

- Implementar o back end
- Acesso a banco de dados
- Criar endpoints da API REST
- Integração com SMS
- Implantação na nuvem

AVISO: as aulas ficarão disponíveis somente até domingo às 23h59

Checklist

Ferramentas

- Postman (Vídeo: https://youtu.be/CWKLVapcnCU)
- Heroku CLI (Vídeo: https://youtu.be/70LUh5KNaEk)

Passo: configuração de segurança

```
import java.util.Arrays;

import org.springframework.context.annotation.Bean;
import org.springframework.context.annotation.Configuration;
import org.springframework.security.config.annotation.web.builders.HttpSecurity;
import org.springframework.security.config.annotation.web.configuration.EnableWebSecurity;
import org.springframework.security.config.http.SessionCreationPolicy;
import org.springframework.security.web.SecurityFilterChain;
import org.springframework.web.cors.CorsConfiguration;
import org.springframework.web.cors.CorsConfigurationSource;
import org.springframework.web.cors.UrlBasedCorsConfigurationSource;
```

```
@Configuration
@EnableWebSecurity
public class SecurityConfig {
        @Bean
        public SecurityFilterChain filterChain(HttpSecurity http) throws Exception {
                http.headers().frameOptions().disable();
                http.cors().and().csrf().disable();
                http.sessionManagement().sessionCreationPolicy(SessionCreationPolicy.STATELESS);
                http.authorizeHttpRequests((auth) -> auth.anyRequest().permitAll());
                return http.build();
        }
        @Bean
        CorsConfigurationSource corsConfigurationSource() {
                CorsConfiguration configuration = new CorsConfiguration().applyPermitDefaultValues();
                configuration.setAllowedMethods(Arrays.asList("POST", "GET", "PUT", "DELETE", "OPTIONS"));
                final UrlBasedCorsConfigurationSource source = new UrlBasedCorsConfigurationSource();
                source.registerCorsConfiguration("/**", configuration);
                return source;
```

• COMMIT: Security config

Passo: banco de dados

- Criar entidade Sale
- Fazer mapeamento objeto-relacional (JPA)
- Configurar dados de conexão do banco de dados H2

• Fazer seed do banco de dados

application.properties

```
spring.datasource.url=jdbc:h2:mem:testdb
spring.datasource.username=sa
spring.datasource.password=

spring.h2.console.enabled=true
spring.h2.console.path=/h2-console

spring.jpa.show-sql=true
spring.jpa.properties.hibernate.format_sql=true
```

