Факултет за информатички науки и компјутерско инженерство

Континуирана интеграција и испорака

FoodApp

Ива Макенациева 213013

Краток опис на апликацијата:

Апликацијата е наменета за барање на најблиските локали, и
производите кои тие ги нудат, кои се во близина на техничкиот кампус
на универзитетот "Св.Кирил и Методиј" во Скопје.

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1.Апликацијата да ја поставите на јавен git репозиториум

```
D:\FINKI\6 semestar\KIII\proekt\VP-proekt\food-app-main\FoodApp\FoodApp-master>git init
Initialized empty Git repository in D:/FINKI/6 semestar/KIII/proekt/VP-proekt/food-app-main/FoodApp/FoodApp-master/.git/

D:\FINKI\6 semestar\KIII\proekt\VP-proekt\food-app-main\FoodApp\FoodApp-master>git remote add origin https://github.com/ivamakenadjieva/KIII_FoodApp_213013.git

D:\FINKI\6 semestar\KIII\proekt\VP-proekt\food-app-main\FoodApp\FoodApp-master>git add .
warning: in the working copy of 'backend/.gitignore', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'backend/mvnw', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'backend/mvnw.cmd', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'backend/pom.xml', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'backend/src/main/java/mk/ukim/finki/wp/backend/BackendApplication.java', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'backend/src/main/java/mk/ukim/finki/wp/backend/model/Comment.java', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'backend/src/main/java/mk/ukim/finki/wp/backend/model/Local.java', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'backend/src/main/java/mk/ukim/finki/wp/backend/model/Product.java', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'backend/src/main/java/mk/ukim/finki/wp/backend/model/enumeration/LocalType.java', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'backend/src/main/java/mk/ukim/finki/wp/backend/model/enumeration/ProductType.java', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'backend/src/main/java/mk/ukim/finki/wp/backend/repository/CommentRepository.java', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'backend/src/main/java/mk/ukim/finki/wp/backend/repository/LocalRepository.java', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'backend/src/main/java/mk/ukim/finki/wp/backend/repository/ProductRepository.java', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'backend/src/main/java/mk/ukim/finki/wp/backend/service/CommentService.java', LF will be replaced by CRLF the next time Git touches it
```

```
D:\FINKI\6 semestar\KIII\proekt\VP-proekt\food-app-main\FoodApp\FoodApp-master>git commit -m "Inital commit"
[master (root-commit) 963eaca] Inital commit
 53 files changed, 2604 insertions(+)
 create mode 100644 backend/.gitignore
 create mode 100644 backend/mvnw
 create mode 100644 backend/mvnw.cmd
 create mode 100644 backend/pom.xml
 create mode 100644 backend/src/main/java/mk/ukim/finki/wp/backend/BackendApplication.java
 create mode 100644 backend/src/main/java/mk/ukim/finki/wp/backend/model/Comment.java
 create mode 100644 backend/src/main/java/mk/ukim/finki/wp/backend/model/Local.java
 create mode 100644 backend/src/main/java/mk/ukim/finki/wp/backend/model/Product.java
 create mode 100644 backend/src/main/java/mk/ukim/finki/wp/backend/model/enumeration/LocalType.java
```

```
D:\FINKI\6 semestar\KIII\proekt\VP-proekt\food-app-main\FoodApp\FoodApp-master>git push -u origin master
Enumerating objects: 85, done.
Counting objects: 100% (85/85), done.
Delta compression using up to 8 threads
Compressing objects: 100% (72/72), done.
Writing objects: 100% (85/85), 10.98 MiB | 108.00 KiB/s, done.
Total 85 (delta 11), reused 0 (delta 0), pack-reused 0
remote: Resolving deltas: 100% (11/11), done.
To https://github.com/ivamakenadjieva/KIII_FoodApp_213013.git
 * [new branch]      master -> master
branch 'master' set up to track 'origin/master'.
```

2.Апликацијата да ја докеризирате

```
D:\FINKI\6 semestar\KIII\proekt\VP-proekt\food-app-main\FoodApp\FoodApp-master>notepad Dockerfile

D:\FINKI\6 semestar\KIII\proekt\VP-proekt\food-app-main\FoodApp\FoodApp-master>ren Dockerfile.txt Dockerfile
```

```
C:\Users\Lenovo\OneDrive\Desktop\KIII-proekt\KIII_FoodApp_213013>type Dockerfile
FROM openjdk:17-jdk-slim
WORKDIR /app
COPY backend/target/*.jar app.jar
EXPOSE 8080
ENTRYPOINT ["java", "-jar", "app.jar"]
```

