NED University of Engineering & Technology, Karachi

Department of Software Engineering



Software Quality Engineering (SE-309) ASSIGMMENT

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POSTMAN

Postman is a popular API development and testing tool that simplifies the process of working with APIs, empowering teams to build and maintain high-quality APIs more efficiently. Originally launched in 2012, it has become one of the go-to choices for developers, testers, and DevOps teams worldwide due to its intuitive interface and robust feature set.

Here are some key aspects and features of Postman:

- 1. **API Testing:** One of the primary features of Postman is its comprehensive API testing capabilities. It allows users to create and execute automated tests for REST, SOAP, and GraphQL APIs. Test scripts can be written in JavaScript, enabling advanced testing scenarios such as data-driven tests, assertions, and validations.
- 2. **Request Building:** With Postman, users can easily construct HTTP requests using a user-friendly interface. It supports various request types such as GET, POST, PUT, DELETE, etc., and allows for the customization of headers, parameters, body content, and authentication methods.
- 3. **Environment Variables:** This feature allows users to define variables once and use them dynamically in requests, making it easy to switch between configurations without modifying individual requests.
- 4. **Mock Servers:** Postman allows users to create mock servers for APIs, which can be used for testing purposes before the actual backend implementation is ready. We can develop or test an API before it's ready for production (or without utilizing production data) by using mock servers, which will return pre-defined data for API requests allowing for testing of the API with the frontend before production.
- 5. **API Documentation:** Postman provides tools for generating interactive API documentation from collections(contains number of requests). This documentation includes details such as request methods, request body, endpoints, authentication method, response schema, etc, providing it in human-readable for other developers to easily work with the APIs.
- 6. **Collaboration:** Postman offers collaboration features that facilitate teamwork. Users can share workspaces with other developers and can collaborate in real-time, also roles can be assigned to members you are sharing workspace with.
- 7. **Monitoring Performance:** Postman offers monitoring capabilities to track API performance and uptime. It provides detailed insights into response times, status codes, and error rates, helping teams identify and troubleshoot performance issues effectively.

Getting Started with Postman:

- Go to Postman website(https://www.postman.com/)
- Signup for free account.
- Then download postman application for desktop, for you version of Operating System.
- You can work start testing APIs directly at Postman website after login.

Starting Testing APIs:

- Now create a workspace for testing your APIs, the workspace contains all the APIs for one project.
- After creating a workspace, you can create different collections in the workspace for different endpoints of the APIs that you have defined. A Collection will contain the group of APIs made to similar endpoints.
- Now, in your collection, you can provide request method, request url(endpoint), request body parameters, authorization headers, and write test scripts in the IDE provided.
- Then you can run the request to execute all testcases.
- The API endpoint and the query parameters can also be stored in environment variables for their reusability.

Testing some Node APIs with Postman:

CODE:

```
index.is
const express = require('express');
const app = express();
const cors = require('cors');
const bodyParser = require('body-parser')
app.use(cors());
app.use(bodyParser.json());
const prodRouter = require('./product.router.js');
app.use("/product", prodRouter);
app.listen(8000, () => {
    console.log("App running on port : http://localhost:8000");
});
user.router.js
const Router = require('express').Router()
const { getAllProducts, getProductById, postAddProduct } =
require('./product.controller.js');
Router.get("/all", getAllProducts);
Router.get("/:id", getProductById);
Router.post("/add", postAddProduct);
module.exports = Router;
user.controller.js
const productData = require('./product.data.json');
```

```
const getAllProducts = (req, res) => {
    res.send(productData);
};
const getProductById = (req, res) => {
    if(!(Number.isInteger(parseInt(req.params.id)))){
        res.status(400).json({
            message: "Id of the required product is not provided or
is not integer."
        });
    }else{
        let product = productData.filter(p =>
p.id==parseInt(req.params.id));
        if(product.length==0){
            res.status(400).json({
                message: "Provided id is not correct."
            });
        } else{
            res.status(200).json({
                data: product
            });
        };
    }
const postAddProduct = (req, res) => {
    const { id, name, description, price } = req.body;
    if(!(id&&name&&description&&price)){
        res.status(400).json({
            message: "Not enough data provided, provide all fields."
        });
    } else{
        productData.push({
            "id": id,
            "name": name,
            "description": description,
            "price": price
        });
```

