

Code Quality & Build Validation Workflow Documentation

Project Overview

The purpose of Task 1 is to ensure that every code change meets quality standards before merging. This is done by setting up **automated GitHub workflows** that check for:

- Code styling issues
- Type errors
- Build failures

These automated checks prevent broken or unclean code from entering the main project.

Technology Stack

Tool	Purpose
GitHub Actions	CI Automation
ESLint (Next.js built-in)	Code Linting
TypeScript	Type Checking
Next.js	Build and Type Check Validation
Node.js	Runtime for executing scripts

Workflow Strategy

Steps Covered

- Runs ESLint to verify code style and catch potential bugs.
 - Runs `next build` to validate TypeScript type safety and build correctness.
 - Blocks pull requests if linting or build checks fail.
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GitHub Workflow Configuration

 **Workflow File:** `.github/workflows/code-quality.yml`

```
name: Code Quality & Build Validation
```

```
on: [push, pull_request]
```

```
jobs:
```

```
  code-quality-check:
```

```
    runs-on: ubuntu-latest
```

```
    steps:
```

```
      - name: Checkout Repository
```

```
        uses: actions/checkout@v3
```

```
      - name: Setup Node.js
```

```
        uses: actions/setup-node@v3
```

```
        with:
```

```
          node-version: '18'
```

```
      - name: Install Dependencies
```

```
        run: npm install
```

```
      - name: Run ESLint
```

```
        run: npm run lint
```

```
      - name: Build and Type Check
```

```
        run: npm run build
```

✓ How to Run Locally

Run Linting

```
npm run lint
```

Run Build and Type Check

```
npm run build
```

✓ Both steps must pass before pushing the code.

✓ Local Setup Steps

1 Clone the Repository

```
git clone  
https://github.com/sultansaudagar1999/calculator\_Automation.git
```

2 Navigate to Project Directory

```
cd calculator_Automation
```

3 Install Dependencies

```
npm install
```

4 Run Code Quality Checks

```
npm run lint
npm run build
```

✓ Purpose of Each Command

Command	Purpose
npm run lint	Check code style and potential errors
npm run build	Check TypeScript errors and validate build success

✓ Workflow Trigger

Event	Action
Push	Runs ESLint, Type Check, Build
Pull Request	Runs ESLint, Type Check, Build

✓ Failure Handling

- If linting or build steps fail:
 - GitHub will block the pull request from merging.
 - Developer must fix the issues before proceeding.
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📁 Folder Structure

```
.github/
├─ workflows/
│   └─ code-quality.yml    # GitHub workflow for lint & build checks
package.json              # Contains scripts: lint, build
```

Key Benefits

- Prevents bad code from merging.
- Ensures type-safe, build-ready code at all times.
- Fast feedback using GitHub Actions.
- No manual code reviews for basic syntax errors.

Future Enhancements

- Add unit test execution in the same workflow.
- Integrate additional tools like Prettier for formatting.
- Add code coverage reporting.