Insider QA Bootcamp | Final Project

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Project Requirements:
https://github.com/insiderqabootcampefinalproject/project-requirements
Github Repository:
https://github.com/insiderqabootcampefinalproject/insiderbootcampproject-egebozdemir
Grafana Dashboard:
https://snapshots.raintank.io/dashboard/snapshot/rrXXPHLmrXQkWZ06rvIY7ALzRjKTTWEQ

1. Tech Stack

Java | Selenium | Maven | TestNG | MySQL | Jenkins | Grafana

Selenium - Java (21) Test Automation project with TestNG framework is created to fulfill the requirements. Created as a Maven project to enhance the dependency management and build automation. As Selenium, TestNG, Webdriver Manager, Jackson Databind, Extent Reports, Mysql Connector dependencies are injected, Maven Surefire plugin is also used.

2. Solution Overview

a. Architecture

- Code base is maintained in github repository
- Jenkins CI/CD pipeline is configured to trigger builds by push events/PRs fired in github project repository
- Jenkins build takes stage by Maven command which executes the test suite within the surefire plugin configuration at root pom.
- Results of the test cases executed are stored in the local mysql instance or generated on a html report based on the suite selection.
- Grafana dashboard is created for monitoring the metrics based on the results stored in database

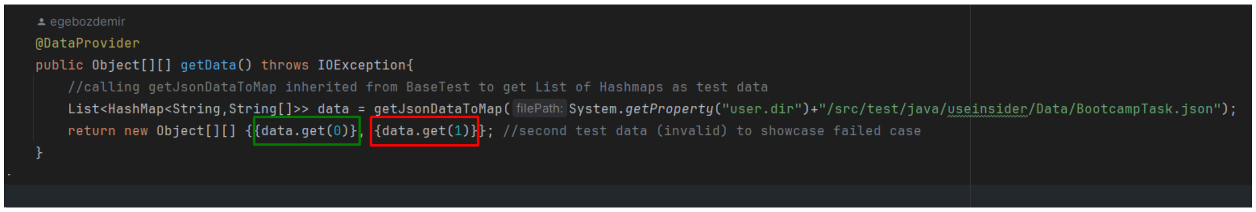
b. Framework Design - Capabilities

- Maven structured framework with all necessary automation dependencies managed.
- Page Object Model design to drive locators from respective classes. Object creation within Page object classes encapsulated from Tests.
- Base Test factory class to set browser configurations on Global properties

