BUSTRACKER

APLICACIÓN PARA VER LOS TIEMPOS DEL TRANSPORTE PUBLICO

Roberto Blázquez Martín

TECNOLOGIAS

- Ktor
- React
- Mongo
- Docker
- Nginx

KTOR

Ktor es un marco de desarrollo de aplicaciones web en Kotlin. Proporciona un conjunto de herramientas y características que permiten crear rápidamente aplicaciones web y API.

¿POR QUÉ KTOR?

- Ktor permite desarrollar apis rápido y además tiene mucho mejor rendimiento que alternativas sus alternativas como Spring.

REACT

- React es una biblioteca de JavaScript utilizada para construir interfaces de usuario interactivas y reactivas.

¿POR QUÉ REACT?

- Eficiencia y rendimiento
- Componentes reutilizables
- Gran ecosistema y comunidad
- Multiplataforma

MONGO

- MongoDB es una base de datos NoSQL (No Relacional) que se caracteriza por su enfoque en la escalabilidad, la flexibilidad y el almacenamiento.

¿POR QUÉ MONGO?

- Flexibilidad en el esquema de datos
- Escalabilidad horizontal
- Consultas flexibles

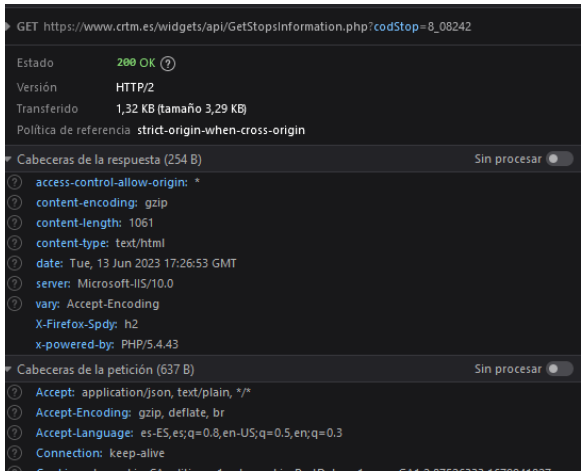
BACKEND

- Tiempos de las paradas de bus
- Localización de los autbuses
- Tiempos de las estaciones de metro
- Usuarios
- Autenticación
- Paradas Favoritas

TIEMPOS BUS

- ¿Dónde obtengo los datos?
- Normalizar los datos

OBTENCIÓN DATOS




```
public class WebServices
{
  public static String key = null;
  private static Date lastKey;
  public static String privateKey = "pruebapruebapruebapruebaprueba12";
  public static String server = "http://www.citram.es:8080/WSMultimodalInformation/MultimodalInformation.svc?wsdl";
  static final String serverV2_viejo = "http://sbit1.crtm.es:50080/spai-crtm/srv/prepago/venta/";
  static final String serverV2pre = "http://www.citram.es:50081/VENTAPREPAGOTITULO/VentaPrepagoTitulo.svc?wsdl";
  public static final String server_dev = "http://www.citram.es:8080/WSMultimodalInformation_DEV/MultimodalInformation.svc?wsdl";
  public static final String server_pre = "http://www.citram.es:8080/WSMultimodalInformation_TEST/MultimodalInformation.svc?wsdl";
  public static final String server_pro = "http://www.citram.es:8080/WSMultimodalInformation/MultimodalInformation.svc?wsdl";

```

GENERAR SOAP

```
implementation("com.sun.xml.ws:jaxws-tools:4.0.1")
```

```
task( name: "wsimport-myservice") {
    group = BasePlugin.BUILD_GROUP
    val destDir = file( path: "$projectDir/src/main/java")
    destDir.mkdirs()
    val sourceDestDir = file( path: "$projectDir/src/main/java")
    sourceDestDir.mkdirs()
    doLast {
        ant.withGroovyBuilder {
            "taskdef"( ...keywordArguments:
                "name" to "wsimport",
                "classname" to "com.sun.tools.ws.ant.WsImport",
                "classpath" to jaxws.asPath
            )

            "wsimport"( ...keywordArguments:
                "keep" to true,
                "sourcedestdir" to sourceDestDir,
                //"destDir" to destDir, already compiled java classes, not needed
                "package" to "crtm.soap",
                "wsdl" to "http://www.citram.es:8080/WSMultimodalInformation/MultimodalInformation.svc?wsdl",
            ) {
                "xjcarg"( ...keywordArguments: "value" to "-XautoNameResolution")
            }
        }
    }
}
```

