 Phone	599.99
321	Panda Ear Buds	99.99
340	Digital Life Cam	179.99
341	Digital Life Doorbell	179.99
347	Panda Wifi	89.99
...	...	...

(i) When calculating the total for each order, the following data is calculated.

orderNo	price	quantity	LineTotal
1001	840.99	1	840.99
1001	99.99	1	99.99
1002	89.99	3	269.97
1002	179.99	1	179.99
1003	179.99	1	179.99
1004	599.99	2	1199.98
...	...	...	...

Design a query to produce this result.

Field(s) and calculations(s)	orderNo, price, quantity (price * quantity) AS "LineTotal"
Table(s)	orderdetails, products
Search criteria	
Grouping	
Sort Order	orderNo ASC, LineTotal DESC

1 mark for fields with calculation

1 mark for alias

1 mark for correct tables

1 mark for sort order

(ii) The total for each order is calculated and displayed as follows.

orderNo	custID	Order Total
1001	1	940.98
1002	2	449.96
1003	3	179.99
1004	2	1199.98
...	...	...

Design a query to produce this result.

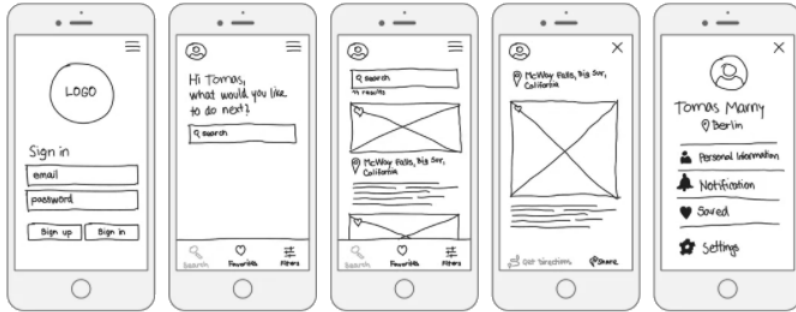
Field(s) and calculations(s)	orderdetails.orderNo, customers.custID, SUM(quantity * price) As 'Order Total'
Table(s)	customers, orders, orderdetails, products
Search criteria	
Grouping	Orderdetails.orderNo
Sort Order	

1 mark for SUM(quantity * price) with other fields

1 mark for four tables

1 mark for grouping

15. A low-fidelity prototype for a new social media site has been created.



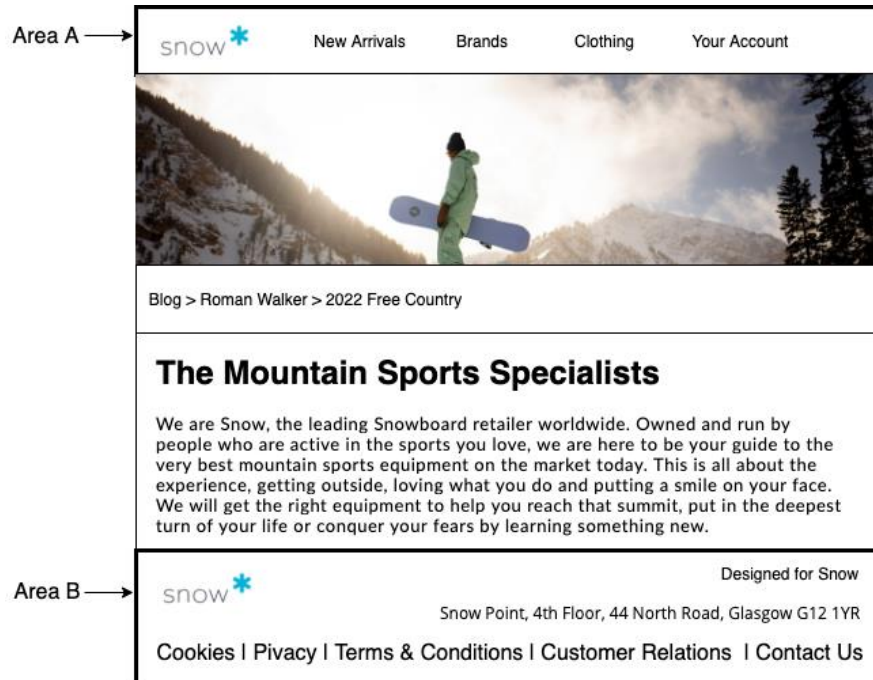
Describe how this prototype will be used to carry out usability testing.

Any of the following:

- Provide scenario/give prospective users a task to perform
- Observe users
- Receive feedback
- Identify problems with navigation eg missing/orphan pages/ hyperlink destinations
- Record difficulties or improvements needed

1 mark for each bullet, max 2 marks

16. A web page has been created using HTML elements to define areas of the page.



State the HTML element which have been used for area A and area B.

