



PAK-AUSTRIA FACHHOCHSCHULE:
INSTITUTE OF APPLIED SCIENCES AND TECHNOLOGY

Department of IT & CS

Name:

**Obaid Ullah, Mohammad Saad, Husnain Safdar,
Abdul Basit**

IDs:

**B22F1451SE067, B22F0183SE081,
B22F0269SE056, B22F0359SE052**

Project Report:

Software Construction & Development

Submitted To:

Dr. Nabeel Ahmed

Table of Contents

- 1. Project Title**
- 2. Project Overview**
- 3. Objectives**
- 4. Technologies Used**
- 5. Architecture Overview**
 - **5.1 Controller Layer**
 - **5.2 Service Layer**
 - **5.3 Model Layer**
- 6. Core Functionalities**
- 7. Configuration Details**
- 8. Class Summary**
 - **8.1 SearchController.java**
 - **8.2 GitHubSearchService.java**
 - **8.3 SearchRequest.java**
 - **8.4 CodeItem.java**
 - **8.5 Repository.java**
 - **8.6 TextMatch.java**
 - **8.7 SearchResponse.java**
- 9. Features**
- 10. Future Improvements**
- 11. Folder Structure Overview**
- 12. Diagrams**
- 13. UI Screen Shots**

Project Title:

GitHub Code Finder:

Using Spring Boot and GitHub REST API

Github Link:

<https://github.com/obaid305/Project-SCD-6.git>

Project Overview:

The GitHub Code Finder is a Java-based Spring Boot web application that allows users to search for code snippets hosted on GitHub using the official GitHub REST API. Users can input search queries via a form, and the system will retrieve relevant code data such as file names, paths, URLs, and repositories where the code exists.

Objectives:

- To build a lightweight and fast web interface to search code on GitHub.
- To utilize Spring Boot's features such as `@Controller`, `@Service`, and dependency injection.
- To learn API consumption using `RestTemplate`.
- To understand and apply MVC architecture and Service Layer Design Pattern.
- To map external JSON data to internal Java objects using model classes.

Technologies Used:

- **Java:** Core programming language
- **Spring Boot:** Web application framework
- **Maven:** Dependency management
- **Thymeleaf:** Template engine for frontend (if used)
- **GitHub REST API:** To retrieve code search results
- **Rest Template:** For making REST API calls
- **IntelliJ IDEA:** Development IDE

Architecture Overview:

The application is structured following the MVC (Model-View-Controller) pattern. It also adopts the Service Layer Pattern for separating business logic from the controller.

Layer Breakdown:

Controller Layer:

- **File:** SearchController.java
- Handles form submissions and REST endpoints.
- Calls the service layer with user input.

Service Layer:

- **File:** GitHubSearchService.java
- Contains business logic for interacting with GitHub's API.
- Uses RestTemplate to send GET requests.

Model Layer:

- **Files:** SearchRequest.java, CodeItem.java, Repository.java, SearchResponse.java, TextMatch.java
- Maps the JSON response from GitHub into Java objects for processing.

Core Functionalities:

- **Search GitHub Code:** User enters a query and submits it.
- **API Communication:** The backend service constructs a GitHub API URL and makes a GET request.
- **JSON ParsingMaps:** GitHub's JSON response into CodeItem, Repository, etc.
- **Display Results:** Controller returns the list of results to the frontend.
- **REST Endpoint Support:** Exposes a /api/search endpoint to be used by frontends or APIs.

Configuration Details:

The GitHub personal access token is read from application.properties:

github.token=ghp_YourAccessTokenHere

github.api.url=https://api.github.com/search/code

These properties are injected into **GitHubSearchService** using **Spring's @Value** annotation.

Class Summary:

- **SearchController.java**

Handles GET and POST requests to /search and /api/search.

Integrates with Thymeleaf or other frontend views.

Delegates the code search logic to GitHubSearchService.

- **GitHubSearchService.java**

Contains logic to build GitHub API query URLs.

Uses RestTemplate to fetch data.

Maps the response into Java objects (SearchResponse, CodeItem, etc.).

