Web
Java servlets

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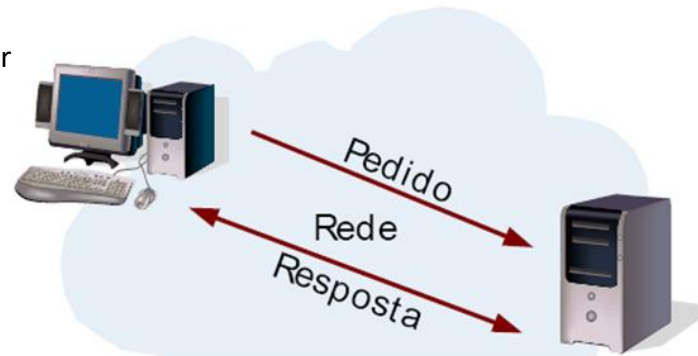DCT DEPARTAMENTO **CIÊNCIA E TECNOLOGIA**

UPT UNIVERSIDADE PORTUCALENSE

Funcionamento das Servlets

(1) **Cliente**
faz uma requisição HTTP ao servidor
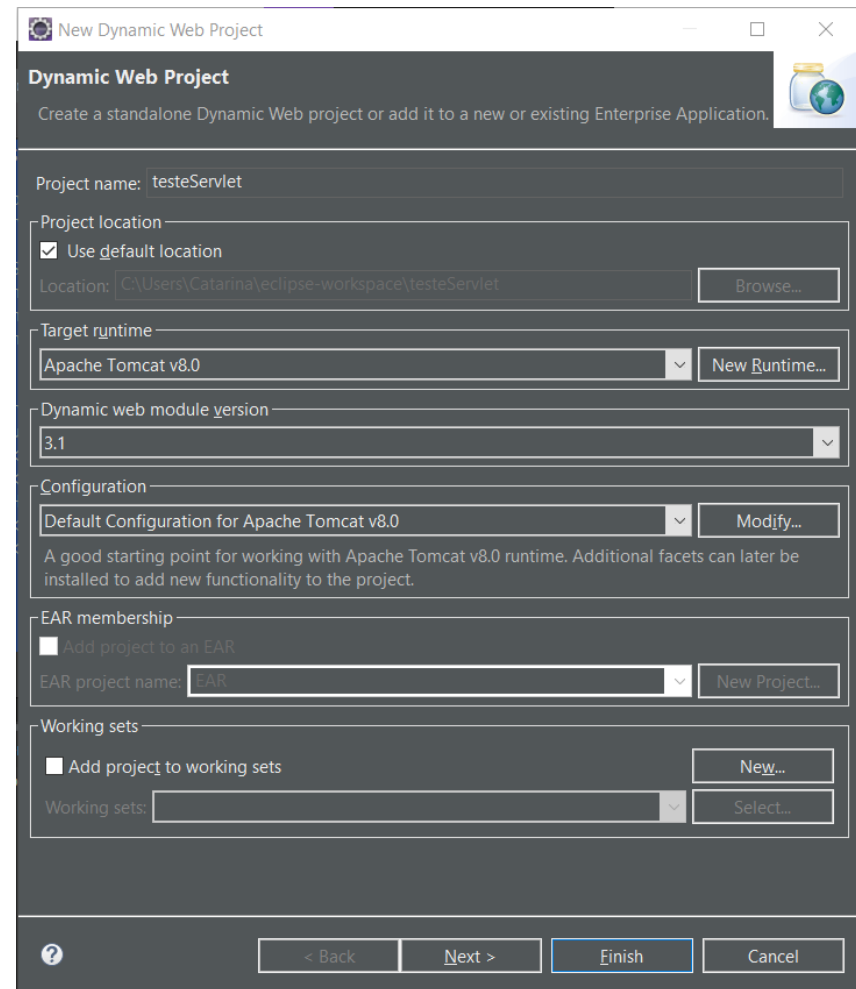
(3) **Cliente**
Recebe a resposta e mostra-a

(2) **Servlet**
Recebe o pedido, trata-o e responde ao cliente

Pedido
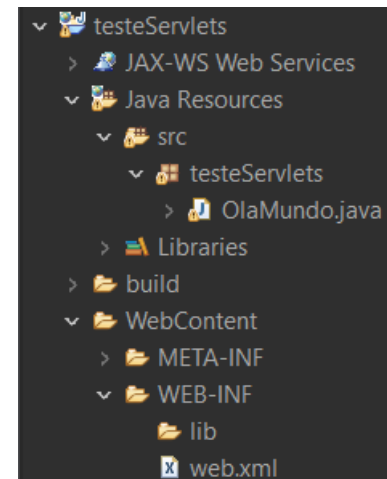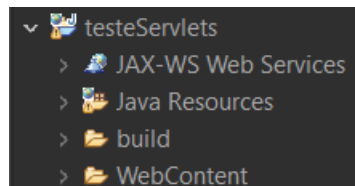
Rede