Build the Docker image:

```
C:\Users\Lenovo\OneDrive\Desktop\KIII-proekt\KIII_FoodApp_213013>docker build -t foodapp .                                    docker:desktop-linux
[+] Building 2.7s (8/8) FINISHED
 => [internal] load build definition from Dockerfile                                                                          0.0s
 => => transferring dockerfile: 163B                                                                                          0.0s
 => [internal] load metadata for docker.io/library/openjdk:17-jdk-slim                                                        2.4s
 => [internal] load .dockerignore                                                                                             0.0s
 => => transferring context: 2B                                                                                              0.0s
 => [1/3] FROM docker.io/library/openjdk:17-jdk-slim@sha256:aaa3b3cb27e3e520b8f116863d0580c438ed55ecfa0bc126b41f68c3f62f9774   0.0s
 => resolve docker.io/library/openjdk:17-jdk-slim@sha256:aaa3b3cb27e3e520b8f116863d0580c438ed55ecfa0bc126b41f68c3f62f9774      0.0s
 => [internal] load build context                                                                                            0.0s
 => => transferring context: 126B                                                                                            0.0s
 => CACHED [2/3] WORKDIR /app                                                                                                 0.0s
 => CACHED [3/3] COPY backend/target/*.jar app.jar                                                                            0.0s
 => exporting to image                                                                                                        0.1s
 => => exporting layers                                                                                                       0.0s
 => => exporting manifest sha256:897e456322656cf3f9196b0396f91b57ada1b772ad15df27c136a6738042855c                             0.0s
 => => exporting config sha256:ddf22758ad7d953e365befacd8ac3fd7bd4773339acc53eb4fe46e7b279a53a2                               0.0s
 => => exporting attestation manifest sha256:7360691666732a5f6bea4c7f77f012160981b5512d2e85ec1f8a20b96ec54d4e                 0.0s
 => => exporting manifest list sha256:ea3aefab40baba44e05fb9a0df27375fade57c6f1b0fd5ea2898102eb571bbea                        0.0s
 => => naming to docker.io/library/foodapp:latest                                                                            0.0s
 => => unpacking to docker.io/library/foodapp:latest                                                                         0.0s

View build details: docker-desktop://dashboard/build/desktop-linux/desktop-linux/ql79k3bcrtu20l1tst31ucrpc
```

Images   Give feedback ⟲

Local   Hub repositories

1.12 GB / 1.08 GB in use   3 images   Last refresh: 6 hours ago ⟲

	Name	Tag	Image ID	Created	Size	Actions		
☐ ●	foodapp	latest	5c1e2a57270a	18 minutes ag	754.77 MB	▷	⋮	🗑

