

Technical Assessment

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Coding assignments:

1. Design & develop a webpage where we can sign up as user and use a to do list function when we login. The to do list will have options to save and retrieve list items, in your choice of framework.

To submit a git repository for both assignments.

Open Ended Questions:

Software development cycle.

1. What is Scrum? Name roles in Scrum.

Scrum is a framework that teams may use to create their own procedures. It establishes the foundation for regular meetings, artifacts, and roles and responsibilities. One of the Scrum roles is Scrum Master which is responsible for addressing the resources issues and protecting the team.

2. What is Agile & how is Agile different from other software delivery approaches?

Agile software development is a collection of iterative software development approaches in which requirements and solutions emerge from cooperation among self-organizing cross-functional teams. One of the differences between the agile approach and traditional approaches is that in the agile approach the testing can be done for each sprint. While in traditional the test will be comprehensive test planning

3. What is the difference between load and stress testing?

Stress testing is used to determine how well a system or software application performs under excessive load. The load limit is the point at which a break occurs in load testing. Furthermore, the software's performance is evaluated by many users.

Stress testing is used to determine the system's or software application's robustness under excessive stress. The load limit in stress testing is higher than the break threshold. Additionally, the performance is evaluated with varied data quantities.

4. When is refactoring useful?

Before making any improvements or adding new features to existing code, it's wise to think about refactoring. Cleaning up the existing code before adding new programming would not only increase the product's quality but will also make it much easier for future developers to develop the source code.

5. What is an MVC framework?

The Model-View-Controller (MVC) architectural pattern divides an application into three logical components: model, view, and controller. Each of these components is designed to handle certain parts of application development. MVC is a popular industry-standard web development framework for building scalable and adaptable projects.

Proficiency with Javascript, HTML, CSS

6. Explain how you would ensure that your web design is user-friendly and what kinds of steps would you use?

The first thing by try using the website on mobile to check if it can fit in phone screen size. Moreover, is to check that the website navigation is properly working.

7. Can you tell us when would you utilize CSS float?

Only when I must.

8. How do you structure your source code to make it easy for leverage by your colleagues?

By writing comments in understandable parts and by following the structure of writing code that was agreed by the team.

9. Given a string, reverse each word in the sentence using Javascript.

- Problem: For example Welcome to this Javascript Guide! should be become emocleW ot siht tpircsavaJ !ediuG.

```
10. let string = "Welcome to this Javascript Guide!";
11. let reversedString = "";
12. const stringArray = string.split(" ");
13. stringArray.forEach(reverseString);
14. function reverseString(item) {
15.   for (var i = item.length - 1; i >= 0; i--) {
16.     reversedString += item[i];
17.   }
18.   reversedString += " ";
19. }
20.
21. console.log(string); // Welcome to this Javascript Guide!
22. console.log(reversedString); // emocleW ot siht tpircsavaJ !ediuG
```

Node JS, React JS, and JavaScript

10. List out the differences between ReactJS and NodeJS?

ReactJS is a pure JavaScript library developed by Facebook to enhance the UI for web apps and it can be used to make single-page web apps. ReactJS is basically used in the Client-side. React is not supporting APIs. It supports both android and web with the introduction of react-native.

NodeJS is a server-side programming language that executes JavaScript code outside of the browser using a JavaScript runtime environment. NodeJS is written in C, C++, and JS. Micro-services and API can be created with NodeJS. NodeJS support only the web.

11. What are the key features of Node.js?

Cross-platform compatibility, NodeJS works on a variety of platforms, including Windows, Unix, Linux, Mac OS X, and mobile devices. It can be used with the appropriate package to create a self-contained executable. NodeJS is an expert at managing several requests at the same time. Furthermore, its cluster module can load and balance all CPU cores. Another fascinating aspect is that it can partition software horizontally. This implies you may show different users' alternative versions of software or apps based on their age, interests, location, and other factors. NodeJS reduce the workload by utilizing quick communication.

Python and Django framework

12. When to use a tuple vs list vs dictionary in Python?

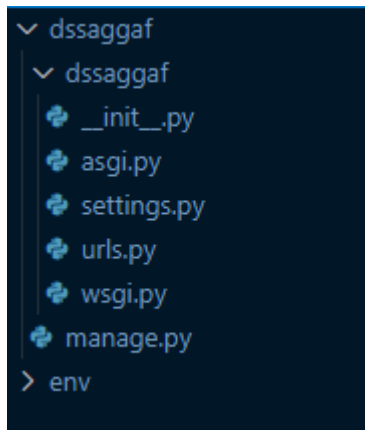
A tuple is used when you know you won't edit or modify it after it's been created and when the content is sorted or has a structure for retrieval. While the dictionary is used when the data doesn't have a structure and quick retrieval is the primary concern and space complexity is unimportant. While the list is used when it is not sure the data structure will expand; Also, it's the best option for testing.

