**Assignment on Node.js**

**Theory:**

1. What is Node.js? Explain its core characteristics and why it is popular for building certain types of applications.
2. What is the event-driven, non-blocking I/O model of Node.js? Explain its advantages and disadvantages.
3. Differentiate between synchronous and asynchronous operations. Provide a real-world analogy for each.
4. What is npm (Node Package Manager)? What is its significance in the Node.js ecosystem?
5. What is the purpose of the node\_modules directory? How does npm manage dependencies within this directory?
6. Explain the concept of callbacks in Node.js. What are the potential issues with deeply nested callbacks (callback hell)?
7. What are Promises in JavaScript? How do they help in managing asynchronous operations compared to callbacks?
8. What is the purpose of streams in Node.js? How do they improve efficiency when working with large files?
9. What is Express.js? Why is it a popular framework for building web applications with Node.js?
10. Explain the role of database drivers or ORMs (Object-Relational Mappers) in connecting Node.js applications to databases. Provide examples of popular ORMs for Node.js.

**Practical:**

1. Create a simple Node.js script that prints "Hello, Node.js!" to the console. Run this script using the Node.js runtime.
2. Create a local module named calculator.js that exports functions for addition and subtraction.
3. Write a Node.js function that simulates reading a file asynchronously using setTimeout and a callback function. Handle potential errors.
4. Create a Node.js script that uses streams to read data from one file (large\_input.txt) and write it to another file (large\_output.txt).
5. Build a simple RESTful API for managing tasks, demonstrating the fundamental CRUD operations.