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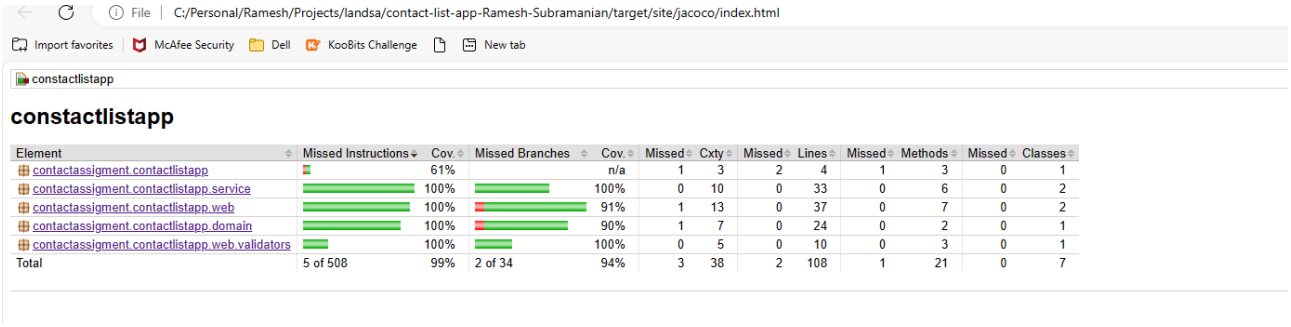
Unit Tests and Code Coverage

Written Junit Test and used Mockito framework

Included Jacoco to generate Code Coverage Report and also to enforce minimum needed Code Coverage and Branch Coverage Percentage

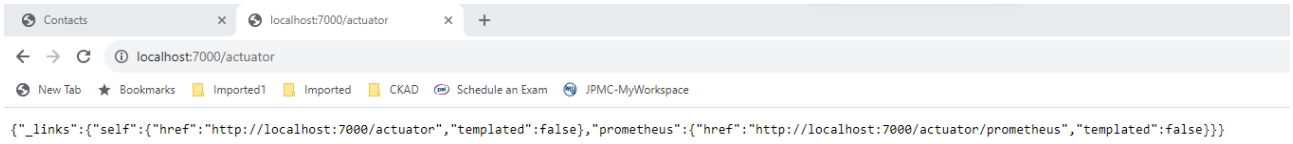


Specified Minimum Code Coverage needed. Package of application will fail if the coverage falls below the limit

```
<configuration>
  <rules>
    <rule>
      <element>BUNDLE</element>
      <limits>
        <limit>
          <counter>INSTRUCTION</counter>
          <value>COVEREDRATIO</value>
          <minimum>0.90</minimum>
        </limit>
        <limit>
          <counter>BRANCH</counter>
          <value>COVEREDRATIO</value>
          <minimum>0.80</minimum>
        </limit>
      </limits>
    </rule>
  </rules>
</configuration>
```

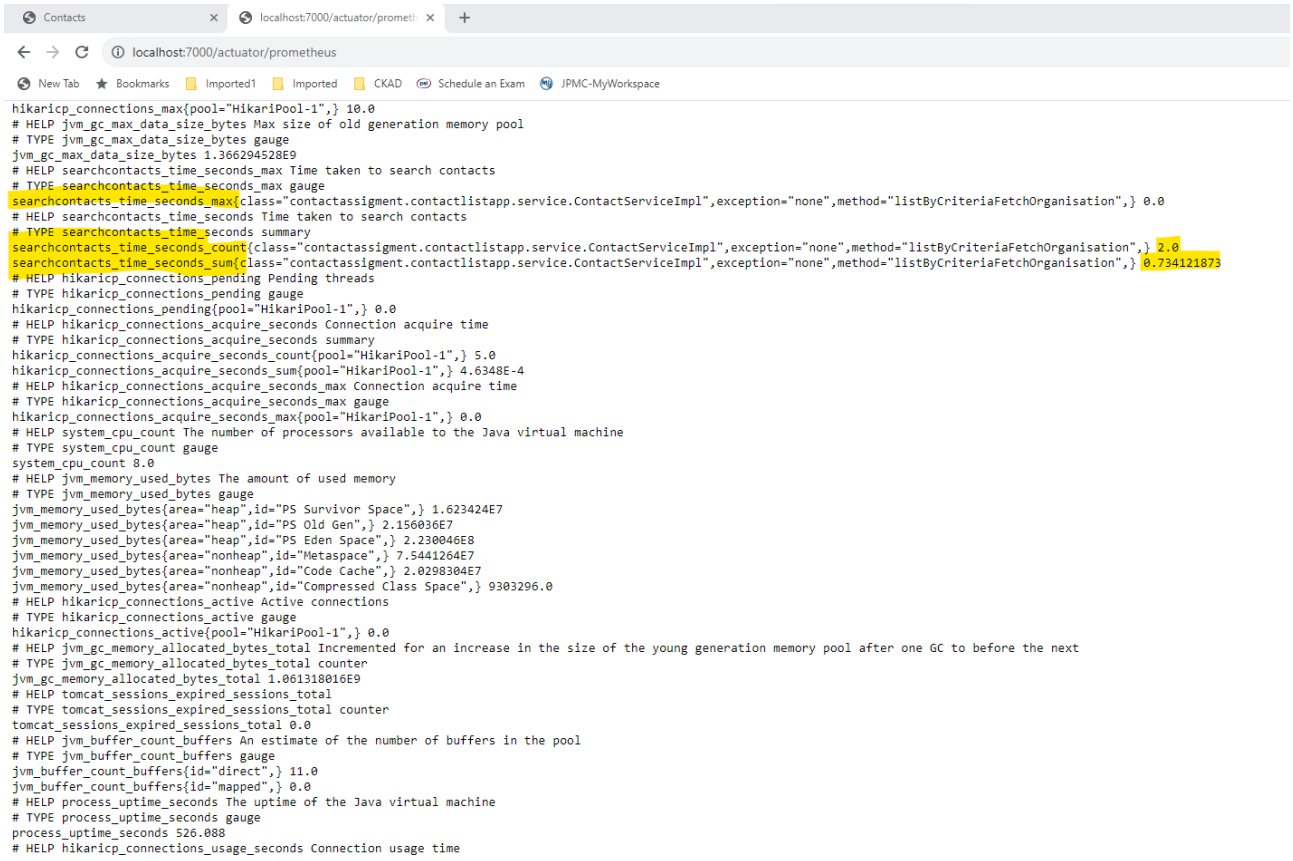
Metrics and Monitoring Performance

Have added a minimal instructions to monitor using Actuator



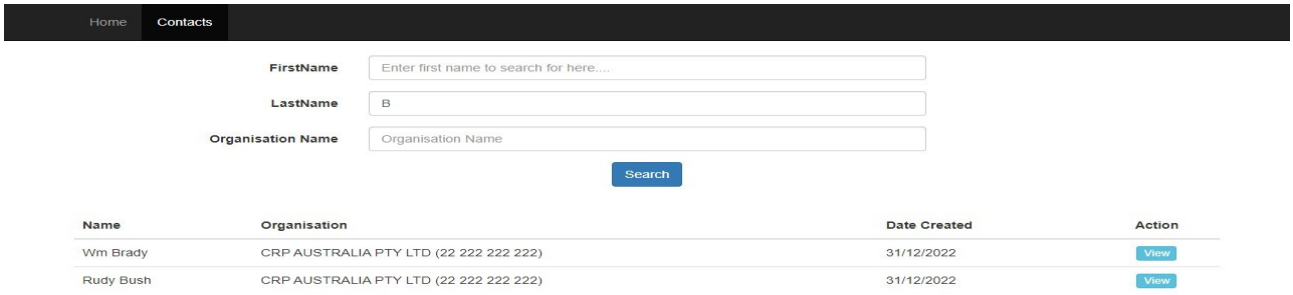
Using the endpoint http://localhost:7000/actuator/prometheus can monitor the JVM Memory, DB Connection Pool etc.,