CONSUMIR SOAP

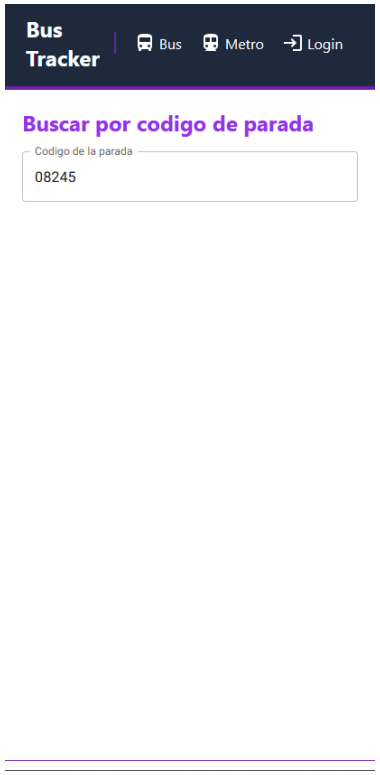
```kotlin
val defaultClient = MultimodalInformation_Service().basicHttp

val privateKey = "pruebapruebapruebapruebaprueba12".toByteArray()
Roberto Blázquez
fun MultimodalInformation.auth(): AuthHeader {
    val key = getPublicKey(PublicKeyRequest())
    return authHeader(key.key.toByteArray(), privateKey)
}
```

```kotlin
fun getStopTimes(stopCode: String, codMode: String?): ShortStopTimesResponse? {
    val request = ShortStopTimesRequest().apply {
        codStop = stopCode
        type = 1
        orderBy = 2
        stopTimesByIti = 3
        authentication = defaultClient.auth()
    }
    if (codMode ≠ null) request.codMode = codMode
    return defaultClient.getShortStopTimes(request)
}
```

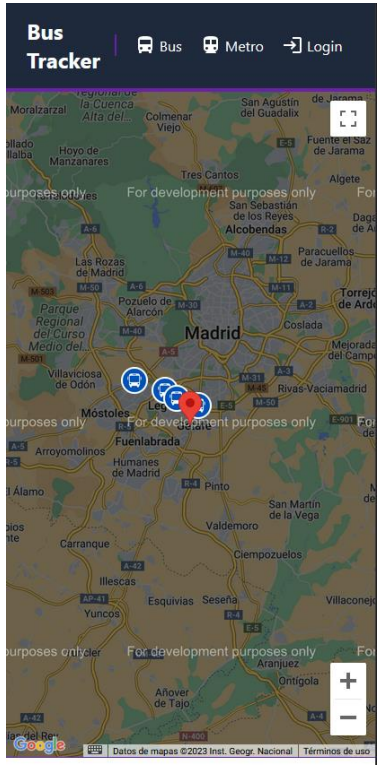
EXPONER LOS ENDPOINTS

```
fun Route.stopsRouting() = route( path: "/stops") {
    get( path: "/{stopCode}/times") {
        val stopCode = createStopCode( codMode: "8", call.parameters["stopCode"]!!)
        val codMode = call.request.queryParameters["codMode"]
        val timedVCached = try {
            withTimeout(20.seconds) {
                val stopTimes = CoroutineScope(Dispatchers.IO).async { getStopTimes(stopCode, codMode) }.await()
                stopTimes?.stopTimes?.times?.shortTime?.map(::buildStopTimesJson)?.asJson()?.timed()
            } ?: stopTimesCache.get(stopCode)
        } catch (e: Exception) {
            if (e is TimeoutCancellationException) stopTimesCache.get(stopCode)
            else null
        } ?: return@get call.respond(HttpStatusCode.BadRequest)

        stopTimesCache.put(stopCode, timedVCached)

        val json = jObject {
            "data" += timedVCached.value
            "lastTime" += timedVCached.createdAt.toEpochMilli()
        }
        call.respondText(json.serialized(), ContentType.Application.Json)
    }
```

FRONT


Bus Tracker
Bus
Metro
Login
Buscar por codigo de parada
Codigo de la parada
08245

