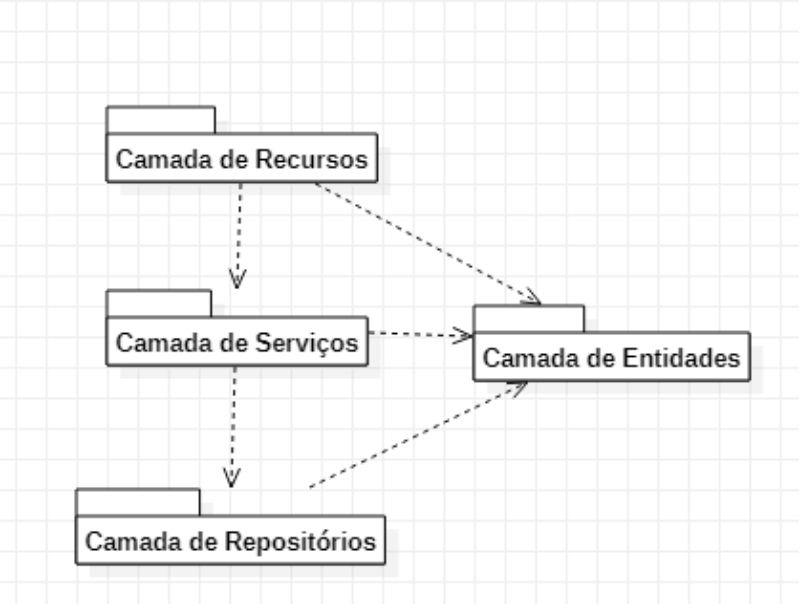
Camada de Serviço

Introdução

- Até o momento implementamos as classes A (camada de entidades), RecursoA (camada de recursos) e a interface RepositorioA (camada de repositórios).
- Nessa aula iremos implementar a classe ServicoA que será o representante da camada de serviços.
- A separação entre recursos e serviços é interessante para colocar algumas regras de negócio na camada de serviço (fluxo de casos de uso).
- A Camada de Recursos é a camada “porta de entrada” do sistema, nela colocamos como será feito acesso as funcionalidades (camada de controle de interação).
- A Camada de Serviços trata do fluxo de casos de uso (camada de gerência de tarefas).
- A Camada de Repositórios trata da persistência de dados (camada de gerência de dados).
- A Camada de Entidades trata das classes de domínio do problema (camada de domínio do problema).



ServicoA e obterTodos

- O uso de **@Service** é para registrar essa classe no Spring (sem isso o Spring não consegue instanciar essa classe lá no RecursoA).
- O **@Autowired** de repositorio irá garantir a instanciação desse objeto.
- Na sequência temos a definição de um método que retorna a lista de todos os “As” usando o objeto de repositório (que é um objeto padrão que fará a busca dos “As”)

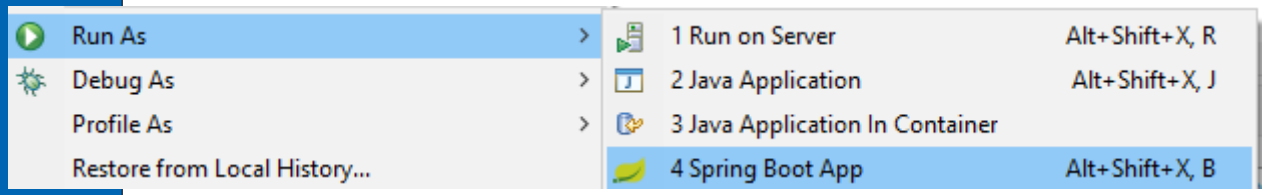
```java
import java.util.List;

import org.springframework.beans.factory.annotation.Autowired;
import org.springframework.stereotype.Service;

import com.servicos.abcde.entidades.A;
import com.servicos.abcde.repositorios.RepositorioA;

@Service
public class ServicoA {

    // Fazendo a Injeção de Dependência
    @Autowired
    private RepositorioA repositorio;

    public List<A> obterTodos(){
        return repositorio.findAll();
    }
}
```

