Software and Cloud Engineering Hackathon

Project Presentation

Eleni Voulgaraki

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Introduction

Klelia (Eleni) Voulgaraki

Pfizer

Code.Hub

- MEng Electrical and Computer Engineering
- MSc Data Science
- Data Scientist, Baresquare Analytics

Project/Presentation Outline

1. Clone and run existing project
2. Perform API requests to test functionality
3. Code Enhancements
4. Other areas of improvement
5. Unit testing
6. Migrate to cloud
7. Skills acquired/challenges
8. My personal roadmap

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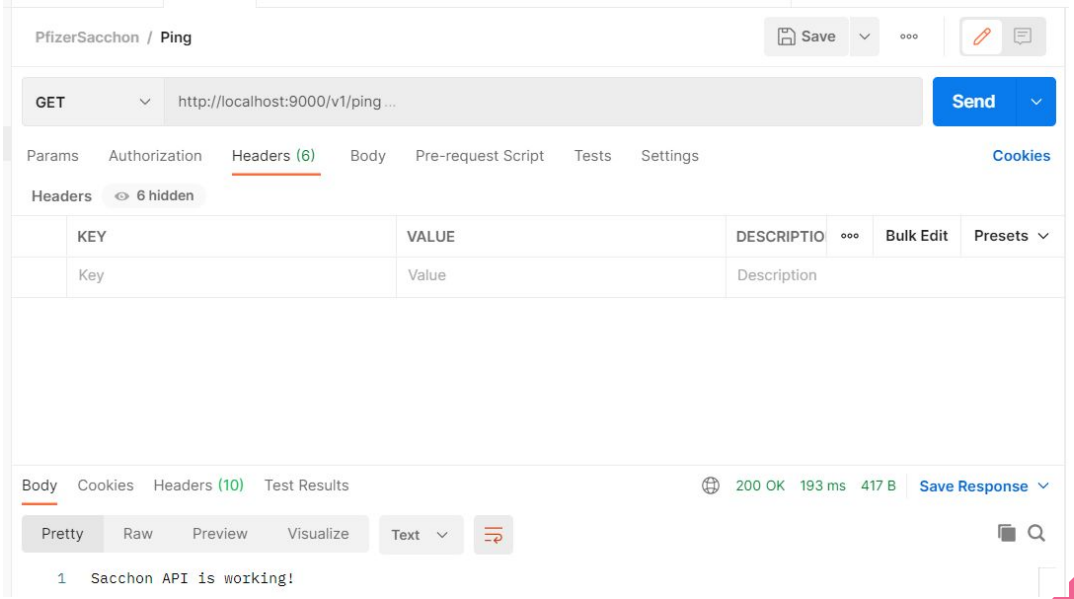
1. Clone and run existing project

- Sacchon project
  - Diabetes management Rest API (patients, doctors, chiefDoctor)
  - Java, Maven for library management (brings the right libraries)
- Connect to Microsoft SQL Server
  - Hibernate ---> Framework for interaction with Database
    - Implements the specifications of JPA (**Java** Persistence API) for data persistence.

2. Perform API call to test functionality (Ping)

- Postman tool
  - Create collection with requests



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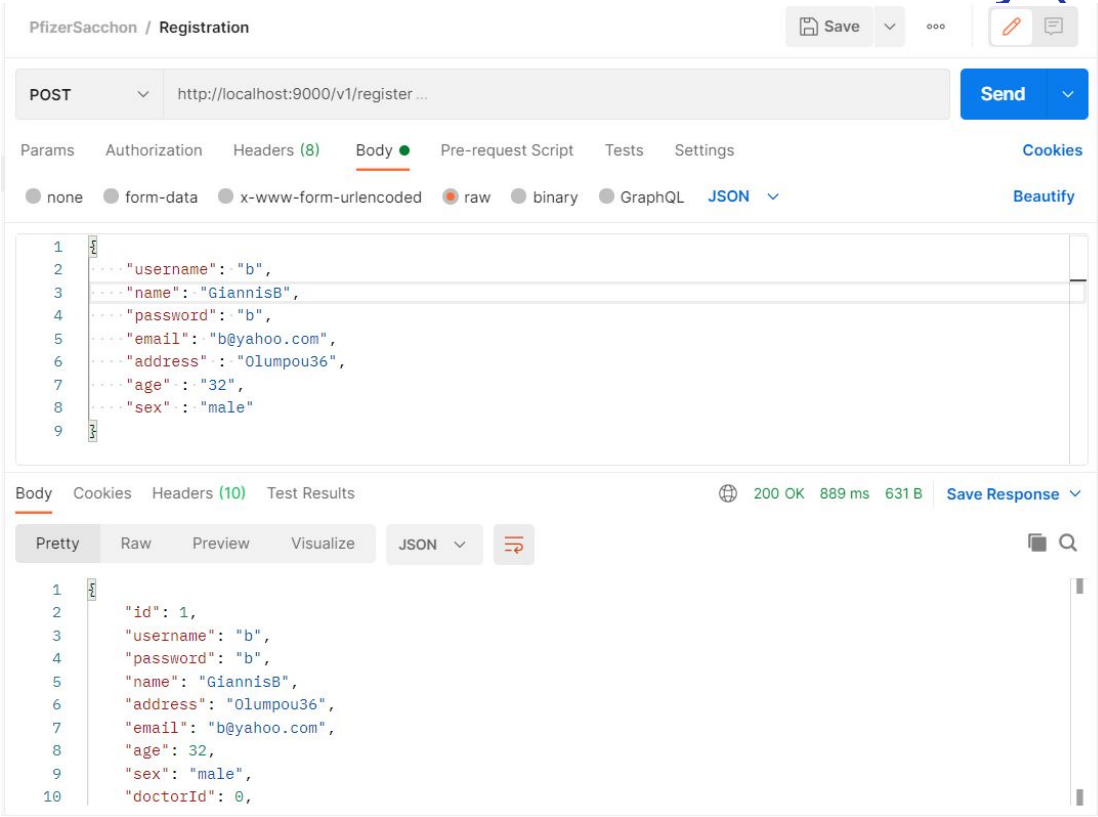
2. Perform API call to test functionality (Register)



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2. Perform API call to test functionality (Check db)

SQLQuery2.sql - loc...erSacchon (sa (99)) | SQLQuery1.sql - loc...erSacchon (sa (94))

```
/****** Script for SelectTopNRows command from SSMS  ******/
SELECT TOP (1000) [id]
      ,[address]
      ,[email]
      ,[name]
      ,[password]
      ,[username]
      ,[age]
      ,[consultationChanged]
      ,[dateRegistered]
      ,[recentCarb]
      ,[recentConsultation]
      ,[recentGlucose]
      ,[role]
      ,[sex]
      ,[doctor_id]
  FROM [pfizerSacchon].[dbo].[Patient]
```

100 %

Results | Messages

	id	address	email	name	password	username	age	consultationChanged	dateRegistered	recentCarb	recentConsultation	recentGlucose	role	sex	doctor_id
1	1	Olumpou36	b@yahoo.com	GiannisB	b	b	32	0	2021-05-13 13:05:25.3260000	NULL	NULL	NULL	patient	male	NULL
2	2	Olumpou36	c@yahoo.com	Giannisc	b	c	33	0	2021-05-13 13:06:25.6460000	NULL	NULL	NULL	patient	male	NULL
3	3	Olumpou 48	d@yahoo.com	Eleni	b	d	15	0	2021-05-13 13:07:26.0780000	NULL	NULL	NULL	patient	female	NULL

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3. Code Enhancements

- Issue: Users could login without authorization
  - Solution: Require authorization, make fields private
- Issue: The system did not return null values in case of some exceptions
  - Solution: Return null in case of exception
- Issue: The system did not allow users use the same password
  - Solution: Removed this restriction
- Issue: The system allowed registration of 2 different users with same email
  - Solution: Add restriction

4. Areas of improvement

- Authentication: Require JWT Authentication
- Add extra Class to keep record of actions
- Ensure GDPR compliance
  - Chief doctor should not have access to patient names (?)
  - Patient should be able to delete their data
- Redesign API

5. Testing

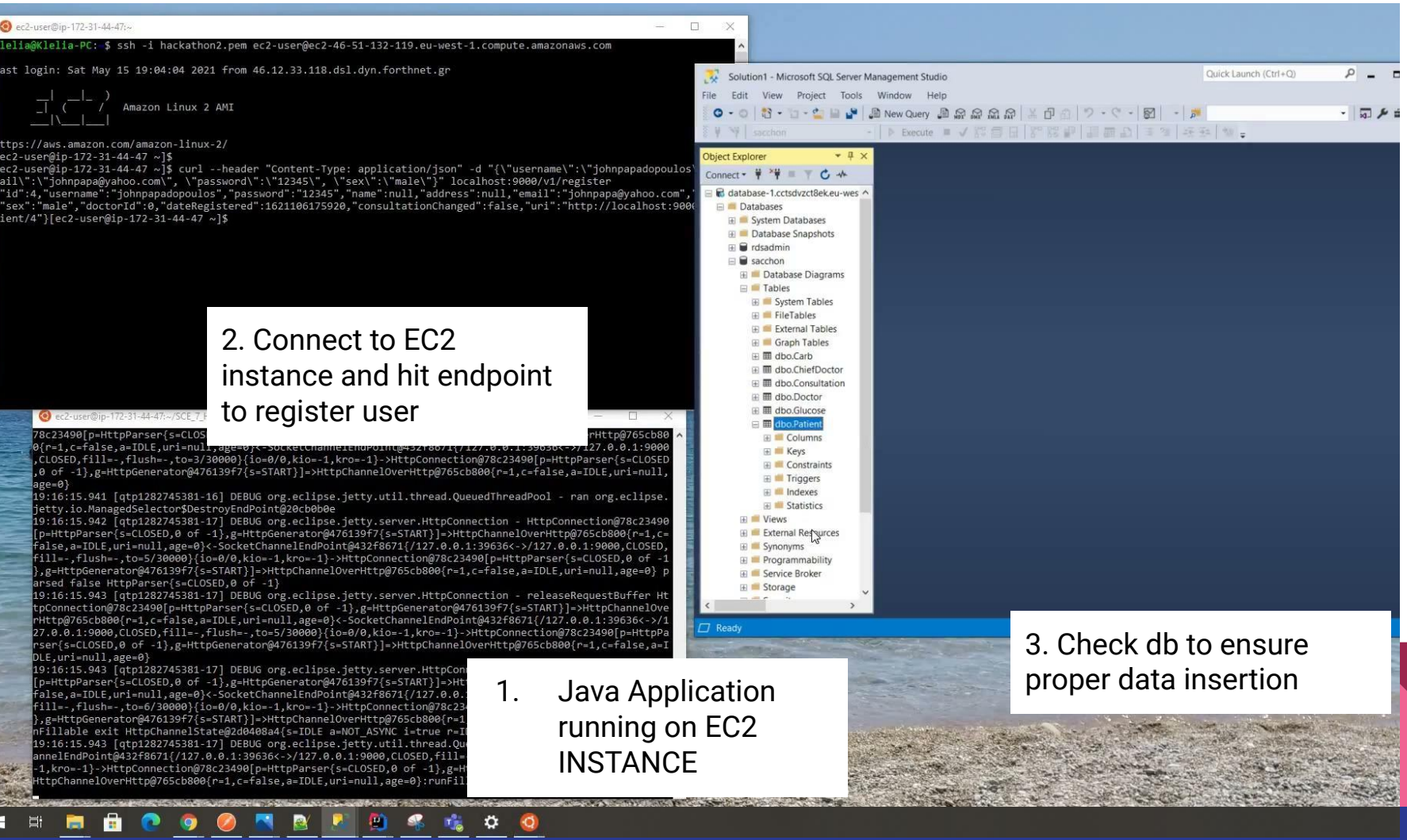
- Unit testing
  - Create tester classes
  - Compare actual output with desired output

6. Migrate to cloud (part 1: EC2 instance)

1. Created AWS account
2. Created EC2 instance
3. Connected to instance via WSL from windows using SSH
4. Cloned project from Github into EC2 instance
5. Download Java and Maven into the instance

6. Migrate to cloud (part 2, RDS instance)

1. Create RDS instance (Microsoft SQL Server)
1. Modify persistence.xml file of the project to point to the newly launched RDS instance
2. Build project and create jar file
3. Run APP!


