2012 Terms Test Answers

STUDENT:

QUESTION 1

Part	Description	Marks	Comment
(a) 2 marks	☐ No electromagnetic interference. ☐ Therefore, no need for error detection/correction.		
(b) 2 marks	☐ Error detection code added to the frame before sending. ☐ Code recomputed and compared with received EDC.		
(c) 2 marks	☐ Record address as associated with interface. ☐ Broadcast on all links except on the one received.		

QUESTION 2

Part	Description	Marks	Comment
(a) 2 marks	☐ 4 bytes. ☐ 16 bytes.		
(b) 4 marks	☐ (i) = C ☐ (i) MSB is 110. ☐ (ii) = A ☐ (ii) MSB is 0.		
(c)(i) 2 marks	☐ 32-26=8-2=6 ☐ 2^6=64. Said STATE so working does not need to be shown.		
(c)(ii) 2 marks	☐ Fourth subnet (count from 0 so 3), 11000000 ☐ 129.254.128.192 Note that 1st subnet is 00000000 so 129.254.128.0, 2nd subnet is 01000000 so 129.254.128.64, 3rd subnet is 10000000 so 129.254.128.128. Said STATE so working does not need to be shown.		
(c)(iii) 2 marks	☐ Fourth subnet (count from 0 so 3), 11111111 ☐ 129.254.128.255 Broadcast addresses for other subnets are: 129.254.128. Said STATE so working does not need to be shown.		
	☐		
	☐		
	☐		

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STUDENT:

QUESTION 2

Part	Description	Marks	Comment
(a) 4 marks	☐ GET ☐ Host ☐ Operation ☐ Parameter		
(b) 4 marks	☐ POST ☐ Service (/deposit). ☐ Account as XML ☐ Amount as XML		
(c) 4 marks	☐ POST. ☐ /withdraw ☐ Account as XML ☐ Amount as XML		
(d) 4 marks	☐ With POX, the service always returns 200OK irrespective of the error. ☐ The programmer has to parse the response to extract error information. ☐ With CRUD services. The HTTP status codes are used to indicate the type of error. ☐ The response contains additional information about the error.		
(e) 4 marks	☐ Timestamp is cheaper to compute than a hash. ☐ Hash requires doing a computation over entire reply. ☐ Granularity of changes that can be monitored. ☐ May change more rapidly than the resolution of the timestamp.		

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QUESTION 3

Part	Description	Marks	Comment
(a) 2 marks	☐ Something like … http://www.bank.com/account. ☐ Minimises coupling with clients by hiding server implementation details (encapsulation)		
(b) 2 marks	☐ Allows different clients to be used, ☐ For example a browser rather than a program might be used to interact with the service so returning XHTML might be a better choice.		
(c) 5 marks	☐ Allows programmers to take advantage of standard rendering libraries. ☐ Thereby reducing the work of building clients and servers.		
(d) 6 marks	☐ Each state is listed. ☐ Logout leads to no state. ☐ Customer is able to getBalance, deposit, withdraw, logout for the rest for at least one example. ☐ Appropriate links for the remaining states. ☐ Attempted to use LINK type to indicate flow.		
(e) 3 marks	☐ Login provides getBalance and logout links. ☐ GetBalance provides withdraw and deposit and logout. ☐ Withdraw and deposit provide GetBalance and logout.		
(f) 5 marks	☐ When links are returned to clients that have not been updated, the clients just ignore them. ☐ This means that old clients can keep running without needing to be updated. ☐ This improves the robustness of the application by removing potential fragilty. ☐ That is in the previous approaches the client would need to be updated to work with the application each time that a protocol is changed. ☐ Additionally the semantic information returned with responses allow clients to be flexible in how they render representations.		

