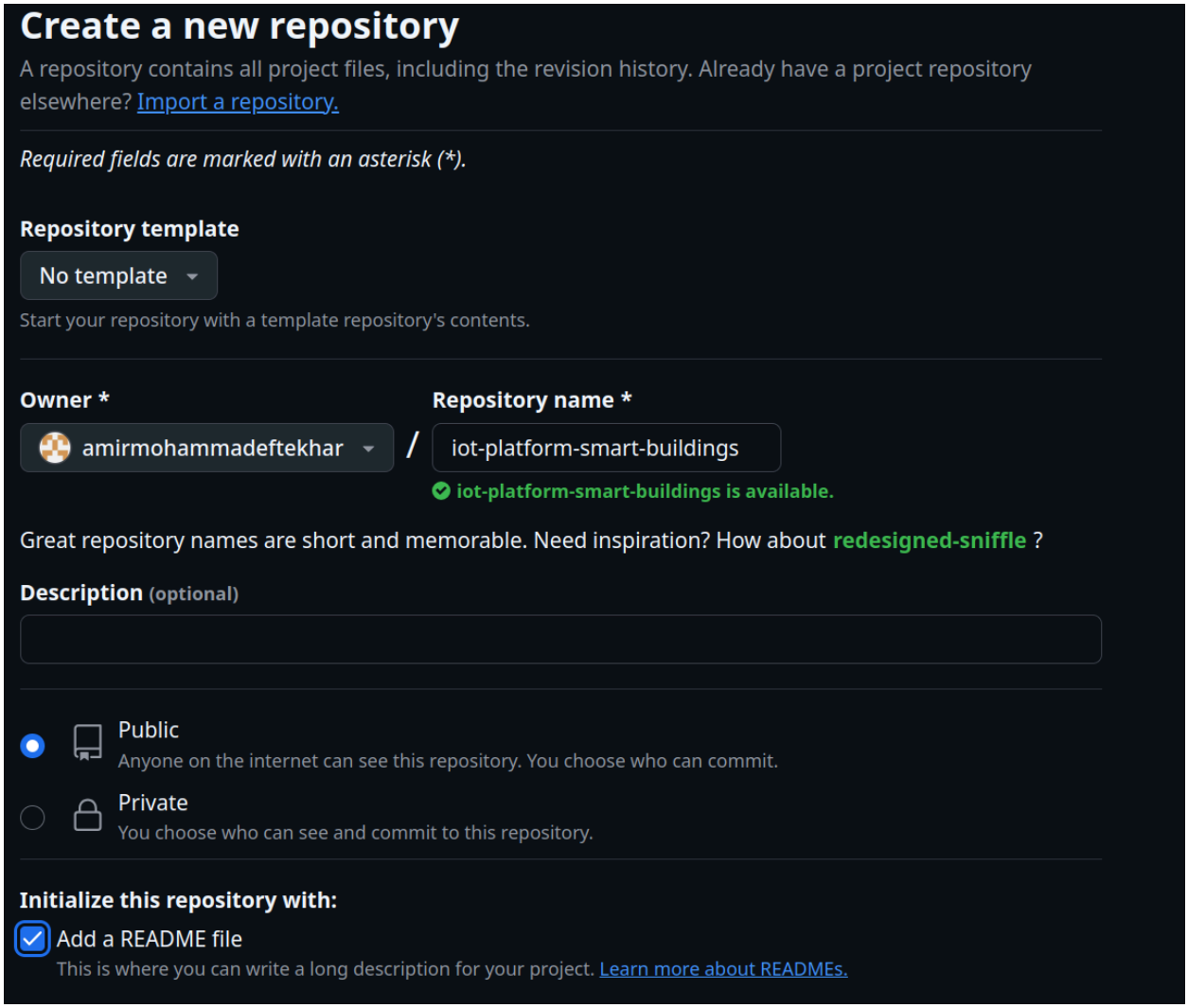
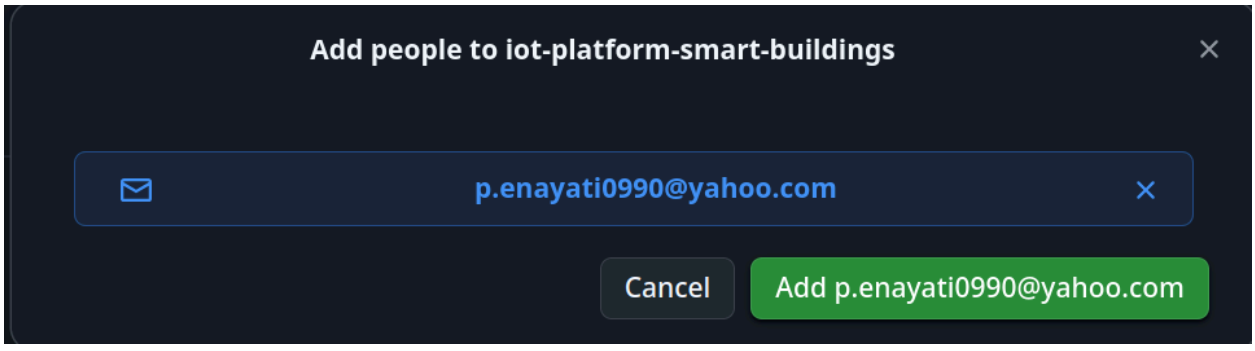
مراحل طی شده در آزمایش:

فاز ۱:

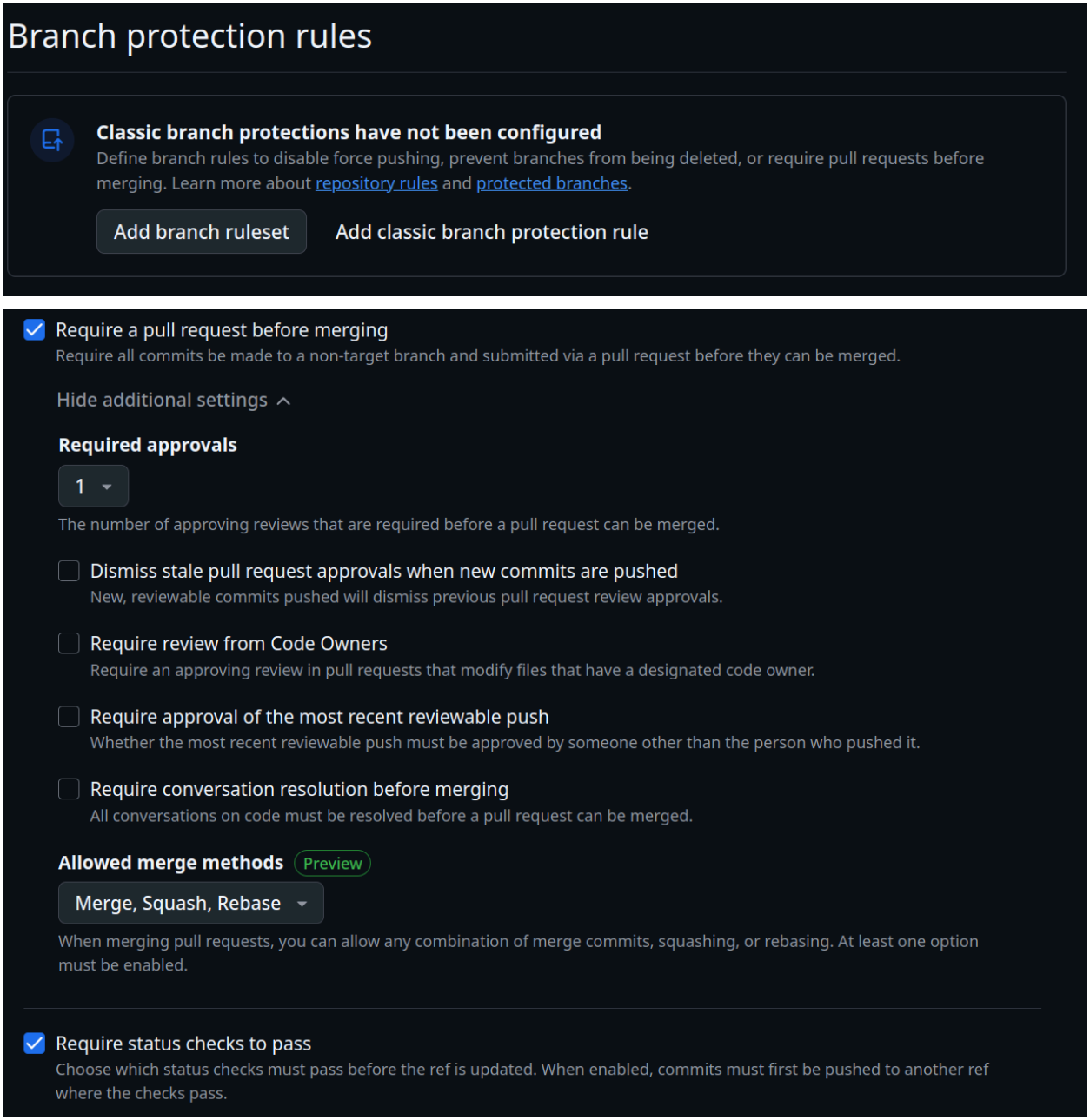
1. در ابتدا repo را ساخته و آن را فعلا private می کنم. همچنین گزینه ی README را هم می زنم که اضافه شود:



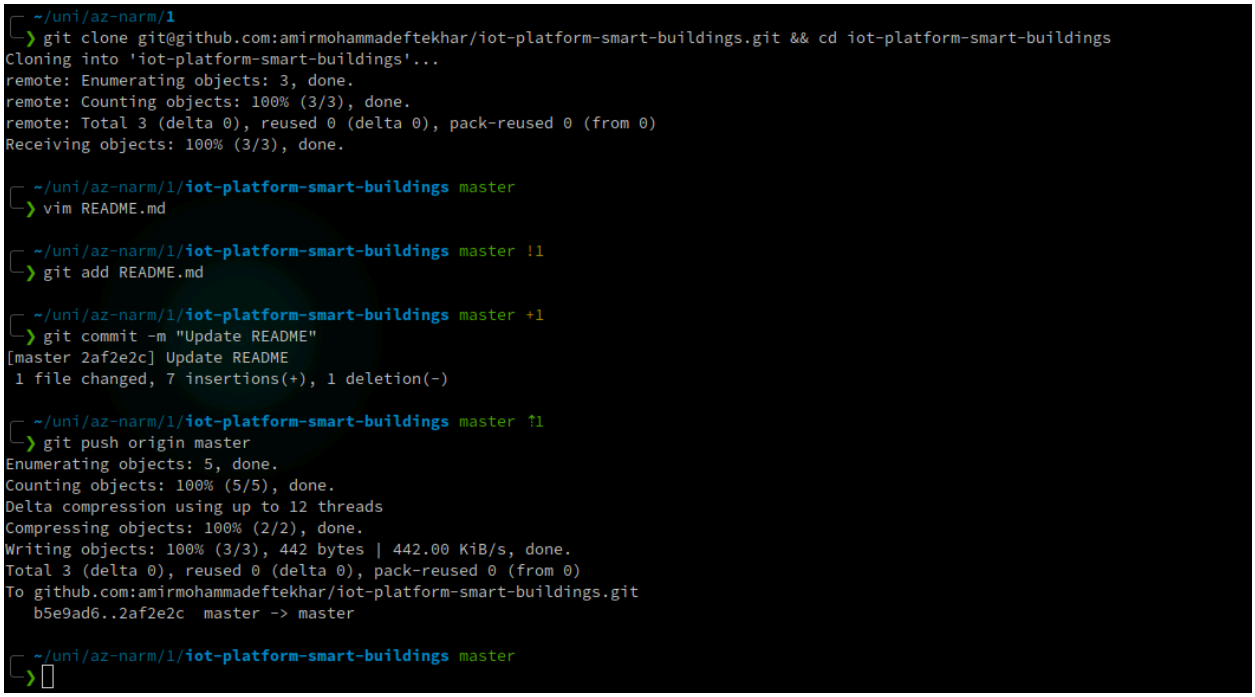
2. سپس هم گروهی ها را به repo اضافه می کنم:



3. سپس شرایط گفته شده برای branch مستر را اعمال می کنم. برای merge کردن هم ۱ approval در نظر می گیرم.



4. حال README را آپدیت می کنم و بروزرسانی می کنم. برای نوشتن آن از هوش مصنوعی استفاده کردم.



5. سپس branch های گفته شده را در سیستم خود ساخته و به github پوش می کنم:

```
~/uni/az-narm/1/iot-platform-smart-buildings master
❯ git checkout -b feature/iot-sensors
Switched to a new branch 'feature/iot-sensors'

~/uni/az-narm/1/iot-platform-smart-buildings feature/iot-sensors
❯ git push origin feature/iot-sensors
Total 0 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
remote:
remote: Create a pull request for 'feature/iot-sensors' on GitHub by visiting:
remote:      https://github.com/amirmohammadeftekhar/iot-platform-smart-buildings/pull/new/feature/iot-sensors
remote:
To github.com:amirmohammadeftekhar/iot-platform-smart-buildings.git
 * [new branch]      feature/iot-sensors -> feature/iot-sensors

~/uni/az-narm/1/iot-platform-smart-buildings feature/iot-sensors
❯ git checkout main

error: pathspec 'main' did not match any file(s) known to git

~/uni/az-narm/1/iot-platform-smart-buildings feature/iot-sensors
❯ git checkout master
Switched to branch 'master'
Your branch is up to date with 'origin/master'.

~/uni/az-narm/1/iot-platform-smart-buildings master
❯ git checkout -b feature/web-dashboard

Switched to a new branch 'feature/web-dashboard'

~/uni/az-narm/1/iot-platform-smart-buildings feature/web-dashboard
❯ git push origin feature/web-dashboard

Total 0 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
remote:
remote: Create a pull request for 'feature/web-dashboard' on GitHub by visiting:
remote:      https://github.com/amirmohammadeftekhar/iot-platform-smart-buildings/pull/new/feature/web-dashboard
remote:
To github.com:amirmohammadeftekhar/iot-platform-smart-buildings.git
 * [new branch]      feature/web-dashboard -> feature/web-dashboard

~/uni/az-narm/1/iot-platform-smart-buildings feature/web-dashboard
❯
```