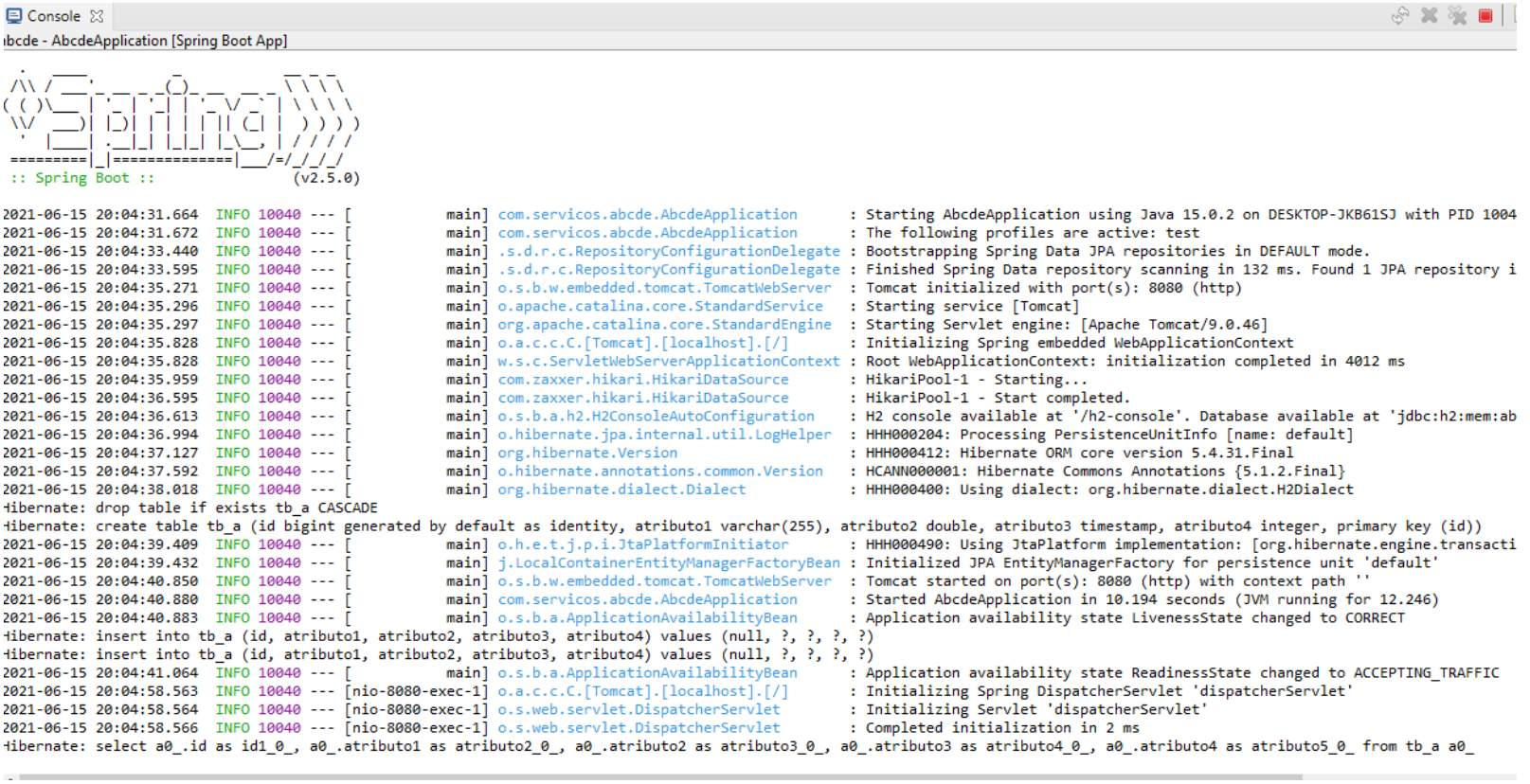
Modificando o RecursoA

```java
import java.util.List;

import org.springframework.beans.factory.annotation.Autowired;
import org.springframework.http.ResponseEntity;
import org.springframework.web.bind.annotation.GetMapping;
import org.springframework.web.bind.annotation.RequestMapping;
import org.springframework.web.bind.annotation.RestController;

import com.servicos.abcde.entidades.A;
import com.servicos.abcde.servicos.ServicoA;

@RestController
@RequestMapping(value = "/as")
public class RecursoA {

    @Autowired
    private ServicoA servico;

    @GetMapping
    public ResponseEntity<List<A>> obterTodos(){
        List<A> lista = servico.obterTodos();
        return ResponseEntity.ok().body(lista);
    }
}
```

- **RecursoA** agora precisa instanciar o servico, por isso o uso de **@Autowired** (antes estávamos gerando um único objeto da classe A “na mão” e retornando no método obterTodos).
- Notar a chamada de obterTodos do objeto de servico instanciado.
- Foi necessário modificar o retorno do método pois ao invés de retornar um A passamos a retornar uma lista de A.