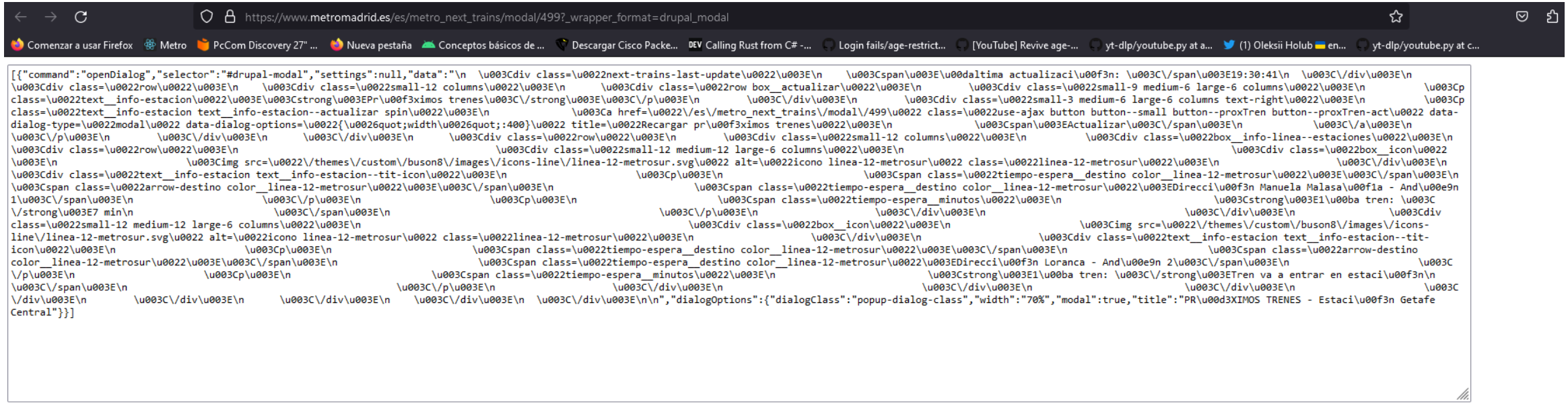

Bus Tracker
Bus
Metro
Login
Ultima actualizacion de CRTM
16:36:55
2
- 16:41:00
- 16:53:01
- 17:13:05
3
- 16:48:00
- 16:48:20
- 17:12:00
4
- 17:02:44
- 17:37:51
- 18:12:00
6
- 16:58:53
- 17:10:00
- 17:50:00


Bus Tracker
Bus
Metro
Login
Madrid
For development purposes only
Datos de mapas ©2023 Inst. Geogr. Nacional
Términos de uso

TIEMPO METRO

- ¿Dónde obtengo los datos?
- Normalizar los datos

OBTENCIÓN DATOS

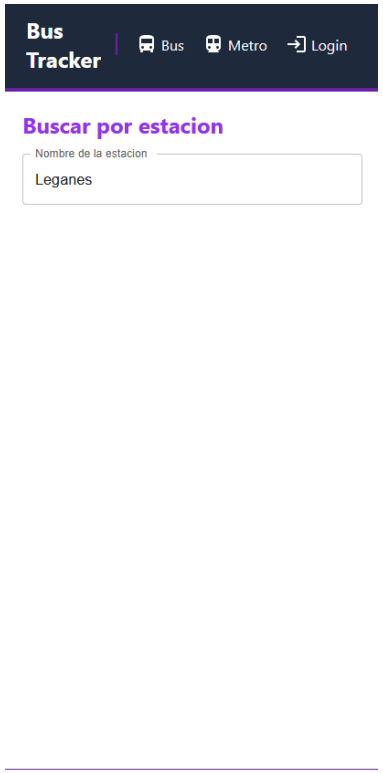


OBTENCIÓN DATOS

CONSUMIR API

```kotlin
fun urlBuilder() = HttpUrl.Builder()
    .scheme("https")
    .host("serviciosapp.metromadrid.es")
    .addPathSegment( pathSegment: "servicios")
    .addPathSegment( pathSegment: "rest")
    .addPathSegment( pathSegment: "teleindicadores")

Roberto <unknown> +1
fun getTimes(id: String? = null): JsonNode? {
    val url = urlBuilder()
        .also { if (id != null) it.addPathSegment(id) }
        .build()


    val request = Request.Builder()
        .url(url)
        .get()
        .addHeader( name: "Accept",  value: "application/json")
        .build()
```

FRONT


Bus Tracker
Bus
Metro
Login
Buscar por estacion
Nombre de la estacion
Leganes


Bus Tracker
Bus
Metro
Login
Leganés Central
Linea 12
Anden 1
- 3 minutos
- 11 minutos
Linea 12
Anden 2
- 2 minutos
- 10 minutos

USUARIOS

- Registro
- Inicio de sesión
- Verificar
- Restaurar contraseña

REGISTRO

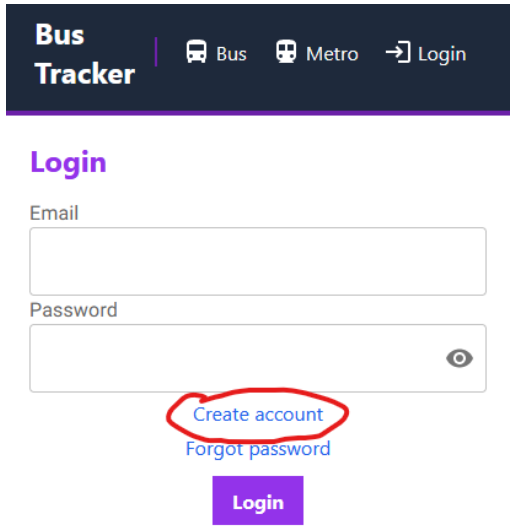
- Introduce los datos
- Se validan y se envía el correo
- Usuario verifica su cuenta