3. Апликацијата и базата да ги оркестрирате со Docker Compose

```
C:\Users\Lenovo\OneDrive\Desktop\KIII-proekt\KIII_FoodApp_213013>notepad docker-compose.yml

C:\Users\Lenovo\OneDrive\Desktop\KIII-proekt\KIII_FoodApp_213013>type docker-compose.yml
services:
  app:
    build: .
    ports:
      - "8080:8080"
    depends_on:
      db:
        condition: service_healthy
    environment:
      SPRING_DATASOURCE_URL: jdbc:postgresql://db:5432/backe
      SPRING_DATASOURCE_USERNAME: postgres
      SPRING_DATASOURCE_PASSWORD: vasil
    restart: always

  db:
    image: postgres:13
    container_name: postgres
    restart: always
    environment:
      POSTGRES_DB: backe
      POSTGRES_USER: postgres
      POSTGRES_PASSWORD: vasil
    volumes:
      - db_data:/var/lib/postgresql/data
    ports:
      - "5432:5432"
    healthcheck:
      test: ["CMD", "pg_isready", "-U", "postgres"]
      interval: 10s
      retries: 5
      start_period: 10s

volumes:
  db_data:
```

```
C:\Users\Lenovo\OneDrive\Desktop\KIII-proekt\KIII_FoodApp_213013>docker-compose up
[+] Running 4/4
 ✔ Network kiii_foodapp_213013_default   Created                                    0.0s
 ✔ Volume "kiii_foodapp_213013_db_data"  Created                                    0.0s
 ✔ Container postgres                     Created                                    0.2s
 ✔ Container kiii_foodapp_213013-app-1    Created                                    0.1s
Attaching to app-1, postgres
postgres  | exec /usr/local/bin/docker-entrypoint.sh: exec format error
postgres exited with code 0
postgres  | exec /usr/local/bin/docker-entrypoint.sh: exec format error
postgres  | exec /usr/local/bin/docker-entrypoint.sh: exec format error
postgres exited with code 1
postgres  | exec /usr/local/bin/docker-entrypoint.sh: exec format error
postgres  | exec /usr/local/bin/docker-entrypoint.sh: exec format error
postgres exited with code 1
postgres  | exec /usr/local/bin/docker-entrypoint.sh: exec format error
Gracefully stopping... (press Ctrl+C again to force)
dependency failed to start: container postgres is unhealthy
■ View in Docker Desktop   ■ View Config   ■ Enable Watch
C:\Users\Lenovo\OneDrive\Desktop\KIII-proekt\KIII_FoodApp_213013>notepad docker-compose.yml

C:\Users\Lenovo\OneDrive\Desktop\KIII-proekt\KIII_FoodApp_213013>docker-compose up
[+] Running 14/14
 ✔ db Pulled                                                                        19.0s
   ✔ 23f17e809847 Download complete                                                  0.7s
   ✔ 23644c5635ca Download complete                                                  0.6s
   ✔ 349ff876226d Download complete                                                 14.6s
   ✔ c4489854ba43 Download complete                                                  0.6s
   ✔ 4db0bf51897c Already exists                                                     0.1s
   ✔ b7830a5f7a9e Download complete                                                  0.8s
   ✔ ed61c92d86a2 Download complete                                                  0.7s
   ✔ b35f5f06ba1f Download complete                                                  0.8s
   ✔ 35199d0a6eca Download complete                                                  0.8s
   ✔ 1539d6d4b0a0 Download complete                                                  2.1s
   ✔ ef3e9a00774a Download complete                                                  1.4s
   ✔ 090e86dd07d4 Download complete                                                  3.0s
   ✔ 0920e99e58fd Download complete                                                  0.8s
[+] Running 2/2
 ✔ Container kiii_foodapp_213013-app-1    Created                                    0.0s
 ✔ Container postgres                     Recreated                                  0.8s
Attaching to app-1, postgres
postgres  | The files belonging to this database system will be owned by user "postgres".
postgres  | This user must also own the server process.
postgres  |
postgres  | The database cluster will be initialized with locale "en_US.utf8".
postgres  | The default database encoding has accordingly been set to "UTF8".
postgres  | The default text search configuration will be set to "english".
postgres  |
```

Апликацијата сега е достапна и на http://localhost:8080 .
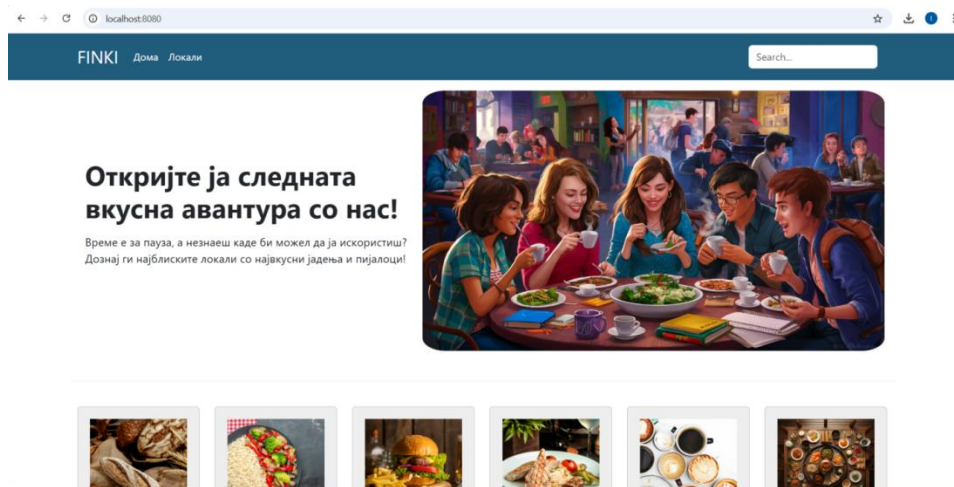
4. Со GitHub Actionsи се сетира pipeline за целосно CI решение: со push на git да се постави новата верзија на Docker Image на DockerHub.


```yaml
1    name: Build and Push Docker Image
2
3    on:
4      push:
5        branches:
6          - 'master'
7
8    jobs:
9      build-and-push:
10       runs-on: ubuntu-latest
11
12       steps:
13         - name: Checkout code
14           uses: actions/checkout@v2
15
16         - name: Set up Docker Buildx
17           uses: docker/setup-buildx-action@v1
18
19         - name: Login to Docker Hub
20           uses: docker/login-action@v2
21           with:
22             username: ${{ secrets.DOCKERHUB_USERNAME }}
23             password: ${{ secrets.DOCKERHUB_TOKEN }}
24
25         - name: Build the backend
26           run: |
27             cd backend
28             mvn clean install -DskipTests
29
30         - name: Build Docker image
31           run: |
32             docker buildx build \
33               --platform linux/amd64,linux/arm64 \
34               --push \
35               --tag ${{ secrets.DOCKERHUB_USERNAME }}/kiii_foodapp_213013-app:latest .
36
37         - name: Clean up
38           run: docker buildx prune -a -f
```