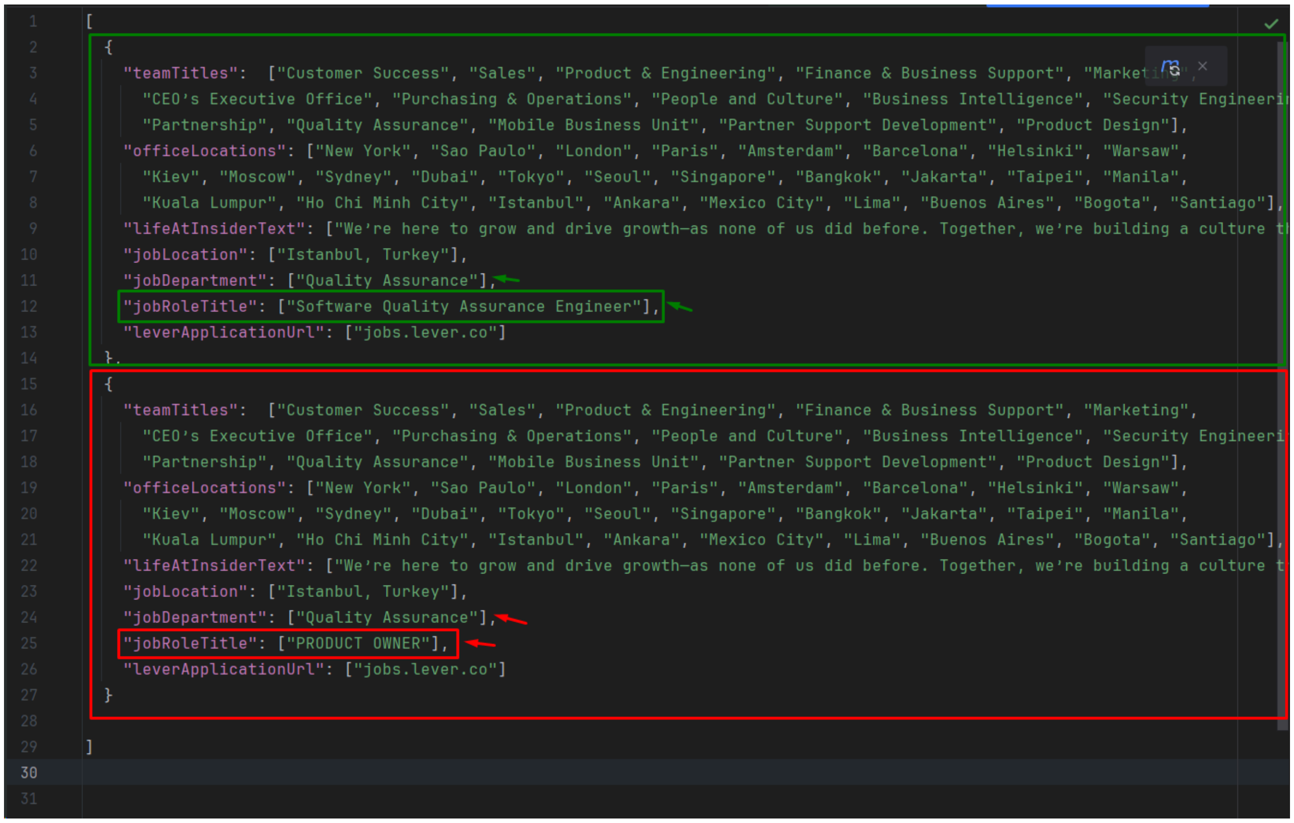
- Test strategy applied by appropriate annotations to decide how tests should be clubbed and distributed.
- TestNG runner file to trigger tests with one single point of execution control
- Categorized tests with different tags of execution
- Data driven testing & parameterization using TestNG Data provider, HashMap and Json file readers
- Soft and Hard Assertions implemented in tests
- TestNG listeners with ITestResult interface implemented to capture screenshot on automated test failures and logging
- Database controller and listener to store test results in MySQL database
- Extent Report wrapper to generate excellent HTML reports
- Supports parallel test execution with thread safe mechanism (currently only with ExtentReport Listener, will be fixed for Database Listener also)
- Running the framework tests with Maven commands
- Integrated with Jenkins with Build Pipeline Jobs and triggers for Github events
- Customized Grafana dashboard to perfectly visualize the test results and tracking metrics