Area A: nav

Area B: footer

1 mark each, max 2 marks

17. Some HTML from a web page is shown below.

```
<h2>Guardians of the universe</h2>
```

This heading is to be blue and float to the left.

Rewrite the HTML above to include inline CSS code to format the text as required.

```
<h2 style="color: blue; float:left;">Guardians  
of the universe</h2>
```

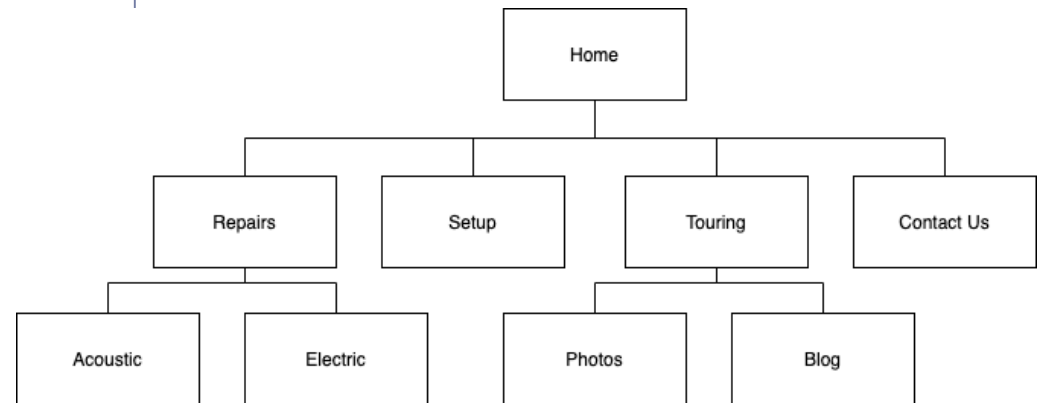
1 mark for use of style property

1 mark for CSS rules

18. Guitar Tech Ltd is developing a web site. The website will be multi-level, consisting of a home page and pages for each of the following: Repairs, Setup, Touring, Contact Us. Repairs has two subpages: Acoustic, Electric. Touring has two subpages: Photos and Blog.

(a) Design a multi-level structure for this website.

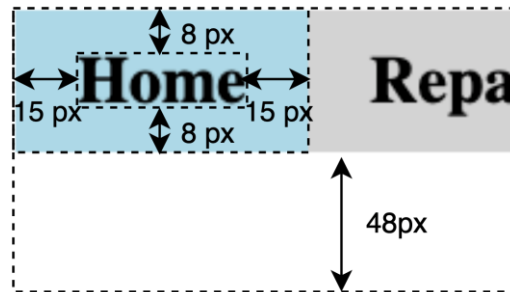
1 mark for 1st level correct under Home
1 mark for 2nd level correct under Repairs/Touring



(b) The site has a horizontal navigation bar. The HTML for the navigation bar is shown below.

```
<ul class="horizontal" id="nav">
  <li><a href="home.html" class="active">Home</a></li>
  <li><a href="repairs.html">Repairs</a></li>
  <li><a href="setup.html">Setup</a></li>
  <li><a href="touring.html">Touring</a></li>
  <li><a href="contact.html">Contact Us</a></li>
</ul>
```

A wireframe for the navigation bar has the following dimensions.



Complete the missing properties of the CSS below to format the menu as required.

```
ul.horizontal {  
    width: 100%;  
    float: left;  
  
    margin: _____;  
    padding: 0;  
  
    list-style: _____;  
    background-color: lightgrey;  
}
```

```
ul.horizontal li {  
    float: left;  
}
```

```
ul.horizontal li a {  
  
    display: _____;  
  
    padding: _____;  
    text-decoration: none;  
    font-weight: bold;  
    color: black;  
}
```

```
ul.horizontal li a.active {  
    background-color: lightblue;  
}
```

```
margin: 0 0 48px 0;  
(1 mark)
```

```
List-style: none;  
(1 mark)
```

```
display: block;  
(1 mark)
```

```
padding: 8px 15px;  
(can use padding: 8px 15px 8px  
15px;)
```

(1 mark)

(c) Explain why descendant selectors are used in (b)

- Style will only apply within the (parent) `ul.horizontal` element
- Style will apply to list and/or anchor elements

1 mark each bullet, max 2 marks

(d) The Touring page from the Guitar Tech Ltd site is shown below.