6. سپس README را بروزرسانی می کنم:

```
~/uni/az-narm/1/iot-platform-smart-buildings feature/web-dashboard
❯ git checkout master
Switched to branch 'master'
Your branch is up to date with 'origin/master'.

~/uni/az-narm/1/iot-platform-smart-buildings master
❯ vim README.md

~/uni/az-narm/1/iot-platform-smart-buildings master !1
❯ git add README.md

~/uni/az-narm/1/iot-platform-smart-buildings master +1
❯ git commit -m "Update README: Add description about branches"
[master 8729c08] Update README: Add description about branches
 1 file changed, 2 insertions(+)

~/uni/az-narm/1/iot-platform-smart-buildings master ↑1
❯ git push origin master
Enumerating objects: 5, done.
Counting objects: 100% (5/5), done.
Delta compression using up to 12 threads
Compressing objects: 100% (2/2), done.
Writing objects: 100% (3/3), 393 bytes | 393.00 KiB/s, done.
Total 3 (delta 1), reused 0 (delta 0), pack-reused 0 (from 0)
remote: Resolving deltas: 100% (1/1), completed with 1 local object.
To github.com:amirmohammadeftekhar/iot-platform-smart-buildings.git
   2af2e2c..8729c08  master -> master

~/uni/az-narm/1/iot-platform-smart-buildings master
❯
```

7. سپس دوباره README را آپدیت می کنم و مطابق milestone های گفته شده توضیحاتی راجع به ورژن می دهم.
برای نوشتن متن هم از هوش مصنوعی کمک گرفتم

```
~/uni/az-narm/1/iot-platform-smart-buildings master
❯ vim README.md

~/uni/az-narm/1/iot-platform-smart-buildings master !1
❯ git add README.md

~/uni/az-narm/1/iot-platform-smart-buildings master +1
❯ git tag -a v1.0.0 -m "Initial module development"


~/uni/az-narm/1/iot-platform-smart-buildings master +1
❯ git commit -m "docs: Update README"
[master d5c57f2] docs: Update README
 1 file changed, 9 insertions(+)

~/uni/az-narm/1/iot-platform-smart-buildings master ⇡1
❯ git push origin --tags

Enumerating objects: 1, done.
Counting objects: 100% (1/1), done.
Writing objects: 100% (1/1), 183 bytes | 183.00 KiB/s, done.
Total 1 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
To github.com:amirmohammadeftekhar/iot-platform-smart-buildings.git
 * [new tag]         v1.0.0 -> v1.0.0

~/uni/az-narm/1/iot-platform-smart-buildings master ⇡1
❯ git push origin master
Enumerating objects: 5, done.
Counting objects: 100% (5/5), done.
Delta compression using up to 12 threads
Compressing objects: 100% (2/2), done.
Writing objects: 100% (3/3), 516 bytes | 516.00 KiB/s, done.
Total 3 (delta 1), reused 0 (delta 0), pack-reused 0 (from 0)
remote: Resolving deltas: 100% (1/1), completed with 1 local object.
To github.com:amirmohammadeftekhar/iot-platform-smart-buildings.git
   8729c08..d5c57f2  master -> master

~/uni/az-narm/1/iot-platform-smart-buildings master
❯
```

فاز دوم:

1. ابتدا به برنچ مربوطه سوییچ میکنیم:

```
PCMOD@DESKTOP-RFLFO5F MINGW64 ~/OneDrive/Desktop/IOT/iot-platform-smart-building
s (master)
$ git checkout feature/iot-sensors
Switched to a new branch 'feature/iot-sensors'
branch 'feature/iot-sensors' set up to track 'origin/feature/iot-sensors'.

PCMOD@DESKTOP-RFLFO5F MINGW64 ~/OneDrive/Desktop/IOT/iot-platform-smart-building
s (feature/iot-sensors)
```

2. ایجاد اسکریپت شبیه‌سازی سنسور (مثال: sensor_simulation.py):

```python
#!/usr/bin/env python3
import random
import time

def read_sensor():
    # شبیه‌سازی دریافت داده از سنسور
    return round(random.uniform(20.0, 30.0), 2)

if __name__ == '__main__':
    for _ in range(10):
        print("سنسور خوانش:", read_sensor())
        time.sleep(1)
```

3. ثبت تغییرات:

```
PCMOD@DESKTOP-RFLFO5F MINGW64 ~/OneDrive/Desktop/IOT/iot-platform-smart-building
s (feature/iot-sensors)
$ git add sensor_simulation.py

PCMOD@DESKTOP-RFLFO5F MINGW64 ~/OneDrive/Desktop/IOT/iot-platform-smart-building
s (feature/iot-sensors)
$ git commit -m "Added script of simulating sensor data for module"
[feature/iot-sensors 069c5fa] Added script of simulating sensor data for module
 1 file changed, 12 insertions(+)
 create mode 100644 sensor_simulation.py

PCMOD@DESKTOP-RFLFO5F MINGW64 ~/OneDrive/Desktop/IOT/iot-platform-smart-building
s (feature/iot-sensors)
$ git push origin feature/iot-sensors
Enumerating objects: 4, done.
Counting objects: 100% (4/4), done.
Delta compression using up to 24 threads
Compressing objects: 100% (3/3), done.
Writing objects: 100% (3/3), 551 bytes | 551.00 KiB/s, done.
Total 3 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
To https://github.com/amirmohammadeftekhar/iot-platform-smart-buildings
   2af2e2c..069c5fa  feature/iot-sensors -> feature/iot-sensors
```

4. برای بخش ماژول web-dashboard به برنچ مورد نظر سوییچ میکنیم:

```
PCMOD@DESKTOP-RFLFO5F MINGW64 ~/OneDrive/Desktop/IOT/iot-platform-smart-buildings (feature/iot-senso
rs)
$ git checkout feature/web-dashboard
Switched to a new branch 'feature/web-dashboard'
branch 'feature/web-dashboard' set up to track 'origin/feature/web-dashboard'.

PCMOD@DESKTOP-RFLFO5F MINGW64 ~/OneDrive/Desktop/IOT/iot-platform-smart-buildings (feature/web-dashb
oard)
$
```

