Project Report

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| Project Title | Application Integration - API |
| Qualification Name (NICF) |  |
| Product Name |  |
| Module Name (NICF) | Application Integration (API using Spring Boot & Reactjs) |

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| Student name | | Assessor name | |
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| Date issued | Completion date | | Submitted on |
| May 29, 2023 | May 31, 2023 | | June 5, 2023 |
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| Project title | Application Integration -API | | |

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| Learner declaration |
| I certify that the work submitted for this assignment is my own and research sources are fully acknowledged.  Student signature: Date: 5/29/2023 |

Content

1. **Project Background**
2. **Project Objectives**
3. **Project Requirement Specifications**
4. **Task 1**
5. **Task 2**
6. **Task 3**
7. **Task 4**
8. **Task 5**
9. **Task 6**

Project Background

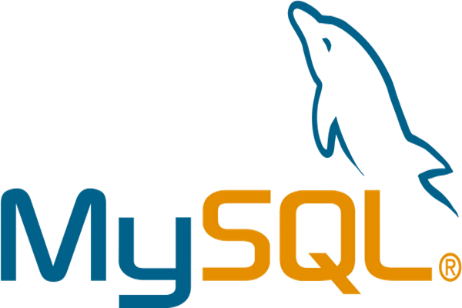
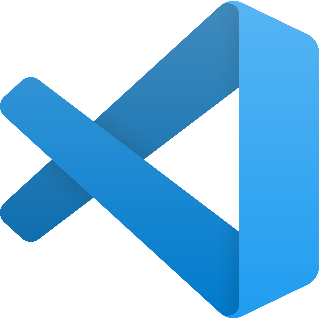
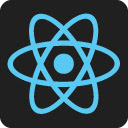
The client for ABC Neighbourhood has tasked you to implement a revision of your Know Your Neighbourhood project. The project’s requirement are as follows:

* The backend should utilize the Spring boot and JPA frameworks.
* Using the Restful Web Services to develop the API.
* Creating the front-end of the webpage using React.js.
* Identify the existing APIs available and their uses on the application.

**2. Project Objective**

The objectives of this project include the following:

* The Users should be able to perform the following functions:
  + User should be able to log-in using the provided APIs
  + Users are required to provide the existing username and password for the API and can login to the application.
* Tools and Platforms
  + Jetbrains IntelliJ IDEA Ultimate  
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    Description automatically generated
  + Spring Tool Suite  
    
  + MySQL Server  
    
  + Visual Studio Code  
    
  + Node.js  
    
  + Mozilla Firefox  
    
  + Google Chrome  
    
  + React Developer Tools  
    
  + Microsoft Word  
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  + Microsoft PowerPoint  
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**3. Project Requirement Specifications**

**3.1. Project Scope**

You have already developed a "Know-Your-Neighborhood" application. The goal of this application is to provide login/sign up using existing API. For this to happen, the application should have login button with available APIs.

The Know-Your-Neighborhood website consists of the following Key pages:

1. Home Page

2. Registration Page

3. Login Page with API link

4. Contact us Page

5. About us Page

6. Terms and Conditions Page

Customers can login using the existing API and fetch basic information such as name, email from API.

**4. Task 1**

**Task Statement:**

Create the following items Under **“APIs and Types of APIs”** in Project Presentation.

1. Explain what API is, its role and need for API and research existing APIs.

2. Examine the relationship between API and SDK.

3. Identify types of API and its uses.

4. Identify the potential security issues with API and critically evaluate the suitable API for given scenario or your selected application.

**Solution:**

1. **Explain what API is, its role and need for API and research existing APIs.**
2. What is API?
   1. An API stands for Application Programming Interface. It serves as a set of rules and protocols that allows different software applications to communicate with each other.
3. Its Role
   1. The primary role of the API is to facilitate interaction between different software systems, acting as a bridge between data and functionality.
4. Need for API
   * Integration of Platforms: Applications can easily integrate certain functionalities that exist from different systems.
   * Payment Processing: Instead of building your own payment gateway, you can use an API from a service like Stripe or Paypal which will allow your website to connect with their services to securely process payments, handle refunds, and manage subscriptions.
   * Real-time Data Updates: Suppose you're building a news aggregation application that pulls the latest news from various sources. Each news organization may not have the same data structure for their articles. APIs allow you to streamline this process, pulling in data from various sources in a uniform way.
   * Social Media Integration: Let's say you're developing a new mobile app and you want users to be able to register and log in using their existing social media accounts, like Facebook or Google. Instead of having to develop your own authentication system from scratch, you can leverage the APIs provided by these platforms to accomplish this.

1. Example APIs for mobile, desktop, Web APIs.
   1. Mobile APIs
      1. Google Maps API: Allows the integration of Google Maps functionality to your mobile apps.
      2. Facebook API: Allows integration with Facebook for social features like User Authentication.
   2. Desktop APIs
      1. Windows API (WinAPI): Provides core functionality for Windows applications.
      2. .NET API: Used for creating desktop applications on the Windows platform.
   3. Web APIs
      1. Twitter API: Allows the retrieval and posting of tweets, user information, and more.
      2. Stripe API: Provides functionality to handle online payments.
2. **Examine the relationship between API and SDK.**

An SDK (Software Development Kit) and an API are both tools used in software development. While an API defines how different software components should interact, an SDK is a suite of software development tools that includes one or more APIs, along with documentation, libraries, code samples, processes, and guides that developers can use to create software applications for a specific platform or framework. In other words, an API can be thought of as part of an SDK. The API helps a program interact with other programs, whereas the SDK provides a broader toolkit for developing that program.

1. **Identify types of API and its uses.**
2. Examine different APIs  
   Different types of APIs include:
   1. Web APIs also known as HTTP APIs or REST APIs, which allow communication between different web services.
   2. Operating System APIs, which provide functions for applications to interact with the underlying OS.
   3. Database APIs, which allow communication with a database system.
   4. Remote APIs, which define standards for communication between software on different machines.
3. Examine the uses of APIs for a particular type
   1. Taking Web APIs as an example, they're used to enable interaction between different web services. For instance, a travel booking website might use a Web API to retrieve flight information from various airlines' systems. Similarly, a mobile app could use a social media Web API to allow users to share their achievements directly to their social media profiles.
4. **Identify the potential security issues with API and critically evaluate the suitable API for given scenario or your selected application.**
5. Identify potential security issues with API

* Injection Attack
* DDoS Attacks
* Broken Authentication
* Sensitive Data Exposure
* Broken Access Control
* Parameter Tampering
* Man-In-The-Middle-Attack (MITM)

1. Evaluate potential security issues in a suitable API of Know-Your-Neighborhood

* **Injection:**
* **Broken User authentication:**
* **Broken access control/authorization**
* Suitable API for given scenario