Еве како изгледа ова во DockerHub:

Kubernetes манифести:

- **Deployment за апликацијата со потребните ConfigMaps/Secrets**

```
C:\Users\Lenovo\OneDrive\Desktop\KIII-proekt\KIII_FoodApp_213013\kubernetes-manifests>type deployment.yaml
apiVersion: v1
kind: Secret
metadata:
  name: postgres-secret
  namespace: foodapp-namespace
type: Opaque
data:
  username: cG9zdGdyZXM=
  password: dmFzaWw=

---
apiVersion: v1
kind: ConfigMap
metadata:
  name: postgres-config
  namespace: foodapp-namespace
data:
  POSTGRES_DB: backe
```

```
---
apiVersion: apps/v1
kind: Deployment
metadata:
  name: postgres
  namespace: foodapp-namespace
spec:
  replicas: 1
  selector:
    matchLabels:
      app: postgres
  template:
    metadata:
      labels:
        app: postgres
    spec:
      containers:
        - name: postgres
          image: postgres:13
          env:
            - name: DATABASE_URL
              value: "postgres://postgres:vasil@db-service:5432/postgres"
            - name: POSTGRES_USER
              valueFrom:
                secretKeyRef:
                  name: postgres-secret
                  key: username
            - name: POSTGRES_PASSWORD
              valueFrom:
                secretKeyRef:
                  name: postgres-secret
                  key: password
            - name: POSTGRES_DB
              valueFrom:
                configMapKeyRef:
                  name: postgres-config
                  key: POSTGRES_DB
          ports:
            - containerPort: 5432
          volumeMounts:
            - name: postgres-data
              mountPath: /var/lib/postgresql/data
          livenessProbe:
            exec:
              command: ["pg_isready", "-U", "postgres"]
            initialDelaySeconds: 10
            periodSeconds: 10
      volumes:
        - name: postgres-data
          emptyDir: {}
---
```

```
---
apiVersion: apps/v1
kind: Deployment
metadata:
  name: foodapp
  namespace: foodapp-namespace
spec:
  replicas: 1
  selector:
    matchLabels:
      app: foodapp
  template:
    metadata:
      labels:
        app: foodapp
    spec:
      containers:
        - name: foodapp
          image: ivamakenadjieva/kiii_foodapp_213013-app:latest
          env:
            - name: SPRING_DATASOURCE_URL
              value: jdbc:postgresql://db-service:5432/backe
            - name: SPRING_DATASOURCE_USERNAME
              valueFrom:
                secretKeyRef:
                  name: postgres-secret
                  key: username
            - name: SPRING_DATASOURCE_PASSWORD
              valueFrom:
                secretKeyRef:
                  name: postgres-secret
                  key: password
            - name: SPRING_JPA_HIBERNATE_DDL_AUTO
              value: update
          ports:
            - containerPort: 8080
```

- **Service за апликацијата**

```
C:\Users\Lenovo\OneDrive\Desktop\KIII-proekt\KIII_FoodApp_213013\kubernetes-manifests>notepad services.yaml
```

```
C:\Users\Lenovo\OneDrive\Desktop\KIII-proekt\KIII_FoodApp_213013\kubernetes-manifests>type services.yaml
apiVersion: v1
kind: Service
metadata:
  name: foodapp-service
  namespace: foodapp-namespace
spec:
  type: NodePort
  ports:
    - port: 8080
      targetPort: 8080
      nodePort: 30080
  selector:
    app: foodapp

---
apiVersion: v1
kind: Service
metadata:
  name: db-service
  namespace: foodapp-namespace
spec:
  ports:
    - port: 5432
      targetPort: 5432
  selector:
    app: postgres
```