13. What is the difference between Flask and Django?

Django is a full-stack web framework with a batteries-included approach that provides ready-to-use applications. It works well with multi-page apps. Django is compatible with the most widely used relational database management systems, such as MySQL and Oracle. Django is appropriate for high-end technological enterprises such as Instagram, Udemy, and Coursera, among others.

Flask is a lightweight framework with a lot of functionality and minimum features. It doesn't require any additional libraries. Only single-page apps are acceptable with Flask. Flask does not support the standard database management system and instead relies on SQLAlchemy to meet database needs. Flask is appropriate for enterprises and projects that wish to experiment with the framework's modules and design, such as Netflix, Reddit, and Airbnb.

14. What are the various files that are created when you create a Django Project? Explain briefly.



1. `__init__.py`

This is a blank document. This file's purpose is to inform the Python interpreter that this directory is a package and that the presence of the `__init__.py` file in it makes it a Python project.

2. `asgi.py`

ASGI is an asynchronous callable, which means it accepts scope, which holds information about incoming requests, `send`, which is an awaitable that allows you to send events to the client, and `receive`, which is an awaitable that allows you to receive events from the client.

3. `settings.py`

It holds the Django project's settings. The most crucial file is `setting.py`, which is used to add all the apps and middleware applications. This is the Django project's primary settings file. This comprises a list of variable names and changing the value will cause your application to behave differently. The default database is `sqlite3`.

4. `urls.py`

It has all of the endpoints that the project website should have. It's utilized to deliver the URLs of the materials that may be found on the internet. This file instructs Django that if a user enters this URL, they should be directed to that specific website or picture.

5. `wsgi.py`

WSGI is a standard interface that separates server code from application code, allowing for the addition of business logic. WSGI programs process a single request at a time and produce a response. WSGI's long-lived connections, such as WebSocket connections, are limited by this single and synchronous callable.

6. manage.py

This file serves as the project's command-line tool. It contains the code for starting the server, performing migrations or migrations, and a variety of additional instructions that are entered into the code editor.

15. Write a program in Python to produce Star triangle.

Output:

```
*
***
*****
*****
*****
*****
*****
*****
*****
*****
*****
```

```
rowsNumber = 9
j = 0
for i in range(1, rowsNumber+1):
    for space in range(1, (rowsNumber-i)+1):
        print(end=" ")
    while j!=(2*i-1):
        print("*", end="")
        j += 1
    j = 0
    print()
#      *
#     ***
#    *****
#   *****
#  *****
# *****
# *****
# *****
# *****
# *****
```

MySQL

16. What is the difference between the database and the table?

A table is part of a database in which one database can contain many tables.

17. Can you explain the general process of database testing?

Cleaning up the database is the first step. If the database contains testable data, it should be emptied. then Install the fixture, this includes inserting data into the database and validating the database's current condition. Finally, check the results and produce them. The test is completed, and the results are checked. If the output matches the expectations, the next step is to create the required outcomes. Otherwise, testing is done to detect database issues.

Amazon Web Services

18. Are you familiar with cloud systems? What are their pros and cons?

Yes, there are many pros to using cloud systems one of them is automated backup and recovery. While one of the cons is always dependent upon an internet connection.

19. Mention what the difference between Amazon S3 and EC2 is?

EC2 is used to install anything because it provides a complete virtual computer. It doesn't matter if you're dealing with large physical files or deploying your.Net/PHP code. However, EC2 is much more expensive than S3. S3 may be used to store and deploy large physical files as well as static websites. In addition, the cost of S3 is relatively low. As a result, we should put our physical files in an S3 bucket and run our code on an EC2 instance.

Code versioning tools.

20. What is Git?

Git is a free and open-source distributed version management system that can handle small to extremely big projects quickly and efficiently.

21. What's the difference between a pull request and a branch?

The code is saved on the branch, and you may merge it using a pull request.

22. What is Git fork? What is difference between fork, branch and clone?

Forking it is basically making a copy of a repository from another GitHub in the GitHub account, but with a link back to the original. While the clone is to make a local copy of the repository in the local machine. But the branch is to create another copy of the code inside the repository to apply for example unstable feature that wont effect the original code.