WAD Assignment

Q.1) Illustrate the need Colors Package

The **Colors Package** is a popular Node.js utility used to style console output with colors, backgrounds, and other text formatting options like bold or underline. It is especially useful in backend development, like the **Node.js (Express.js)** part of a **MERN stack** application.

Why is it needed in MERN stack?

1. **Improved Console Readability:**

    When developing the **backend (Node.js + Express)**, developers often rely on console logs to debug code. With the Colors package, logs like server status, error messages, or success messages can be color-coded for **faster identification**.

2. **Better Error Highlighting:**

    Error logs can be printed in **red**, warnings in **yellow**, and successful operations in **green**. This helps quickly spot problems during development or in production logs.

3. **Efficient Debugging:**

    When handling multiple tasks or API routes, colored outputs help developers **trace the flow** of data or identify which route is being triggered without confusion.

4. **Custom Styling:**

    Developers can customize the console output using styles such as **underline**, **italic**, or **inverse** which can make logs more structured and appealing.

5. **Non-blocking and Lightweight:**

    The Colors package is **lightweight** and doesn't slow down the application. It only affects development logs and has no impact on frontend performance (React).

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

1. Setup Instructions:

```
mkdir color-demo
cd color-demo
npm init -y
npm install colors readline-sync
```

Code : -

```
const colors = require('colors');
const readline = require('readline-sync');
console.log('--- Task Logger ---'.rainbow);
const task = readline.question('Enter task description: ');
const status = readline.question('Enter task status (completed/pending/error): ').toLowerCase();

console.log('\n--- Task Summary ---');

switch (status) {
  case 'completed':
        console.log(`Task: ${task}`.green);
        console.log('Status: Completed'.bold.green);
        break;
  case 'pending':
        console.log(`Task: ${task}`.yellow);
        console.log('Status: Pending'.bold.yellow);
        break;
  case 'error':
        console.log(`Task: ${task}`.red);
        console.log('Status: Error'.bold.red);
        break;
  default:
        console.log(`Task: ${task}`.white);
        console.log('Status: Unknown'.gray);
}
```

I/O :-

Enter task description: Submit assignment
Enter task status (completed/pending/error): completed

Task: Submit assignment   ✅ (in green)
Status: Completed   ✅ (bold green)

Q.3) Illustrate the need for code of ethics.

Introduction:

A **Code of Ethics** is a set of guidelines designed to help professionals conduct business honestly and with integrity. In the field of **technology and software development**, it plays a crucial role in ensuring responsible behavior, fairness, and professionalism.

 Need for Code of Ethics:

1. **Promotes Trust and Integrity:**

    A code of ethics helps build **trust between clients, developers, and users** by promoting transparent and honest practices.

2. **Guides Professional Behavior:**

    It provides a clear **framework for decision-making**, helping professionals choose actions that are morally and socially acceptable.

3. **Prevents Misuse of Technology:**

    In an era of AI, data privacy, and cyber threats, ethical codes help developers avoid actions like **data breaches, plagiarism, or unauthorized access.**

4. **Ensures Respect for Users' Rights:**

    Ethical guidelines promote **user privacy, data security**, and respect for cultural and individual differences.

5. **Reduces Legal Risks:**

Following ethical practices can **prevent lawsuits or penalties**, especially in areas like software licensing, intellectual property, and data protection.

6. **Promotes Fairness in the Workplace:**

   A code of ethics supports **non-discrimination, equal opportunity**, and respectful behavior in tech teams and organizations.

7. **Supports Sustainable Development:**

   Encourages developers to create **inclusive, accessible, and environmentally responsible solutions.**

Example:

- A developer finds a security flaw in their company's app. The Code of Ethics would guide them to **report and fix the issue**, rather than ignore or exploit it.