



Prifysgol Cymru
Y Drindod Dewi Sant
University of Wales
Trinity Saint David

Examination Answer Books

12 Pages

Instructions to Candidates

1. Please give the information requested in the boxes below.
2. Enter your name in the space provided to the right, fold over and seal down (using the label provided) to hide your name.
3. The answers must be legibly written. The Examiners can either ignore illegible script or have it typed and the expense of typing charged to the candidate.
4. Write your answers in ink.
5. Begin each answer on a fresh page. Do all rough work in the answer book and cross it through.
6. No part of this book is to be torn out; it must be handed in complete.
7. If more books than one are used, fasten them together using the tags available from the invigilator(s).
8. Every book must be handed in. In no circumstances may answer books, used or unused, be taken out of the examination venue.

Complete, fold and seal
(see note 2 below)

SURNAME:

Joseph

FORENAME(S):

Lee

Michael, Kenneth

1	Student Number	P097298
2	Title of Examination Paper	Web Services
3	Module Code	Acqa 7005
4	Date and Time of Examination	13 th May 19 09:00
5	Examination Venue	BA 310
6	Seat Number	G009
7	Number of Answer Books handed in	one

List the numbers of the questions you have attempted	Office Use
one	9
Two	13
three	11
Four	17
Total	50

(Gweler yr ochr arall am y fersiwn Cymraeg)

GT 31/5/19

$\text{H Hps} : // \text{google} . \text{com}$
 $\uparrow \qquad \qquad \qquad \uparrow$
 protocol Domain

- protocols are Http and Tcp/ip.
- Http is stateless, Tcp/ip is not stateless
- Data is encapsulated into ~~pk~~ Head packets.
- packets are then sent to destination
- A Host computer will send requests. the request is navigated to a Dns Server via the Switches and Routers.
- If the host computer is within a private network the request will be sent to the Authoritative Dns Server for the domain to which it belongs.
- As this Dns Server is not Authoritative for the google domain (say it is authoritative for .uk) it will recursively send out requests to a list of other Dns Servers.
- Some will contain lists of where possibly the requester could go and provide this information via forwarding
- once this request is completed the reply or response is provided.

• Connection is established via a 3 handshake.
Syn ~~A to~~ From A to B,
Ack From B to A
Ack From A to B.

- connection is then established and data can now be passed between A and B.
- connection established is known as a Session.
- The session is not indefinite and will terminate after a given amount of time.
- if no data passed usually in 78 seconds the session will be terminated and will

One have to be re-established via another handshake.

A: cont....

Get	Get Item Data
Head	Get Item Head Data
Post	not idempotent: not concurrent: Multiple requests Data will change with multiple requests
Put	Idempotent: consistent: Data will not change with multiple requests
Delete	Delete
options	options
Trace	Trace last request

packets can possibly be lost ~~but~~ though the path to the destination. At times this may not be an issue. For example video streaming, this will cause a slight pause to the stream. If too many packets are lost then the stream will stop. It is possible at this point the connection has been lost and a connection handshake will be required again.

Tcp I/p layers:

Application layer

Transport layer

Internet layer

network interface layer.

one

URI: uniform resource identifier ✓

B.

: used to identify a given particular resource from a database fed through the Restful web service to a ~~Json~~ format

URL: uniform resource location ✓

: used to identify a given location to a group of resources

URN:

2

Two
A

C R U D

Concurrent: Concurrence to ensure all Transactions are stable, causing no conflicts and ensuring the State is concurrent in operations.

Redundant: ensure no transactions become redundant to affect the State of operations

C

D

Two
B

Post request is not Idempotent. Is not Concurrent. Data will change with multiple requests.

Put is idempotent. it is consistent. Data will not change with Multiple requests.