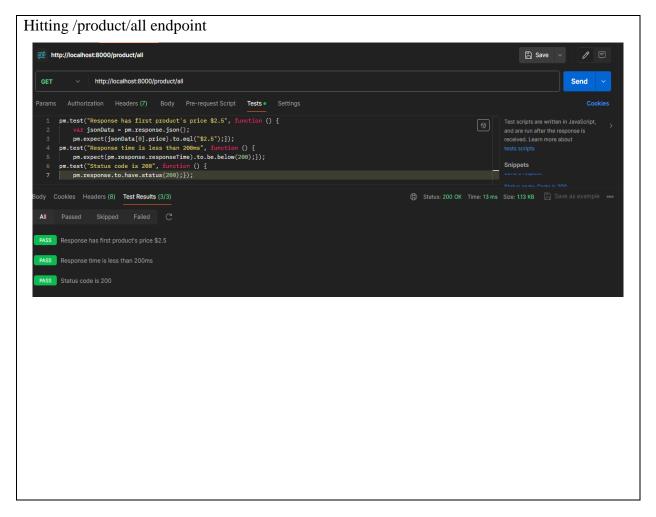
```
res.status(201).end();
}

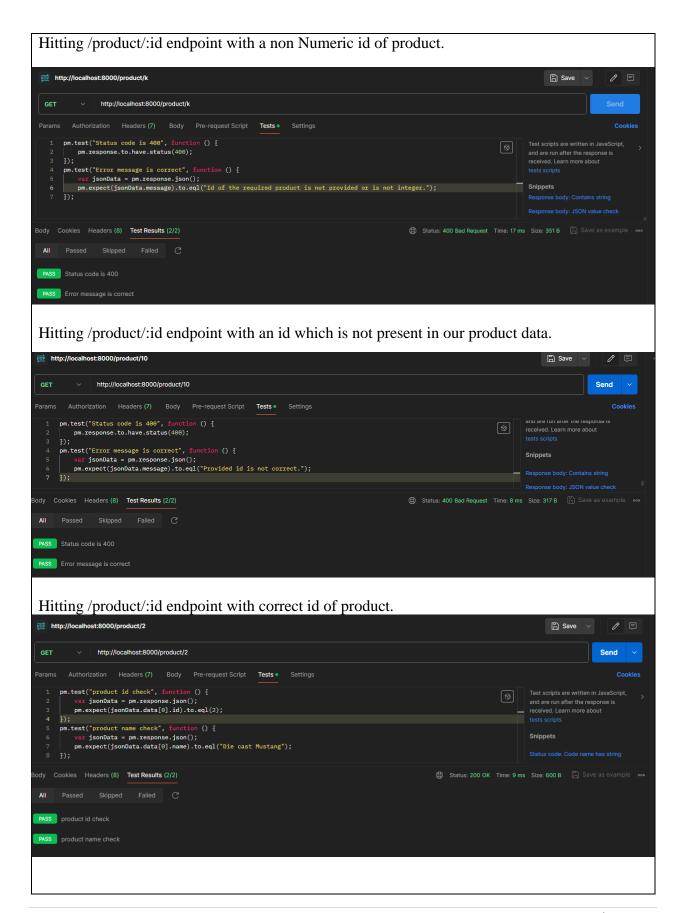
module.exports = {
    getAllProducts,
    getProductById,
    postAddProduct
}

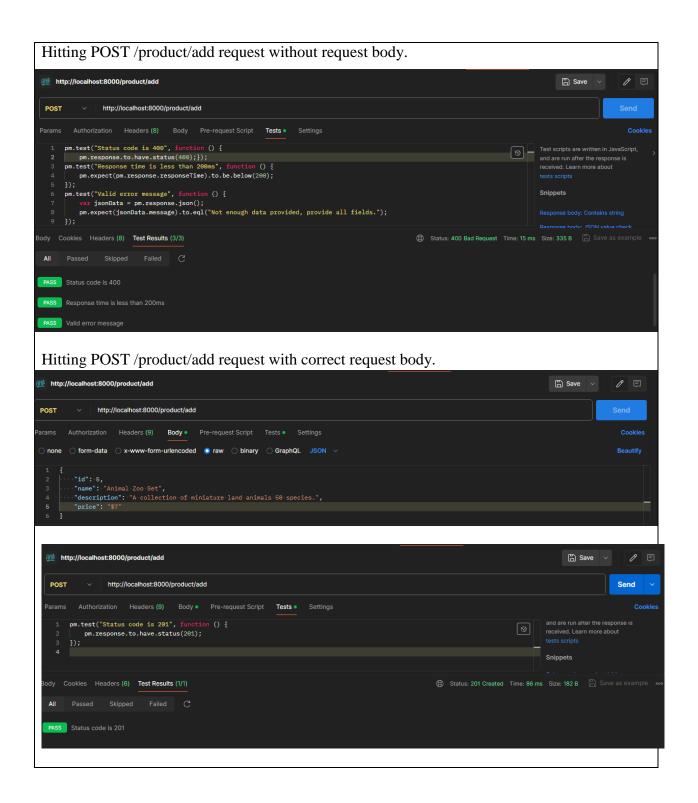
product.data.json
contains a collection of objects

Repository URL: <a href="https://github.com/KhawarGit/APIs-for-SQE-assignment">https://github.com/KhawarGit/APIs-for-SQE-assignment</a>
```

TESTING Screenshots with Postman:







2nd Tool: Katalon Studio

Katalon Studio is a free and robust automation solution for API, Web, Desktop, and Mobile Testing. It provides an easy start for beginners and also offers extensions and customization for experts. It provides native integration with popular CI tools. It is an integrated test automation platform designed to streamline the process of automated testing for web, API, mobile, and desktop applications. It offers a comprehensive suite of tools and features to help testers and developers create, execute, and manage automated tests efficiently.

