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Answer ALL the questions

1. An operating system is a program that controls the operation of the computer. One task performed by an operating system is to allocate system resources such as memory and CPU time.

Give **three** other tasks performed by the operating system. Support your answer with an example in each case.

Task 1

Example

.....

Task 2

Example

.....

Task 3

Example

.....

Q1

(Total 6 marks)



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2. A manager of an insurance company wants to update the computer system. The manager employs a systems analyst to manage the introduction of the new system.

(a) Give **two** reasons why the computer system might need updating.

Reason 1

Reason 2

(2)

(b) The analyst decides to identify the problems with the current system. One method is an interview.

Give **two** other methods the analyst could use to identify the problems at this stage.

Method 1

(1)

Method 2

(1)

(c) The analyst produces a **user's guide** for the new system.

Give **two** pieces of information that should be included in the user's guide.

1

2

(2)

(d) The analyst produces a **technical guide** for the new system.

Give **two** pieces of information that should be included in the technical guide.

1

2

(2)

(e) The analyst decides to run the new system in parallel with the old system for one month.

Explain why the analyst decides to run the systems in this way.

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.....

.....

(2)

(Total 10 marks)

Q2

| | |
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| | |
|--|--|

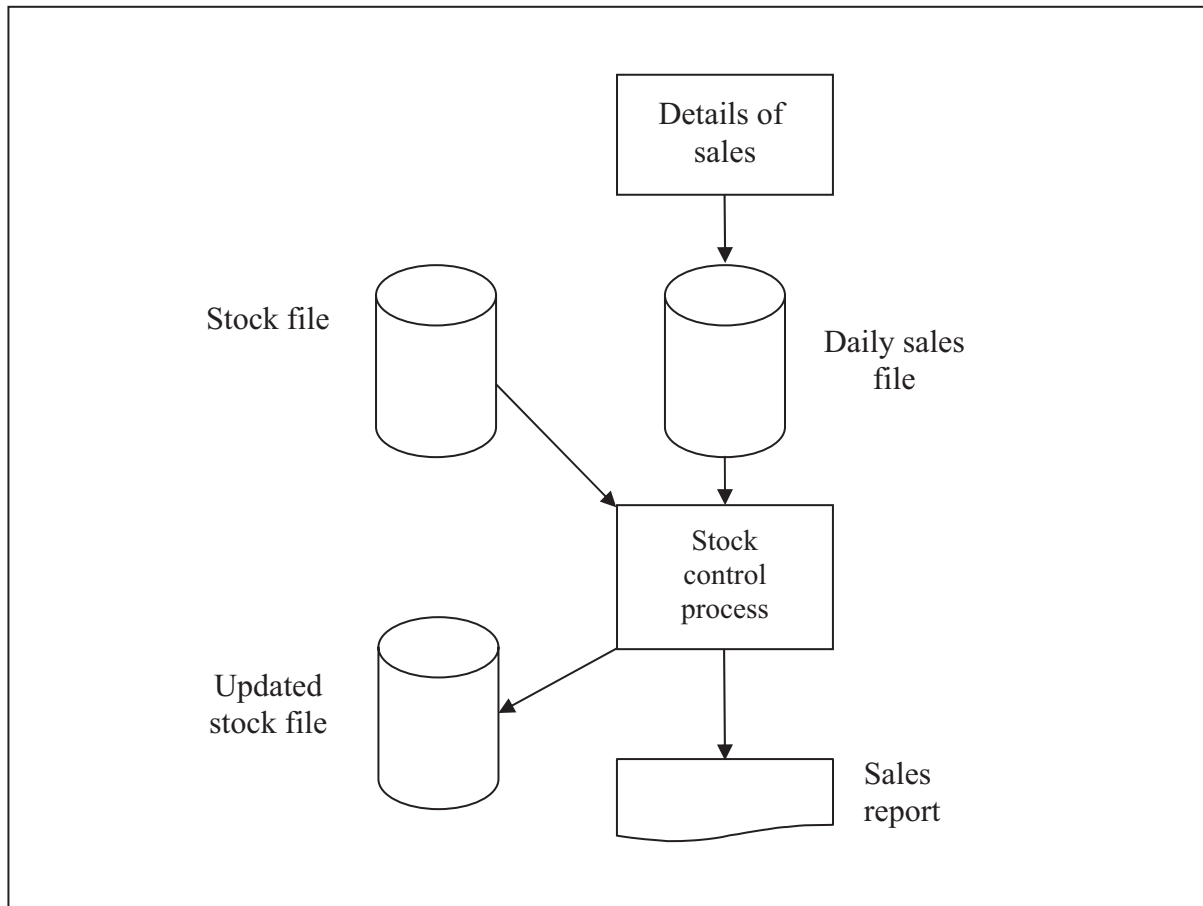
3

Turn over



N 3 0 3 4 1 A 0 3 1 6

3. The diagram shows a possible supermarket stock control system.



In the diagram above, the daily sales file is the **transaction file**, and the stock file is the **master file**.

- (a) State what is meant by:
 - (i) Transaction File
..... (1)
 - (ii) Master File
..... (1)
- (b) Show on the diagram how a backup file could be added to this system. (2)



(c) Explain, with reference to the stock file, how the management of the supermarket would make sure it does not run out of stock.

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.....
.....

(3)

(Total 7 marks)

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Q3



