Practice with GitHub and Software Develop

Description of the Project

The project consists of developing a basic computer security web tool that allows users to perform a simple analysis of passwords to determine their strength. The tool will include a web interface for entering passwords, a password evaluation system, and a feedback function to improve password security.

Roles

- **Lead/Reviewer**: Responsible for reviewing and approving changes to the code.
- **Programmers**: **N** programmers assigned to different features of the project.

Instructions

1. Creation of the Project

1. **Initialize the repository:**

```
git init security-tool
cd security-tool
echo "# Security Tool" >> README.md
```

2. Initial content

1. **Add the initial structure of the project:**

```
mkdir -p src/public src/css src/js
touch src/index.html src/css/styles.css src/js/main.js
```

2. **Add basic content to** `index.html`

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initia
l-scale=1.0">
    <title>Security Tool</title>
    <link rel="stylesheet" href="css/styles.css">
</head>
<body>
    <h1>Password Strength Checker</h1>
    <input type="password" id="password" placeholder="Enter y
our password">
    <button id="check">Check Password</button>
    <p id="feedback"></p>
    <script src="js/main.js"></script>
</body>
</html>
```

3. **Add basic content to** `styles.css`

```
body {
    font-family: Arial, sans-serif;
    display: flex;
    flex-direction: column;
    align-items: center;
    justify-content: center;
    height: 100vh;
    margin: 0;
}
#password {
    padding: 10px;
    font-size: 16px;
```

```
    margin-bottom: 10px;
}
```

4. **Add basic content to** `main.js`:

```
document.getElementById('check').addEventListener('click', fu
nction() {
    const password = document.getElementById('password').valu
e;
    document.getElementById('feedback').textContent = `Passwo
rd length: ${password.length}`;
});
```

5. **Make the first commit, create remote repository in GitHub and add it to your git project, finally upload your files**

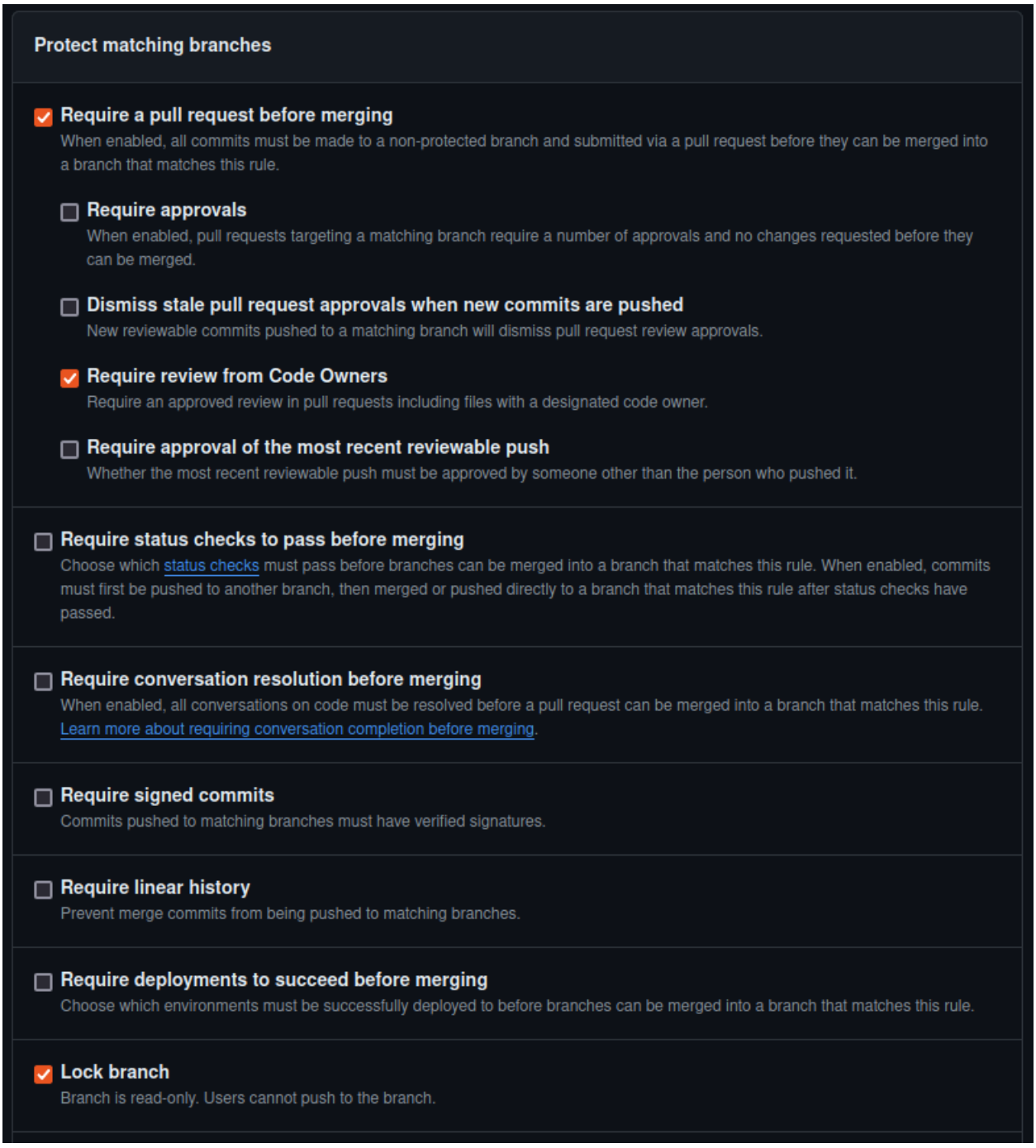
```
git add .
git commit -m "Initial project structure"
git branch -M main
git remote add origin git@github.com:{user_name}/{repository_
name}.git
git push -u origin main
```

3. Development in the branch develop

1. **Create the develop branch from main:**