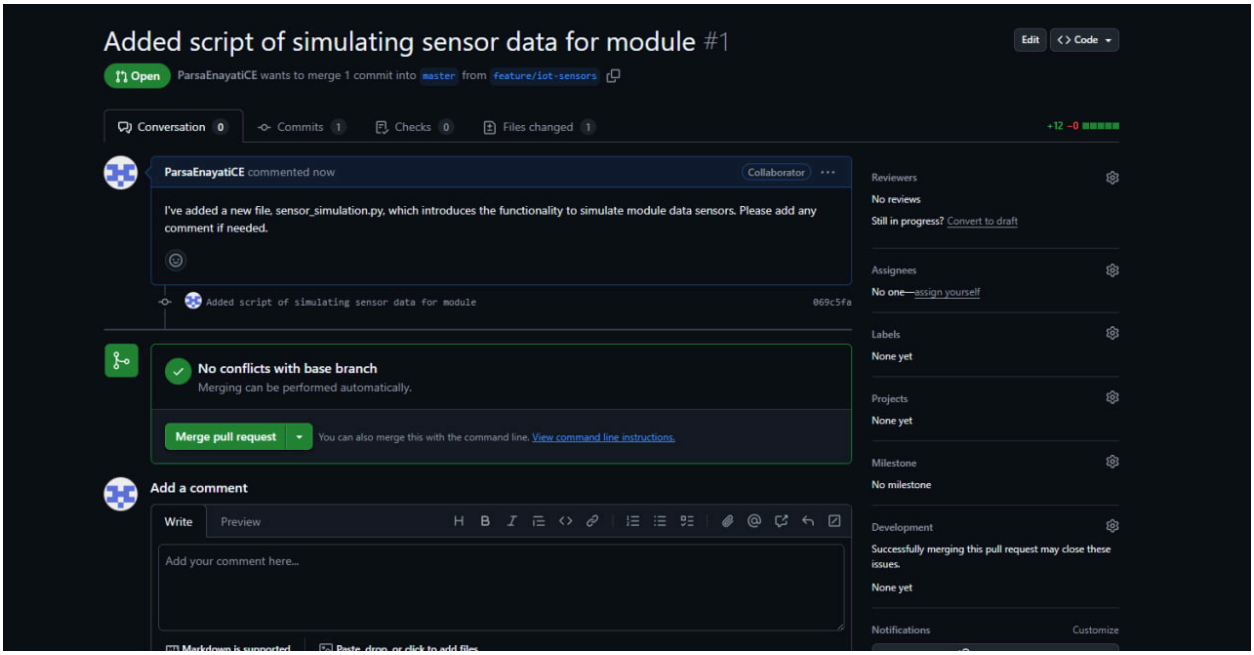
5. ایجاد فایل HTML نمونه (مثال: index.html):

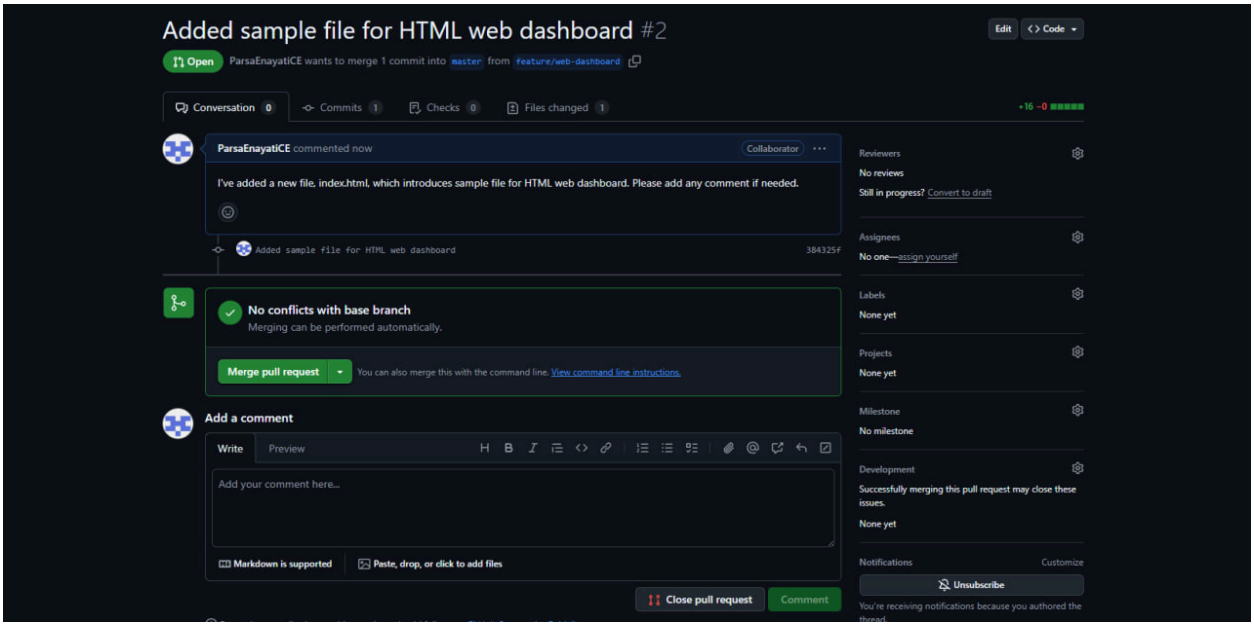
```html
<!DOCTYPE html>
<html lang="fa">
<head>
    <meta charset="UTF-8">
    <title>داشبورد اینترنت اشیا</title>
    <script>
        function showMessage() {
            alert("به داشبورد اینترنت اشیا خوش آمدید!");
     }
    </script>
</head>
<body onload="showMessage()">
    <h1>داشبورد اینترنت اشیا</h1>
    <p>این یک نمونه داشبورد برای نمایش داده‌های سنسور است.</p>
</body>
</html>
```

6. ثبت تغییرات(add,commit,push):

```
CMOD@DESKTOP-RFLF05F MINGW64 ~/OneDrive/Desktop/IOT/iot-platform-smart-buildings (feature/web-dashb
oard)
$ git add index.html

CMOD@DESKTOP-RFLF05F MINGW64 ~/OneDrive/Desktop/IOT/iot-platform-smart-buildings (feature/web-dashb
oard)
$ git commit -m "Added sample file for HTML web dashboard"
[feature/web-dashboard 384325f] Added sample file for HTML web dashboard
 1 file changed, 16 insertions(+)
 create mode 100644 index.html

CMOD@DESKTOP-RFLF05F MINGW64 ~/OneDrive/Desktop/IOT/iot-platform-smart-buildings (feature/web-dashb
oard)
$ git push origin feature/web-dashboard
Enumerating objects: 4, done.
Counting objects: 100% (4/4), done.
Delta compression using up to 24 threads
Compressing objects: 100% (3/3), done.
Writing objects: 100% (3/3), 592 bytes | 592.00 KiB/s, done.
Total 3 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
To https://github.com/amirmohammadeftekhar/iot-platform-smart-buildings
   2af2e2c..384325f  feature/web-dashboard -> feature/web-dashboard
```

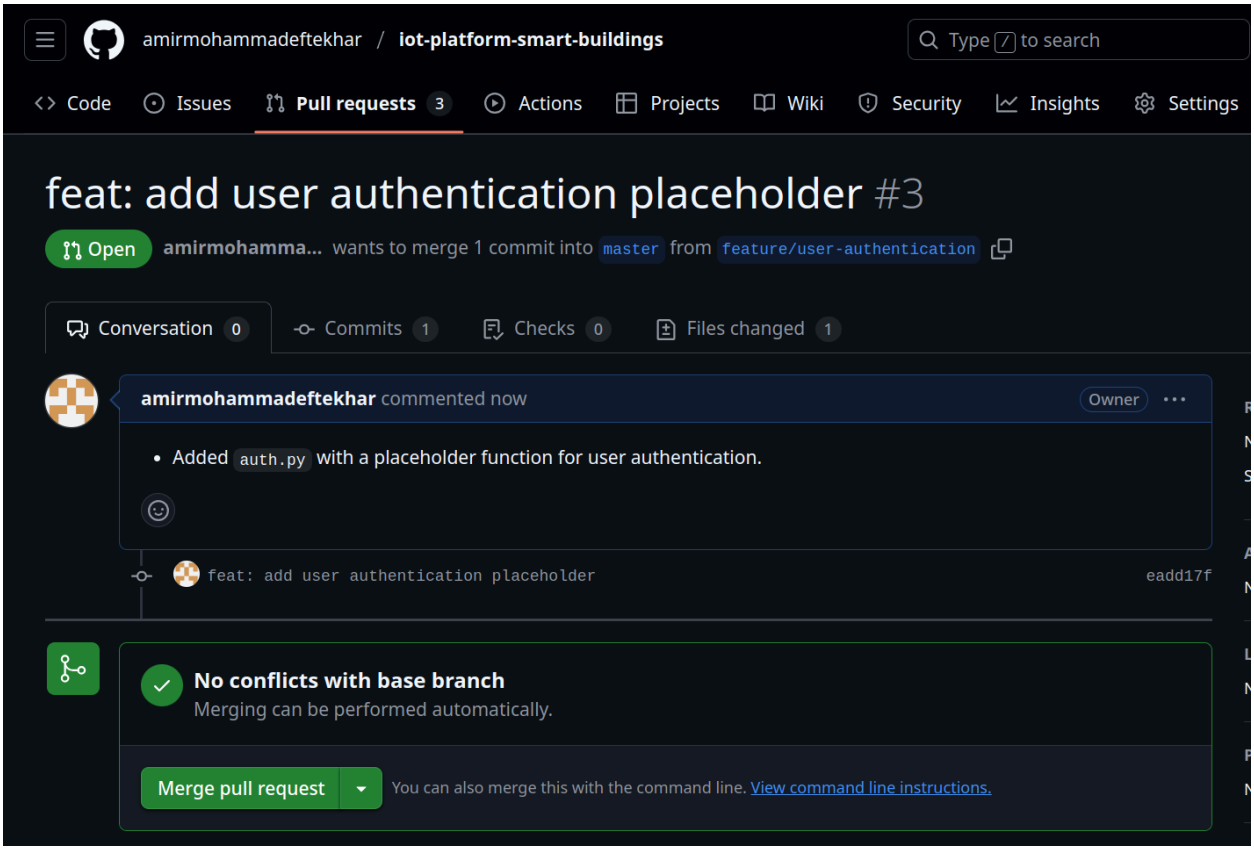
7. مدیریت PR(Pull Request):





8. حال بقیه اعضا هم اقدام به commit جدید می کنند ولی به دلیل وجود pull request موقع push کردن مشکل می خوریم که از rebase استفاده می کنیم.

```
~/uni/az-narm/1/iot-platform-smart-buildings feature/iot-sensors ?1
❯ git add sensor_api.py


~/uni/az-narm/1/iot-platform-smart-buildings feature/iot-sensors +1
❯ git commit -m "feat: add sensor API placeholder"

[feature/iot-sensors 0a5724f] feat: add sensor API placeholder
 1 file changed, 1 insertion(+)
 create mode 100644 sensor_api.py

~/uni/az-narm/1/iot-platform-smart-buildings feature/iot-sensors
❯ git push origin feature/iot-sensors

To github.com:amirmohammadeftekhar/iot-platform-smart-buildings.git
 ! [rejected]        feature/iot-sensors -> feature/iot-sensors (non-fast-forward)
error: failed to push some refs to 'github.com:amirmohammadeftekhar/iot-platform-smart-buildings.git'
hint: Updates were rejected because the tip of your current branch is behind
hint: its remote counterpart. If you want to integrate the remote changes,
hint: use 'git pull' before pushing again.
hint: See the 'Note about fast-forwards' in 'git push --help' for details.

~/uni/az-narm/1/iot-platform-smart-buildings feature/iot-sensors
❯ git pull
There is no tracking information for the current branch.
Please specify which branch you want to merge with.
See git-pull(1) for details.

    git pull <remote> <branch>

If you wish to set tracking information for this branch you can do so with:

    git branch --set-upstream-to=origin/<branch> feature/iot-sensors


~/uni/az-narm/1/iot-platform-smart-buildings feature/iot-sensors
❯ git pull origin feature/iot-sensors
From github.com:amirmohammadeftekhar/iot-platform-smart-buildings
 * branch            feature/iot-sensors -> FETCH_HEAD
hint: You have divergent branches and need to specify how to reconcile them.
hint: You can do so by running one of the following commands sometime before
hint: your next pull:
hint:
hint:   git config pull.rebase false  # merge
hint:   git config pull.rebase true   # rebase
hint:   git config pull.ff only       # fast-forward only
hint:
hint: You can replace "git config" with "git config --global" to set a default
hint: preference for all repositories. You can also pass --rebase, --no-rebase,
hint: or --ff-only on the command line to override the configured default per
hint: invocation.
fatal: Need to specify how to reconcile divergent branches.

~/uni/az-narm/1/iot-platform-smart-buildings feature/iot-sensors
❯ git config pull.rebase true

~/uni/az-narm/1/iot-platform-smart-buildings feature/iot-sensors
❯ git pull origin feature/iot-sensors
From github.com:amirmohammadeftekhar/iot-platform-smart-buildings
 * branch            feature/iot-sensors -> FETCH_HEAD
Successfully rebased and updated refs/heads/feature/iot-sensors.

~/uni/az-narm/1/iot-platform-smart-buildings feature/iot-sensors
❯
```



9. حال برای اضافه کردن alias به مسیر دیرکتوری یوزر خود رفته و فایل .gitConfig را ادیت میکنیم:

```
[alias]
    pr-fetch = "!f() { git fetch origin pull/$1/head:pr-$1; }; f"
```

```
PCMOD@DESKTOP-RFLFO5F MINGW64 ~/OneDrive/Desktop/IOT/iot-platform-smart-buildings (feature/web-dashb
oard)
$ git fetch origin pull/2/head:pr-branch
From https://github.com/amirmohammadeftekhar/iot-platform-smart-buildings
 * [new ref]         refs/pull/2/head -> pr-branch
```

10. مستندسازی در فایل `GitCommands.md`:

```
# GitCommands.md

## Alias برای دریافت Pull Request ها
برای دریافت یک Pull Request به صورت محلی از دستور زیر استفاده کنید:

git pr-fetch <ID>

به عنوان مثال، برای دریافت PR 23 با شناسه:
git pr-fetch 23
```

```
PCMOD@DESKTOP-RFLFO5F MINGW64 ~/OneDrive/Desktop/IOT/iot-platform-smart-buildings (feature/web-dashb
oard)
$ git add GitCommands.md

PCMOD@DESKTOP-RFLFO5F MINGW64 ~/OneDrive/Desktop/IOT/iot-platform-smart-buildings (feature/web-dashb
oard)
$ git commit -m "Added GitCommands.md"
[feature/web-dashboard a146761] Added GitCommands.md
 1 file changed, 9 insertions(+)
 create mode 100644 GitCommands.md

PCMOD@DESKTOP-RFLFO5F MINGW64 ~/OneDrive/Desktop/IOT/iot-platform-smart-buildings (feature/web-dashb
oard)
$ git push origin feature/web-dashboard
Enumerating objects: 4, done.
Counting objects: 100% (4/4), done.
Delta compression using up to 24 threads
Compressing objects: 100% (3/3), done.
Writing objects: 100% (3/3), 516 bytes | 516.00 KiB/s, done.
Total 3 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
To https://github.com/amirmohammadeftekhar/iot-platform-smart-buildings
   384325f..a146761  feature/web-dashboard -> feature/web-dashboard
```

11. **افزودن فایل پیکربندی ESLint به شاخه web-dashboard:**

ایجاد فایل `.eslintrc.json`:

```
{
  "env": {
    "browser": true,
    "es6": true
  },
  "extends": "eslint:recommended",
  "rules": {
    "no-console": "off"
  }
}
```

مستندسازی راهنمای بازبینی کد در فایل `CodeReviewGuidelines.md`:

```
# راهنمای بازبینی کد

- پیام‌های کامیت باید توصیفی و مرتبط با تغییرات باشند.
- تغییرات کد باید از طریق Pull Request به شاخه اصلی ارسال شوند.
- قبل از ادغام، تست‌ها باید با موفقیت اجرا شوند.
- PR شود مطرح نظرات سازنده و پیشنهادات بهبود باید در.
```

ثبت تغییرات:

```
PCMOD@DESKTOP-RFLFO5F MINGW64 ~/OneDrive/Desktop/IOT/iot-platform-smart-buildings (feature/web-dashb
oard)
$ git add .eslintrc.json CodeReviewGuidelines.md

PCMOD@DESKTOP-RFLFO5F MINGW64 ~/OneDrive/Desktop/IOT/iot-platform-smart-buildings (feature/web-dashb
oard)
$ git commit -m "افزودن فایل‌های پیکربندی ESLint و راهنمای بازبینی‌ی کد"
[feature/web-dashboard 09aa90f] افزودن فایل‌های پیکربندی ESLint و راهنمای بازبینی‌ی کد
 2 files changed, 16 insertions(+)
 create mode 100644 .eslintrc.json
 create mode 100644 CodeReviewGuidelines.md

PCMOD@DESKTOP-RFLFO5F MINGW64 ~/OneDrive/Desktop/IOT/iot-platform-smart-buildings (feature/web-dashb
oard)
$ git push origin feature/web-dashboard
Enumerating objects: 5, done.
Counting objects: 100% (5/5), done.
Delta compression using up to 24 threads
Compressing objects: 100% (4/4), done.
Writing objects: 100% (4/4), 816 bytes | 816.00 KiB/s, done.
Total 4 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
To https://github.com/amirmohammadeftekhar/iot-platform-smart-buildings
   a146761..09aa90f  feature/web-dashboard -> feature/web-dashboard

PCMOD@DESKTOP-RFLFO5F MINGW64 ~/OneDrive/Desktop/IOT/iot-platform-smart-buildings (feature/web-dashb
oard)
```

فاز سوم:

1. در مرحله ی اول یا فولدر مخصوص github می سازم و یک فایل کانفیگ ci/cd به آن اضافه می کنم. برای نوشتن این فایل از GPT کمک گرفتم. در این کانفیگ کد ما توسط استاندارد pep8 چک می شود.

```
~/uni/az-narm/1/iot-platform-smart-buildings master
❯ mkdir -p .github/workflows

~/uni/az-narm/1/iot-platform-smart-buildings master
❯ vim .github/workflows/ci-cd.yml

~/uni/az-narm/1/iot-platform-smart-buildings master ?1
❯ git add .github/workflows/ci-cd.yml


~/uni/az-narm/1/iot-platform-smart-buildings master +1
❯ git commit -m "ci: add CI/CD pipeline with static analysis, tests, and deployment"

[master 1a328d4] ci: add CI/CD pipeline with static analysis, tests, and deployment
 1 file changed, 37 insertions(+)
 create mode 100644 .github/workflows/ci-cd.yml

~/uni/az-narm/1/iot-platform-smart-buildings master ↑1
❯ git push origin master
Enumerating objects: 6, done.
Counting objects: 100% (6/6), done.
Delta compression using up to 12 threads
Compressing objects: 100% (3/3), done.
Writing objects: 100% (5/5), 783 bytes | 783.00 KiB/s, done.
Total 5 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
To github.com:amirmohammadeftekhar/iot-platform-smart-buildings.git
   c0d8c49..1a328d4  master -> master

~/uni/az-narm/1/iot-platform-smart-buildings master
❯
```

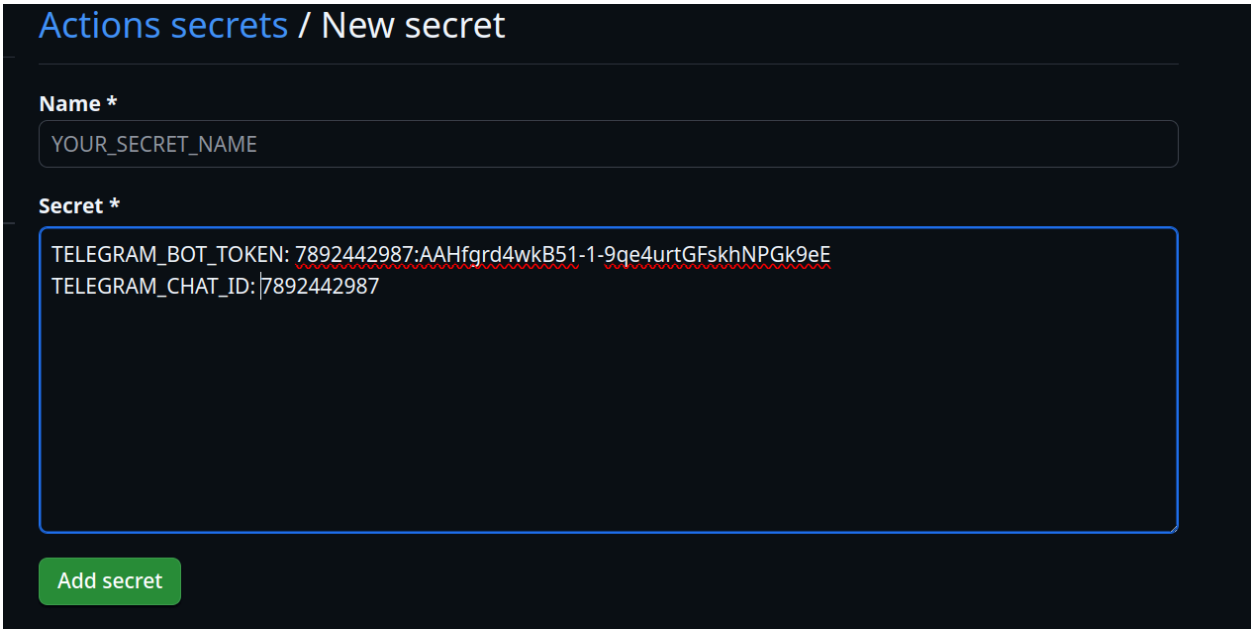
2. سپس برای خودکار سازی ادغام یک job جدید به yaml file قبلی اضافه می کنم:

```yaml
jobs:
  static-analysis:
    runs-on: ubuntu-latest
    steps:
      - name: Checkout code
        uses: actions/checkout@v4
      - name: Run Flake8 (Static Analysis)
        run: |
          pip install flake8
          flake8 . --count --show-source --statistics
  auto-merge:
  needs: [unit-tests]
  runs-on: ubuntu-latest
  steps:
    - name: Auto-merge PR
      uses: actions/github-script@v6
      with:
        script: |
          await github.rest.pulls.merge({
            owner: context.repo.owner,
            repo: context.repo.repo,
            pull_number: context.payload.pull_request.number,
            merge_method: 'squash'
          })
      env:
        GITHUB_TOKEN: ${{ secrets.GITHUB_TOKEN }}

  unit-tests:
```

3. برای بخش سوم نیز تصمیم گرفتم تا از telegram bot برای اعلانات استفاده کنم. در اولین قدم yaml رو بروزرسانی می کنم:

```yaml
notify-telegram:
  needs: [static-analysis, unit-tests, deploy-staging, auto-merge]
  if: failure() # از یکی از Jobs فقط درصورتیکه دچار خطا شد
  runs-on: ubuntu-latest
  steps:
    - name: Notify Telegram
      uses: appleboy/telegram-action@v0.1.0
      with:
        to: ${{ secrets.TELEGRAM_CHAT_ID }}
        token: ${{ secrets.TELEGRAM_BOT_TOKEN }}
        message: |
          ❌ خطا در CI/CD پیش‌آمده
          - ریپو: ${{ github.repository }}
          - کامیت: ${{ github.sha }}
          - لاگ خطا: ${{ github.server_url }}/${{ github.repository }}/actions/runs/${{ github.run_id }}
```

4. در مرحله ی بعد credential هارو بروزرسانی می کنم



فاز چهارم:

1. ایجاد فایل `ReleaseProcess.md`:

```
# فرآیند مدیریت انتشار

1. **تگ گذاری نسخه:**
   - پس از اتمام توسعه و تست‌های نهایی، از دستور زیر استفاده کنید:
     ```
     git tag -a v1.0.0 -m "نسخه پایدار 1.0.0"
     git push origin v1.0.0
     ```
2. **یادداشت‌های انتشار:**
   - در هر انتشار، یادداشت‌های مربوط به تغییرات (ویژگی‌های جدید، رفع باگ‌ها و بهبودها) نوشته می‌شود.
3. **استقرار:**
   - پس از تأیید نهایی، نسخه به محیط تولید منتشر می‌شود.
```

2. ثبت تغییرات:

```
PCMOD@DESKTOP-RFLFO5F MINGW64 /f/iot-platform-smart-buildings (master)
$ git checkout master
Already on 'master'
Your branch is up to date with 'origin/master'.

PCMOD@DESKTOP-RFLFO5F MINGW64 /f/iot-platform-smart-buildings (master)
$ git add ReleaseProcess.md

PCMOD@DESKTOP-RFLFO5F MINGW64 /f/iot-platform-smart-buildings (master)
$ git commit -m "افزودن مستندات فرآیند انتشار"
[master 2546e1e] افزودن مستندات فرآیند انتشار
 1 file changed, 12 insertions(+)
 create mode 100644 ReleaseProcess.md

PCMOD@DESKTOP-RFLFO5F MINGW64 /f/iot-platform-smart-buildings (master)
$ git push origin main
error: src refspec main does not match any
error: failed to push some refs to 'https://github.com/amirmohammadeftekhar/iot-
platform-smart-buildings'

PCMOD@DESKTOP-RFLFO5F MINGW64 /f/iot-platform-smart-buildings (master)
$ git push origin master
Enumerating objects: 4, done.
Counting objects: 100% (4/4), done.
Delta compression using up to 24 threads
Compressing objects: 100% (3/3), done.
Writing objects: 100% (3/3), 708 bytes | 708.00 KiB/s, done.
Total 3 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
To https://github.com/amirmohammadeftekhar/iot-platform-smart-buildings
   8b16b42..2546e1e  master -> master
```

3. ایجاد فایل `DisasterRecoveryPlan.md`:

```
# برنامه بازیابی از فاجعه

1. **بازگشت به نسخه قبلی:**
   - برای بازگشت به یک نسخه پایدار استفاده کنید Git در صورت بروز مشکل، از تگ‌های:
     ```
     git checkout <تگ نسخه قبلی>
     ```
2. **اجرای اسکریپت‌های بازگشت:**
   - اسکریپت‌های مخصوص بازگشت به نسخه‌های قبلی در صورت شکست انتشار وجود دارد.
3. **مانیتورینگ و گزارش خطا:**
   - تمامی خطاها به تیم فنی گزارش داده می‌شود و لاگ‌ها جهت عیب‌یابی ثبت می‌گردند.
```

4. ثبت تغییرات:

```
PCMOD@DESKTOP-RFLFO5F MINGW64 /f/iot-platform-smart-buildings (master)
$ git add DisasterRecoveryPlan.md

PCMOD@DESKTOP-RFLFO5F MINGW64 /f/iot-platform-smart-buildings (master)
$ git commit -m "افزودن مستندات برنامه بازیابی از فاجعه"
[master 1dfb7b7] افزودن مستندات برنامه بازیابی از فاجعه
 1 file changed, 11 insertions(+)
 create mode 100644 DisasterRecoveryPlan.md

PCMOD@DESKTOP-RFLFO5F MINGW64 /f/iot-platform-smart-buildings (master)
$ git push origin master
Enumerating objects: 4, done.
Counting objects: 100% (4/4), done.
Delta compression using up to 24 threads
Compressing objects: 100% (3/3), done.
Writing objects: 100% (3/3), 761 bytes | 761.00 KiB/s, done.
Total 3 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
To https://github.com/amirmohammadeftekhar/iot-platform-smart-buildings
   2546e1e..1dfb7b7  master -> master
```

5. ایجاد شاخه تست برای شبیه‌سازی خطای عمدی:

```
PCMOD@DESKTOP-RFLFO5F MINGW64 /f/iot-platform-smart-buildings (master)
$ git checkout -b simulation/error-test
Switched to a new branch 'simulation/error-test'
```

6. ایجاد تغییر عمدی (مثلاً افزودن خطای نحوی یا اشتباه در کد):