Rodando a aplicação





Testando a aplicação

localhost:8080/as

[{"id":1,"atributo1":"Atributo 11","atributo2":7.77,"atributo3":"2021-06-15T23:04:40Z","atributo4":7},{"id":2,"atributo1":"Atributo 12","atributo2":2.77,"atributo3":"2020-07-20T19:51:09Z","atributo4":2}]

http://localhost:8080/as

Save

GET http://localhost:8080/as Send

Params Authorization Headers (6) Body Pre-request Script Tests Settings Cookies

Query Params

KEY	VALUE	DESCRIPTION	Bulk Edit
Key	Value	Description	

Body Cookies Headers (5) Test Results Status: 200 OK Time: 51 ms Size: 367 B Save Response

Pretty Raw Preview Visualize JSON


```
[
    {
        "id": 1,
        "atributo1": "Atributo 11",
        "atributo2": 7.77,
        "atributo3": "2021-06-15T23:04:40Z",
        "atributo4": 7
    },
    {
        "id": 2,
        "atributo1": "Atributo 12",
        "atributo2": 2.77,
        "atributo3": "2020-07-20T19:51:09Z",
        "atributo4": 2
    }
]
```


```
@RestController
@RequestMapping(value = "/as")
public class RecursoA {

    @Autowired
    private ServicoA servico;

    @GetMapping
    public ResponseEntity<List<A>> obterTodos(){
        List<A> lista = servico.obterTodos();
        return ResponseEntity.ok().body(lista);
    }
}
```

obterPorId

```java
@RestController
@RequestMapping(value = "/as")
public class RecursoA {

    @Autowired
    private ServicoA servico;

    @GetMapping
    public ResponseEntity<List<A>> obterTodos(){
        List<A> lista = servico.obterTodos();
        return ResponseEntity.ok().body(lista);
    }

    @GetMapping(value = "/{id}")
    public ResponseEntity<A> obterPorId(@PathVariable Long id){
        A a = servico.obterPorId(id);
        return ResponseEntity.ok().body(a);
    }
}
```

```java
@Service
public class ServicoA {

    // Fazendo a Injeção de Dependência
    @Autowired
    private RepositorioA repositorio;

    public List<A> obterTodos(){
        return repositorio.findAll();
    }

    public A obterPorId(Long id) {
        Optional<A> obj = repositorio.findById(id);
        return obj.get();
    }
}
```

Testando a aplicação

localhost:8080/as/1

localhost:8080/as/1


```
{"id":1,"atributo1":"Atributo 11","atributo2":7.77,"atributo3":"2021-06-15T23:33:09Z","atributo4":7}
```


http://localhost:8080/as/2

```
@GetMapping(value = "/{id}")
public ResponseEntity<A> obterPorId(@PathVariable Long id){
    A a = servico.obterPorId(id);
    return ResponseEntity.ok().body(a);
}
```

Save

GET http://localhost:8080/as/2 Send

Params Authorization Headers (6) Body Pre-request Script Tests Settings Cookies

Query Params

KEY	VALUE	DESCRIPTION	...	Bulk Edit
Key	Value	Description		

Body Cookies Headers (5) Test Results Status: 200 OK Time: 42 ms Size: 264 B Save Response

Pretty Raw Preview Visualize JSON


```
{
    "id": 2,
    "atributo1": "Atributo 12",
    "atributo2": 2.77,
    "atributo3": "2020-07-20T19:51:09Z",
    "atributo4": 2
}
```


```
@Configuration
@Profile("test")
public class SemeadoraDadosTeste implements CommandLineRunner{

    @Autowired
    private RepositorioA repositorioA;

    @Override
    public void run(String... args) throws Exception {
        A a1 = new A(null, "Atributo 11", 7.77, Instant.now(), 7);
        A a2 = new A(null, "Atributo 12", 2.77, Instant.parse("2020-07-20T19:51:09Z"), 2);

        repositorioA.saveAll(Arrays.asList(a1, a2));
    }
}
```

