

### Q.1) Illustrate the need for MongoDB Package

MongoDB is a popular NoSQL database designed for handling large volumes of unstructured data.

Traditional relational databases are not well suited for modern web apps needing high speed, scalability, and flexibility.

MongoDB uses document-oriented storage (JSON-like documents), making it easier to model real-world objects.

It provides high performance, high availability (via replication), and horizontal scalability (via sharding).

MongoDB is very developer-friendly, supports schema-less designs, and easily integrates with modern web development frameworks like Node.js, Express.js, etc.

In short, MongoDB solves the need for flexible, scalable, and fast data storage in dynamic web applications.

Q.2) Implement small application which will make use of MongoDB package  
(I/p, O/p)

Application Title: Student Record Manager

Technology Stack: Node.js + Express.js + MongoDB

Input (I/p): Student details - Name, Roll Number, Branch

Output (O/p): Saved student data and retrieval of student records

Simple Code Example:

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

const mongoose = require('mongoose');

const app = express();

app.use(express.json());

mongoose.connect('mongodb://localhost:27017/studentDB', {
  useNewUrlParser: true,
  useUnifiedTopology: true
});

const studentSchema = new mongoose.Schema({
  name: String,
  rollNo: Number,
  branch: String
});
```

```
const Student = mongoose.model('Student', studentSchema);
```

```
app.post('/addStudent', async (req, res) => {  
  const { name, rollNo, branch } = req.body;  
  const student = new Student({ name, rollNo, branch });  
  await student.save();  
  res.send('Student record added successfully!');  
});
```

```
app.get('/students', async (req, res) => {  
  const students = await Student.find();  
  res.json(students);  
});
```

```
app.listen(3000, () => {  
  console.log('Server is running on port 3000');  
})
```

### Q.3) Illustrate the need for Code of Ethics

**Trust Building:** Ethical behavior promotes trust between developers, clients, and users.

**Data Privacy:** In web development, respecting user data privacy is crucial.

**Professionalism:** Following ethics maintains professionalism in coding practices, documentation, and communication.

**Security:** Ethical practices ensure that security vulnerabilities are not intentionally created or ignored.

**Fairness:** Fair use of software libraries and respecting intellectual property rights is part of ethics.

Thus, a Code of Ethics ensures responsible and respectful development, fostering a safer and more inclusive tech community.