c. <u>Useful Information</u>

- Parallel test execution is supported for suites with ‘ExtentReportListenersNG’ currently due to the race condition issue occurring on Database operations when trying to run parallel tests. For parallel test execution, run ‘ParallelSuiteExtentReport.xml’.
- Both options for generating html reports or storing test results on a database is available. You can find the generated html and screenshot files under ‘/reports’ directory when you run tests on your local machine (run:‘ParallelSuiteExtentReport.xml’)
- To connect your database, edit ‘DB_URL’, ‘USER’, ‘PASS’ static variables with your own values in the Database Controller class. Be aware that you need to create the table in your db based on the logic followed.
- JSON test data file containing both valid and invalid test data for positive/negative flows added. With the data provider method in the ‘BootcampTest’, it’s looping the same test with both data.



```
egebozdemir
@DataProvider
public Object[][] getData() throws IOException{
    //calling getJsonDataToMap inherited from BaseTest to get List of Hashmaps as test data
    List<HashMap<String,String[]>> data = getJsonDataToMap( filePath: System.getProperty("user.dir")+"/src/test/java/useinsider/Data/BootcampTask.json");
    return new Object[][] {{data.get(0)}, {data.get(1)}}; //second test data (invalid) to showcase failed case
}
```



```
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      "Kiev", "Moscow", "Sydney", "Dubai", "Tokyo", "Seoul", "Singapore", "Bangkok", "Jakarta", "Taipei", "Manila",
      "Kuala Lumpur", "Ho Chi Minh City", "Istanbul", "Ankara", "Mexico City", "Lima", "Buenos Aires", "Bogota", "Santiago"],
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      "Kuala Lumpur", "Ho Chi Minh City", "Istanbul", "Ankara", "Mexico City", "Lima", "Buenos Aires", "Bogota", "Santiago"],
    "lifeAtInsiderText": ["We're here to grow and drive growth—as none of us did before. Together, we're building a culture t
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    "jobDepartment": ["Quality Assurance"],
    "jobRoleTitle": ["PRODUCT OWNER"],
    "leverApplicationUrl": ["jobs.lever.co"]
  }

]
```
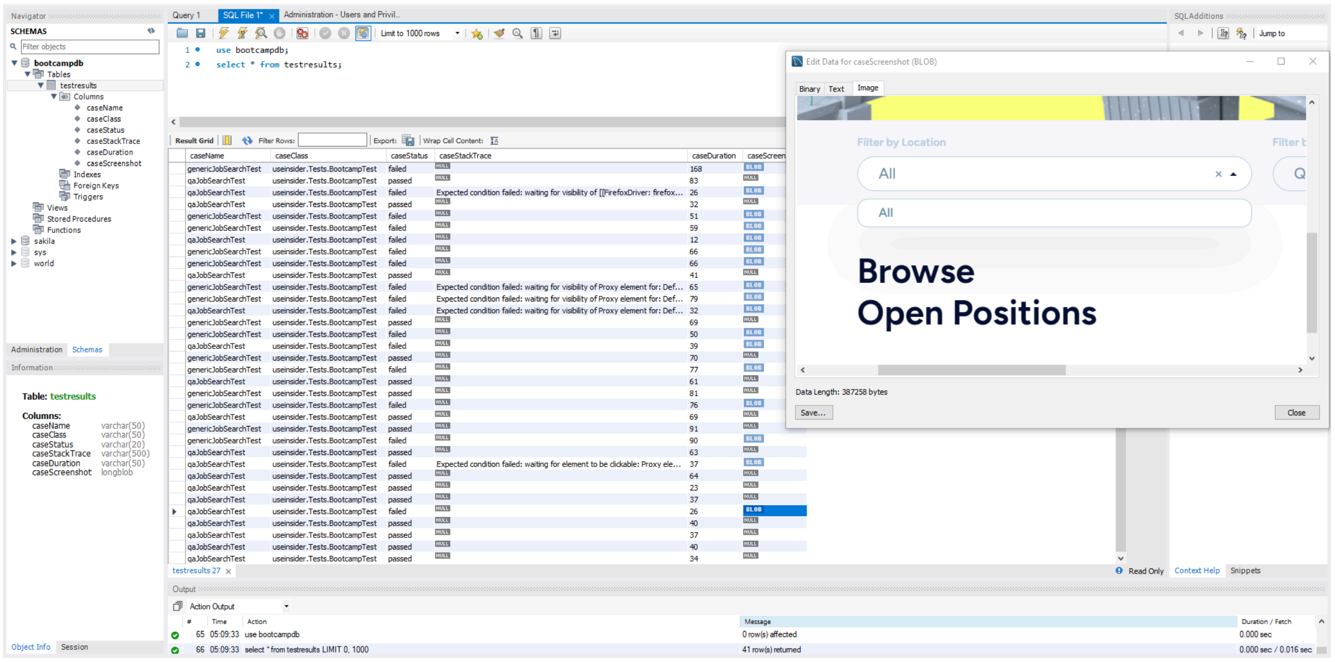

- MySQL database is created with single 'testresults' table inside. Each test run result is stored as new values to the table. Screenshot is taken for only failed cases and stored as png images, so for passed cases it's passed as null.



```sql
use bootcampdb;
select * from testresults;
```