[Home](#) [Repairs](#) [Setup](#) [Touring](#) [Contact Us](#)



[Tour Photos](#) | [Tour Blog](#)



Screen A

[Home](#) [Repairs](#) [Setup](#) [Touring](#) [Contact Us](#)



[Tour Photos](#) | [Tour Blog](#)

Screen B

When the page loads, and the mouse pointer is not on the image, screen A is shown. When the mouse is moved over the image, Screen B is shown.

When the mouse is moved back off the image, it should return to Screen A, but currently it does not.

HTML Code for parts of the page are shown below.

```
...
<script>
    function swapimage(guitarpic) {
        guitarpic.src="guitar2.png";
    }
</script>
</head>
...
...
<main>
    <div style="width:500px">
        
    <div style="text-align: center; width:500px">
        <h3>
            <a href="photos.html">Tour Photos</a> |
            <a href="blog.html">Tour Blog</a>
        </h3>
    </div>
</main>
...
```

(i) Write the JavaScript function to display the original image when the mouse is moved off the image.

```
function swapback(guitarpic) {  
    guitarpic.src="guitar1.png";  
}
```

1 mark for new function

1 mark for setting back to original image

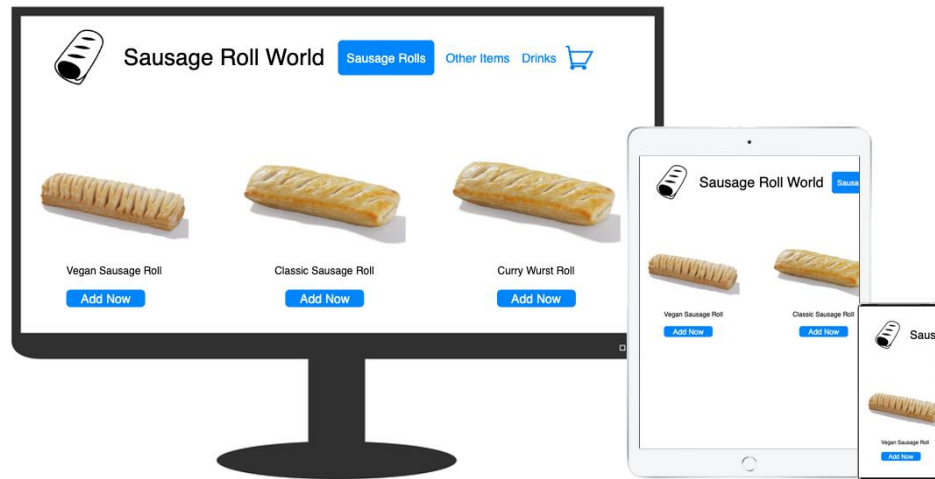
(ii) Rewrite the HTML element to call the function created in part (i) when the mouse is moved off the image.

```
onmouseout="swapback(this);"
```

1 mark for new function call onmouseout

1 mark for code within img element

19. A low-fidelity prototype of a web site for ordering sausage rolls has been created.



(a) The prototype displays as expected on a desktop computer but there are issues on other device types.

Explain the role of compatibility testing as part of the development of a web site.

Compatibility testing requires that the web site is tested using multiple device types to ensure that it displays correctly **(1 mark)**

When it does not display as expected, changes are made to the code so as to correct the code to allow the page to be displayed **(1 mark)**

(b) Compatibility testing should also be carried out with different web browsers. Explain why testing using a range of web browsers is required.

Web browsers may implement web technologies using different standards **(1 mark)**

which can lead to code being processed in unexpected ways **(1 mark)**

1 mark for concept that not all web browsers are the same.

1 mark for impact of incompatibility.

(c) A page on the sausage roll web site allows customers to enter their payment details for their order. When using the form, customers will need to submit the following information.

- Name
- Card number (16 digits)
- Card expiry (2 digits month, 2 digits year)
- Card CCV Number (3 digits)
- Order note (max of 500 characters)

Using this information, draw a wireframe design for the payment details form.

1 mark for fields without validation (name, order note).

1 mark for at least two fields with validation.

1 mark for submit button for form

The wireframe shows a form with the following fields and annotations:

- Your Name:** A text input field with the placeholder text "Your Name".
- Card Number:** A text input field with the placeholder text "Card Number". An arrow points to this field with the annotation "16 digits only".
- Card Expiry:** Two small text input fields, one with the placeholder "MM" and one with "YY". An arrow points to the "YY" field with the annotation "Check data not beyond current".
- CCV Number:** A small text input field with the placeholder "CCV". An arrow points to this field with the annotation "Validate as 1 to 12".
- Order Note:** A large text area with the placeholder text "Order note".
- Next:** A blue button with the text "Next".

Additional annotations include:

- An arrow pointing to the "CCV" field with the annotation "Must be three digits".
- An arrow pointing to the "Order Note" text area with the annotation "16 digits only".