Stephen King
Intro to Server-Side Development with PHP

1. **In the LAMP stack, what software is responsible for responding to HTTP requests?**

Apache is the software that keeps track of what sites are available on the server along with the setup of hosting those sites. The software that would actually respond to HTTP requests would be PHP. The PHP would be written to do something with a request such as redirect or respond with data or an error (like a 500) for the user or machine that made the request.

2. **Describe one alternative to the LAMP stack.**

One alternative would be the Mongo Express Angular Node stack or MEAN stack. It has most of the basic components the LAMP stack has like a database (Mongo) and a hosting server (Express). Node would be the foundation for the web server while Angular is the framework for the client side. The One overwhelming plus for the MEAN stack is all of the technologies use Javascript as their hosting language which makes learning the whole stack much more fluid.

3. **Identify and briefly describe at least four different server- side development technologies.**

Node and Express: They both work hand in hand to deliver server side web apps. Node is the framework that Express builds off of. Express takes care of routing and controlling the data flow.

Django: A full server side framework that is built and used with Python. Django is primarily used to get web applications up and running very quickly.

Ruby on Rails: Another full server side framework that is built and used with Ruby. Rails is used for any type of web applications.

Sails: Pretty much exactly like Express but not as much is given to you. It also used Node as a building framework.

At the end of the day all of these technologies do the same thing.

4. **Describe the difference between the multi- threaded and multi- process setup of PHP in Apache.**

   The pre-forked (multi-process) flavor runs several copies of itself and each copy is designed to serve one visitor at a time. The multi-threaded model runs one, sometimes a few, copies of itself but each copy has several threads and each of those threads can serve one visitor at a time.

   So, if you had 20 simultaneous requests to your server, the pre-forked version would need 20 copies of itself running to serve them all. In the same situation, the multi-threaded version might have only 1 copy running with 20 internal threads to serve the same requests.

5. **Describe the steps taken by the Zend Engine when it receives a PHP request.**

   At the lowest levels you find **the Zend Engine (ZE)**. ZE handles parsing a human-readable script into machine-readable tokens, and then executing those tokens within a process space. ZE also handles memory management, variable scope, and dispatching function calls.

6. **What does it mean that PHP is dynamically typed?**

   It means that PHP will give types to variables at run time, not at compile time like Java and C++. Pretty much you, as the programmer, don't have to specify if a variable is an integer, string, characer, etc. PHP will do all of that for you.

7. **What are server- side include files? Why are they important in PHP?**

   PHP included files are other php files that are included in a single php document. For example, you can include 'header.php' in your 'index.php'. This is really important

because it makes files modular, creates a single source of truth for editing, and breaks what would be huge documents into smaller pieces so troubleshooting can be easier.

8. **Can we have two functions with the same name in PHP? Why or why not?**

From what I can find, since PHP is dynamically typed it can't happen, but some people online with a ton of time can make the language do it. But that's silly.

9. **How do we define default function parameters in PHP?**

Place them in the function parenthesis. For example:

function add_one($here, $are, $your, $parameters) {}

The four parameters are then in the scope of the add_one function and can be used anywhere within the function.

10. **How are parameters passed by reference different than those passed by value?**

Function parameters are passed by value by default. So if the functions is going to alter an outside value and not override it, like it would if it were passed by value, it would take the parameter as a reference. It does this by using the '&' before the parameter. For example:

function example(&$some_parameter){}

This function would reference the value that was passed into it, in this case $some_parameter.