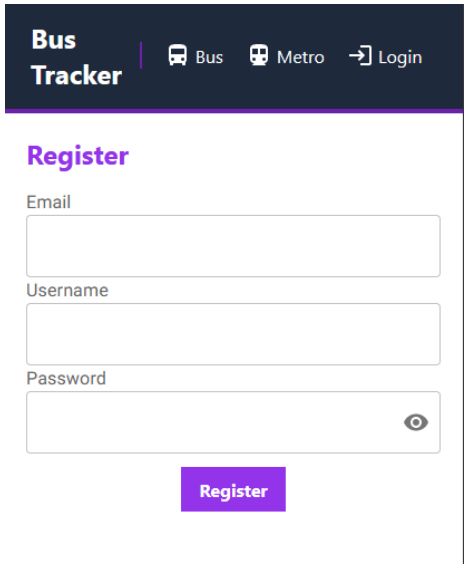
REGISTRO

- Bcrypt para la contraseña
- Enviar correo

```
35
36      post("/register") {
37          val user = call.receiveText().deserialized()
38          val backUrl = call.request.queryParameters["backUrl"]?.also { URLEncoder.encode(it, "utf-8") }
39              ?: return@post badRequest("Missing backUrl")
40          val redirectUrl = call.request.queryParameters["redirectUrl"]?.also { URLEncoder.encode(it, "utf-8") }
41              ?: return@post badRequest("Missing redirectUrl")
42
43          val userTyped = User(
44              username = user["username"].asString()
45                  .validateUsername()
46                  .getOrElse { return@post badRequest(it.message) },
47              password = user["password"].asString()
48                  .validatePassword()
49                  .map { Bcrypt.hashAsString(it, saltRounds) }
50                  .getOrElse { return@post badRequest(it.message) },
51              email = user["email"].asString()
52                  .validateMail()
53                  .getOrElse { return@post badRequest(it.message) },
54              verified = false
55          )
56
57          val userExists = userRepo.getCollection<User>().findOne(User::email eq userTyped.email) != null
58          if (userExists) conflict("User already exists")
59
60          userRepo.getCollection<User>().insertOne(userTyped)
61
62          val rawToken = signer { withClaim("email", userTyped.email) }
63
64          val token = URLEncoder.encode(rawToken, "utf-8")
65
66          val email = EmailBuilder.startingBlank()
67              .from("BusTracker", "noreply@bustracker.com")
68              .to(userTyped.username, userTyped.email)
69              .withSubject("Account Verification")
70              .withPlainText("Click here to verify your account: ${backUrl}/v1/users/verify?token=$token&redirectUrl=$redirectUrl")
71              .buildEmail()
```

FRONT


Bus Tracker
Bus
Metro
Login
Login
Email
Password
Create account
Forgot password
Login

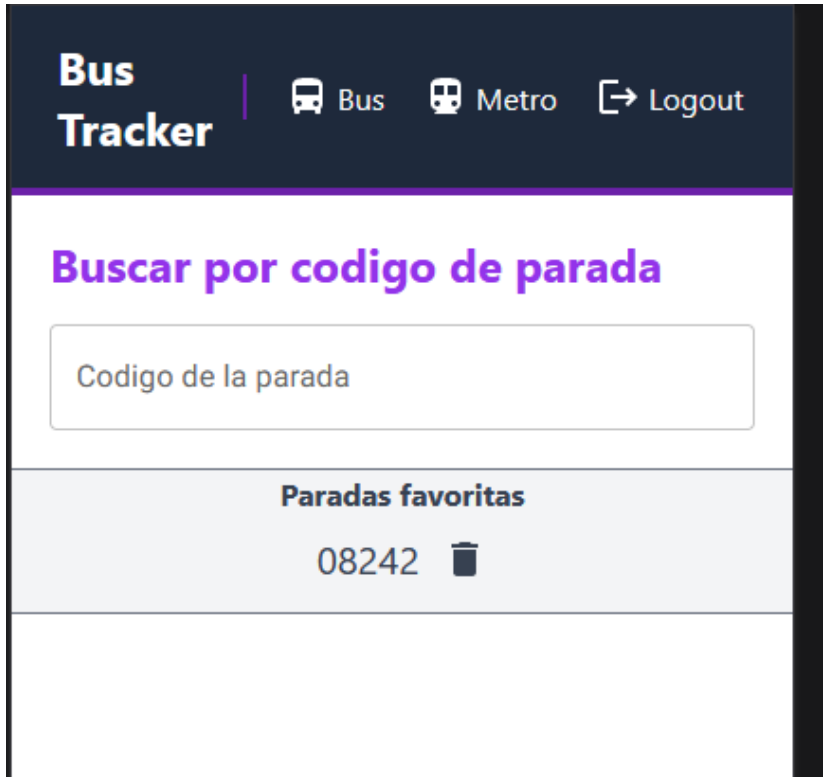

Bus Tracker
Bus
Metro
Login
Register
Email
Username
Password
Register


Account Verification
BusTracker <robertobl022@gmail.com>
martes, 13 de junio de 2023 16:04:20
Deliverability
Responder
Trasladar
Imprimir
Eliminare
Click here to verify your account: https://159.223.249.18:7777/v1/users
/verify?token=eyJhbGciOiJIUzI1NiIsInR5cCI6IkpXVCJ9.eyJhdWQiOiJidXNfdHJhY2tlciIsImlzcyI6ImJ1c190cmFja2VyIiwiZW1haWwiOiJhbHQubnAtMTFhMmJmZ0B5b3BtYWlsLmNvbSJ9.bq1byT9DCpqxfTJgPN4i11zWS45xSJ6HyPw8Rr4ozJw&
redirectUrl=https://159.223.249.18/login