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4. 'Toys with Chips' is a shop that sells a range of microprocessor-controlled toys. The shop owner has decided to create a web site that allows customers to buy these toys on-line.

(a) Other than a computer, state **two** items of software or hardware that 'Toys with Chips' must have to allow connection to the Internet.

Item 1

Item 2

(2)

(b) Describe how 'Toys with Chips' would benefit from this web site.

.....

.....

.....

(3)

(c) Give **two** disadvantages to customers of using the web site to purchase goods.

Disadvantage 1

.....

Disadvantage 2

.....

(2)

(d) The shop owner is concerned about credit card fraud when customers buy toys on-line.

Describe the steps that the shop owner can take to reduce the risk of fraud.

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.....

.....

(3)

(e) Give **three** features of web sites that allow easy navigation.

Feature 1

Feature 2

Feature 3

(3)

(Total 13 marks)

Q4



5. Residents of a small village are worried about the amount of traffic passing through their village at certain times of the day and night.

The council decides to count the number of vehicles passing through the village.

(a) The council uses a computer data logging system for this purpose.

One benefit of this data logging system is that it can operate 24 hours a day, 7 days a week, without stopping.

Describe **three** other benefits of this data logging system.

Benefit 1

.....

Benefit 2

.....

Benefit 3

.....

(3)

(b) Data collected is stored in a computer file. One field in the record is the time the vehicle is detected.

Explain why it is necessary to record the time when a vehicle is detected.

.....

.....

(2)

(c) (i) The council wishes to produce graphs or charts to analyse the data collected.

State the type of software package that could be used to analyse the data in this way.

.....

(1)

(ii) Give **one** feature, other than graphs or charts, that this software provides for the analyst.

.....

(1)



(d) (i) Suggest a sensor that could be used to detect vehicles.

.....
(1)

(ii) State how the system obtains the time that the vehicle is detected.

.....
(1)

(Total 9 marks)

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Q5



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6. In a college, each student submits **one** project and takes **one** examination.

The results are one of:

- Pass
- Fail
- Borderline.

