# Question 1

### What does XML stand for?

XML stands for eXtensible Markup Language.

### Explain how XML is like HTML.

XML is like HTML in that they both use markup language to define elements and attributes.

### Also discuss the differences between XML and HTML.

HTML has predefined tags that define how content should be displayed, while in XML, tags are created by the user to define the data. XML is more flexible than HTML because it does not have predefined tags or structures and can be used to describe any kind of data.

# Question 2

### Compare the strengths and weaknesses of using a system sequence diagram to define inputs.

* It is useful for defining inputs because it can help to identify all the possible interactions that an external actor can have with the system. This can help to ensure that all possible inputs have been considered.
* However, SSDs can be limited because they only show the interactions between the system and external actors. They do not show how the system processes the inputs or how the system responds to the inputs.

# Question 3

### Which requirements model shows most clearly the messages that cross the system boundary?

The system sequence diagram (SSD) shows most clearly the messages that cross the system boundary. It shows the interactions between external actors and the system, which can help to identify all the possible interactions that an external actor can have with the system.

# Question 4

### Why is it important to review the event table to make sure all outputs are identified?

Because it is important to ensure that all necessary outputs are identified and included in the system. If an output is missed, it could result in incorrect or incomplete information being provided to the external actor, which could have negative consequences.

# Question 5

### If a report is produced when a user selects a menu item on a form, is the event that triggers the use case still described as temporal?

If a report is produced when a user selects a menu item on a form, the event that triggers the use case is still described as temporal. A temporal use case is one that is triggered by an external event, such as a user action or the passage of time. In this case, the user action of selecting a menu item on a form is the external event that triggers the use case.

### If the system automatically produces the report, is it still a use case? Explain.

The fact that the system automatically produces the report does not change the fact that the use case is still triggered by an external event. If the production of the report is part of the specific sequence of actions that the system performs in response to the user action of selecting a menu item, then it can be considered a use case. If the production of the report is not part of the specific sequence of actions that the system performs in response to the user action, then it may not be considered a use case.

# Question 6

### How are the data fields on an input or an output identified using UML with the object-oriented approach?

In UML with the object-oriented approach, data fields on an input or an output are identified using attributes.

# Question 7

### Explain four types of integrity controls for input forms.

* Field-level validation: Checks that the data entered in a field is valid, such as checking that a phone number is in the correct format.
* Range validation: Verifies that a value falls within an acceptable range, such as checking that an age is between 18 and 120.
* Completeness validation: Ensures that all required fields are filled out, such as requiring a first and last name for a user registration form.
* Format validation: Checks that the data entered in a field matches a specified format, such as ensuring that an email address includes an @ symbol.

### Which have you seen most frequently?

Field-level validation is the most frequently seen type of integrity control.

### Why are they important?

Field-level validation ensures the data entered is correct and consistent. These controls are important because they help to prevent errors and inconsistencies in the data, which can lead to incorrect results.

# Question 8

### What protection does transaction logging provide?

Transaction logging provides protection by creating a record of all transactions that occur in a system. This helps identify errors or inconsistencies in the data.

### Should it be included in every system?

Transaction logging should be included in every system because it provides an important layer of protection against errors and fraud.

# Question 9

### What are the different considerations for output screen design and output report design?

* Output screen design should focus on presenting information in a clear and concise format, with a focus on user experience and ease of use. This includes considerations such as font size, color, and layout, as well as the use of icons and other visual aids to help users quickly understand the information being presented.
* Output report design, on the other hand, should focus on providing a comprehensive view of the data, with a focus on accuracy and completeness. This includes considerations such as the layout of the report, the use of headers and footers, and the inclusion of charts and graphs to help users understand the data.

# Question 10

### What is meant by drill down?

Drill down refers to the ability to access more detailed information by clicking on a summary value in a report.

### Give an example of how you might use it in a report design.

In a sales report, a user might be able to click on a total sales figure for a particular region to see a breakdown of sales by product or by salesperson.

# Question 11

What is the danger from information overload?

Information overload can lead to errors and poor decision-making.

What solutions can you think of to avoid it?

* Filtering the information to show only the most important or relevant data.
* Using visual aids such as charts and graphs to help users quickly understand the information.
* Providing the ability to drill down to more detailed information as needed.
* Providing context and guidance to help users understand the meaning and importance of the information presented.

# Question 12

### Describe what kinds of integrity controls you would recommend being placed on all output reports. Why?

The types of integrity controls that should be used will depend on the nature of the data being presented and the users who will be viewing the report.