```
git checkout -b develop
git push origin HEAD
```

4. Add rules protection to main branch



5. Assignment of Features

- **Programmer 1: Password validation**
  - Create branch: `feature/password-validation`
  - Add logic to validate passwords according to simple criteria like length, uppercase, lowercase, numbers, special characters.

- **Programmer 2: Security feedback**
  - Create branch: `feature/security-feedback`
  - Add detailed messages to help users improve their passwords, for example, research algorithms to identify password strength and show the results with friendly message to user.
- **Programmer 3: Improve the interface**
  - Create branch: `feature/ui-enhancements`
  - Improve the design and usability of the web interface.
- **Programmer 4: Integration with external library**
  - Create branch: `feature/external-library`
  - Integrate an external library to analyze passwords.

6. Development and Conflict Resolution

This flow is repeated for each of the functionalities that each developer does.

1. **Development of each feature**:

```
git checkout -b feature/password-validation
# First write all the code necessary to fulfill the functi
onality, then you can execute the following commands

git add .
git commit -m "Add password validation logic"
git push origin feature/password-validation
```

2. **Pull Request and Review:**
   - Create a pull request from 'feature/password-validation' to 'develop'.
   - The lead/reviewer reviews and approves the pull request.
   - After leader review: This is a flow to resolve conflicts if there are any, perform rebasing if necessary:

```
git checkout develop
git pull origin develop
git checkout feature/password-validation
git rebase develop
git push -f origin feature/password-validation
```

3. **Integration in develop (Optional, The PR from feature to develop on GitHub does the same):**

```
git checkout develop
git merge feature/password-validation
git push origin develop
```

7. Merge develop into main

1. **First perform thorough tests on develop:**
   - Make sure that all the features are working properly and that there are no conflicts.
2. **Merge develop into main:**

```
git checkout main
git merge develop
git push origin main
```