The following algorithm is used to give a result for a student

```
1 input project-mark
2 input exam-mark
3 if (project-mark  $\geq$  40 and exam-mark  $\geq$  40) then result = "Pass"
4   Else if (project-mark <20 or exam-mark <20) then result = "Fail"
5   Else result = "Borderline"
```

Complete the table to show the result in each case.

| Project Mark | Exam Mark | Result (Pass/Fail/Borderline) |
|--------------|-----------|----------------------------------|
| 50 | 45 | |
| 70 | 18 | |
| 38 | 38 | |
| 15 | 19 | |
| 38 | 50 | |

(Total 5 marks)

Q6

9



Turn over

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7. A company sells a range of health foods at different shops. The owner is going to computerise the business. The owner will install a PC, with a keyboard and mouse, to manage sales and control stock. Customers will pay for goods using cash or credit cards.

(a) Choose **three** additional input devices for this application. Explain your choice in each case.

Device 1

Explanation

(2)

Device 2

Explanation

(2)

Device 3

Explanation

(2)

(b) Explain how the traders in the shops can keep head office up to date with sales as they happen.

.....

.....

.....

.....

(3)

(Total 9 marks)

Q7



8. A teacher in a college uses mark sheets to enter examination marks into a subject file. Part of the mark sheet for a group of students on the same course is:

| Course code | Student ID | Name | Mark |
|-------------|------------|---------------|------|
| 0213 | 4001 | Singh: Gurjit | 46 |
| 0213 | 4002 | Harding: Mark | 53 |
| 0213 | 4003 | Miah: Nia | 82 |

The teacher wishes to use an automatic data capture method for data input. The mark sheet will be redesigned so that students' marks can be input directly to a computer.

(a) (i) In the box, draw an annotated diagram to show how Gurjit Singh's record could be represented on the new mark sheet.

(1)

(ii) Explain how the computer would capture the marks.

.....
.....
.....

(2)

(b) Describe a suitable verification check that could be applied to this data.

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.....
.....

(2)

(Total 5 marks)

Q8



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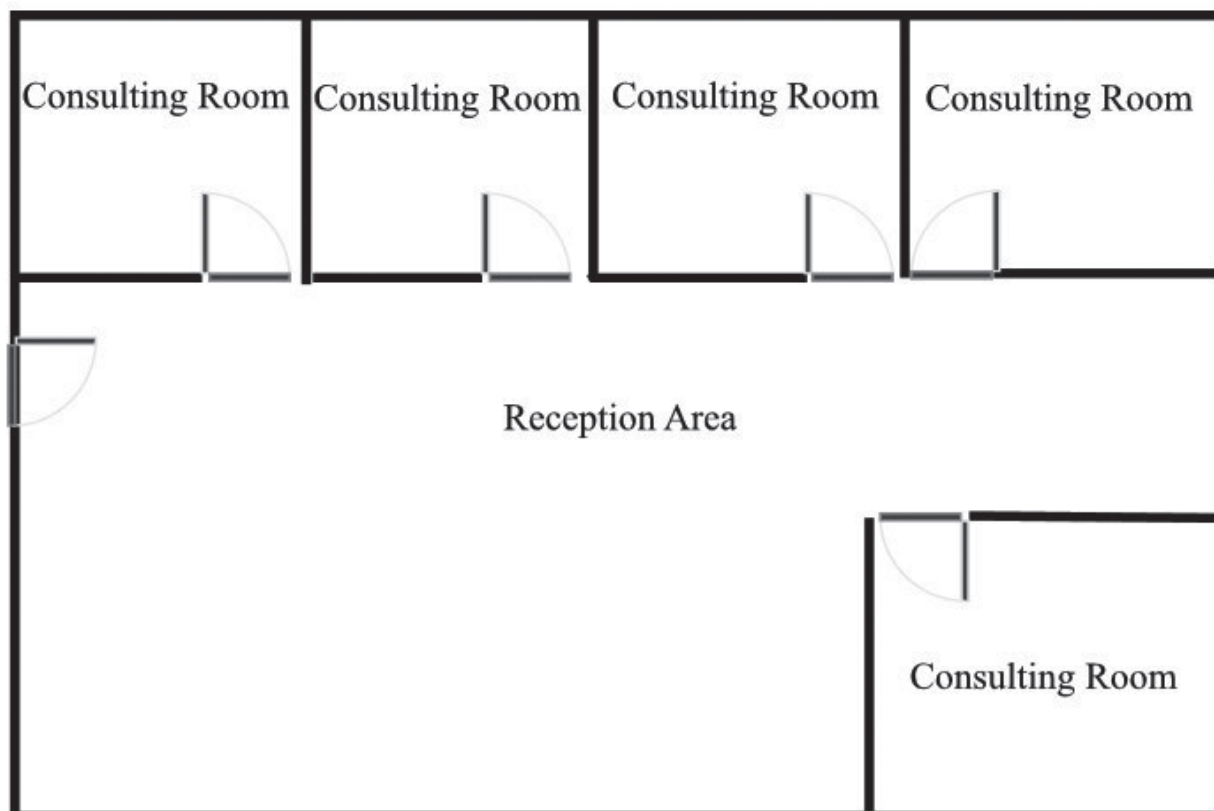
9. Five doctors work together in a hospital department.

