

Dear Candidate,

Congratulations on being shortlisted for the assignment stage of the interview process. For this process kindly go through your assignment details below. You are allowed to use any available supporting material online. Once you have completed the assignment you may be required to present your work.

Interview Assignment

Task 1 (Limit to 3 slides)

Conduct your own research to understand the Semiconductor industry. Your presentation should cover drivers, key players, and general information on the industry.

Task 2 (Limit to 3 slides)

Conduct your own research to understand the Semiconductor manufacturing process and the equipment used in manufacturing.

Task 3

Develop two separate C# applications, one acting as a server and the other as a client, that establish a TCP/IP connection and enable communication between them.

Requirements:

Server Application:

- Create a server application that listens for incoming TCP/IP connections.
- Implement functionality to send a command and receive a response from multiple clients.
- Continuously poll each client to obtain the current status.
- Display received messages from connected clients.

Client Application:

- Develop a client application that connects to the server application using TCP/IP.
- Enable the client to send an acknowledgement to all messages received from the server.
- Enable the client to send replies to messages to the server 3 seconds after requested for status.
Receive Command > Send Acknowledgement > Wait 3 seconds > Send Reply
- The status should comprise the press status of the 10 buttons on the UI.
- Implement error handling for connection issues.
- Client should respond back with a busy message if new request received within 3 second delay period.
Receive Command while busy > Send Busy

Communication Protocol:

- Define a simple communication protocol for exchanging messages.
- Ensure the server can handle multiple clients concurrently without conflicts.

Code Structure:

- Organize the code logically with proper separation of concerns.
- Implement clear and concise comments where necessary.

Evaluation Criteria:

- **Connection Establishment:** Do both applications successfully establish a TCP/IP connection?
- **Message Exchange:** Can the client send messages to the server, and does the server receive and display them correctly?
- **Concurrency Handling:** Does the server handle multiple client connections without issues?
- **Error Handling:** How effectively are network errors and other issues handled in both applications?
- **Code Quality:** Is the code well-structured, readable, and following best practices?