Inserindo objetos da classe A

```java
@Service
public class ServicoA {

    // Fazendo a Injeção de Dependência
    @Autowired
    private RepositorioA repositorio;

    public List<A> obterTodos(){
        return repositorio.findAll();
    }

    public A obterPorId(Long id) {
        Optional<A> obj = repositorio.findById(id);
        return obj.get();
    }

    public A inserir(A a) {
        return repositorio.save(a);
    }
}
```

```java
@RestController
@RequestMapping(value = "/as")
public class RecursoA {

    @Autowired
    private ServicoA servico;

    @GetMapping
    public ResponseEntity<List<A>> obterTodos(){
        List<A> lista = servico.obterTodos();
        return ResponseEntity.ok().body(lista);
    }

    @GetMapping(value = "/{id}")
    public ResponseEntity<A> obterPorId(@PathVariable Long id){
        A a = servico.obterPorId(id);
        return ResponseEntity.ok().body(a);
    }

    @PostMapping
    public ResponseEntity<A> inserir(@RequestBody A a){
        a = servico.inserir(a);
        URI uri = ServletUriComponentsBuilder.fromCurrentRequest().
                path("/{id}").buildAndExpand(a.getId()).toUri();
        return ResponseEntity.created(uri).body(a);
    }
}
```

Testando a aplicação

GET http://localhost:80...

No Environment

http://localhost:8080/as

Save

GET http://localhost:8080/as Send

Params Authorization Headers (9) Body Pre-request Script Tests Settings

Content-Length	<calculated when request is sent>	
Host	<calculated when request is sent>	
User-Agent	PostmanRuntime/7.28.0	
Accept	*/*	
Accept-Encoding	gzip, deflate, br	
Connection	keep-alive	
Content-Type	application/json	
Key	Value	Description

Body Cookies Headers (5) Test Results

Status: 200 OK Time: 636 ms Size: 367 B Save Response

Pretty Raw Preview Visualize JSON


```
[
    {
        "id": 1,
        "atributo1": "Atributo 11",
        "atributo2": 7.77,
        "atributo3": "2021-06-16T00:08:04Z",
        "atributo4": 7
    },
    {
        "id": 2,
        "atributo1": "Atributo 12",
        "atributo2": 2.77,
        "atributo3": "2020-07-20T19:51:09Z",
        "atributo4": 2
    }
]
```

Testando a aplicação

POST http://localhost:8...

No Environment

http://localhost:8080/as

Save

POST http://localhost:8080/as

Send

Params Authorization Headers (9) Body Pre-request Script Tests Settings

Cookies

none form-data x-www-form-urlencoded raw binary GraphQL JSON

Beautify

```
1 {
2     "atributo1": "Atributo 13",
3     "atributo2": 3.77,
4     "atributo3": "2020-03-20T19:51:09Z",
5     "atributo4": 3
6 }
```

Body Cookies Headers (6) Test Results

Status: 201 Created Time: 151 ms Size: 307 B Save Response

Pretty Raw Preview Visualize JSON

```
1 {
2     "id": 3,
3     "atributo1": "Atributo 13",
4     "atributo2": 3.77,
5     "atributo3": "2020-03-20T19:51:09Z",
6     "atributo4": 3
7 }
```

Código HTTP: **201 – Created**

Específico para inserções de novos Itens.

Testando a aplicação

Registro inserido no slide anterior

GET http://localhost:80...

No Environment

http://localhost:8080/as

Save

GET http://localhost:8080/as Send

Params Authorization Headers (9) Body Pre-request Script Tests Settings Cookies

none form-data x-www-form-urlencoded raw binary GraphQL JSON Beautify

```
1 {
2     "atributo1": "Atributo 13",
3     "atributo2": 3.77,
4     "atributo3": "2020-03-20T19:51:09Z",
5     "atributo4": 3
6 }
```

Body Cookies Headers (5) Test Results Status: 200 OK Time: 330 ms Size: 468 B Save Response