Here are some key aspects and features of Katalon Studio:

- 1. **Cross-Platform Support:** Katalon Studio supports testing for a wide range of platforms, including web applications, APIs, mobile applications (iOS and Android), and desktop applications (Windows).
- 2. **Rich Set of Test Automation Capabilities:** Katalon Studio provides a rich set of built-in keywords and actions for test automation, enabling testers to create powerful and comprehensive test scripts without the need for extensive coding. It offers support for both keyword-driven testing and script-driven testing, catering to users with varying levels of technical expertise.
- 3. **Reporting and Analytics:** Test reports can be generated into different forms such as PDF, etc using Katalon Platform.
- 4. **Web Testing Feature:** Katalon Studio excels in web testing, offering a plethora of features to automate interactions with web elements, validate page content, and handle various scenarios such as pop-ups and frames. With support for popular web browsers like Chrome, Firefox, Safari, and Edge, testers can ensure their web applications function flawlessly across different browser environments.
- 5. **API Testing Feature:** Simplifying the intricacies of API testing, Katalon Studio provides intuitive tools for creating, executing, and validating API requests and responses. Testers can effortlessly construct API requests, specify parameters and headers, and validate response data using built-in assertions. With support for RESTful APIs, SOAP services, and GraphQL, Katalon Studio caters to a broad spectrum of API testing needs.
- 6. **Mobile Testing Feature:** Katalon Studio offers a comprehensive suite of features for both iOS and Android applications. Testers can automate interactions with mobile app elements, conduct functional testing, and ensure consistent behavior across various devices and screen sizes.
- 7. **Desktop Testing Feature:** For desktop application testing on the Windows platform, Katalon Studio provides robust capabilities to automate interactions with UI elements, perform functional testing, and validate application behavior across different Windows versions.

Getting Started with Katalon Studio:

• Visit the Katalon Studio website at https://katalon.com/download and download appropriate version of Katalon Studio for your operating system (Windows, macOS, Linux).

- Katalon studio offers both free version and a paid version, choose the one that best suits your needs.
- After downloading Katalon Studio, install from your downloads folder.
- Create a Katalon Account on the Katalon website and login your Katalon Studio.
- After successful login, you can explore Katalon Studio features.

Starting Testing APIs:

- Select "New Draft REST Request" option.
- Provide your API url, and other necessary data, query string and request body, and authorization headers.
- Then save this request in "Object Repository" folder.
- Then right click on "Test Cases" and select new Test Case.
- Provide name for the new Test Case.
- First select API request from "Object Repository" folder.
- then select "Add Web Service Keyword" option for inserting a test scenario or you can write directly in the script after select "Script" option.
- Then run this test case.
- You can add test cases in a test suite to form a collection of test cases.

Testing Some Node APIs with Katalon Studio:

We test the same APIs which code is provided above.

CODE:

```
index.is
const express = require('express');
const app = express();
const cors = require('cors');
const bodyParser = require('body-parser')
app.use(cors());
app.use(bodyParser.json());
const prodRouter = require('./product.router.js');
app.use("/product", prodRouter);
app.listen(8000, () => {
    console.log("App running on port : http://localhost:8000");
});
user.router.js
const Router = require('express').Router()
const { getAllProducts, getProductById, postAddProduct } =
require('./product.controller.js');
```

```
Router.get("/all", getAllProducts);
Router.get("/:id", getProductById);
Router.post("/add", postAddProduct);
module.exports = Router;
user.controller.js
const productData = require('./product.data.json');
const getAllProducts = (req, res) => {
    res.send(productData);
};
const getProductById = (req, res) => {
    if(!(Number.isInteger(parseInt(req.params.id)))){
        res.status(400).json({
            message: "Id of the required product is not provided or
is not integer."
        });
    }else{
        let product = productData.filter(p =>
p.id==parseInt(req.params.id));
        if(product.length==0){
            res.status(400).json({
                message: "Provided id is not correct."
            });
        } else{
            res.status(200).json({
                data: product
            });
        };
    }
const postAddProduct = (req, res) => {
    const { id, name, description, price } = req.body;
    if(!(id&&name&&description&&price)){
        res.status(400).json({
            message: "Not enough data provided, provide all fields."
```

```
});
} else{
    productData.push({
        "id": id,
        "name": name,
        "description": description,
        "price": price
    });

    res.status(201).end();
}

module.exports = {
    getAllProducts,
    getProductById,
    postAddProduct
}
```

product.data.json

contains a collection of objects

Repository URL: https://github.com/KhawarGit/APIs-for-SQE-assignment

Testing Screenshots with Katalon Studio:

