

## LP-II : Web Application Development

### Assignment on “ESLint” JavaScript Tool

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#### Q.1) Illustrate the need “ESLint” Package

In modern JavaScript development, maintaining code quality, consistency, and avoiding potential bugs is crucial. ESLint is a widely used tool that helps developers write clean and error-free JavaScript code by identifying problems and enforcing coding standards.

**ESLint** is an open-source static code analysis tool used to identify problematic patterns in JavaScript code. It analyzes code without executing it and helps developers follow best practices and coding conventions.

#### Need for ESLint:

1. **Error Detection Before Runtime:** ESLint helps detect syntax and logical errors in the code during development, preventing bugs that may otherwise occur during runtime.
2. **Code Consistency:** It enforces a consistent coding style (such as indentation, spacing, naming conventions), making code easier to read and maintain, especially in teams.
3. **Enforces Best Practices:** ESLint promotes the use of modern and efficient JavaScript practices. For example, it can warn against using `var` in favor of `let` or `const`.
4. **Avoids Common Bugs:** ESLint flags issues like unused variables, unreachable code, and undefined variables which are common causes of bugs.
5. **Customizable Rules:** Developers can configure ESLint rules according to the project requirements. It also supports extending configurations like Airbnb, Google, or Standard style guides.
6. **Integration with Editors and CI/CD:** ESLint integrates well with popular code editors like VS Code, showing linting errors in real-time. It can also be integrated into CI/CD pipelines to automate code quality checks before deployment.
7. **Supports Plugins:** ESLint supports third-party plugins, making it extendable for different environments like React, Vue, or Node.js.
8. **Improves Collaboration:** With enforced coding standards, multiple developers can work on the same project without stylistic conflicts, improving teamwork and reducing code reviews.

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

A **simple calculator app** using JavaScript, written cleanly with **ESLint** standards.

```
// calculator.js
```

```
function calculate(a, b, operator) {  
  
    switch (operator) {  
  
        case '+':  
  
            return a + b;  
  
        case '-':  
  
            return a - b;  
  
        case '*':  
  
            return a * b;  
  
        case '/':  
  
            if (b !== 0) {  
  
                return a / b;  
  
            } else {  
  
                return 'Error: Cannot divide by zero';  
  
            }  
  
        default:  
  
            return 'Error: Invalid operator';  
  
    }  
}
```

```
}
```

```
// Test cases
```

```
console.log('10 + 5 =', calculate(10, 5, '+'));
```

```
console.log('10 - 5 =', calculate(10, 5, '-'));
```

```
console.log('10 * 5 =', calculate(10, 5, '*'));
```

```
console.log('10 / 5 =', calculate(10, 5, '/'));
```

```
console.log('10 / 0 =', calculate(10, 0, '/'));
```

```
console.log('10 ^ 5 =', calculate(10, 5, '^')); // invalid operator
```

**Output :**

**10 + 5 = 15**

**10 - 5 = 5**

**10 \* 5 = 50**

**10 / 5 = 2**

**10 / 0 = Error: Cannot divide by zero**

**10 ^ 5 = Error: Invalid operator**

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

A **Code of Ethics** refers to a set of principles designed to guide behavior and decision-making in professional environments. In software development, especially in open-source projects like **ESLint**, a code of ethics is essential to ensure respectful collaboration, maintain project integrity, and build a trustworthy developer community.

## **Why a Code of Ethics is Needed for ESLint:**

### ***1. Promotes Respectful Collaboration:***

ESLint is maintained by a global open-source community. A code of ethics helps contributors communicate respectfully, regardless of geography, gender, or experience.

### ***2. Ensures Fair Use and Contribution:***

Developers must follow licensing rules, avoid plagiarism, and contribute original work. Ethical guidelines ensure the code is used and modified responsibly.

### ***3. Protects Against Malicious Code:***

Without ethical standards, contributors could intentionally or unintentionally add harmful or biased code. Ethics helps build secure and reliable tools.

### ***4. Encourages Inclusivity and Diversity:***

Open-source tools like ESLint thrive on contributions from people with diverse backgrounds. A code of ethics ensures that all voices are welcomed and valued.

### ***5. Maintains Project Integrity and Reputation:***

With thousands of developers relying on ESLint, ethical practices maintain its credibility and ensure long-term sustainability.

### ***6. Guides Conflict Resolution:***

In collaborative projects, disagreements may arise. A code of ethics provides a clear framework to handle disputes peacefully and constructively.

### ***7. Responsibility Toward Users:***

ESLint influences how developers write code. It's ethically important that the tool remains unbiased, transparent, and prioritizes code quality for all users.