ec2-user@ip-172-31-44-47:~
lelia@Klelia-PC: $ ssh -i hackathon2.pem ec2-user@ec2-46-51-132-119.eu-west-1.compute.amazonaws.com
ast login: Sat May 15 19:04:04 2021 from 46.12.33.118.dsl.dyn.forthnet.gr
Amazon Linux 2 AMI
ttps://aws.amazon.com/amazon-linux-2/
ec2-user@ip-172-31-44-47 ~]$
ec2-user@ip-172-31-44-47 ~]$ curl --header "Content-Type: application/json" -d "{\"username\":\"johnpapadopoulos
ail\":\"johnpapa@yahoo.com\", \"password\":\"12345\", \"sex\":\"male\"}" localhost:9000/v1/register
"id":4,"username":"johnpapadopoulos","password":"12345","name":null,"address":null,"email":"johnpapa@yahoo.com",
"sex":"male","doctorId":0,"dateRegistered":1621106175920,"consultationChanged":false,"uri":"http://localhost:900
ient/4"}[ec2-user@ip-172-31-44-47 ~]$
2. Connect to EC2 instance and hit endpoint to register user
Solution1 - Microsoft SQL Server Management Studio
File Edit View Project Tools Window Help
New Query
Object Explorer
Connect
database-1.cctsdvzct8ek.eu-wes
Databases
System Databases
Database Snapshots
rdsadmin
sacchon
Database Diagrams
Tables
System Tables
FileTables
External Tables
Graph Tables
dbo.Carb
dbo.ChiefDoctor
dbo.Consultation
dbo.Doctor
dbo.Glucose
dbo.Patient
Columns
Keys
Constraints
Triggers
Indexes
Statistics
Views
External Resources
Synonyms
Programmability
Service Broker
Storage
Ready
ec2-user@ip-172-31-44-47:~/SCE_7_
19:16:15.941 [qtp1282745381-16] DEBUG org.eclipse.jetty.util.thread.QueuedThreadPool - ran org.eclipse.jetty.io.ManagedSelector$DestroyEndPoint@20cb0b0e
19:16:15.942 [qtp1282745381-17] DEBUG org.eclipse.jetty.server.HttpConnection - HttpConnection@78c23490[p=HttpParser{s=CLOSED,0 of -1},g=HttpGenerator@476139f7{s=START}]=>HttpChannelOverHttp@765cb800{r=1,c=false,a=IDLE,uri=null,age=0}<-SocketChannelEndPoint@432f8671{/127.0.0.1:39636<->/127.0.0.1:9000,CLOSED,fill=-,flush=-,to=5/30000}{io=0/0,kio=-1,kro=-1}->HttpConnection@78c23490[p=HttpParser{s=CLOSED,0 of -1},g=HttpGenerator@476139f7{s=START}]=>HttpChannelOverHttp@765cb800{r=1,c=false,a=IDLE,uri=null,age=0} parsed false HttpParser{s=CLOSED,0 of -1}
19:16:15.943 [qtp1282745381-17] DEBUG org.eclipse.jetty.server.HttpConnection - releaseRequestBuffer HttpConnection@78c23490[p=HttpParser{s=CLOSED,0 of -1},g=HttpGenerator@476139f7{s=START}]=>HttpChannelOverHttp@765cb800{r=1,c=false,a=IDLE,uri=null,age=0}<-SocketChannelEndPoint@432f8671{/127.0.0.1:39636<->/127.0.0.1:9000,CLOSED,fill=-,flush=-,to=5/30000}{io=0/0,kio=-1,kro=-1}->HttpConnection@78c23490[p=HttpParser{s=CLOSED,0 of -1},g=HttpGenerator@476139f7{s=START}]=>HttpChannelOverHttp@765cb800{r=1,c=false,a=IDLE,uri=null,age=0}
19:16:15.943 [qtp1282745381-17] DEBUG org.eclipse.jetty.server.HttpConnection - HttpConnection@78c23490[p=HttpParser{s=CLOSED,0 of -1},g=HttpGenerator@476139f7{s=START}]=>HttpChannelOverHttp@765cb800{r=1,c=false,a=IDLE,uri=null,age=0}:runFillable exit HttpChannelState@2d0408a4{s=IDLE a=NOT_ASYNC i=true r=1}
19:16:15.943 [qtp1282745381-17] DEBUG org.eclipse.jetty.util.thread.QueuedThreadPool - ran org.eclipse.jetty.server.HttpConnection$HttpChannelOverHttp@765cb800
1. Java Application running on EC2 INSTANCE
3. Check db to ensure proper data insertion

7. Skills acquired/Challenges

- **Skills/Technologies used**: Java, Maven, Git, Postman, AWS Microservices

- **Challenges**:
    - Java (no prior professional experience)
    - Running the generated executable (missing some dependencies from configuration)

8. My roadmap in SW development

- **How I see myself in the future:**
  - Contributing to Pfizer’s roadmap
  - Be part of a team that develops various applications that make a real impact to the world

- **Skills**:
  - Teamwork
  - Eagerness to learn and grow
  - Analytical thinking
  - Attention to quality

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Any questions?

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