- **SearchRequest.java**

A simple POJO to carry the user's query input.

- **CodeItem.java**

Represents a code snippet returned from GitHub.

Includes fields like name, path, HTML URL, and associated repository.

- **Repository.java**

Represents the repository in which a file or code snippet is found.

- **TextMatch.java**

Represents the specific matched text fragment in the search result.

- **SearchResponse.java**

Wraps the entire response returned from GitHub into a manageable Java object.

Features:

- Clean and modular code structure.
- Easy to maintain and extend with more API features.
- Search functionality works with real-time GitHub API.
- RESTful endpoint to allow further integration (e.g., mobile apps).

Future Improvements:

- Add authentication using Spring Security for protected usage.
- Display syntax-highlighted code previews.
- Save search history to a database.
- Paginate results from GitHub API.
- Implement caching for repeated queries.

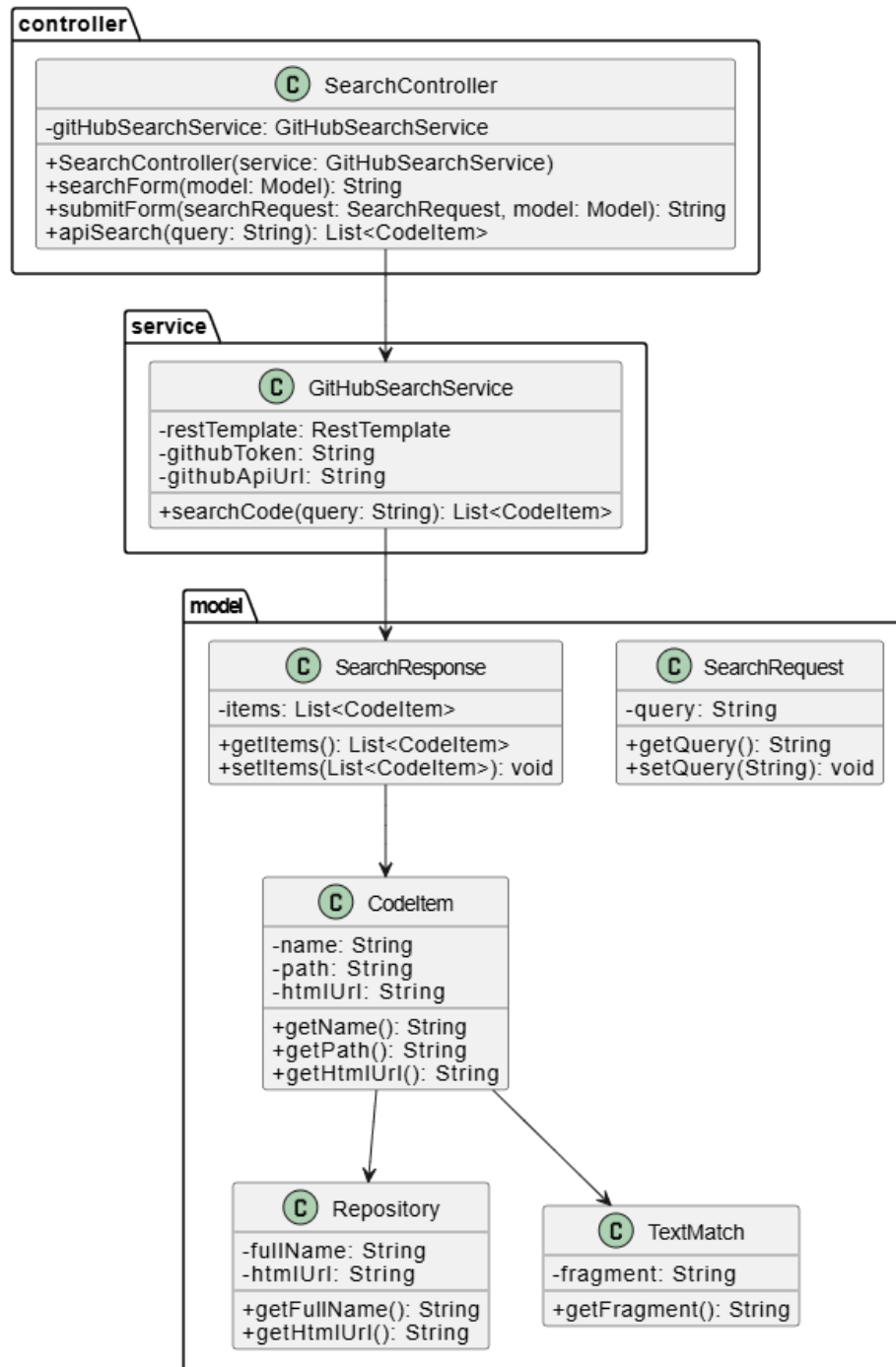
Folder Structure Overview:

src/

```
└─ main/
    │   └─ java/
    │       └─ com/example/githubcodefinder/
    │           └─ controller/
    │               └─ SearchController.java
    │           └─ model/
    │               └─ CodeItem.java
    │               └─ Repository.java
    │               └─ TextMatch.java
    │               └─ SearchRequest.java
    │               └─ SearchResponse.java
    │           └─ service/
    │               └─ GitHubSearchService.java
    └─ resources/
        └─ templates/
            └─ search.html
        └─ application.properties
```

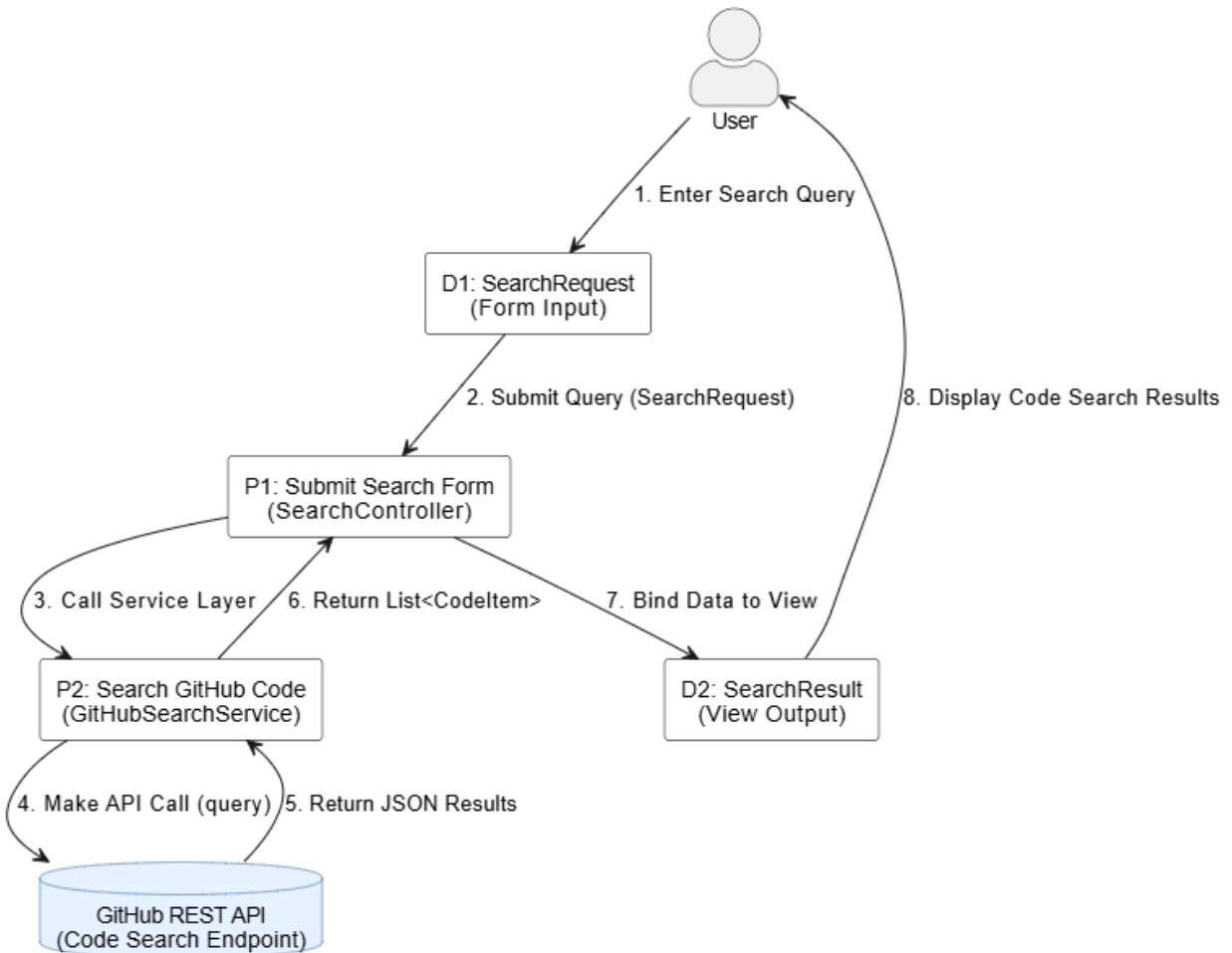
Diagrams:

Class Diagram:

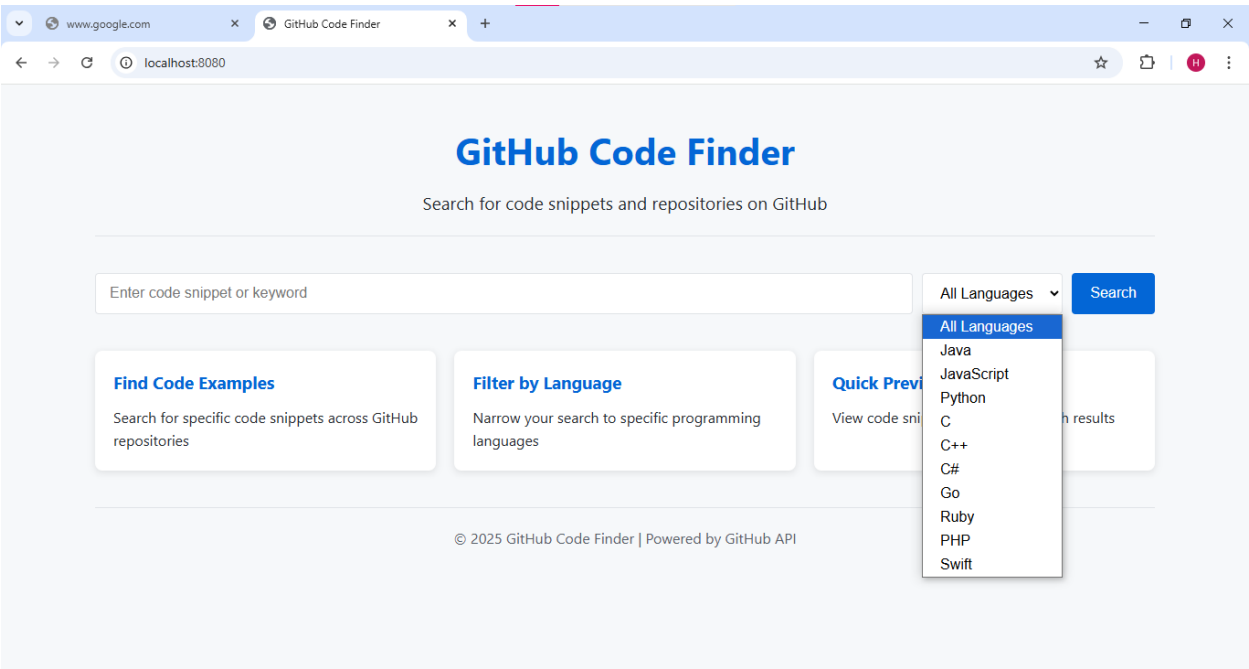
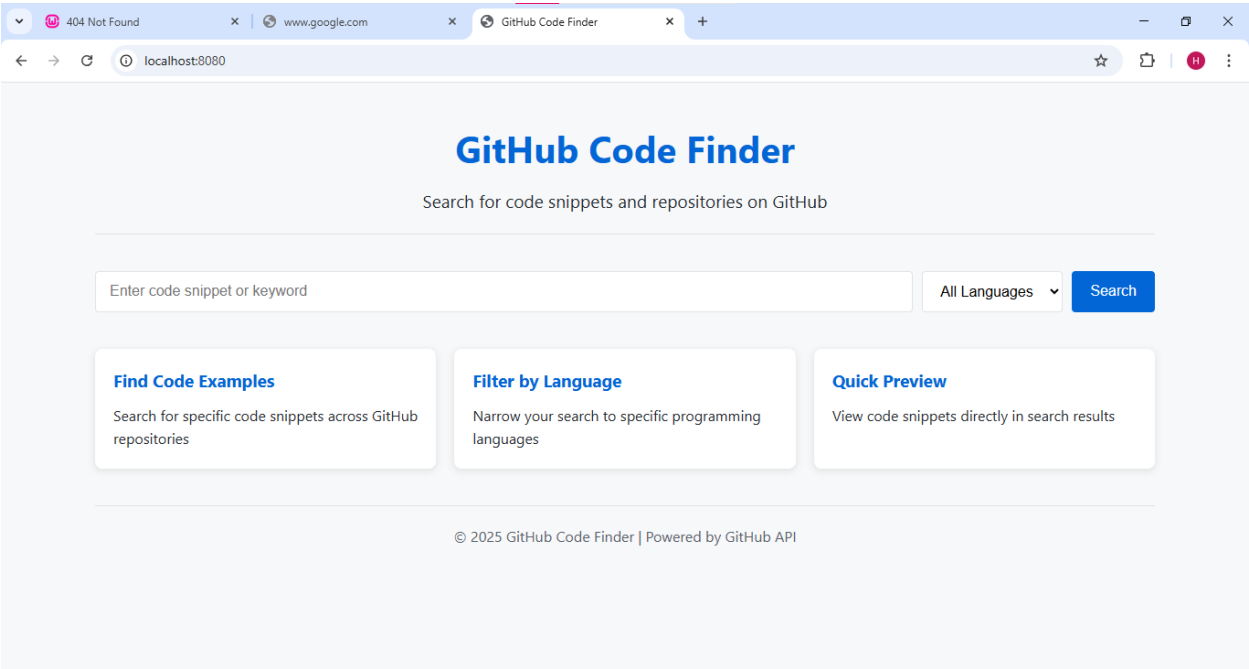


Data Flow Diagram:

Level 1 Data Flow Diagram - GitHub Code Finder Project



UI Screenshots:



Search Results - GitHub Code F...Edit Personal Access Token (Cl...localhost8080/search

localhost:8080/search

GitHub Code Finder

Search for code snippets and repositories on GitHub

All LanguagesSearch

Search Results

Found 10 results for: for

[apache/apachecn-algo-zh / docs/think-dast-zh/5.md](#)

```
public void timeMe(int n) {
    for (int i=0; i<n; i++) {
        list.add(0, "a string");
    }
}
```

[View on GitHub](#)

Search Results - GitHub Code F...Edit Personal Access Token (Cl...localhost8080/search

localhost:8080/search

[lucasjones/cpuminer-multi / NEWS](#)

```
- Fix CPU affinity on FreeBSD (ache)
- Compatibility fixes for various platforms, including Solaris 8
  and old versions of OS X
```

[View on GitHub](#)

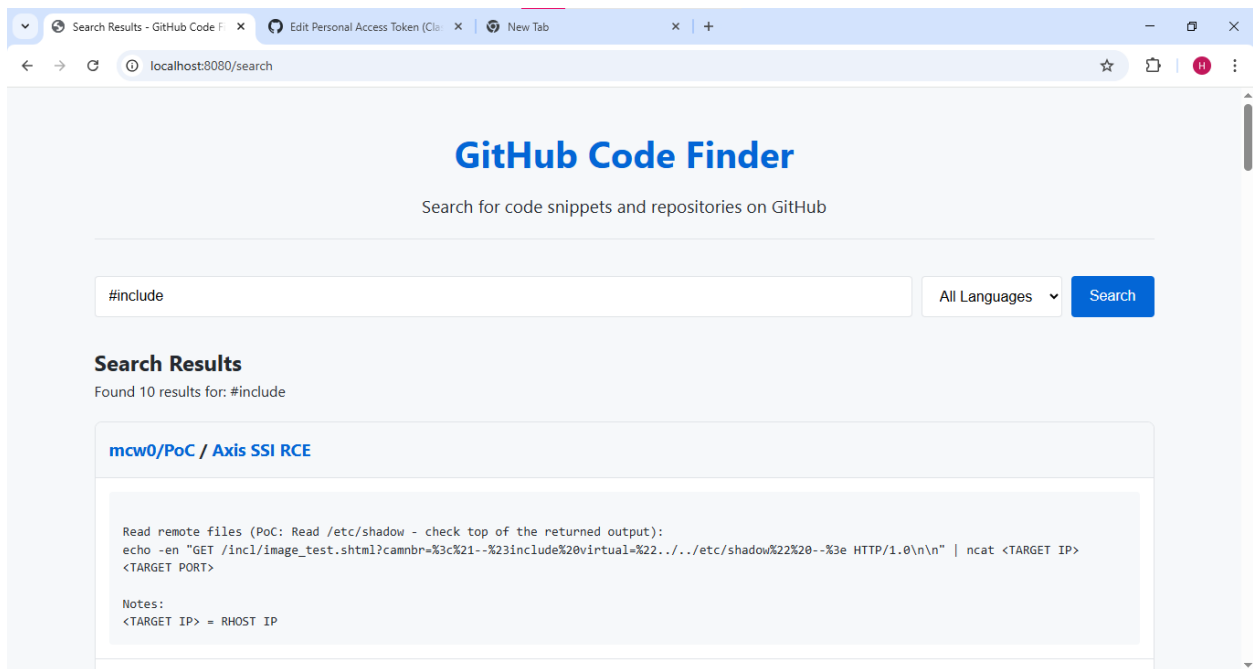
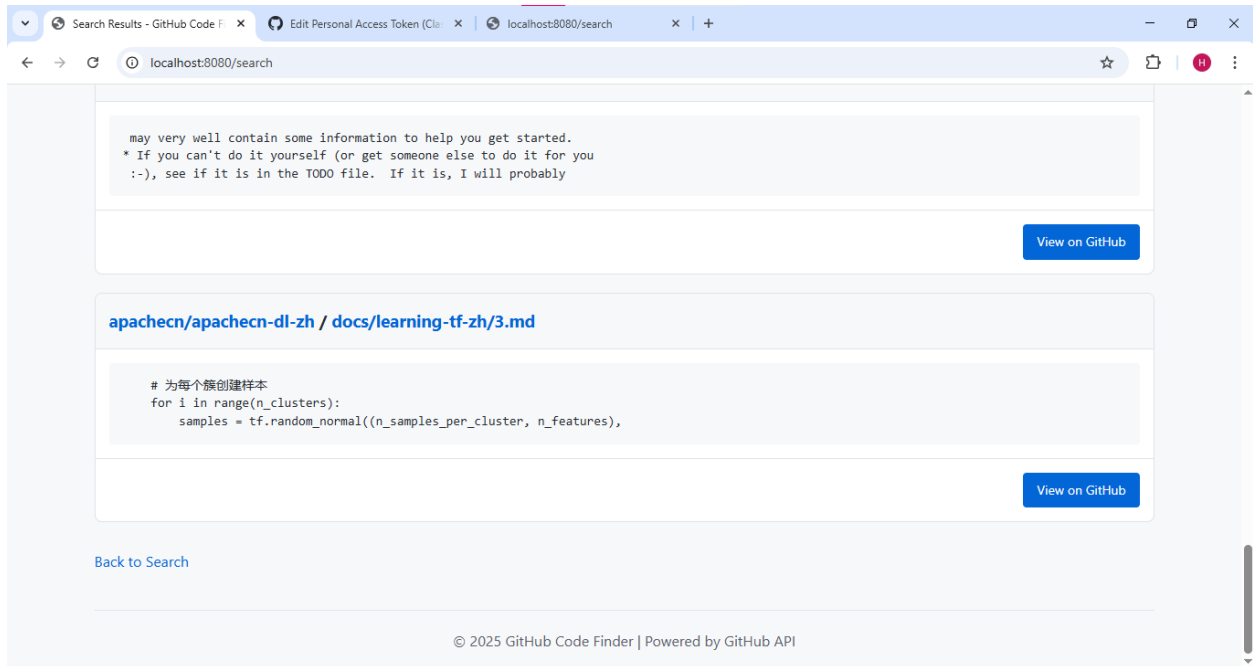
[aneasystone/mysql-deadlocks / 1.md](#)

```
## 死锁特征

1. insert WAITING FOR lock_mode X insert intention waiting
2. insert WAITING FOR lock_mode X insert intention waiting, HOLDS lock_mode X
3. 隔离级别: RR
```