The department has five separate consulting rooms, and a reception area in one building.

There is a computer in each consulting room. There is a computer and a printer in the reception area.

The computers and the printer are connected as a wireless network but they do not have access to the Internet.

Complete the diagram and label it to show the features of this network.



(Total 6 marks)

Q9



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10. A student downloaded a demonstration version of a computer game from the World Wide Web. Soon afterwards the student's computer produced error messages and new browser icons appeared. The student performed some tests and discovered that several files had been altered.

The tests showed that the computer did **not** have a virus.

(a) Explain what could have happened to the student's computer and how it was caused.

.....
.....
.....
.....

(3)

(b) Describe **two** methods that the student could use to prevent a similar event occurring in the future.

Method 1

.....

(2)

Method 2

.....

(2)

Q10

(Total 7 marks)



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11. A mail order company uses a database to record details of its customers. For a customer to make purchases the customer must be approved and have a credit limit set. The table shows part of this information:

| Customer ID | Surname | Forename | Address | Postcode | Approved (Y/N) | Credit limit (£) |
|-------------|----------|----------|-------------------|----------|----------------|------------------|
| 0120 | Singh | Gurjit | 5 Belgrave Road | SA4 2RD | Y | 750.00 |
| 1135 | Williams | Anne | 7 Belgrave Road | SA2 9RH | Y | 550.00 |
| 0890 | Evans | Glyn | 190 High Holborn | W1CV 7ED | N | 400.00 |
| 1078 | Jones | Peter | 9 Blundell Street | W7 9JK | Y | 750.00 |
| 0898 | Miah | Mamun | 32 Russell Square | W1GH 3TY | N | 1000.00 |
| 0139 | Kahn | Imogen | 1 Hales Road | BR51 9QR | Y | 200.00 |

(a) Complete the table to show the data structure

| Field | Data type | Field length |
|--------------|-----------|--------------|
| Customer ID | | |
| Surname | | |
| Forename | | |
| Address | | |
| Postcode | | |
| Approved | | |
| Credit limit | | |

(7)

(b) State, with a reason, a suitable validation check that could be applied to the Credit limit field.

Validation Check

Reason

.....

(3)

