Web Fundamentals

1. **What is the World Wide Web?**
   A global information system of interconnected webpages that are accessed over the internet. It uses hyperlinks to navigate between webpages of different websites and allows users to access and share information via multimedia content.

2. **Functional differences between a web application's front end and back end**
   Front-end development involves the user-facing elements and user experience, focussing on the visual aesthetics. It is responsible for creating the user interface and developing the layout and navigation of the web application. It is also responsible for the client-side logic using HTML, CSS and Javascript to run the web browser. Furthermore, it involves formatting text, images and multimedia content for the presentation of the web browser.
   Back-end development focusses on the processes behind the scenes on the server side where it processes requests from clients, interacts with databased and generates the dynamic content. It is responsible for data management where it stores, retrieves and deletes data from data storage systems. It is also responsible for the security of the web application and integrating with external services.

3. **What occurs on the back end during a web interaction using an example of a user logging into a web application:**
   - Request processing – user requests login page by entering URL in web browser, the web browser sends a request to server, server receives requests and begins processing on back end
   - Routing and dispatching – the request is handled by the authentication controller or endpoint responsible for managing user authentication
   - Authentication and authorisation – back-end code verifies the user's login credentials against stored data in database, if valid the back end authenticates the user
   - Response generation – back end generates response back to client which redirects to the user's dashboard or a confirmation message
   - Sending the response – server sends response to client over network, web browser receives response and gives content to the user

4. **What is the Mern Stack?**
   An acronym for ta combination of echnologies used for building web applications.
   M: MongoDB – a noSQL database that stores data as documents or objects, providing a JSON-based data-storage approach, designed to handle large volumes of data. Used as the database component of the MERN stack – a storage solution for web applications.
   E: Express.js – a web framework that simplifies server-side web development using Node.js, it streamlines the process of creating server-side applications. It provides a set of features for building web servers and handling HTTP requests and responses.
   R: React – a JavaScript libray for building user interfaces, allowing developers to create UI components. Used as the front-end component of the MERN stack.
   N: Node.js – a JavaScript runtime environment, enabling server-side execution of JavaScript