caseName	caseClass	caseStatus	caseStackTrace	caseDuration	caseScreen
genericJobSearchTest	useinsider.Tests.BootcampTest	failed	NULL	168	BLOB
qaJobSearchTest	useinsider.Tests.BootcampTest	passed	NULL	83	NULL
qaJobSearchTest	useinsider.Tests.BootcampTest	failed	Expected condition failed: waiting for visibility of [[FirefoxDriver: firefox...	26	BLOB
qaJobSearchTest	useinsider.Tests.BootcampTest	passed	NULL	32	NULL
genericJobSearchTest	useinsider.Tests.BootcampTest	failed	NULL	51	BLOB
genericJobSearchTest	useinsider.Tests.BootcampTest	failed	NULL	59	BLOB
qaJobSearchTest	useinsider.Tests.BootcampTest	failed	NULL	12	BLOB
genericJobSearchTest	useinsider.Tests.BootcampTest	failed	NULL	66	BLOB
genericJobSearchTest	useinsider.Tests.BootcampTest	failed	NULL	66	BLOB
qaJobSearchTest	useinsider.Tests.BootcampTest	passed	NULL	41	NULL
genericJobSearchTest	useinsider.Tests.BootcampTest	failed	Expected condition failed: waiting for visibility of Proxy element for: Def...	65	BLOB
genericJobSearchTest	useinsider.Tests.BootcampTest	failed	Expected condition failed: waiting for visibility of Proxy element for: Def...	79	BLOB
qaJobSearchTest	useinsider.Tests.BootcampTest	failed	Expected condition failed: waiting for visibility of Proxy element for: Def...	32	BLOB
genericJobSearchTest	useinsider.Tests.BootcampTest	passed	NULL	69	NULL
genericJobSearchTest	useinsider.Tests.BootcampTest	failed	NULL	50	BLOB
qaJobSearchTest	useinsider.Tests.BootcampTest	failed	NULL	39	BLOB
genericJobSearchTest	useinsider.Tests.BootcampTest	passed	NULL	70	NULL
genericJobSearchTest	useinsider.Tests.BootcampTest	failed	NULL	77	BLOB
qaJobSearchTest	useinsider.Tests.BootcampTest	passed	NULL	61	NULL
genericJobSearchTest	useinsider.Tests.BootcampTest	passed	NULL	81	NULL
genericJobSearchTest	useinsider.Tests.BootcampTest	failed	NULL	76	BLOB
qaJobSearchTest	useinsider.Tests.BootcampTest	passed	NULL	69	NULL
genericJobSearchTest	useinsider.Tests.BootcampTest	passed	NULL	91	NULL
genericJobSearchTest	useinsider.Tests.BootcampTest	failed	NULL	90	BLOB
qaJobSearchTest	useinsider.Tests.BootcampTest	passed	NULL	63	NULL
qaJobSearchTest	useinsider.Tests.BootcampTest	failed	Expected condition failed: waiting for element to be clickable: Proxy ele...	37	BLOB
qaJobSearchTest	useinsider.Tests.BootcampTest	passed	NULL	64	NULL
qaJobSearchTest	useinsider.Tests.BootcampTest	passed	NULL	23	NULL
qaJobSearchTest	useinsider.Tests.BootcampTest	passed	NULL	37	NULL
qaJobSearchTest	useinsider.Tests.BootcampTest	failed	NULL	26	BLOB
qaJobSearchTest	useinsider.Tests.BootcampTest	passed	NULL	40	NULL
qaJobSearchTest	useinsider.Tests.BootcampTest	passed	NULL	37	NULL
qaJobSearchTest	useinsider.Tests.BootcampTest	passed	NULL	40	NULL
qaJobSearchTest	useinsider.Tests.BootcampTest	passed	NULL	34	NULL

Table: testresults

Columns:

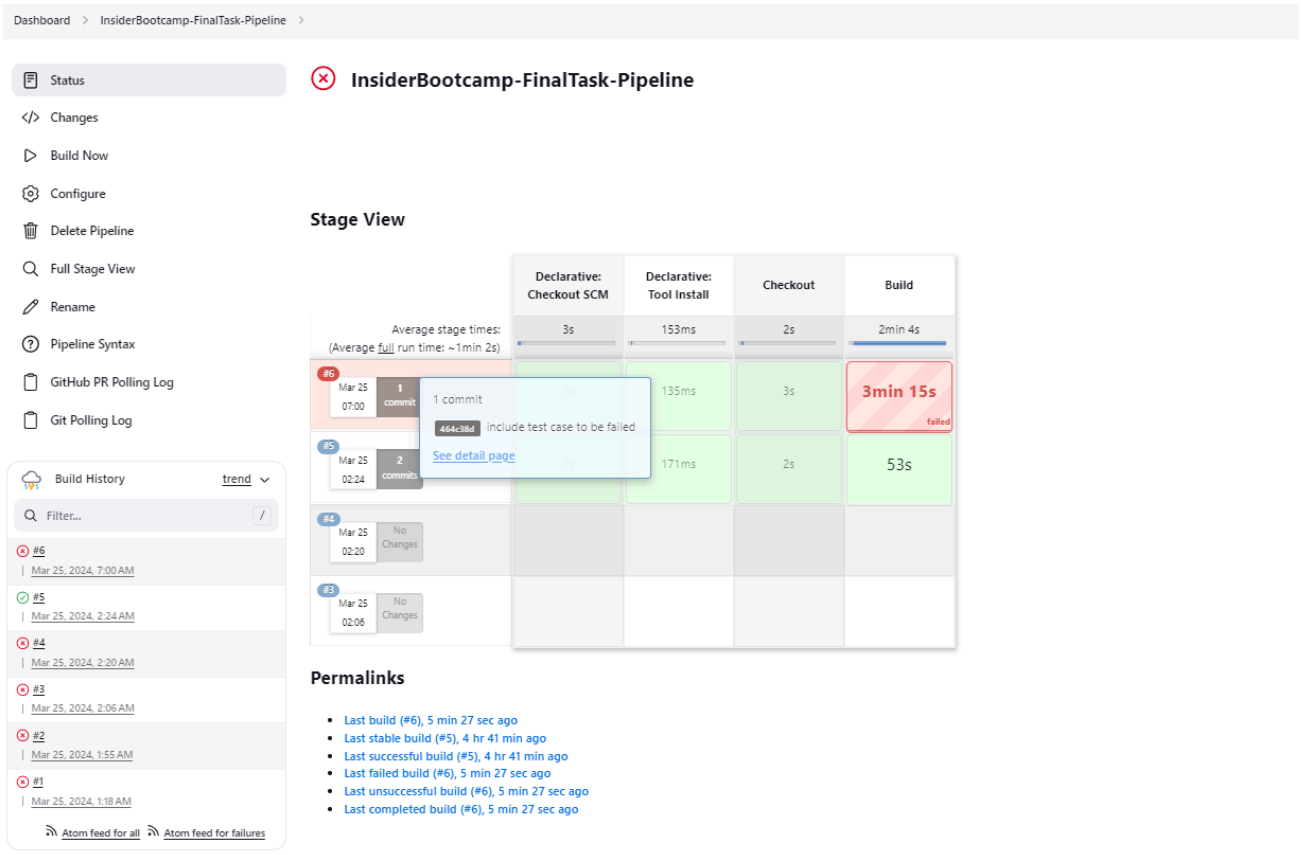
caseName	varchar(50)
caseClass	varchar(50)
caseStatus	varchar(20)
caseStackTrace	varchar(500)
caseDuration	varchar(50)
caseScreenshot	longblob

Edit Data for caseScreenshot (BLOB)

Data Length: 387258 bytes

```
#   Time      Action                                  Message              Duration / Fetch
65  05:09:33  use bootcampdb                          0 row(s) affected    0.000 sec
66  05:09:33  select * from testresults LIMIT 0, 1000 41 row(s) returned   0.000 sec / 0.016 sec
```

- Jenkins Pipeline is created and configured to trigger builds when any push events to repo/PR with stages defined in the Jenkinsfile present in the repo.



Dashboard > InsiderBootcamp-FinalTask-Pipeline >

- Status
- Changes
- Build Now
- Configure
- Delete Pipeline
- Full Stage View
- Rename
- Pipeline Syntax
- GitHub PR Polling Log
- Git Polling Log

Build History trend

Filter...

