

Lab: GitHub Automation & AI Reviewer

Objective: Build a script that uses PyGithub and Gemini to automatically review Pull Requests.

Prerequisites

1. **GitHub Account.**

2. **Personal Access Token (PAT):**

- Settings -> Developer Settings -> Personal access tokens -> Fine-grained tokens.
- Permissions: Read/Write Access to "Pull Requests", "Issues", "Code".

3. **Gemini API Key.**

Task 1: PyGithub Warmup

1. Install `PyGithub`: `pip install PyGithub`.
2. Write a script `list_repos.py`:
 - Authenticate.
 - Print the names and URL of your last 5 created repositories.
3. Create a **new repository** programmatically named `test-automation-lab`.
 - Add a `README.md` via the API.

Task 2: The Setup

1. In your new `test-automation-lab` repo:

- Create a file `calculator.py` on `main`.
- Create a new branch `bad-code`.
- Modify `calculator.py` to add a bug (e.g., `def add(a, b): return a - b`).
- Create a **Pull Request** from `bad-code` to `main`.

2. Note the PR number (e.g., #1).

Task 3: Fetching the Diff

Write a script `fetch_pr.py` :

1. Get the repo.
2. Get the PR object using the number.
3. Iterate through `pr.get_files()` .
4. Print the `filename` and the `patch` (the diff).

Expected Output:

```
File: calculator.py
Patch:
@@ -1,2 +1,2 @@
  def add(a, b):
-     return a + b
+     return a - b
```

Task 4: The AI Reviewer

Integrate Gemini:

1. Construct a prompt:

```
You are a senior code reviewer. Review the following patch for bugs and logic errors.  
Be concise. If the code is buggy, explain why.
```

```
Patch:  
{file_patch}
```

2. Send to Gemini API.

3. Print the response.

Task 5: Posting the Review

Close the loop:

1. Take the LLM response.
2. Use `pr.create_issue_comment(body=llm_response)` to post the review as a general comment on the PR.
 - *Advanced:* Use `create_review_comment` to post on the specific line number (requires calculating position from the diff).

Run the script and check your GitHub PR! You should see your bot's comment.

Challenge: GraphQL "Stargazer" Analytics

Write a script using `requests` and GraphQL to:

1. Find your most starred repository.
2. Fetch the last 10 stargazers.
3. Print: "Your repo X was starred by: [User1, User2...]"

Use the [GitHub GraphQL Explorer](#) to build your query first.