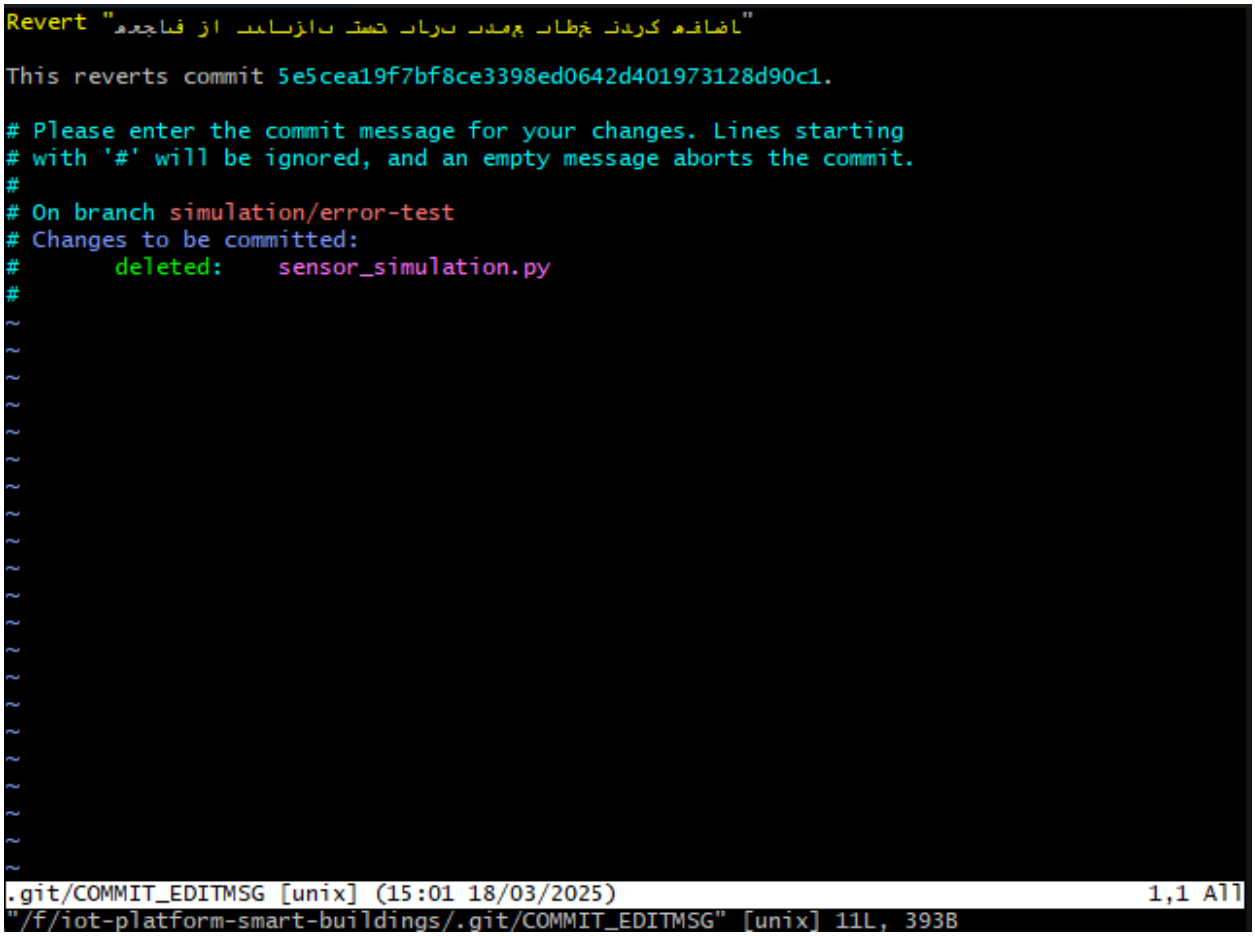
```
print("This is an error")
```

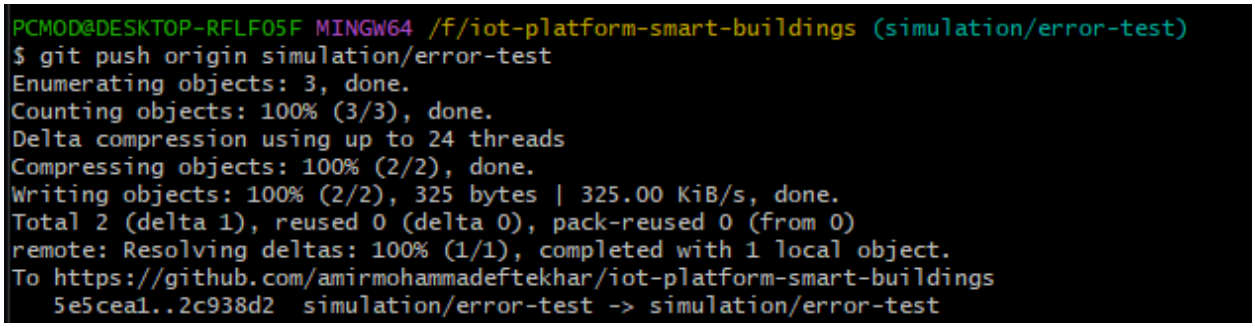
7. ثبت تغییرات در شاخه تست:

```
PCMOD@DESKTOP-RFLFO5F MINGW64 /f/iot-platform-smart-buildings (simulation/error-test)
$ git add sensor_simulation.py

PCMOD@DESKTOP-RFLFO5F MINGW64 /f/iot-platform-smart-buildings (simulation/error-test)
$ git commit -m "اضافه کردن خطای عمدی برای تست بازیابی از فاجعه"
[simulation/error-test 5e5cea1] اضافه کردن خطای عمدی برای تست بازیابی از فاجعه
 1 file changed, 1 insertion(+)
 create mode 100644 sensor_simulation.py

PCMOD@DESKTOP-RFLFO5F MINGW64 /f/iot-platform-smart-buildings (simulation/error-test)
$ git push origin simulation/error-test
Enumerating objects: 4, done.
Counting objects: 100% (4/4), done.
Delta compression using up to 24 threads
Compressing objects: 100% (2/2), done.
Writing objects: 100% (3/3), 385 bytes | 385.00 KiB/s, done.
Total 3 (delta 1), reused 0 (delta 0), pack-reused 0 (from 0)
remote: Resolving deltas: 100% (1/1), completed with 1 local object.
remote:
remote: Create a pull request for 'simulation/error-test' on GitHub by visiting:
remote:      https://github.com/amirmohammadeftekhar/iot-platform-smart-buildings/pull/new/
simulation/error-test
remote:
To https://github.com/amirmohammadeftekhar/iot-platform-smart-buildings
 * [new branch]      simulation/error-test -> simulation/error-test
```

8. پس از شبیه‌سازی و بررسی، بازگشت به نسخه پایدار:

```
PCMOD@DESKTOP-RFLFO5F MINGW64 /f/iot-platform-smart-buildings (simulation/error-test)
$ git revert 5e5cea19f7bf8ce3398ed0642d401973128d90c1
[simulation/error-test 2c938d2] Revert "اضافه کردن خطای عمدی برای تست بازیابی از فاجعه"
 1 file changed, 1 deletion(-)
 delete mode 100644 sensor_simulation.py
```





لینک ریپو: https://github.com/amirmohammadeftekhar/iot-platform-smart-buildings