

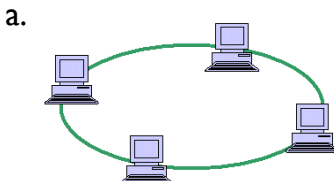
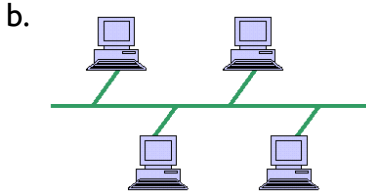
## Information Systems SQA Exam H 1011

## Section I

1. If Michelle leaves, then it may be possible that all details of the customer Claire Morrison (name and phone number), will be deleted from the system if this is the only appointment that Claire Morrison has made.
2. The data is in 1NF. The repeating data has been removed from the system, but there is still a partial dependency (item number will give price and description).
3. Overall total. This is a calculated field and such fields are not part of the normalisation process, as these fields are not stored in the same way as other fields.
4. Object and link.
5. a. 1:M  
b. M:N
6. A compound key is a key which is made up of two or more attributes in a table.
7. A data dictionary is used to describe the structure of a database defining data types, primary and foreign keys, validation checks and data formats.
8. A Decision Support System.
9. A Data Processing System is used to store high volumes of day to day (operational) transactions.

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## Section I

10. He should consider the font size, type and colour to be used. He should also ensure that he avoids information overload on each slide to overwhelm his viewing customers.
  11. Gantt charts and critical path analysis.
  12. Overall total. This is a calculated field and such fields are not part of the normalisation process, as these fields are not stored in the same way as other fields.
- a. 
- b. 
13. Portability is the ability to run a piece of software on more than one type of operating system.
  14. A macro is a facility that allows a series of operations to be recorded and attached to a single keystroke to allow the operations to be re-run very quickly in future.
  15. This is unethical. Mr Kai is breaching the privacy of the user. Mr Kai should simply hand the wallet in at reception to allow the manner to be dealt with.



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## Section 2

For 2NF

Class & Lesson (Room Type Capacity)

Lesson (Period Day Start time Finish time Teacher Class Class size Subject Room \*)

Knowing the period will automatically tell you the start and finish time.

### Identification of partial dependencies

period	day	start	finish	teacher	class	class size	subject	room
1	Monday	9.00	9.55	M Jones	3N6	18	Maths	C17
2	Monday	10.00	10.55	K Brown	2P2	20	English	C17
1	Tuesday	9.00	9.55	M Jones	1N4	22	Maths	C17
1	?	9.00	9.55	?	?	?	?	?

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## Section 2

2NF

Class & Lesson (Room Type Capacity)

Lesson (Period \* Day Teacher Class Class size Subject Room \*)

Period (Period Start time Finish time)

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# Section 2

For 3NF

Class & Lesson (Room Type Capacity)

Lesson (Period \* Day Teacher Class Class size Subject Room \*)

Period (Period Start time Finish time)

Knowing the class will always tell you the class size and subject.

## Identification of non-key dependencies

period	day	teacher	class	class size	subject	room
1	Monday	M Jones	3N6	18	Maths	C17
2	Monday	K Brown	2P2	20	English	C17
2	Thursday	M Jones	3N6	18	Maths	C17
?	?	?	2P2	20	English	?

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# Section 2

3NF

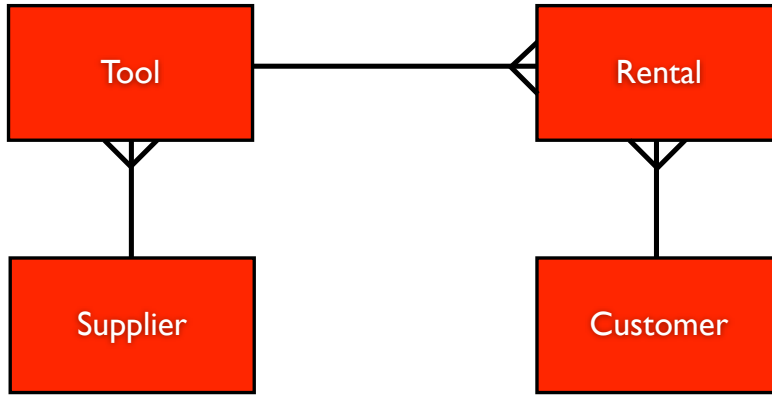
Class & Lesson (Room Type Capacity)

Lesson (Period \* Day Teacher Class \* Room \*)

Period (Period Start time Finish time)

Class (Class Class size Subject)

17. a.



b. Entity integrity would be affected in that 2 or more customers could be using the same phone number (a husband and wife say), so the requirement for a unique primary key would be broken. A more unlikely scenario would be that a customer did not have a phone number, which would break the other aspect of entity integrity, that the primary key must be non-null.

c.

- A - Yes
- B - Yes
- C - No
- D - Lookup value from customer table

18. a. Security refers to the **protection** that is applied to data, such as using encryption techniques, passwords and so on.

Privacy refers to maintaining respect for **personal** information that is stored to ensure that unauthorised sources do not access such information.

b. scotland is not a suitable password. A suitable password should include a mixture of upper and lower case letters, instead of just the lower case letters given here. A password should also integrate numbers with letters, and use special characters such as \*. Also, a password should not use a recognisable word, which scotland clearly is.

On the plus side, it does have a suitable number of characters.

c. Reliability, portability, functionality, support, data migration.

19. The Data Protection Act relates to the data that is stored on individuals in information systems. The act ensures that data is held securely, and that that data held is acquired lawfully, is appropriate and not excessive. The act also ensures that data subjects rights are maintained, such as the ability to view personal data held, and have changes made where required.

The Freedom of Information Act allows members of the public to access information stored by public authorities.

The Regulation of Investigatory Powers act allows government agencies to monitor electronic communications to prevent illegal activities such as acts of terrorism from taking place. It also allows employers to ensure that systems are used appropriately by members of staff.

20. a. Data is unprocessed facts and figures without meaning or context, e.g. 3.

Information is data given meaning and context, e.g. 3 is a skill level associated with a swimming activity.

Knowledge is derived from information, and produces new information, e.g. A 3 is a pass.

b. The report is complete. All areas of the form such as name, class, lesson time and skill levels have been filled in with no omissions.

The report is relevant as all the information pertains to the swimmer Lewis James and will allow him to analyse his swimming performance.

The report is Concise. The information is presented in a tabular form, with skill levels shown allowing the information to be extracted quickly and easily.

The report is reliable as it has been completed and signed by a qualified swim coach, an expert in the given domain.