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QUESTION 4

Part	Description	Marks	Comment
(a) 4 marks	☐ (1) Client retrieves representation from a nearby cache without having to traverse the whole network to the origin server thereby reducing bandwidth usage; ☐ (2) Client retrieves representation from a proxy that is closer in terms of latency thereby improving performance; ☐ (3) Instead of all requests going to a single server, the load is spread out over multiple proxy servers. ☐ (4) Where it is a transient failure, the proxy can respond to requests from clients even if the origin server is unavailable.		
(b) 6 marks	☐ Local cache. ☐ Stores representations from many origin servers on behalf of a single user agent, application or machine. ☐ Proxy cache. ☐ Proxy cache stores representations from many origin servers on behalf of many consumers. Can be hosted both inside the corporate firewall and outside. ☐ Reverse proxy. ☐ Stores representations from one origin server on behalf of many consumers. Reverse proxies are located in front of an application or web server.		
(c) 2 marks	☐ Requires server to maintain knowledge of which clients it is in conversation. ☐ Allows it to inform them of changes to its state.		
(d) 3 marks	☐ Only the client's local cache are allowed to store the data. ☐ Can be stored for up to an hour. ☐ Would be used where the response is somehow private to the consumer and so should not be stored in a public cache and can be up to an hour out of date (caching allows better performance).		
(e) 5 marks	☐ Fresh if it has not been stored in the cache longer than a specified lifetime. ☐ Has nothing to do whether it has diverged from the original or not. ☐ The original may have changed but the cached representation might still be fresh. ☐ A stale cached representation is one that has exceeded its lifetime. ☐ This might have diverged but equally the representation at the origin server might be just the same. ☐ You can only find this out by revalidating the cached representation.		

2012 Terms Test Answers

QUESTION 5

Part	Description	Marks	Comment
(a) 2 marks	☐ An event (as specified in the book) is a significant change in the state of the resource at any particular point in time,. ☐ In this case it would be a change in temperature.		
(b) 3 marks	☐ Tight requires client and server to be present at the same instant of time in order for communication to take place. ☐ Loose doesn't require both to be present at the same time for communication to take place. ☐ Loose improves reliability of the application.		
(c) 5 marks	☐ Publisher is polled by the consumer. ☐ Consumer checks at regular intervals if there are any new events. ☐ The shorter the polling period the more up to date the view of the events. ☐ But the greater bandwidth used. ☐ Worse performance of the client as it has to do more work.		
(d) 5 marks	☐ Feed is fetched as a single document therefore do want it to grow forever. ☐ Otherwise everytime we want to poll we will incur large bandwidth costs. ☐ Therefore, break the feeds up into chunks that are smaller files and less costly to download. ☐ One approach is simply archive at a regular interval but this does not place an upper bound on the size of a feed. ☐ Another approach is to simply set a maximum size or number of entries and archive when it reaches this size.		
(e) 5 marks	☐ Client finds current event feed. Reads events to see if any that it has seen before. ☐ No? got to the previous archive and repeat the process until eventually a previously processed event is found. ☐ When found, process all events in the feed. ☐ Then follow the next-archive link to the next oldest archive and process these events. Continue until all events are processed. ☐ This should be expensive because reading archives twice. ☐ However, if the feeds are cached it is likely that they will be stored in a local cache which does not require any requests to pass over the network to the origin server.		

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QUESTION 6

Part	Description	Marks	Comment
(a) 4 marks	☐ Need to construct a function of degree 2. ☐ For example, f(x) = 42 + 3x. ☐ Hand out shares (= number of people to share secret with), for example … (1, f(1)), (2, f(2), (3, f(3)), (4, f(4)). ☐ Need two people in order to work out what the secret was through interpolation, one is not sufficient.		
(b) 3 marks	☐ Malice sends Bob "Hi, I'm Alice" and gives Bob Malice's public key. ☐ Malice intercepts Bob's challenge. ☐ Malice sends Bob N encrypted using Malice's private key.		
(c) 2 marks	☐ Authentication is about proving who you are whereas. ☐ Authorisation is about proving your right to do something.		
(d) 3 marks	☐ Ticket for service issued to the client has a time to live. ☐ An attacker could extend the time to live by making the application server's clock run slow. ☐ This would allow them to capture the ticket issued to the client and replay it a many times as it would like.		
(e) 2 marks	☐ First, the service doesn't have to manage its own authentication system. ☐ Second, it provides a single sign on service freeing the user from having to remember a large number of usernames and passwords.		
(f) 3 marks	☐ The reason isn't confidentiality, ☐ The main reason is that a malicious service might redirect a user to a fake version of their OpenID provider ☐ In order to steal user credentials.		
(g) 5 marks	☐ Server – service hosting the protected resources – this would be the Bank. Issues temporary credential for access. ☐ Resource owner – the customer in this case who has control over the resource. ☐ Authenticates itself and chooses whether credentials will be issued to the client. ☐ Client – the service needing access to the protected resource. ☐ Must request authorisation from the Bank for access to resources and bank redirects it to the resource owner.		