- #6 Mar 25, 2024, 7:00 AM
- #5 Mar 25, 2024, 2:24 AM
- #4 Mar 25, 2024, 2:20 AM
- #3 Mar 25, 2024, 2:06 AM
- #2 Mar 25, 2024, 1:55 AM
- #1 Mar 25, 2024, 1:18 AM

Atom feed for all   Atom feed for failures

InsiderBootcamp-FinalTask-Pipeline

Stage View

	Declarative: Checkout SCM	Declarative: Tool Install	Checkout	Build
Average stage times: (Average full run time: ~1min 2s)	3s	153ms	2s	2min 4s
#6 Mar 25 07:00 1 commit	3s	135ms	3s	3min 15s failed
#5 Mar 25 02:24 2 commits	2s	171ms	2s	53s
#4 Mar 25 02:20 No Changes				
#3 Mar 25 02:06 No Changes				

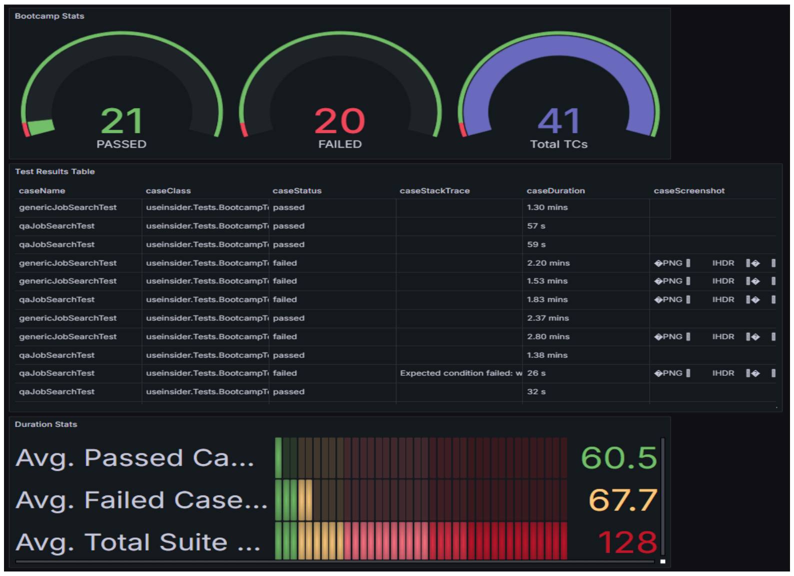
1 commit
464c38d include test case to be failed
See detail page

Permalinks

- Last build (#6), 5 min 27 sec ago
- Last stable build (#5), 4 hr 41 min ago
- Last successful build (#5), 4 hr 41 min ago
- Last failed build (#6), 5 min 27 sec ago
- Last unsuccessful build (#6), 5 min 27 sec ago
- Last completed build (#6), 5 min 27 sec ago

- Grafana dashboard is created by connecting the data source with MySQL plugin. Customized views for some of the stats are made. Dashboard snapshot is published as public via Grafana free service.

https://snapshots.raintank.io/dashboard/snapshot/rrXXPHLmrXQkWZ06rvIY7ALzRjKTTWEQ



Test Results Table

caseName	caseClass	caseStatus	caseStackTrace	caseDuration	caseScreenshot
genericJobSearchTest	useinsider.Tests.BootcampT	passed		1.30 mins	
qaJobSearchTest	useinsider.Tests.BootcampT	passed		57 s	
qaJobSearchTest	useinsider.Tests.BootcampT	passed		59 s	
genericJobSearchTest	useinsider.Tests.BootcampT	failed		2.20 mins	�PNG IHDR �
genericJobSearchTest	useinsider.Tests.BootcampT	failed		1.53 mins	�PNG IHDR �
qaJobSearchTest	useinsider.Tests.BootcampT	failed		1.83 mins	�PNG IHDR �
genericJobSearchTest	useinsider.Tests.BootcampT	passed		2.37 mins	
genericJobSearchTest	useinsider.Tests.BootcampT	failed		2.80 mins	�PNG IHDR �
qaJobSearchTest	useinsider.Tests.BootcampT	passed		1.38 mins	
qaJobSearchTest	useinsider.Tests.BootcampT	failed	Expected condition failed: w	26 s	�PNG IHDR �
qaJobSearchTest	useinsider.Tests.BootcampT	passed		32 s	

Duration Stats

Avg. Passed Ca...	60.5
Avg. Failed Case...	67.7
Avg. Total Suite ...	128