3

Two
C

1xx	Information	200	ok, item is returned
2xx	Success	401	unauthorised, e.g. log in credentials in correct
3xx	redirection	403	Forbidden, Not authorized to access given items.
4xx	client error	404	not Found; Requested item is not found
5xx	Server error	500	Bad request

8

~~The 404 response informs an end~~

Two
D. the 401 response, provides an unauthorised response, for example an end user would enter the incorrect credentials to gain access to their account.

the 403 response, provides a Forbidden response, for example this can occur when an end user ~~attempts~~ attempts to access a given set of data of which they are not permitted / allowed to access.

2

Three

A.

Restful web services provide an established, secure, dependable service from the back end being a database, the central hub hanging queries, responses, code etc and providing end users an easy experience on the front end.

The service is able to merge items such as ~~data~~ classes, methods, functions etc to provide a seamless communication between databases and websites, which can involve many communications from various languages such as SQL, Java, Javascript, HTML.

Restful web services provide many pre-defined sections which help to create and maintain the service. Other aspects such as Automation tools are available to assist in the Automation of code creation such as Swagger.

There are ^{Controllers} ~~Controllers~~ which provide paths to data which help to access data from a database in a more user friendly way, within these controllers native SQL queries can be coded for example to easily create a URI to gain access to given sets of data.

JSON format provides the data which the service can then manipulate the JSON and gain access and use the information provided from JSON to assist in query checking etc within the Javascript or simply use ajax to provide the given information to the website front end for the end users.

Repositories are available to control the data from the front end and pass through to the back end database.

pre-defined functions can be implemented on the database and data types from programming languages can be converted to database types (data types).

wee

B.

Jackson is a Serializable library that assists in the connection to a given database.

Jpa then inserts the data into a given database.

hibernate provides the function to ~~convert~~ convert

any a Java Data type to a postgresql Data type.

the Jpa Repository extends the Paging and Sorting repository to provide more enhanced, additional functions such as mass delete.

Open Jpa is configured to auto generate information of the creation and consumption of a Restfull service, generating information to assist for example in security auditing.

4

Four
A

On-demand cloud computing can provide benefits such as elastication of given servers or scalable. Depending on a demand for a service, should the demand increase the cloud provider is able to provide additional servers to the customer ~~for~~ for the service to manage the demand. Once the demand of a service decreases so can the number of resources (servers) be decreased.

Software as a service, Infrastructure as a service, Function as a service and many more can be provided.

A customer would not have to worry about the costs of internal infrastructure, security and maintenance of the internal structure.

If all managed internally on site, should a demand increase they would not be able to create a new server instantly to meet the demand thus the service will slow and possibly stop.

cloud computing can provide DNS servers, Firewalls, routing, automatic IP addressing, creation, Sub domain creation & management, Security and so on.

- The company ~~pay~~ who does not use cloud and thus manages all internally have to pay additional costs in professionals to create & maintain the infrastructure.
- On cloud provides very good reliable redundancy should a server or a group of servers fail, the on cloud provider can instantly move the given services held on the failing servers over to a new cluster of servers to ensure that a customer's service does not have any or very little down time.

For
A
Cont... On line providers also provide the databases
and include a strict back up policy to ensure
that all data is held within ^{govt} policies
and is accessible 99.9% of time.

On line providers pay the extra fees unforeseen
circumstances such as natural disasters etc
and have counter measures to ensure that no
services are effected for the customers.

Security is high and provide ^{extensive} ~~extensive~~ methods for the
customers staff to access the servers and data
but also assist in reducing access to given
data and servers, services etc.

The customer only pays for what they are using at a
given time. pay as you go as such. This is
more beneficial financially which enables the
customer to confidently reach out to the world, offering
their services, pulling in more trade to the company
creating more profits rather than a company
not using cloud and having to put profits into

- renewing hardware, new update software,
staff training etc.....

Four

B.

Security, redirection to cause spoofing, Data leak, Code leak, Dos Attacks, SQL injection, flashing, Database connections

2 1/2

Four

C

Auto generate the code, update, confirmed to be stable, reliable, easily manageable. The auto generation of information to assist on areas ~~areas~~ such as security auditing. Testing can be implemented easier if required. Troubleshooting, lack of redundant code, ease of implementation, consistency

4 1/2