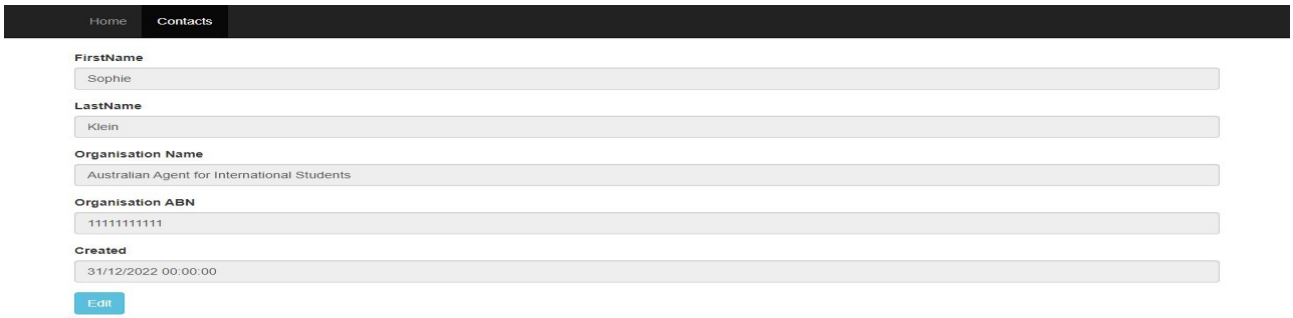
Also, have added a metric called "**searchcontacts_time**" which observes the time taken to do the search operation of the contacts.



UI Tests using Playwright

Have written few UI Tests using Playwright
It will record the test runs by taking UI screenshots
The screenshots will be available at the target/site folder location





Continous Integration using GitHub Actions

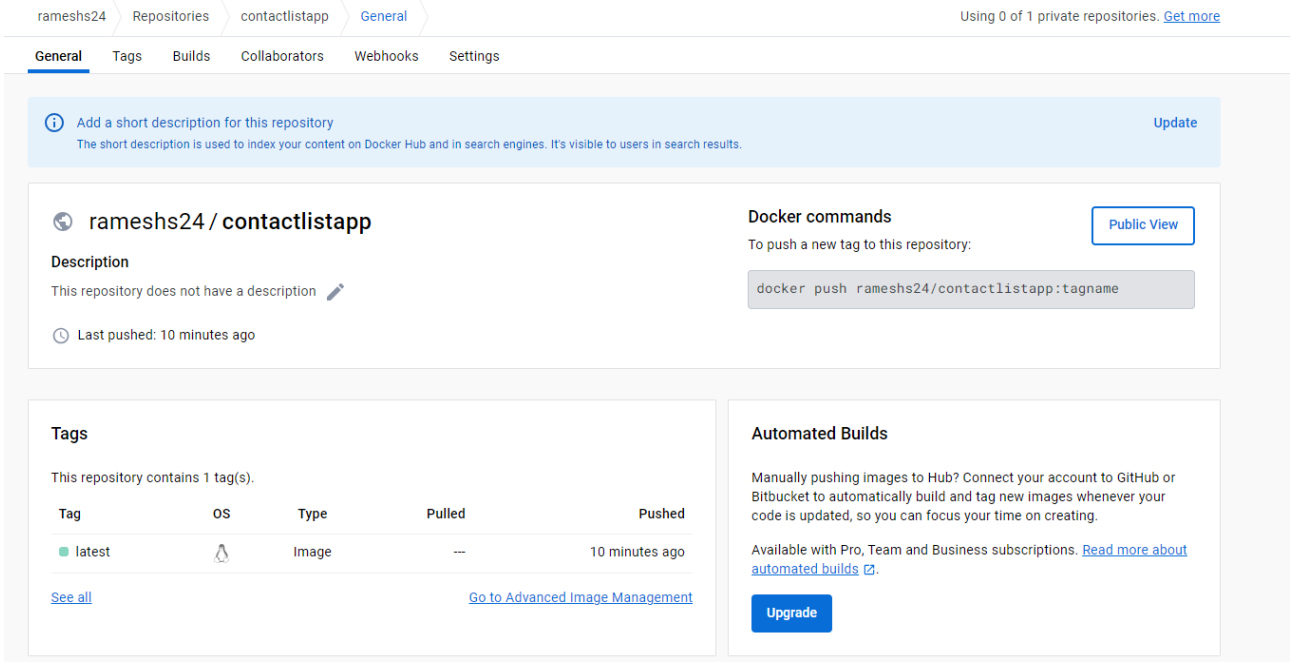
Purpose

- To build application (using maven)
- Create image
- Push Image to DockerHub

Please refer to the below repo: https://github.com/rameshrepo/contact-list-app

Job Run on Push of Code to Repo
https://github.com/rameshrepo/contact-list-app/actions/runs/5995808048/job/16259383659