Resposta

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Criação

No Eclipse:
1. File > New
2. Web > Dynamic Web Project
3. Introduzir o nome
4. Escolher o target runtime
5. Escolher o Dynamic web module version
6. Finish

Estrutura do Projeto
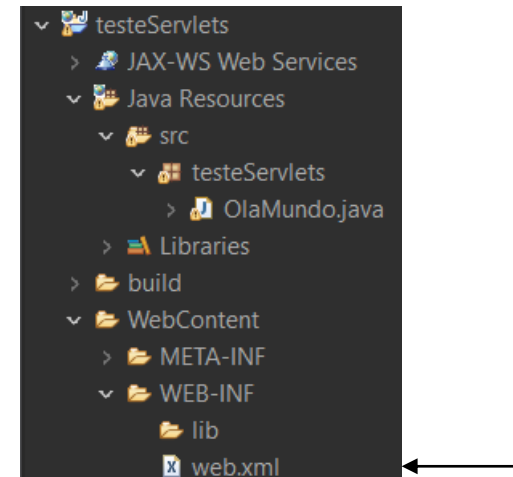
Estrutura do Servlet (exemplo 0)

Ficheiro OlaMundo.java

```
1   package testeServlets;
2
3   import java.io.IOException;
4   import java.io.PrintWriter;
5
6   import javax.servlet.ServletException;
7   import javax.servlet.http.HttpServlet;
8   import javax.servlet.http.HttpServletRequest;
9   import javax.servlet.http.HttpServletResponse;
10
11  public class OlaMundo extends HttpServlet {
12      protected void service (HttpServletRequest request,HttpServletResponse response) throws ServletException, IOException {
13          PrintWriter out = response.getWriter();
14          out.println("<html>");
15          out.println("<body>");
16          out.println("Hello World");
17          out.println("</body>");
18          out.println("</html>");
19      }
20  }
```

```
v 🗄 testeServlets
  > 🌐 JAX-WS Web Services
  v 🗄 Java Resources
    v 🗁 src
      v 🗁 testeServlets
        > 📄 OlaMundo.java
    > 🗁 Libraries
  > 📁 build
  v 📁 WebContent
    > 📁 META-INF
    v 📁 WEB-INF
      📁 lib
      🗎 web.xml
```

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Mapeamento do Servlet (exemplo 0)

Ficheiro web.xml


```xml
1  <?xml version="1.0" encoding="ISO-8859-1"?>
2
3  <!DOCTYPE web-app
4       PUBLIC "-//Sun Microsystems, Inc.//DTD Web Application 2.3//EN"
5       "http://java.sun.com/dtd/web-app_2_3.dtd">
6
7  <web-app>
8      <servlet>
9          <servlet-name>olaServlet</servlet-name>
10         <servlet-class>testeServlets.OlaMundo</servlet-class>
11     </servlet>
12     <servlet-mapping>
13         <servlet-name>olaServlet</servlet-name>
14         <url-pattern>/olaMundo</url-pattern>
15     </servlet-mapping>
16 </web-app>
```
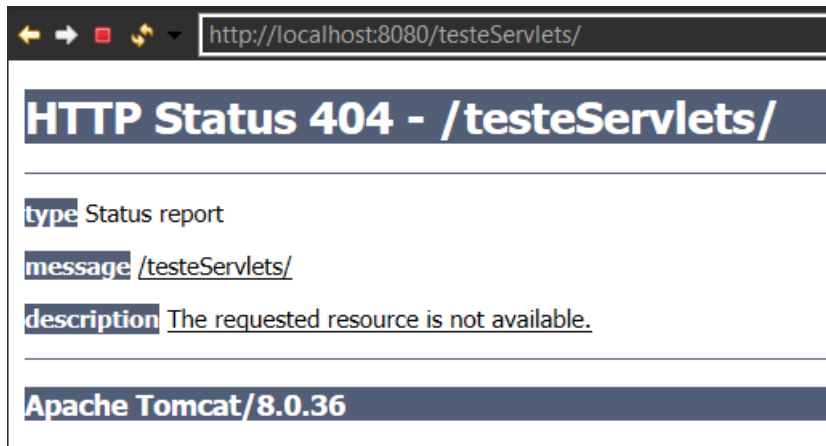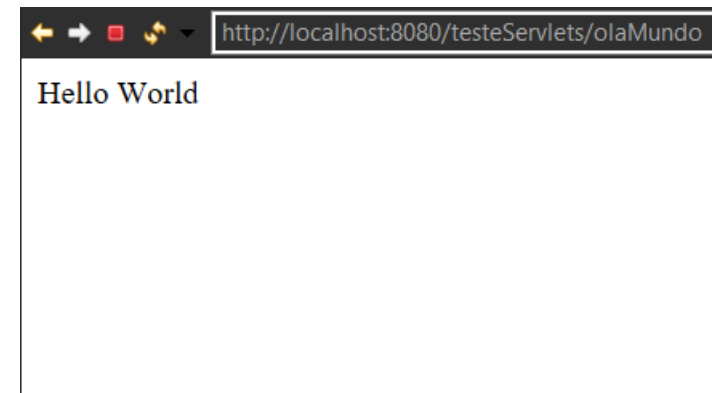
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Execução (exemplo 0)