Pretty Raw Preview Visualize JSON

```
1  [
2      {
3          "id": 1,
4          "atributo1": "Atributo 11",
5          "atributo2": 7.77,
6          "atributo3": "2021-06-16T00:13:24Z",
7          "atributo4": 7
8      },
9      {
10         "id": 2,
11         "atributo1": "Atributo 12",
12         "atributo2": 2.77,
13         "atributo3": "2020-07-20T19:51:09Z",
14         "atributo4": 2
15     },
16     {
17         "id": 3,
18         "atributo1": "Atributo 13",
19         "atributo2": 3.77,
20         "atributo3": "2020-03-20T19:51:09Z",
21         "atributo4": 3
22     }
23 ]
```

Excluindo objetos da classe A

```java
@Service
public class ServicoA {

    // Fazendo a Injeção de Dependência
    @Autowired
    private RepositorioA repositorio;

    public List<A> obterTodos(){..

    public A obterPorId(Long id) {..

    public A inserir(A a) {..

    public void excluir(Long id) {
        repositorio.deleteById(id);
    }
}
```

```java
@RestController
@RequestMapping(value = "/as")
public class RecursoA {

    private ServicoA servico;..

    public ResponseEntity<List<A>> obterTodos(){..

    public ResponseEntity<A> obterPorId(@PathVariable Long id){..

    public ResponseEntity<A> inserir(@RequestBody A a){..

    @DeleteMapping(value = "/{id}")
    public ResponseEntity<Void> excluir(@PathVariable Long id){
        servico.excluir(id);
        return ResponseEntity.noContent().build();
    }
}
```

Testando a aplicação

GET localhost:8080/as | DEL localhost:8080/as/1 | No Environment

localhost:8080/as | Save

GET | localhost:8080/as | Send

Params | Authorization | Headers (6) | Body | Pre-request Script | Tests | Settings | Cookies

Query Params

KEY	VALUE	DESCRIPTION	Bulk Edit
Key	Value	Description	

Body | Cookies | Headers (5) | Test Results | Status: 200 OK | Time: 698 ms | Size: 367 B | Save Response

Pretty | Raw | Preview | Visualize | JSON


```
[
    {
        "id": 1,
        "atributo1": "Atributo 11",
        "atributo2": 7.77,
        "atributo3": "2021-06-17T12:03:10Z",
        "atributo4": 7
    },
    {
        "id": 2,
        "atributo1": "Atributo 12",
        "atributo2": 2.77,
        "atributo3": "2020-07-20T19:51:09Z",
        "atributo4": 2
    }
]
```


Vamos excluir o registro de id = 1

Testando a aplicação

DEL localhost:8080/as/1

No Environment

localhost:8080/as/1

Save

DELETE localhost:8080/as/1

Send

Params Authorization Headers (6) Body Pre-request Script Tests Settings Cookies

Query Params

KEY	VALUE	DESCRIPTION	Bulk Edit
Key	Value	Description	

Body Cookies Headers (3) Test Results

Status: 204 No Content Time: 161 ms Size: 112 B Save Response

Pretty Raw Preview Visualize Text

1

```
@DeleteMapping(value = "/{id}")
public ResponseEntity<Void> excluir(@PathVariable Long id){
    servico.excluir(id);
    return ResponseEntity.noContent().build();
}
```

Testando a aplicação

GET localhost:8080/as/

No Environment

localhost:8080/as/

Save

GET localhost:8080/as/

Send

Params Authorization Headers (6) Body Pre-request Script Tests Settings Cookies

Query Params

KEY	VALUE	DESCRIPTION	Bulk Edit
Key	Value	Description	

Body Cookies Headers (5) Test Results

Status: 200 OK Time: 23 ms Size: 266 B Save Response

Pretty Raw Preview Visualize JSON


```
[
    {
        "id": 2,
        "atributo1": "Atributo 12",
        "atributo2": 2.77,
        "atributo3": "2020-07-20T19:51:09Z",
        "atributo4": 2
    }
]
```


