React Application: Using async.js Package and Code of Ethics

Q.1) Illustrate the Need for the 'async' Package - CO2 (10 Marks)

The 'async.js' package is essential for managing asynchronous operations in JavaScript. In a React or Node.js application, many tasks such as API calls, file reads, or database operations are asynchronous. Managing these tasks manually can be complex and messy. The 'async.js' package provides utility functions like series, parallel, and waterfall that simplify the management of multiple asynchronous functions, making the code cleaner, readable, and easier to debug.

Q.2) Small Application Using 'async.js' - CO1, CO2 (10 Marks)

Below is a simple Node.js application using 'async.js' to run tasks sequentially:

```
const async = require('async');

function firstTask(callback) {
  setTimeout(() => {
    console.log('First Task Done');
    callback(null, 'First Result');
  }, 1000);
}

function secondTask(callback) {
  setTimeout(() => {
    console.log('Second Task Done');
    callback(null, 'Second Result');
  }, 500);
}

async.series([firstTask, secondTask], (err, results) => {
  if (err) {
    console.error('Error:', err);
  } else {
    console.log('Results:', results);
  }
});
```

Input: Executes two tasks in sequence using async.series

Output: Logs each task completion and the results array.

Q.3) Code of Ethics with Respect to React

A code of ethics in React development includes:

- Writing efficient asynchronous code that doesn't block the user experience.

- Handling errors gracefully to avoid crashing the application.

- Respecting the user's time by providing appropriate loading indicators.

- Securing async operations by validating all inputs and API responses.

- Giving credit to open-source libraries like async.js when used.

Following these ethics helps in building trustworthy, reliable, and user-friendly React applications.