LOGIN

- Introducen los datos
- Devuelve jwt con la información del usuario

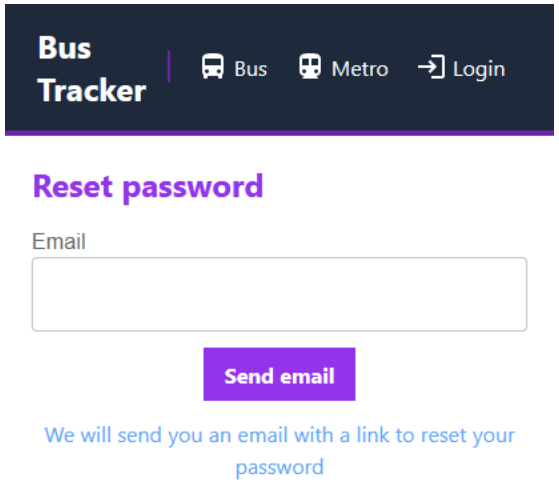
FRONT

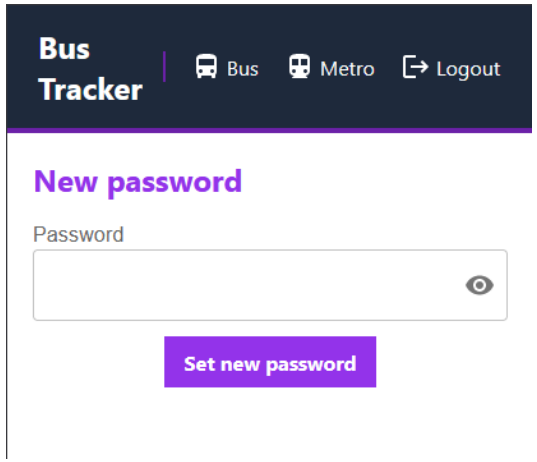

Bus Tracker
Bus
Metro
Logout
Buscar por codigo de parada
Codigo de la parada
Paradas favoritas
08242

RESETEAR CONTRASEÑA

- Introducen los datos
- Se envía un correo con el link para resetear la contraseña
- Se resetea la contraseña

FRONT


Bus Tracker
Bus
Metro
Login
Reset password
Email
Send email
We will send you an email with a link to reset your password


Bus Tracker
Bus
Metro
Logout
New password
Password
Set new password

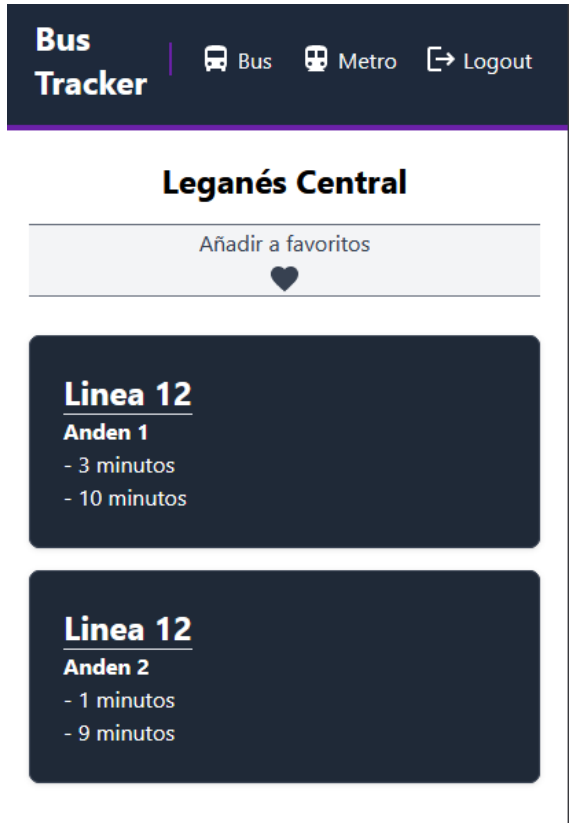

Reset Password
BusTracker <robertobl022@gmail.com>
martes, 13 de junio de 2023 20:02:32
Deliverability
Responder
Trasladar
Imprimir
Eliminare
Click here to reset your password: https://159.223.249.18/new-password?token=eyJhbGciOiJIUzI1NiIsInR5cCI6IkpXVCJ9.eyJhdWQiOiJidXNfdHJhY2tlciIsImlzcyI6ImJ1c190cmFja2VyIiwiZW1haWwiOiJhbHQubnAtMTFhMmJmZ0B5b3BtYWlsLmNvbSJ9.bq1byT9DCpqxfTJgPN4i11zWS45xSJ6HyPw8Rr4ozJw

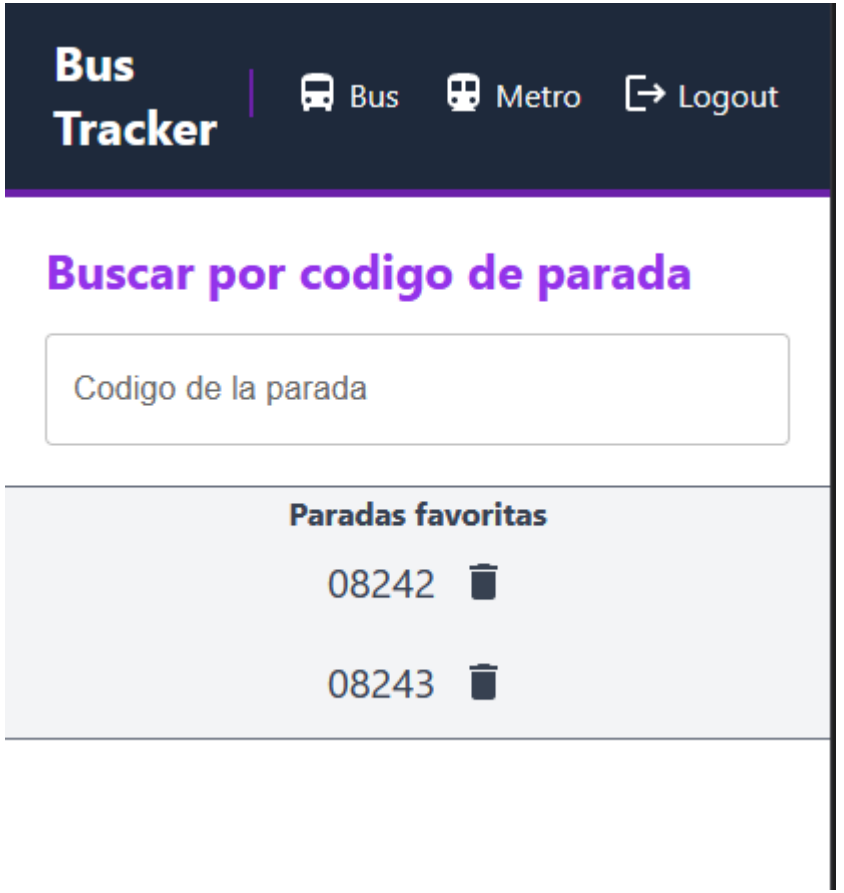
FAVORITOS

- Guardar
- Leer
- Borrar

FRONT


Bus Tracker
Bus
Metro
Logout
Ultima actualizacion de CRTM
20:04:06
Añadir a favoritos
1
- 20:04:12
- 20:29:00
- 20:42:57
441
- 20:12:06
- 20:28:00
- 20:40:00
462
- 20:07:00
- 20:38:53
- 21:29:04
N801
- 0:46:00
- 23:26:00


Bus Tracker
Bus
Metro
Logout
Leganés Central
Añadir a favoritos
Linea 12
Anden 1
- 3 minutos
- 10 minutos
Linea 12
Anden 2
- 1 minutos
- 9 minutos


Bus Tracker
Bus
Metro
Logout
Buscar por codigo de parada
Codigo de la parada
Paradas favoritas
08242
08243

TESTS

Current scope: busTrackerApi | all classes

busTrackerApi: Overall Coverage Summary

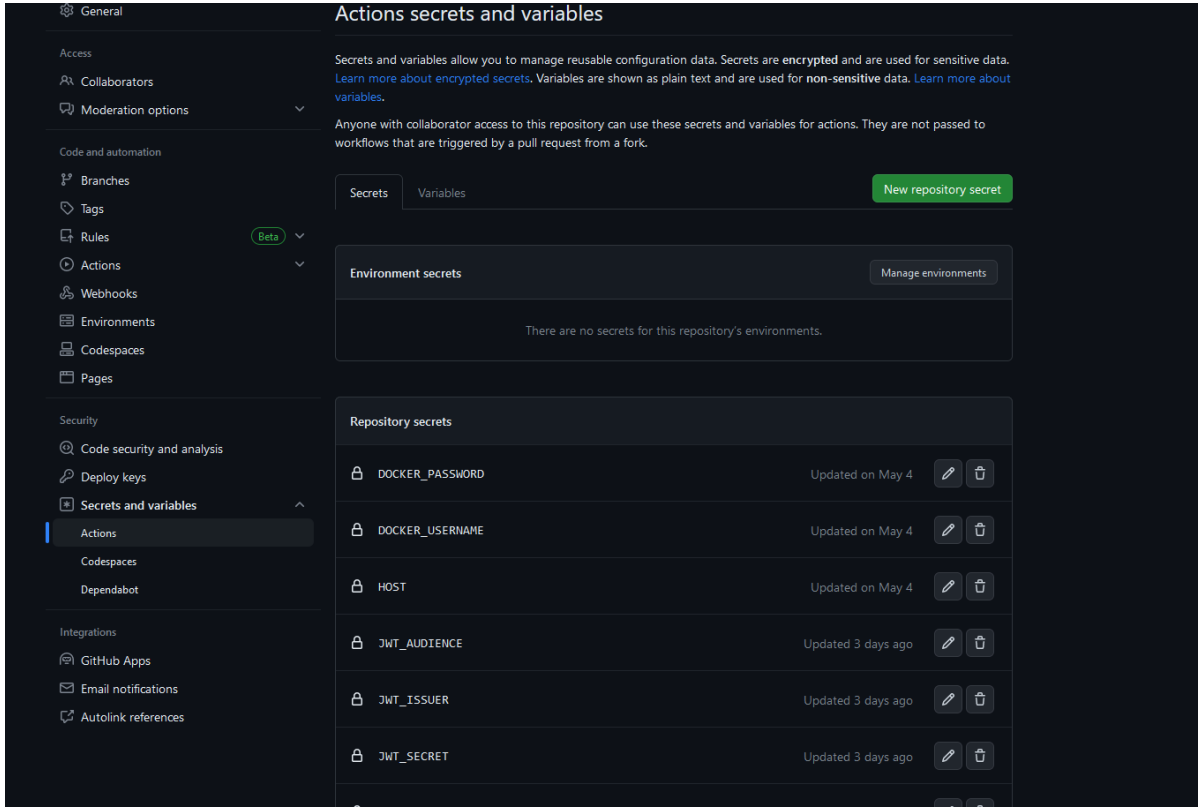
Package	Class, %	Method, %	Branch, %	Line, %	Instruction, %
all classes	90.6% (58/64)	80.4% (78/97)	53.3% (131/246)	80.3% (392/488)	79.7% (3159/3965)