Screen shot of Image pushed by pipeline to my DockerHub



Run the application

```
C:\Personal\Ramesh\Projects\myrepo\contact-list-app>docker run -p 7000:8080 rameshs24/contactlistapp:latest

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 \\/  ___)| |_)| | | | | || (_| |  ) ) ) )
  '  |____| .__|_| |_|_| |_\__, | / / / /
 =========|_|==============|___/=/_/_/_/
 :: Spring Boot ::                (v2.3.4.RELEASE)

2023-08-28 05:15:29.240  INFO 1 --- [           main] c.contactlistapp.Application             : Starting Application v0.1.0-SNAPSHOT on 4947560bd457 with PID 1 (/contactlistapp.war started by root in /)
2023-08-28 05:15:29.243  INFO 1 --- [           main] c.contactlistapp.Application             : No active profile set, falling back to default profiles: default
2023-08-28 05:15:30.418  INFO 1 --- [           main] .s.d.r.c.RepositoryConfigurationDelegate : Bootstrapping Spring Data JPA repositories in DEFERRED mode.
2023-08-28 05:15:30.488  INFO 1 --- [           main] .s.d.r.c.RepositoryConfigurationDelegate : Finished Spring Data repository scanning in 58ms. Found 2 JPA repository interfaces.
2023-08-28 05:15:31.253  INFO 1 --- [           main] o.s.b.w.embedded.tomcat.TomcatWebServer  : Tomcat initialized with port(s): 8080 (http)
2023-08-28 05:15:31.266  INFO 1 --- [           main] o.apache.catalina.core.StandardService   : Starting service [Tomcat]
2023-08-28 05:15:31.267  INFO 1 --- [           main] org.apache.catalina.core.StandardEngine  : Starting Servlet engine: [Apache Tomcat/9.0.38]
2023-08-28 05:15:32.794  INFO 1 --- [           main] org.apache.jasper.servlet.TldScanner     : At least one JAR was scanned for TLDs yet contained no TLDs. Enable debug logging for this logger for a complete
 list of JARs that were scanned but no TLDs were found in them. Skipping unneeded JARs during scanning can improve startup time and JSP compilation time.
2023-08-28 05:15:33.081  INFO 1 --- [           main] o.a.c.c.C.[Tomcat].[localhost].[/]       : Initializing Spring embedded WebApplicationContext
2023-08-28 05:15:33.081  INFO 1 --- [           main] w.s.c.ServletWebServerApplicationContext : Root WebApplicationContext: initialization completed in 3763 ms
2023-08-28 05:15:33.494  INFO 1 --- [           main] o.s.s.concurrent.ThreadPoolTaskExecutor  : Initializing ExecutorService 'applicationTaskExecutor'
2023-08-28 05:15:33.845  INFO 1 --- [         task-1] o.hibernate.jpa.internal.util.LogHelper  : HHH000204: Processing PersistenceUnitInfo [name: default]
2023-08-28 05:15:33.632  INFO 1 --- [         task-1] org.hibernate.Version                    : HHH000412: Hibernate ORM core version 5.4.21.Final
2023-08-28 05:15:33.833  INFO 1 --- [         task-1] o.hibernate.annotations.common.Version   : HCANN000001: Hibernate Commons Annotations {5.1.0.Final}
2023-08-28 05:15:34.049  INFO 1 --- [         task-1] com.zaxxer.hikari.HikariDataSource       : HikariPool-1 - Starting...
2023-08-28 05:15:34.297  INFO 1 --- [         task-1] com.zaxxer.hikari.HikariDataSource       : HikariPool-1 - Start completed.
2023-08-28 05:15:34.347  INFO 1 --- [         task-1] org.hibernate.dialect.Dialect            : HHH000400: Using dialect: org.hibernate.dialect.H2Dialect
2023-08-28 05:15:35.133  INFO 1 --- [         task-1] o.h.t.schema.internal.SchemaCreatorImpl  : HHH000476: Executing import script 'jar:file:/contactlistapp.war!/WEB-INF/classes!/import.sql'
2023-08-28 05:15:35.141  INFO 1 --- [         task-1] o.h.e.t.j.p.i.JtaPlatformInitiator       : HHH000490: Using JtaPlatform implementation: [org.hibernate.engine.transaction.jta.platform.internal.NoJtaPlatfo
rm]
2023-08-28 05:15:35.150  INFO 1 --- [         task-1] j.LocalContainerEntityManagerFactoryBean : Initialized JPA EntityManagerFactory for persistence unit 'default'
2023-08-28 05:15:35.239  INFO 1 --- [           main] o.s.b.a.e.web.EndpointLinksResolver      : Exposing 1 endpoint(s) beneath base path '/actuator'
2023-08-28 05:15:35.331  INFO 1 --- [           main] o.s.b.w.embedded.tomcat.TomcatWebServer  : Tomcat started on port(s): 8080 (http) with context path ''
2023-08-28 05:15:35.333  INFO 1 --- [           main] DeferredRepositoryInitializationListener : Triggering deferred initialization of Spring Data repositories…
2023-08-28 05:15:35.824  INFO 1 --- [           main] DeferredRepositoryInitializationListener : Spring Data repositories initialized!
2023-08-28 05:15:35.838  INFO 1 --- [           main] c.contactlistapp.Application             : Started Application in 7.073 seconds (JVM running for 7.803)
```