* Field-level validation should be placed on all output reports to ensure that the data presented in each field is valid and accurate. This helps to prevent errors and inconsistencies in the data, which can lead to incorrect results and decisions based on that data.
* Format validation should be placed on all output reports to ensure that the data is presented in the correct format, such as using the correct units of measurement. This helps to ensure consistency in the data and prevents errors caused by incorrect formatting.
* Completeness validation should be placed on all output reports to verify that all necessary fields are included in the report and that there are no missing data points. This helps to ensure the accuracy and completeness of the data presented in the report.
* Consistency validation should be placed on all output reports to check that the data presented in the report is consistent with other data in the system. This helps to ensure that the data is accurate and complete and that there are no discrepancies or inconsistencies in the data presented.

# Question 13

### What are the objectives of integrity controls in information systems?

The objectives of integrity controls in information systems are to ensure that the data is accurate, complete, and consistent.

### In your own words, explain what each of the three objectives means. Give an example of each.

* Accurate data is data that is free from errors or mistakes. For example, a bank statement that accurately reflects all the transactions in a customer's account.
* Complete data includes all necessary fields and data points. For example, a customer database that includes all necessary fields, such as name, address, and phone number.
* Consistent data is data that agrees with other data in the system. For example, a sales report that shows the same total sales figure as the sales database.

# Question 14

### What are the four types of input controls used to reduce input errors? Describe how each works.

* Field-level validation: Checks that the data entered in a field is valid, such as checking that a phone number is in the correct format.
* Range validation: Verifies that a value falls within an acceptable range, such as checking that an age is between 18 and 120.
* Completeness validation: Ensures that all required fields are filled out, such as requiring a first and last name for a user registration form.
* Format validation: Checks that the data entered in a field matches a specified format, such as ensuring that an email address includes an @ symbol.

# Question 15

### Explain what is meant by update controls for a database management system.

Update controls for a database management system are used to ensure that updates are made correctly and completely. Update controls can include things like field-level validation, range validation, completeness validation, and consistency validation. These controls help to ensure that the data being updated is accurate and complete, and that the update is made in a consistent manner.

# Question 16

What is the basic purpose of transaction logging?

The basic purpose of transaction logging is to create a record of all transactions that occur in a system. This helps identify errors or inconsistencies in the data.

Microsoft Access does not have automatic transaction logging. Is this a deficiency or is it not really an important consideration in database integrity?

It is a deficiency because automatic transaction logging is an important consideration in database integrity, as it provides an important layer of protection against errors and fraud.

# Question 17

### On a printed output report, what is the difference between the date the report was printed and the date of the data?

The date the report was printed is the date on which the report was physically printed out. The date of the data is the date on which the data in the report was last updated. The two dates can be different if there is a delay between the time the data is updated and the time the report is printed.

# Question 18

### What are the two primary objectives of security controls?

* To ensure the confidentiality of data. Confidentiality controls are used to protect data from unauthorized access or disclosure.
* To ensure the integrity of data. Integrity controls are used to ensure that data is accurate, complete, and consistent.

# Question 19

Explain the three categories of user access privileges.

* Read-only: Read-only users can view data but cannot make changes.
* Read-write: Read-write users can view and modify data.
* Administrative: Administrative users have full access to the system and can perform tasks such as creating new users and modifying system settings.

Is three the right number, or should there be more or fewer than three? Why or why not?

Three categories is appropriate as it provides a clear distinction between different types of users and their access privileges.

# Question 20

How does single-key (symmetric) encryption work?

Single-key (symmetric) encryption works by using a single key to both encrypt and decrypt data.

What are its strengths?

The strength of single-key encryption is that it is relatively fast and easy to use.

What are its weaknesses?

The weakness of single-key encryption is that the key must be kept secret because anyone who has the key can decrypt the data.

# Question 21

How does public-key (asymmetric) encryption work?

Public-key (asymmetric) encryption works by using a pair of keys, one public and one private. The public key is used to encrypt data, while the private key is used to decrypt data.

What are its strengths?

The strength of public-key encryption is that it is more secure than single-key encryption because the private key does not need to be shared or kept secret.

What are its weaknesses?

The weakness of public-key encryption is that it is slower and more complex than single-key encryption.

# Question 22

What is a digital certificate?

A digital certificate is an electronic document that verifies the identity of a person or organization.

What role do certifying authorities play in security systems?

Certifying authorities play a role in security systems by issuing digital certificates and verifying the identity of the certificate holder.

# Question 23

What is a digital signature?

A digital signature is a mathematical code that is attached to an electronic document to verify its authenticity.

What does it tell a user?

A digital signature tells a user that the document has not been altered since it was signed and that it was signed by the person who claims to have signed it.