Coverage Breakdown

Package	Class, %	Method, %	Branch, %	Line, %	Instruction, %
busTrackerApi	83.3% (5/6)	81.2% (13/16)	38.2% (13/34)	79.7% (51/64)	71.6% (214/299)
busTrackerApi.config	95.2% (20/21)	92.6% (25/27)		98.3% (59/60)	99.2% (241/243)
busTrackerApi.routing.bus.lines	33.3% (2/6)	18.2% (2/11)	0% (0/22)	4.8% (4/84)	5.2% (32/617)
busTrackerApi.routing.bus.stops	100% (7/7)	100% (9/9)	57.7% (15/26)	98% (48/49)	95.4% (349/366)
busTrackerApi.routing.favourites	100% (8/8)	88.9% (8/9)	56% (28/50)	100% (56/56)	94.2% (703/746)
busTrackerApi.routing.metro	100% (4/4)	100% (6/6)	63.3% (19/30)	100% (40/40)	96.4% (323/335)
busTrackerApi.routing.users	100% (12/12)	78.9% (15/19)	66.7% (56/84)	99.3% (134/135)	95.4% (1297/1359)

CI

Configurar variables de entorno



CI

```yaml
name: Java CI with Gradle

on:
  push:
    branches:
      - '*'
  pull_request:
    branches:
      - '*'

permissions:
  contents: read

jobs:
  build:
    runs-on: ubuntu-latest
    env:
        JWT_SECRET: ${{ secrets.JWT_SECRET }}
        JWT_AUDIENCE: ${{ secrets.JWT_AUDIENCE }}
        JWT_ISSUER: ${{ secrets.JWT_ISSUER }}
        STMP_HOST: ${{ secrets.STMP_HOST }}
        STMP_PORT: ${{ secrets.STMP_PORT }}
        STMP_USERNAME: ${{ secrets.STMP_USERNAME }}
        STMP_PASSWORD: ${{ secrets.STMP_PASSWORD }}
    steps:
    - uses: actions/checkout@v3
    - name: Set up JDK 17
      uses: actions/setup-java@v3
      with:
        java-version: '17'
        distribution: 'temurin'

    - name: Run chmod to make gradlew executable
      run : chmod +x ./gradlew

    - name: Build with Gradle
      uses: gradle/gradle-build-action@67421db6bd0bf253fb4bd25b31ebb98943c375e1
      with:
        arguments: build --stacktrace
```

JAR

```
plugins {
    kotlin("jvm")
    id("io.ktor.plugin")
    id("org.jetbrains.kotlinx.kover") version "0.7.1"
    application
}
```

```
ktor {
    fatJar {
        archiveFileName.set("${project.name}.jar")
    }
}
```

DOCKER

```yaml
version: "3.9"
services:
  mongo:
    image: mongo
    restart: always
  api:
    depends_on:
      - mongo
    image: xbank/bus_tracker_api:latest
    environment:
      - MONGO_CONNECTION_STRING
      - MONGO_DATABASE_NAME
      - JWT_SECRET
      - JWT_AUDIENCE
      - JWT_ISSUER
      - STMP_HOST
      - STMP_PORT
      - STMP_USERNAME
      - STMP_PASSWORD
  nginx:
    depends_on:
      - api
    image: nginx
    ports:
      - "7777:443"
    volumes:
      - ./nginx.conf:/etc/nginx/conf.d/default.conf
      - /root/ssl/key.pem:/root/ssl/key.pem
      - /root/ssl/cert.pem:/root/ssl/cert.pem
    command: [ "nginx", "-g", "daemon off;" ]
```