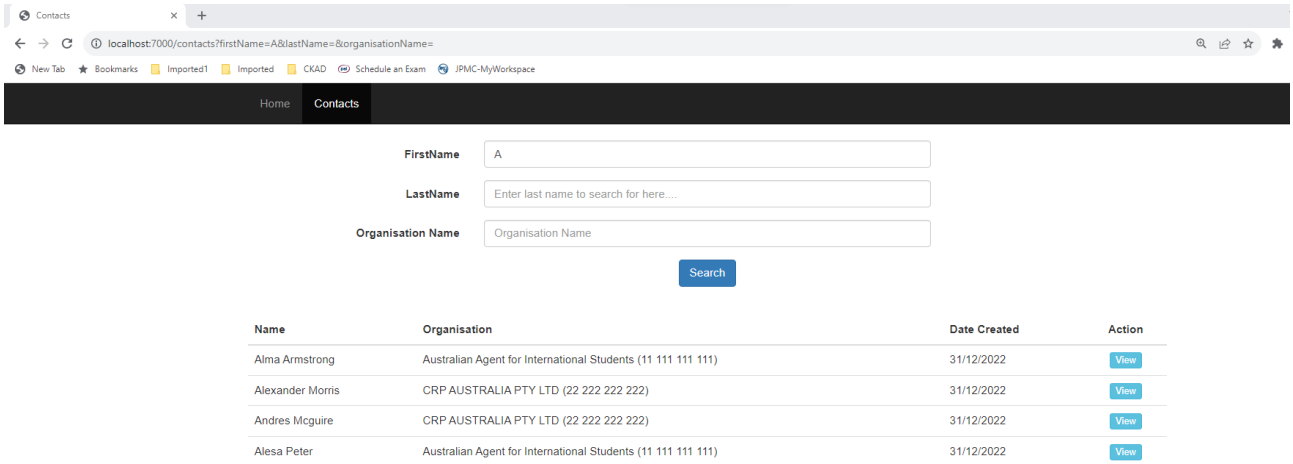
Contacts
localhost:7000/contacts?firstName=A&lastName=&organisationName=
New Tab
Bookmarks
Imported1
Imported
CKAD
Schedule an Exam
JPMC-MyWorkspace
Home
Contacts
FirstName
A
LastName
Enter last name to search for here....
Organisation Name
Organisation Name
Search
Name
Organisation
Date Created
Action
Alma Armstrong
Australian Agent for International Students (11 111 111 111)
31/12/2022
View
Alexander Morris
CRP AUSTRALIA PTY LTD (22 222 222 222)
31/12/2022
View
Andres Mcguire
CRP AUSTRALIA PTY LTD (22 222 222 222)
31/12/2022
View
Alesa Peter
Australian Agent for International Students (11 111 111 111)
31/12/2022
View