1.

Which of Web Application Architecture layers is responsible for manipulating **business objects** and **data**?

|  |  |
| --- | --- |
|  | Business Logic Layer |
|  | Data Access Layer |
|  | Data Storage |
|  | Presentation Logic Layer |

2.

Which one of the following request-methods contains *request-body*?

|  |  |
| --- | --- |
|  | POST |
|  | GET |
|  | HEAD |
|  | DELETE |

3.

Which option do present the web application layers from top to bottom?

|  |  |
| --- | --- |
|  | Presentation Logic Layer > Presentation-GUI > Data Access Layer > Data Storage > Business Logic Layer |
|  | Presentation Logic Layer > Presentation-GUI > Business Logic Layer > Data Access Layer > Data Storage |
|  | Presentation-GUI > Presentation Logic Layer > Business Logic Layer > Data Access Layer > Data Storage |
|  | Presentation-GUI > Presentation Logic Layer > Business Logic Layer > Data Storage > Data Access Layer |

4.

Which of the following direct interactions**aren't** allowed in Model-View-Controller architecture?

|  |  |
| --- | --- |
|  | The interaction between **Controller**and **View** |
|  | The interaction between **Controller**and **Model** |
|  | The interaction between **Model**and **View** |
|  | The interaction between **Model**and **DataBase** |

5.

Which one of the following statemenets are ture?

|  |  |
| --- | --- |
|  | HTTP is a stateless protocol because the server forgets everything related to client/browser state when the request is processed and all requests are processed as separate requests |
|  | HTTP is not stateless because web applications can maintain the state of the requests and store data using Cookies and Sessions |
|  | HTTP protocol can be both stateless and non-stateless; depending on the web server |

1.

Which one of the following correctly describes ‘middleware’?

|  |  |
| --- | --- |
|  | Application integration supporting layer |
|  | Message routing protocol |
|  | Modern client-server 2-tier architecture |
|  | Application programming interface |

2.

Which of the following is correct of the 2-Tier architecture in information systems architectures?

|  |  |
| --- | --- |
|  | The presentation layer is not part of the information system anymore |
|  | It relies on HTTP to send and receives data |
|  | The concept of API is introduced in this architecture |
|  | It is the architecture of choice for many application integration platforms |

3.

Which one of the following is the most appropriate description of a legacy system?

|  |  |
| --- | --- |
|  | Any system that is written in a language invented before 1990 |
|  | A system that is difficult or costly to migrate to a new platform |
|  | Any existing system or application which continues to be used because of the cost of replacing or redesigning it |
|  | Any information system with an API |

4.

Which one of the following is not a characteristic shown in Top-down application design pattern?

|  |  |
| --- | --- |
|  | The design is based on a set of clear goals |
|  | The pattern tends to create a highly optimised and tightly coupled architecture and implementation |
|  | The approach usually defines access channels and client platforms to the system first |
|  | It is the most common pattern in developments of application integration systems |

5.

Which one of the following correctly orders the concepts according to the evolution of programming abstractions model presented in Week 1?

|  |  |
| --- | --- |
|  | Functions - Objects - Components - Modules - Services |
|  | Procedures - Remote Procedure Calls - Distributed Components - Services |
|  | Functions - Modules - Objects - Components - Services |
|  | Go to Statements - Modules - Packages - Components - Services |

1.

Which HTTP method is suitable for updating resources?

|  |  |
| --- | --- |
|  | PUT |
|  | UPDATE |
|  | POST |
|  | POST and OPTIONS |

2.

POST is neither idempotent nor safe operation

|  |  |
| --- | --- |
|  | True |
|  | False |

3.

Having Uniform Interfaces in RESTful Services mean

|  |  |
| --- | --- |
|  | The developers do not have to implement the operations as they are standards |
|  | The developers can build more secure applications |
|  | If the conventions are properly followed, understanding the interface is easy |
|  | Standard data types for HTTP operations |

4.

Which of the following is correct of a resource in RESTful services

|  |  |
| --- | --- |
|  | A resource is not to be updated by the client application to maintain statelessness |
|  | A resource can have many representations |
|  | A resource is always persisted in a database table |
|  | A resource is a collection of hidden data set managed by a RESTful service |

5.

Which one of the following is both Safe and Idempotent?

|  |  |
| --- | --- |
|  | HTTP DELETE |
|  | HTTP PUT |
|  | HTTP GET |
|  | HTTP PATCH |

1.