Q11

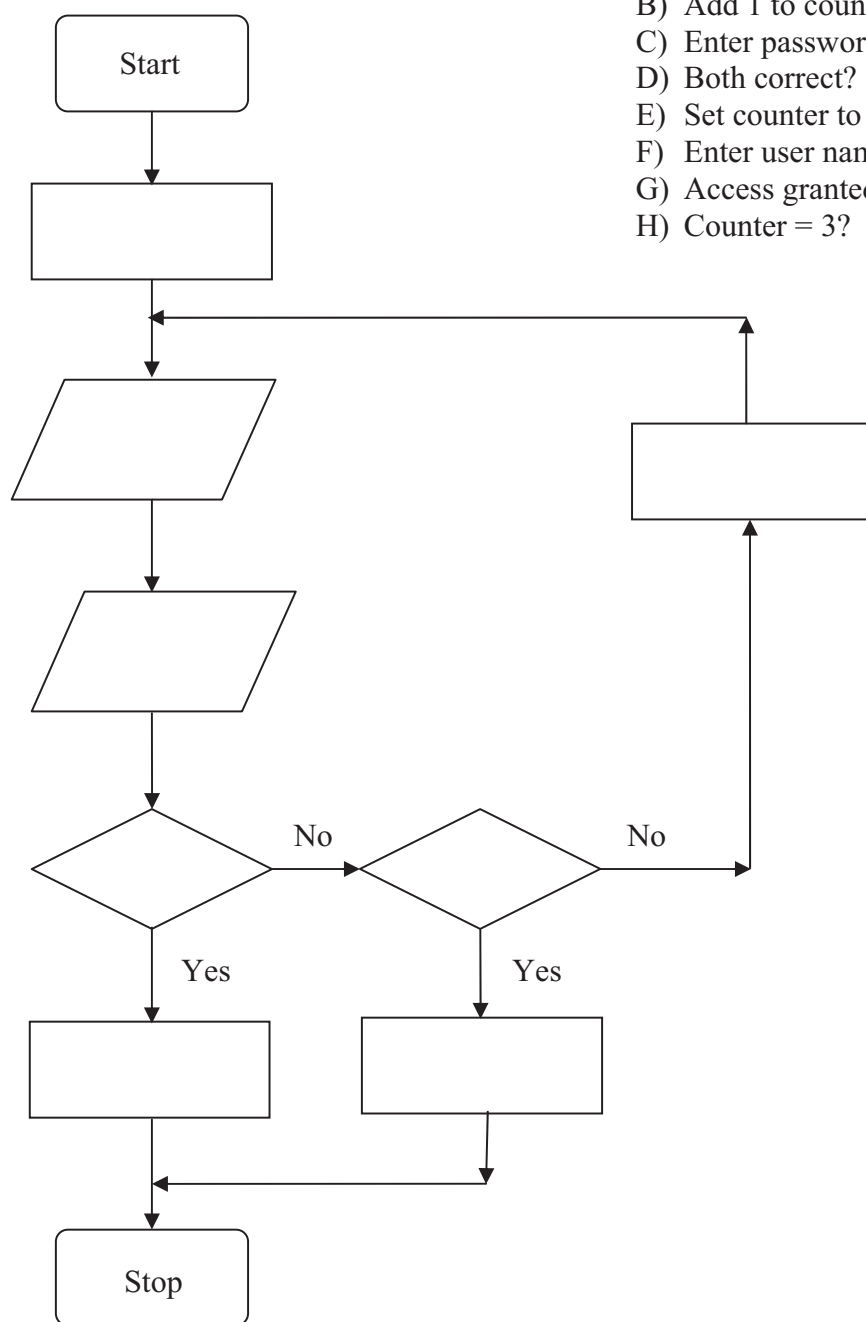
(Total 10 marks)



12. Students must enter the correct User ID and a password to access their college computer network. If after three attempts the information is not entered correctly, the student's network account is locked.

(a) The steps are listed but are not in the correct order. Write the letters A to H into the correct boxes to complete the flowchart.

- Steps
- A) Account locked
 - B) Add 1 to counter
 - C) Enter password
 - D) Both correct?
 - E) Set counter to 1
 - F) Enter user name
 - G) Access granted
 - H) Counter = 3?



(8)



(b) Students details are entered into the computer by data entry clerks. The date is validated and a sorted class list is produced.

Write an algorithm to describe how the data is processed to produce the sorted class list.

Leave
blank

(5)

Q12

(Total 13 marks)

TOTAL FOR PAPER: 100 MARKS

END

