

Week 8 Graded question with Solutions

1] Which of the following are permitted in a fully static website? [MSQ: 1 point]

1. Images
2. Javascript
3. Database connection request for each page
4. All of the above

Answer: Option 1 and 2.

Solution: Options 1 and 2 are OK. but option 3 i.e. database connection for each page will require work by the server and is therefore not a fully static site.

2] Which of the following is most dangerous to the client? [MCQ: 1 point]

1. Static HTML web page
2. PHP script on server
3. JS with native mode access
4. JS with only basic API access

Answer: Option 3.

Solution: Option 3 is the most dangerous to client. Option 2 is dangerous to the server. Others are generally safe.

3] Which of the following is/are true for constraint validation API? [MSQ: 2 points]

1. Constraint validation API is sufficient to protect against SQL injection
2. Constraint validation API only protects the form itself.
3. It is always possible to directly submit to the controller. without going through the HTML form.
4. None of the above

Answer: Option 2 and 3.

Solution: Constraint validation API is not completely sufficient to protect against SQL injection because it only protects the form itself and It is always possible to directly submit to the controller. without going through the HTML form.

4] A server has a 16-core CPU, 64 GB RAM and 1 Gbps network connection. It can run a Python Flask application that can generate 500 HTML pages per second. Each page also has a 100 KB image that needs to be downloaded by the client. What will be the maximum number of requests per second that the server can handle? [NAT: 3 points]

Answer: 500.

Solution: The image size is about 100KB per image, so 1250 of these per second can be delivered on the network. So the limit will come from the Flask application which can generate only 500 pages per second.

5] In question No. 4, if the image resolution is improved such that the size of all the images is increased from 100KB to 500KB but keeping all other parameters unchanged. What will be the maximum number of requests per second that the server can handle? [NAT: 2 points]

Answer: 250.

Solution: The image size is increased to 500KB per image, so 250 of these per second can be delivered on the network. So even though the Flask application which can generate 500 pages per second, the limit will come from the network bandwidth which will allow only 250 requests per second.

6] In question No. 4, if the server gets an upgrade in the network bandwidth from 1 gbps to 2 gbps and the Flask app is optimized to generate 1500 HTML pages per second. Keeping all other parameters unchanged, what will be the maximum number of requests per second that the server can handle? [NAT: 3 points]

Answer: 1500.

Solution: With the increased bandwidth of 2gbps, the number of images (100KB each) that can be delivered to the network is 2500. however, the Flask application generate only 1500 HTML pages per second so limit is determined by the Flask app which is 1500.

7] Which of the following is/are true for a DOM? [MSQ: 2 points]

1. The DOM is used only inside the browser for asynchronous updates.
2. Javascript has APIs for manipulating the DOM at runtime.
3. It is mostly used only for updating inside a browser, but is not restricted to it.
4. DOM updates can be used to add new entries to the database.

Answer: Option 2 and 3.

Solution: DOM is a general document model. It is mostly used only for updating inside a browser, but is not restricted to this. For example, Python has a DOM module that can manipulate such models, but may not be directly useful for runtime changes. Javascript has APIs for manipulating the DOM at runtime like adding new wntries into the database however, DOM cannot itself cannot be used to update database.