Imagine that you have a RESTful endpoint which is used to update (or create) a resource. The endpoint returns a JSON response containing the id of the newly created resource if a request resulted in creating one. Which statement is correct for such an endpoint?

|  |  |
| --- | --- |
|  | The endpoint should always return 200 |
|  | The endpoint should always return 204 as the status code |
|  | The endpoint can return 200 in both update and create situations as long as the Id is included in the response |
|  | The endpoint should return 201 when it creates a new resource, and 200 or 204 when it updates the resource |

2.

Imagine that you are building a RESTful API for ordering books. Which one of the following URLs is an example of well-designed URL patterns for getting the list of books?

|  |  |
| --- | --- |
|  | **/books** |
|  | **/getBooks** |
|  | **/book/{id}** |
|  | **/getBooks/{id}** |

3.

Which one of the following statement is correct?

|  |  |
| --- | --- |
|  | In HTTP Basic Authentication, the password is sent once just in the begining |
|  | In Token-based Authentication, the password is send once, and there is no need for sending it for the subsequent requests |
|  | OAuth allows a company to access a user's login credential which is stored in another company |
|  | In API Key method, the key is determined by the customer |

4.

Which statement is NOT true?

|  |  |
| --- | --- |
|  | AJAX can load data from external sources and into JavaScript seamlessly without page reloads |
|  | AJAX is synchronous |
|  | Generally speaking, using Ajax you can only access to the data from the same domain |

5.

Which of the following is not a common OAA challenge?

|  |  |
| --- | --- |
|  | Investigating available Actions |
|  | Recognising available Objects |
|  | Investigating correct Addresses |
|  | Investigating the server's Authentication policy |

1.

Which type of graph is more suitable when you want to illustrate the correlation between two variables?

|  |  |
| --- | --- |
|  | Line Graph |
|  | Scatter Plot |
|  | Tree Diagram |
|  | Bar Graph |

2.

Which type of graph is more suitable when the focus of the graph is to compare size/strength of the segments to the total of each group?

|  |  |
| --- | --- |
|  | Scatter Plot |
|  | Tree Diagram |
|  | Bar Graph |
|  | Stacked Bar Graph |

3.

Which statement is **NOT** correct about Graphs and Charts?

|  |  |
| --- | --- |
|  | Both rely on a repeated pattern to show data |
|  | Charts are always restricted to numerical axes. |
|  | Graphs must have at least one numerical axe |
|  | They cannot be used interchangeably. |

4.

What is **NOT** true about Choropleth Map.

|  |  |
| --- | --- |
|  | It usually uses a fix set of colours instead of dynamic ranges |
|  | Common form is to use colours to demonstrate some data about a country or reogin |
|  | Its secondary use-case is to show the flow of objects |

5.

What is **a scale function in D3** used for?

|  |  |
| --- | --- |
|  | To measure the significance of different points on a map to show how important is a single point in comparison to the others. |
|  | To resize our data to fit into our pre-defined SVG Coordinate Space |
|  | To generate semi-random numbers out of some seed values |

1.

Which statement is **not true** about NoSQL databases?

|  |  |
| --- | --- |
|  | MongoDB is an example of NoSQL database |
|  | NoSQL databases cannot have a fixed schema |
|  | NoSQL includes a range of non-relational data storage models |
|  | NoSQL databases are suitable for embedded document-like data model |

2.

Which of the following statements is**not true**about **Impedance Mismatch**?

|  |  |
| --- | --- |
|  | It is one of the problems mostly related to relational databases |
|  | It refers to the problem of a mismatch between application data model |
|  | It is a translation layer between the objects in the application code and the database model of tables/row/columns |
|  | It is also called "Object-Relational Mismatch" |

3.

Which is **not true** about ATOM?

|  |  |
| --- | --- |
|  | ATOM is a format to publish and access data |
|  | Atom Publishing Protocol (AtomPub) is used for publishing and editing web resources |
|  | OData is an example of ATOM based protocol |
|  | Atom represents data as ordered sequence which are called entries |

4.

Which one of the following is the most appropriate description of Data Services?

|  |  |
| --- | --- |
|  | A data service is designed to expose a Web service to data clients |
|  | A data service is designed to expose XML files to data clients |
|  | A data service is designed to expose relational tables to data clients |
|  | A data service is designed to expose data access as a service to data clients |

5.

Data Services are good for:

|  |  |
| --- | --- |
|  | Optimising an XML query over relational databases |
|  | Hiding underlying heterogeneous data access mechanisms from data clients |
|  | Converting various REST representations using XSLT |
|  | Providing solutions for security, transactions, reliability concerns when transmitting data |

1.