[View on GitHub](#)

[wizardforcel/eloquent-js-3e-zh / 7.md](#)



Search Results - GitHub Code F...Edit Personal Access Token (Cl...New Tab

localhost:8080/search

GitHub Code Finder

Search for code snippets and repositories on GitHub

All LanguagesSearch

Search Results

Found 10 results for: while

[strongswan/strongswan / NEWS](#)

```
- Fixed issues while reestablishing multiple CHILD_SAs (e.g. after a DPD timeout) that could cause a reqid to get assigned to multiple CHILD_SAs with
```

View on GitHub

Search Results - GitHub Code F...+

localhost:8080/search

GitHub Code Finder

Search for code snippets and repositories on GitHub

All LanguagesSearch

Search Results

Found 10 results for: main

[ikorb/gcvideo / NEWS](#)

```
2020-01-19: GCVideo DVI version 3.0b
- fix inverted colors on WiiDual
- fix flasher->main reboot failure on some Wiis

2020-01-13: GCVideo DVI version 3.0a
- fix flash corruption when saving settings
```

View on GitHub

Search Results - GitHub Code F

localhost:8080/search

GitHub Code Finder

Search for code snippets and repositories on GitHub

C++

Search

Search Results

Found 10 results for: main

[UE4SS-RE/RE-UE4SS / docs/cpp-api/cpp-examples.md](#)

Template repository for making UE4SS C++ mods: [UE4SSCPPTemplate](https://github.com/UE4SS-RE/UE4SSCPPTemplate) - note that if you are developing on latest main branch, you should use the `dev` branch of this template repo if there are any changes to the template that are not yet merged into `main`.

[View on GitHub](#)

Search Results - GitHub Code F

localhost:8080/search

GitHub Code Finder

Search for code snippets and repositories on GitHub

Java

Search

Search Results

Found 10 results for: main

[arcuri82/testing_security_development_enterprise_systems / intro/spring/testing/selenium/crawler/src/main/java/org/tsdes/intro/jee/jsf/crawler/GitCrawler.java](#)

```
public static void main(String[] args) {  
  
    WebDriver driver = SeleniumDriverHandler.getChromeDriver();
```

Search Results - GitHub Code F...x

localhost:8080/search

GitHub Code Finder

Search for code snippets and repositories on GitHub

All Languages

Search

Search Results

Found 10 results for: System.out.println

[influxdata/influxdb-java / FAQ.md](#)

```
queryResult -> {  
  System.out.println("result = " + queryResult);  
},
```

View on GitHub

Search Results - GitHub Code F...x

localhost:8080/search

GitHub Code Finder

Search for code snippets and repositories on GitHub

Java

Search

Search Results

Found 10 results for: System.out.println

[arcuri82/testing_security_development_enterprise_systems / intro/spring/testing/selenium/crawler/src/main/java/org/tsdes/intro/jee/jsf/crawler/GitCrawler.java](#)

```
//Java projects, Most Stars  
String search = "search?l=&o=desc&p="+page+"&q=language%3AJava&ref=advsearch&s=stars&type=Repositories&utf8=v/";
```

View on GitHub