NGINX

```yaml
nginx:
  depends_on:
    - api
  image: nginx
  ports:
    - "7777:443"
  volumes:
    - ./nginx.conf:/etc/nginx/conf.d/default.conf
    - /root/ssl/key.pem:/root/ssl/key.pem
    - /root/ssl/cert.pem:/root/ssl/cert.pem
  command: [ "nginx", "-g", "daemon off;" ]
```

```
upstream servers {
 server api:8080 fail_timeout=50s max_fails=5;
}
server {
    listen                  443 ssl;
    listen                  [::]:443 ssl;
    ssl_certificate         /root/ssl/cert.pem;
    ssl_certificate_key     /root/ssl/key.pem;
    location / {
        proxy_pass http://servers;
    }
}
```

CD

Primero se compila y se sube la imagen a Docker hub

```yaml
push_to_registry:
  name: Push Docker image to Docker Hub
  runs-on: ubuntu-latest
  needs: build
  steps:
    - name: Check out the repo
      uses: actions/checkout@v3

    - name: Log in to Docker Hub
      uses: docker/login-action@65b78e6e13532edd9afa3aa52ac7964289d1a9c1
      with:
        username: ${{ secrets.DOCKER_USERNAME }}
        password: ${{ secrets.DOCKER_PASSWORD }}

    - name: Extract metadata (tags, labels) for Docker
      id: meta
      uses: docker/metadata-action@9ec57ed1fcdbf14dcef7dfbe97b2010124a938b7
      with:
        images: xbank/bus_tracker_api

    - name: Build and push Docker image
      uses: docker/build-push-action@f2a1d5e99d037542a71f64918e516c093c6f3fc4
      with:
        context: .
        push: true
        tags: ${{ steps.meta.outputs.tags }}
        labels: ${{ steps.meta.outputs.labels }}
        name: remote ssh command
deploy:
```

CD

Después se despliega en la maquina ejecutando el Docker compose

```yaml
deploy:
  name: Build
  runs-on: ubuntu-latest
  needs: push_to_registry
  env:
    JWT_SECRET: ${{ secrets.JWT_SECRET }}
    JWT_AUDIENCE: ${{ secrets.JWT_AUDIENCE }}
    JWT_ISSUER: ${{ secrets.JWT_ISSUER }}
    STMP_HOST: ${{ secrets.STMP_HOST }}
    STMP_PORT: ${{ secrets.STMP_PORT }}
    STMP_USERNAME: ${{ secrets.STMP_USERNAME }}
    STMP_PASSWORD: ${{ secrets.STMP_PASSWORD }}
    MONGO_CONNECTION_STRING: ${{ secrets.MONGO_CONNECTION_STRING }}
    MONGO_DATABASE_NAME: ${{ secrets.MONGO_DATABASE_NAME }}
    MONGO_INITDB_ROOT_USERNAME: ${{ secrets.MONGO_INITDB_ROOT_USERNAME }}
    MONGO_INITDB_ROOT_PASSWORD: ${{ secrets.MONGO_INITDB_ROOT_PASSWORD }}
  steps:
    - name: executing remote ssh commands using password
      uses: appleboy/ssh-action@v0.1.10
      with:
        envs: JWT_SECRET,JWT_AUDIENCE,JWT_ISSUER,STMP_HOST,STMP_PORT,STMP_USERNAME,STMP_PASSWORD,MONGO_CONNECTION_STRING,MONGO_DATABASE_NAME,MONGO_INITDB_ROOT_USERNAME,MONGO_INITDB_ROOT_PASSWORD
        host: ${{ secrets.HOST }}
        username: ${{ secrets.USERNAME }}
        password: ${{ secrets.PASSWORD }}
        port: ${{ secrets.PORT }}
        script: |
          export JWT_SECRET=$JWT_SECRET
          export JWT_AUDIENCE=$JWT_AUDIENCE
          export JWT_ISSUER=$JWT_ISSUER
          export STMP_HOST=$STMP_HOST
          export STMP_PORT=$STMP_PORT
          export STMP_USERNAME=$STMP_USERNAME
          export STMP_PASSWORD=$STMP_PASSWORD
          export MONGO_CONNECTION_STRING=$MONGO_CONNECTION_STRING
          export MONGO_DATABASE_NAME=$MONGO_DATABASE_NAME
          export MONGO_INITDB_ROOT_USERNAME=MONGO_INITDB_ROOT_USERNAME
          export MONGO_INITDB_ROOT_PASSWORD=MONGO_INITDB_ROOT_PASSWORD
          docker compose -f ./bus-tracker-back/docker-compose.yml stop
          docker compose -f ./bus-tracker-back/docker-compose.yml rm -f
          docker compose -f ./bus-tracker-back/docker-compose.yml pull
```

GRACIAS