Which statement is not correct about Graph Models?

|  |  |
| --- | --- |
|  | They are suitable when there are many ***Many to Many***relationships between entities |
|  | In this model, entities are represented by nodes, and edges represent relationships |
|  | Vertices are limited to point to the same type of entities. |
|  | Nodes in the graph can have attributes |

2.

What is**not true** about storing and querying graph-like models in relational databases?

|  |  |
| --- | --- |
|  | There should be at least two tables one for nodes and anther for edges. |
|  | Creating indices is essential because they affect the retrieval performance by large |
|  | The schema for vertices must have at least one incoming and at least one outgoing edges |
|  | Both schemes for vertices and edges could store properties which are of JSON type |

3.

Which of the following is not a benefit of using XML in documents for data exchange purposes?

|  |  |
| --- | --- |
|  | It can be parsed and validated using standard tools |
|  | It is extensible and flexible, and you are not limited by a rigid scheme |
|  | It is widely used and search is well supported |
|  | It binds the data content with presentation using namespaces |

4.

What is Active Record?

|  |  |
| --- | --- |
|  | It is a style of ORM in which the domain object itself has methods like save() and delete() to manage the DB. |
|  | It is a style of coding in which the objects stored natively in an object-oriented database system |
|  | It is a style of ORM in which session object is responsible for data manipulation like saving or removing objects from the database |
|  | It is a style of coding in which a object-relation mapping configuration is kept separate from objects themselves |

5.

Which of the following can be considered as metadata?

|  |  |
| --- | --- |
|  | The description of an object and its type |
|  | The time an object is created or modified |
|  | Information about the origin of the object |
|  | All of the abovementioned options |

1.

Which one of the following is correct of the process of data obtaining, massaging and managing?

|  |  |
| --- | --- |
|  | It normally requires a target/final schema into which data is loaded |
|  | If the data is on the Web, it is considered public and OK to scrape the content |
|  | Unformatted text is challenging and a technique like Named Entity Recognition can automated the extraction |
|  | Metadata can act as a target schema in unformatted text |

2.

Which of the following is NOT correct on data extraction?

|  |  |
| --- | --- |
|  | Many HTML documents are auto-generated these days, making it relatively easier to precisely target relevant patterns in a document |
|  | XML and JSON are already structured and can convey hierarchical structure of the data well |
|  | CSV data is always normalised, making it an ideal candidate for database import tasks |
|  | Processing text from a PDF document requires understanding its layout as well as the content |

3.

Which one of the following is not correct of data curation?

|  |  |
| --- | --- |
|  | the task of transforming raw data into knowledge. |
|  | challenging because the underlying data can change |
|  | challenging because the volume of the data is large |
|  | challenging because the distribution of the data needs to be even |

4.

The following lists possible approaches to data curation. Choose the odd one out ...

|  |  |
| --- | --- |
|  | Hybrid of the algorithm and rule - where rules are used evaluate the algorithms |
|  | Hybrid of the algorithm and rule - where rules are used augment the algorithms |
|  | Algorithmic (machine learning) approach |
|  | Rule (if-then-else) approach |

5.

Which one of the following best describe data curation APIs?

|  |  |
| --- | --- |
|  | They offer various curation tasks as a service |
|  | They offer data cleansing as a service |
|  | They offer access to database as a service |
|  | They offer data visualisation as a service |

1.

Data analytics are used in organisations to:

|  |  |
| --- | --- |
|  | improve client relations |
|  | improve their own business processes |
|  | improve their own workforce capabilities |
|  | improve marketing through social network insights |
|  | all of the above |

2.

Which of the following is NOT part of a typical data analytics architecture?

|  |  |
| --- | --- |
|  | Data testing and generation |
|  | Data integration/aggregation |
|  | Data visualisation |
|  | Data management |

3.

Google Analytics API does NOT provide:

|  |  |
| --- | --- |
|  | Scaling and performance assurance of your Web site |
|  | Evaluation of the content in your Web site |
|  | Data visualisation |
|  | Analytics as services through reporting, realtime APIs |

4.

Which one of the following is NOT a service provided by Stanford Core NLP?

|  |  |
| --- | --- |
|  | Lemma analysis |
|  | Part of Speech tagging |
|  | Relation extraction |
|  | Word2Vec |

5.

Which one of the following is true of Prediction.IO

|  |  |
| --- | --- |
|  | It is a framework for building and deploying machine learning as a service |
|  | It provides a wide range of development languages |
|  | The engine templates are limited to NLP related algorithms |
|  | The engine is responsible for collecting data |