



12 Pages

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.**

FORENAME(S): Sophie

List the numbers of the questions you have attempted	Office Use
1(a)	<u>8.5</u>
1(b)	
1(c)	
2(a)	<u>24</u>
2(b)	
2(c)	
3(a)	<u>16.5</u>
3(b)	
Total	<u>65 %</u>

(Gweler yr ochr arall am y fersiwn Cymraeg)

1(a) This pattern works by creating sub-functions within one main function. This allows for little code ~~rep~~ replication. This pattern also requires a return, which must be followed by 'Next' and ~~'reset'~~. These functions will contain the function which comes next, after the first function is completed. And the function which resets the entire function. Outside the main function includes the standard code which sets a variable, ~~including~~ which includes the function, then it permits the reset first, to start fresh, then the Next.

3

1(b) Cross Origin Post is not a good choice to use, this is because the security using a cross origin post is not very secure. It is open to cybercrime. Within cross origin post there must be a proxy which is very limited in use, due to security reasons*. The ~~best~~ developers should use single origin post, this permits scripts running, orientating on the same server access to each others ~~sets~~ methods and properties, with ~~limited~~ ~~access~~ little, or no restriction. Single origin post also prevents ~~post~~ access to most methods and properties from other sites. Therefore, the single origin post is much safer and more ~~ex~~ secure than Cross Origin ~~Post~~. *The developers do not seem to have ~~a~~ proxy which could be why they are getting an error.

4

1(c) Typescript is a loostey ~~x~~ typed language which makes it easier for developers to code with Typescript. This is due to it not mattering if the developer writes a double quote instead of a single quote, this would matter in a strongly typed language. Typescript also is a sub-language of Javascript, so if the developer understands the meaning behind Javascript, they are more likely to understand Typescript. Finally, ~~Typescript~~ allows the developer

More functions within their code as Typescript ~~can~~ is able to hold large amounts of code.

1.5

8.5
agreed

2(a) The four V's which are characteristics of ~~the~~ big data are: Volume, which means how large the data is (terabytes, petabytes etc). Variety, which means how the data is Structured, if it is structured, Semi-~~structured~~ ^{structured} or Un-Structured. Velocity, which provides near real-time or real-time stream of data. Finally veracity which suggests the uncertainty of the data collected.

8

✓

2(b) The benefits of using Map Reduce data is that it is slightly faster and scales out, not up. Map Reduce data also puts all of the data together and counts the number of times the specific data appears, this is what makes it faster. The Map function² receives all of the raw data which has been inputted into the system and counts all of the data separately. For example - the 'are' in both 'How are you today?' are counted as one each. The Shuffle and sort section receives all of the data, and the counts from the Map function and puts them into clearer sections. It groups together the same data, but does not add them together. The reduce function reduces the amount of data which gets stored. It does this by receiving the data from the Shuffle and sort section and adding to the count each time the data is replicated. For example ~~more~~ the count for 'are' is now two. Finally, the final output outputs all of the ~~data~~ data with the number of counts they have. The more times the data is repeated, the more the count increases. Overall, this creates a faster data processing, and load than Hadoop does. The combiner, combines all of the same data together so if the key values are the same, they will be combined together.

19

✓

2(c) Data should always be immutable in big data. This is because it will have a high human fault tolerance, so if someone accidentally deletes a section of data, they are able to go back to the raw ^{immutable} data which hasn't been changed. This way the raw data stays the same. Another reason for data to be immutable is because if the site gets targeted maliciously then the raw data is still available to the developers. However, by creating immutable data, it slows down the processing time as there is so many data being held.

Good answer
24
agreed

3(a) ~~Rest~~ REST is known as representational state transfer, one reason why it is a popular choice is because it is used by WCF (Windows Communication Foundation). REST also has four design principles which are: it exploits data from the server as requested by the client. It is stateless which means the client and the server can be in any state to access it. It also exposes structure directory such as URIs and finally REST transfers XML and JSON, or both. These reasons make REST a popular choice due to the ease of use. REST also include HttpRequest and HttpResponse. HttpRequest allows the client to the site through HttpRequest this should always be done using POST. HttpRequest can be done through HttpHeaders or Html page if it is available. HttpResponse ~~allows~~ permits the usage of methods, these methods are OPTIONS, HEAD, GET, POST, PUT, DELETE, CONNECT and TRACE. CRUD ~~also~~ is a basic REST section which allows for one-to-one mapping between Create, Read, Update and Delete. The principles of CRUD and HTTP are, to create a resource, use POST. To ^{or read} retrieve the resource, use GET. To update a resource, use PUT and to delete the resource, use DELETE. REST's URI must be intuitive, meaning it is easy to guess and provides a basic description about the site.

8

8

3(b) The benefits of using AJAX Pull technique is that it pulls all of the data when new is received, whereas push only receives data every so often. Push must be told when to activate to collect the data, which brings in clusters of data at once to be sorted. Whereas, pull collects the data in parts so it can be analysed as soon as possible.

0.5

16½
agreed.