CFGDEGREE

FULLSTACK ASSESSMENT MATERIAL RELEASE

THEORY QUESTIONS

SECTION TYPE	TOTAL MARKS AVAILABLE	NOTES
Design heuristics	10	
Redux	10	
React	10	
Agile	10	
40 marks available total		

Important notes:

- This document shares the first section of the FullStack Assessment which is composed of 4 FullStack Theory Questions
- You have 24 hours before the assessment to prepare.
- If any plagiarism is found in how you choose to answer a question you will receive a 0 and the instance will be recorded. Consequences will occur if this is a repeated offence. You can remind yourself of the plagiarism policy here.
- Answers need to be explained clearly and illustrated with relevant examples where necessary. Your examples can include code snippets, diagrams or any other evidence-based representation of your answer.

`Questions begin on the next page

Theory Questions	40 total

1. **In design Heuristics, what does the term “advantages of Matching between system and the real world” mean? What are the advantages?**

This design principle is all about making sure a system, program, or interface speaks the same language as users and follows concepts the user is familiar with from real life. The idea is to keep things clear, not confusing, and very intuitive by aligning the design with people’s natural thoughts and understanding.. For instance, even if someone isn't a tech expert, they get that a button is for clicking. So when designing, buttons should look like something you click, and if they see a 'Swipe left or right' on a page, they should know how to swipe.

It involves tapping into what users already know from their past or current experiences, using everyday words and phrases, and steering clear of confusing jargon. This way, we cut down on the brainpower and mental load needed to figure out and work with technology. When someone lands on a website, they should just know what to do without feeling intimidated. This ties into the concept of affordance. If a system or interface matches up with what users are used to in the real world, it gives clear signals, making things way more intuitive and user-friendly. It makes the design flow smoothly, so it feels familiar to users.

Advantages:

- Improves user experience.
- Improves user engagement- patient likely to stay on a website and navigate it through
- Reduced mental load of using a website / interface.
- Increased user confidence in the website and they are likely to return
- If it’s an e-commerce website, it can improve conversion.

2. **What do you understand by “Single source of truth”? and how does it relate to redux? What are the advantages ?**

Single source of truth' means keeping all our applications data in one central place /bank acting as the primary reference for specific information.

In Redux, this main place/ bank is called the global store. It holds all our app's info in one JavaScript object, the store- where the store is the only source of truth for occurrences in the app.

With store, we do not need to pass information through props from component to component or useState to update an application. The information is readily accessible from any React component making it an efficient system. To change state, you dispatch actions that describe the changes and any changes sent into the store. Any changes dispatched into the store trigger components to utilise useSelector to subscribe and receive updates from the store, allowing them to make necessary adjustments.

In order to implement Redux, the entire app is surrounded by a provider component making the store (global bank) available for descending components in the hierarchy.

Here's a basic example of setting up a Redux store:

```
const initialState = {
  name: '',
  age: '',
};
const rootReducer = (state = initialState, action) => {
  return state; };
const store = Redux.createStore(rootReducer);
```

Advantages:

- Fast and efficient: Makes it quick to handle our application’s state
- Predictable;: changes to states are predictable and trackable since there's only a single source of truth
- Debugging: Debugging is easier with redux store, once its debugged in one place, it reflects in other components
- This makes the app scalable as newly built components can readily access the information from the store.

3. What is the difference between a stateless component and a stateful component in React?

Stateful	Stateless
Has its own internal state	Does not have its own internal state
Page is rendered via its own state, and any changes to state trigger a re-render of the page.	Page change is updated via props
Uses UseEffect and USestate for side effects and state management	Relies on props to update UI
Suitable for various tasks, including complex logic and managing dynamic data- e.g UseEffect for API call when page first renders	Good for creating for instance a button components that do not require a state. But can also use functions and conditional rendering to perform tasks.
Robust and Scalable.	Simpler and easy to read, preferred choice for creating presentational components.

4. **List out the advantages and disadvantages of exploratory testing (used in Agile) and scripted testing?**

Exploratory Testing:

Exploratory testing is the practice of allowing testers to enter / test a product and find bugs and errors without the help of a script or pre-defined test cases. Test cases are not created in advance, but testers are encouraged to check them as they go.

Advantages:

1. Well-suited for Agile development environments where flexibility and quick feedback are essential.

2.Promotes a dynamic approach, allowing testers to explore and learn about the application as they test.

3. By leveraging the creativity of testers, hidden defects or scenarios that were not explicitly considered during the development process may be uncovered.

4. Mimics real-world user behaviour, making it effective in identifying issues that might be missed in scripted testing.

5. Facilitates the discovery of bugs early in the development process.

Disadvantages:

1. Lack of predefined structure and process can make it challenging to document and reproduce specific test scenarios.

2.Test cases are determined on the fly during testing, which can result in inconsistencies and challenges in maintaining a structured testing approach.

3.) relying solely on the creativity of individual testers can introduce subjectivity to the testing process. Different testers may approach the same application differently, leading to varying testing outcomes. Consistency in testing can become a challenge, especially in larger teams or projects with multiple testers.

Scripted Testing:

Scripted testing involves designing test cases first and later proceeding with test execution.

Advantages:

1. Easier to automate, enabling efficient execution of repetitive and time-consuming test cases.

2. Ensures consistent testing as test cases are designed and executed in a predefined manner.

3. Offers clear traceability between requirements and test cases, making it easier to track test coverage.

Disadvantages:

1. May not capture real user behaviour effectively, as the test cases are predefined and may not cover all possible user interactions.

2. Might not be as effective in discovering unexpected bugs early in the development process compared to exploratory testing.

3. Testing relies on the execution of predefined test cases, limiting adaptability to changes in requirements.