- **Ingress за апликацијата**

```
C:\Users\Lenovo\OneDrive\Desktop\KIII-proekt\KIII_FoodApp_213013\kubernetes-manifests>notepad ingress.yaml
```

```
C:\Users\Lenovo\OneDrive\Desktop\KIII-proekt\KIII_FoodApp_213013\kubernetes-manifests>type ingress.yaml
apiVersion: networking.k8s.io/v1
kind: Ingress
metadata:
  name: foodapp-ingress
  namespace: foodapp-namespace
  annotations:
    nginx.ingress.kubernetes.io/rewrite-target: /
spec:
  ingressClassName: nginx
  rules:
    - host: foodapp.com
      http:
        paths:
          - path: /
            pathType: Prefix
            backend:
              service:
                name: foodapp-service
                port:
                  number: 8080
```

- **StatefulSet за базата со потребните ConfigMaps/Secrets**

```
C:\Users\Lenovo\OneDrive\Desktop\KIII-proekt\KIII_FoodApp_213013\kubernetes-manifests>notepad statefulset.yaml
```

```
C:\Users\Lenovo\OneDrive\Desktop\KIII-proekt\KIII_FoodApp_213013\kubernetes-manifests>type statefulset.yaml
apiVersion: apps/v1
kind: StatefulSet
metadata:
  name: postgres
  namespace: foodapp-namespace
spec:
  serviceName: "postgres"
  replicas: 1
  selector:
    matchLabels:
      app: postgres
  template:
    metadata:
      labels:
        app: postgres
    spec:
      containers:
        - name: postgres
          image: postgres:13
          env:
            - name: POSTGRES_USER
              valueFrom:
                secretKeyRef:
                  name: postgres-secret
                  key: username
            - name: POSTGRES_PASSWORD
              valueFrom:
                secretKeyRef:
                  name: postgres-secret
                  key: password
            - name: POSTGRES_DB
              valueFrom:
                configMapKeyRef:
                  name: postgres-config
                  key: POSTGRES_DB
          ports:
            - containerPort: 5432
          volumeMounts:
            - name: postgres-data
              mountPath: /var/lib/postgresql/data
          livenessProbe:
            exec:
              command: ["pg_isready", "-U", "postgres"]
            initialDelaySeconds: 10
            periodSeconds: 10
  volumeClaimTemplates:
    - metadata:
        name: postgres-data
      spec:
        accessModes: ["ReadWriteOnce"]
        resources:
          requests:
            storage: 1Gi
```

- **Да ги поставите манифестите во посебен namespace на ваш кластер и да демонстрирате дека работи**

```
C:\Users\Lenovo\OneDrive\Desktop\KIII-proekt\KIII_FoodApp_213013\kubernetes-manifests>notepad namespace.yaml

C:\Users\Lenovo\OneDrive\Desktop\KIII-proekt\KIII_FoodApp_213013\kubernetes-manifests>type namespace.yaml
apiVersion: v1
kind: Namespace
metadata:
  name: foodapp-namespace
```

```
C:\Users\Lenovo\OneDrive\Desktop\KIII-proekt\KIII_FoodApp_213013\kubernetes-manifests>kubectl apply -f namespace.yaml
namespace/foodapp-namespace unchanged

C:\Users\Lenovo\OneDrive\Desktop\KIII-proekt\KIII_FoodApp_213013\kubernetes-manifests>kubectl apply -f statefulset.yaml
statefulset.apps/postgres created

C:\Users\Lenovo\OneDrive\Desktop\KIII-proekt\KIII_FoodApp_213013\kubernetes-manifests>kubectl apply -f services.yaml
service/foodapp-service configured
service/db-service created

C:\Users\Lenovo\OneDrive\Desktop\KIII-proekt\KIII_FoodApp_213013\kubernetes-manifests>kubectl apply -f deployment.yaml
secret/postgres-secret created
configmap/postgres-config created
deployment.apps/postgres created
deployment.apps/foodapp created
```

```
C:\Users\Lenovo\OneDrive\Desktop\KIII-proekt\KIII_FoodApp_213013\kubernetes-manifests>kubectl apply -f ingress.yaml
ingress.networking.k8s.io/foodapp-ingress created
```

Апликацијата сега е достапна и на http://localhost:30080 .