Registro de id = 1 excluído

Atualizando objetos da classe A

```java
@Service
public class ServicoA {

    // Fazendo a Injeção de Dependência
    @Autowired
    private RepositorioA repositorio;

    public List<A> obterTodos(){..

    public A obterPorId(Long id) {..

    public A inserir(A a) {..

    public void excluir(Long id) {..

    public A update(Long id, A objeto_alterado) {
        A a = repositorio.getById(id);
        atualizarDados(a, objeto_alterado);
        return repositorio.save(a);
    }

    public void atualizarDados(A destino, A origem) {
        destino.setAtributo1(origem.getAtributo1());
        destino.setAtributo2(origem.getAtributo2());
        destino.setAtributo3(origem.getAtributo3());
        destino.setAtributo4(origem.getAtributo4());
    }
}
```

```java
@RestController
@RequestMapping(value = "/as")
public class RecursoA {

    private ServicoA servico;..

    public ResponseEntity<List<A>> obterTodos(){..

    public ResponseEntity<A> obterPorId(@PathVariable Long id){..

    public ResponseEntity<A> inserir(@RequestBody A a){..

    public ResponseEntity<Void> excluir(@PathVariable Long id){..

    @PutMapping(value = "/{id}")
    public ResponseEntity<A> update(@PathVariable Long id, @RequestBody A obj){
        obj = servico.update(id, obj);
        return ResponseEntity.ok().body(obj);
    }
}
```

Testando a aplicação

GET localhost:8080/as/ | PUT localhost:8080/as/2 | No Environment

localhost:8080/as/ | Save

GET | localhost:8080/as/ | Send

Params | Authorization | Headers (6) | Body | Pre-request Script | Tests | Settings | Cookies

Query Params

KEY	VALUE	DESCRIPTION	Bulk Edit
Key	Value	Description	

Body | Cookies | Headers (5) | Test Results | Status: 200 OK | Time: 592 ms | Size: 367 B | Save Response

Pretty | Raw | Preview | Visualize | JSON


```
[
    {
        "id": 1,
        "atributo1": "Atributo 11",
        "atributo2": 7.77,
        "atributo3": "2021-06-17T12:39:12Z",
        "atributo4": 7
    },
    {
        "id": 2,
        "atributo1": "Atributo 12",
        "atributo2": 2.77,
        "atributo3": "2020-07-20T19:51:09Z",
        "atributo4": 2
    }
]
```


Registro que será alterado

Testando a aplicação

```java
@PutMapping(value = "/{id}")
public ResponseEntity<A> update(@PathVariable Long id, @RequestBody A obj){
    obj = servico.update(id, obj);
    return ResponseEntity.ok().body(obj);
}
```

GET localhost:8080/as/ | PUT localhost:8080/as/2 | No Environment

localhost:8080/as/2 | Save

PUT | localhost:8080/as/2 | Send

Params | Authorization | Headers (8) | Body | Pre-request Script | Tests | Settings | Cookies

none | form-data | x-www-form-urlencoded | raw | binary | GraphQL | JSON | Beautify

```
1 {
2     "atributo1": "Atributo 8",
3     "atributo2": 8.77,
4     "atributo3": "2028-07-20T19:51:09Z",
5     "atributo4": 8
6 }
```

Body | Cookies | Headers (5) | Test Results | Status: 200 OK | Time: 177 ms | Size: 263 B | Save Response

Pretty | Raw | Preview | Visualize | JSON

```
1 {
2     "id": 2,
3     "atributo1": "Atributo 8",
4     "atributo2": 8.77,
5     "atributo3": "2028-07-20T19:51:09Z",
6     "atributo4": 8
7 }
```

Testando a aplicação

GET localhost:8080/as/ | PUT localhost:8080/as/2 | No Environment

localhost:8080/as/ | Save

GET | localhost:8080/as/ | Send

Params | Authorization | Headers (6) | Body | Pre-request Script | Tests | Settings | Cookies

Query Params

KEY	VALUE	DESCRIPTION	Bulk Edit
Key	Value	Description	

Body | Cookies | Headers (5) | Test Results | Status: 200 OK | Time: 19 ms | Size: 366 B | Save Response

Pretty | Raw | Preview | Visualize | JSON


```
[
    {
        "id": 1,
        "atributo1": "Atributo 11",
        "atributo2": 7.77,
        "atributo3": "2021-06-17T12:39:12Z",
        "atributo4": 7
    },
    {
        "id": 2,
        "atributo1": "Atributo 8",
        "atributo2": 8.77,
        "atributo3": "2028-07-20T19:51:09Z",
        "atributo4": 8
    }
]
```


Registro alterado

Dúvidas?