import.sql

```
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Barry Allen', 121, 67, 18196.0, '2022-06-16');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Logan', 26, 14, 4255.0, '2022-06-14');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Padme', 55, 42, 13249.0, '2022-06-14');
INSERT INTO tb_sales(seller_name, visited, deals, amount, date) VALUES ('Padme', 73,65,20751.0,'2022-06-10');
INSERT INTO tb_sales(seller_name, visited, deals, amount, date) VALUES ('Logan', 47, 25, 7318.0, '2022-06-04');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Kal-El', 72, 60, 15608.0, '2022-06-03');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Kal-El', 97, 68, 8901.0, '2022-06-03');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Anakin', 68, 26, 13231.0, '2022-06-02');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Barry Allen', 73, 53, 19476.0, '2022-05-22');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Kal-El', 28, 23, 20530.0, '2022-05-18');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Logan', 83, 44, 4864.0, '2022-05-13');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Barry Allen', 82, 43, 21753.0, '2022-05-06');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Logan', 43, 26, 7362.0, '2022-05-03');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Anakin', 54, 23, 10549.0, '2022-04-28');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Padme', 125, 84, 13333.0, '2022-04-25');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Logan', 44, 26, 7431.0, '2022-04-23');
```

```
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Kal-El', 46, 25, 21099.0, '2022-04-19');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Kal-El', 42, 28, 7217.0, '2022-04-19');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Anakin', 52, 21, 10107.0, '2022-04-18');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Padme', 121, 90, 18174.0, '2022-04-17');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Logan', 65, 14, 8095.0, '2022-04-12');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Padme', 107, 74, 11507.0, '2022-04-12');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Barry Allen', 140, 74, 11709.0, '2022-04-09');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Kal-El', 95, 91, 8288.0, '2022-04-08');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Anakin', 68, 43, 17016.0, '2022-04-07');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Kal-El', 21, 20, 17126.0, '2022-04-03');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Logan', 38, 15, 7957.0, '2022-03-31');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Barry Allen', 53, 29, 20903.0, '2022-03-29');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Logan', 19, 10, 3987.0, '2022-03-28');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Anakin', 78, 34, 20795.0, '2022-03-27');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Logan', 83, 44, 4938.0, '2022-03-26');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Logan', 32, 12, 6926.0, '2022-03-13');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Logan', 64, 33, 8193.0, '2022-03-13');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Barry Allen', 39, 39, 10557.0, '2022-03-05');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Barry Allen', 158, 84, 21601.0, '2022-03-02');
INSERT INTO tb_sales(seller_name, visited, deals, amount, date) VALUES ('Logan', 12,6,7625.0,'2022-02-29');
INSERT INTO tb sales(seller_name, visited, deals, amount, date) VALUES ('Padme', 82, 82, 22465.0, '2022-02-27');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Barry Allen', 68, 56, 12595.0, '2022-02-17');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Logan', 27, 13, 4636.0, '2022-02-16');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Kal-El', 52, 33, 10155.0, '2022-02-14');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Kal-El', 142, 81, 13610.0, '2022-02-13');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Padme', 81, 45, 15306.0, '2022-02-08');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Anakin', 64, 35, 17460.0, '2022-02-07');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Anakin', 48, 24, 21413.0, '2022-02-03');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Barry Allen', 150, 82, 6505.0, '2022-01-26');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Kal-El', 138, 95, 7983.0, '2022-01-18');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Padme', 70, 48, 9564.0, '2022-01-16');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Barry Allen', 162,84,7302.0,'2022-01-15');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Kal-El', 57, 54, 9126.0, '2022-01-12');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Kal-El', 78, 60, 5253.0, '2022-01-06');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Padme', 81,53,11553.0,'2022-01-04');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Kal-El', 168, 92, 6299.0, '2021-12-28');
```

```
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Anakin', 48, 13, 22411.0, '2021-12-26');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Anakin', 107, 67, 9788.0, '2021-12-24');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Barry Allen', 106,62,18942.0,'2021-12-20');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Anakin', 40, 26, 11731.0, '2021-12-18');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Padme', 101, 68, 19882.0, '2021-12-18');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Padme', 185, 100, 14618.0, '2021-12-17');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Logan', 82, 47, 7951.0, '2021-12-15');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Logan', 86, 45, 4147.0, '2021-12-14');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Padme', 95, 88, 12943.0, '2021-12-09');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Barry Allen', 75, 58, 18747.0, '2021-12-02');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Anakin', 96, 50, 12624.0, '2021-12-01');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Kal-El', 79, 40, 14770.0, '2021-11-21');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Padme', 73, 46, 14124.0, '2021-11-20');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Padme', 92,58,20953.0,'2021-11-20');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Logan', 43, 30, 9690.0, '2021-11-18');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Kal-El', 58, 30, 11396.0, '2021-11-14');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Logan', 49, 14, 5119.0, '2021-11-14');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Anakin', 53, 23, 8206.0, '2021-11-12');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Anakin', 49, 25, 8269.0, '2021-11-10');
INSERT INTO tb_sales(seller_name, visited, deals, amount, date) VALUES ('Anakin', 53, 29, 17984.0, '2021-11-09');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Logan', 43, 26, 3056.0, '2021-11-08');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Anakin', 51, 21, 8624.0, '2021-11-06');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Barry Allen', 64, 41, 10959.0, '2021-11-03');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Anakin', 75, 23, 15883.0, '2021-10-30');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Barry Allen', 51, 44, 14038.0, '2021-10-27');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Kal-El', 141, 81, 13535.0, '2021-10-26');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Barry Allen', 135, 98, 17241.0, '2021-10-25');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Barry Allen', 116, 66, 16415.0, '2021-10-19');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Kal-El', 60, 44, 5329.0, '2021-10-14');
INSERT INTO tb_sales(seller_name, visited, deals, amount, date) VALUES ('Kal-El', 63, 32, 16618.0, '2021-10-07');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Kal-El', 176, 100, 5062.0, '2021-10-01');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Anakin', 118, 45, 22235.0, '2021-09-29');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Kal-El', 150, 97, 14484.0, '2021-09-26');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Anakin', 115,63,18081.0,'2021-09-24');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Padme', 159, 88, 16101.0, '2021-09-23');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Kal-El', 76, 45, 11150.0, '2021-09-22');
```

```
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Kal-El', 65, 63, 17982.0, '2021-09-09');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Barry Allen', 90, 68, 15927.0, '2021-09-08');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Logan', 22, 12, 9793.0, '2021-09-06');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Logan', 19, 11, 4185.0, '2021-09-05');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Anakin', 68, 21, 15541.0, '2021-09-04');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Barry Allen', 64, 47, 7287.0, '2021-09-04');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Kal-El', 153, 92, 17913.0, '2021-09-04');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Padme', 93,53,12648.0,'2021-09-02');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Anakin', 78, 32, 12021.0, '2021-08-30');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Anakin', 94, 49, 18787.0, '2021-08-29');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Logan', 54, 28, 3974.0, '2021-08-28');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Anakin', 45, 25, 5681.0, '2021-08-26');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Logan', 11, 1, 4008.0, '2021-08-14');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Padme', 118,80,5218.0,'2021-08-13');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Anakin', 52, 21, 21220.0, '2021-08-09');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Anakin', 127, 23, 8831.0, '2021-08-06');
INSERT INTO tb_sales(seller_name, visited, deals, amount, date) VALUES ('Anakin', 78, 23, 13900.0, '2021-08-04');
INSERT INTO tb_sales(seller_name, visited, deals, amount, date) VALUES ('Barry Allen', 102, 52, 22086.0, '2021-08-03');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Barry Allen', 54, 53, 15731.0, '2021-07-31');
INSERT INTO tb_sales(seller_name, visited, deals, amount, date) VALUES ('Barry Allen', 173, 93, 10816.0, '2021-07-22');
INSERT INTO tb sales(seller_name, visited, deals, amount, date) VALUES ('Kal-El', 60, 45, 17633.0, '2021-07-20');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Kal-El', 138, 72, 14528.0, '2021-07-19');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Padme', 147, 96, 21582.0, '2021-07-17');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Logan', 32, 12, 9751.0, '2021-07-13');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Padme', 83, 59, 8496.0, '2021-07-08');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Padme', 58, 48, 5283.0, '2021-07-07');
INSERT INTO tb_sales(seller_name, visited, deals, amount, date) VALUES ('Kal-El', 55, 35, 20474.0, '2021-07-05');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Anakin', 84, 34, 5787.0, '2021-07-01');
INSERT INTO tb sales(seller name, visited, deals, amount, date) VALUES ('Padme', 79,68,11976.0,'2021-06-27');
```

COMMIT: Database

Passo: Primeiro teste de endpoint da API REST

- Criar repository
- Criar service
- Criar controller
- COMMIT: API test

Passo: Consulta por data

Consulta customizada:

```
@Query("SELECT obj FROM Sale obj WHERE obj.date BETWEEN :min AND :max ORDER BY obj.amount DESC")
Page<Sale> findSales(LocalDate min, LocalDate max, Pageable pageable);
```

• COMMIT: Date select

Passo: Envio de SMS

Dependências Maven do Twilio

Variáveis de ambiente no application.properties:

```
twilio.sid=${TWILIO_SID}
twilio.key=${TWILIO_KEY}
```

```
twilio.phone.from=${TWILIO_PHONE_FROM}
  twilio.phone.to=${TWILIO_PHONE_TO}
Classe SmsService:
  @Service
  public class SmsService {
          @Value("${twilio.sid}")
          private String twilioSid;
          @Value("${twilio.key}")
          private String twilioKey;
          @Value("${twilio.phone.from}")
          private String twilioPhoneFrom;
          @Value("${twilio.phone.to}")
          private String twilioPhoneTo;
          public void sendSms() {
                  Twilio.init(twilioSid, twilioKey);
                  PhoneNumber to = new PhoneNumber(twilioPhoneTo);
                  PhoneNumber from = new PhoneNumber(twilioPhoneFrom);
                  Message message = Message.creator(to, from, "Teste").create();
                  System.out.println(message.getSid());
```

• COMMIT: Twilio SMS

Passo: Implantação no Heroku

Arquivo system.properties

java.runtime.version=17

- Criar app no Heroku
- Definir variáveis de ambiente:
 - TWILIO_SID
 - TWILIO_KEY
 - TWILIO_PHONE_FROM
 - TWILIO_PHONE_TO

```
heroku -v
heroku login
heroku git:remote -a <nome-do-app>
git remote -v
git subtree push --prefix backend heroku main
```

PARABÉNS!



- Quero muito saber seu feedback
 - o O que você está achando da nossa abordagem?

- Você está conseguindo acompanhar?
- O que você está achando do evento?
- Participe
 - o Comente na página da Semana Spring React
 - o Divulgue seu projeto no Linkedin e marque a DevSuperior