1. Clicar com o botão direito do rato no nome do projeto
2. Run > Run on Server
3. Finish

No eclipse aparece:

Alterando o URL para http://localhost:8080/testeServlets/olaMundo:

← → ■ ↻ ▾ | http://localhost:8080/testeServlets/

HTTP Status 404 - /testeServlets/

type Status report

message /testeServlets/

description The requested resource is not available.

Apache Tomcat/8.0.36

← → ■ ↻ ▾ | http://localhost:8080/testeServlets/olaMundo

Hello World

(acessível em qualquer browser)

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Exemplo 1

```java
public class Person {
    private String name;
    private double height;
    private double weight;

    public Person(String name, double height, double weight) {
        super();
        this.name = name;
        this.height = height;
        this.weight = weight;
    }

    public double imc() {
        return weight/(height*height);
    }

    @Override
    public String toString() {
        return "Person [name=" + name + ", height=" + height + ", weight=" + weight + "]";
    }

    public String getName() {
        return name;
    }

    public void setName(String name) {
        this.name = name;
    }

    public double getHeight() {
        return height;
    }

    public void setHeight(double height) {
        this.height = height;
    }

    public double getWeight() {
        return weight;
    }

    public void setWeight(double weight) {
        this.weight = weight;
    }
}
```
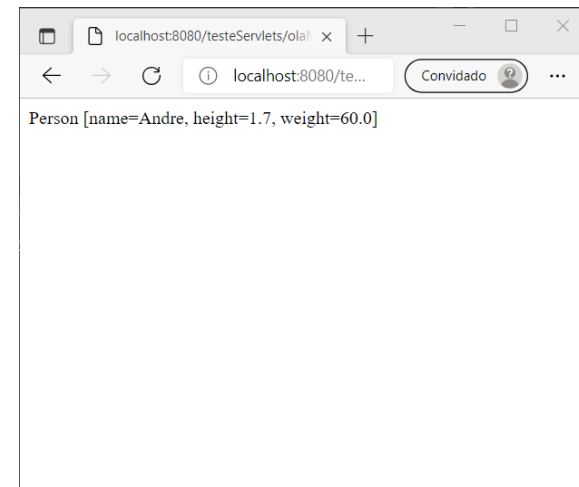
```java
public class OlaMundo extends HttpServlet {
    protected void service (HttpServletRequest request,HttpServletResponse response)
        throws ServletException, IOException {

        Person p = new Person("Andre", 1.70, 60);

        PrintWriter out = response.getWriter();
        out.println("<html>");
        out.println("<body>");
        out.println(p);
        out.println("</body>");
        out.println("</html>");
    }
}
```

localhost:8080/testeServlets/ola × +

localhost:8080/te...   Convidado

Person [name=Andre, height=1.7, weight=60.0]
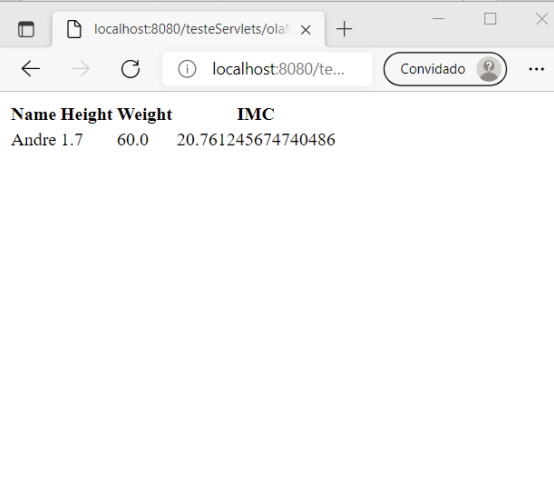
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Exemplo 2

```java
public class OlaMundo extends HttpServlet {
    protected void service (HttpServletRequest request,HttpServletResponse response)
        throws ServletException, IOException {

        Person p = new Person("Andre", 1.70, 60);

        PrintWriter out = response.getWriter();
        out.println("<html>");
        out.println("<body>");
        out.println("<table>");
        out.println("<tr><th>Name</th><th>Height</th><th>Weight</th><th>IMC</th></tr>");
        out.print("<tr>");
        out.print("<td>" + p.getName() + "</td>");
        out.print("<td>" + p.getHeight() + "</td>");
        out.print("<td>" + p.getWeight() + "</td>");
        out.print("<td>" + p.imc() + "</td>");
        out.print("</tr>");
        out.println("</table>");
        out.println("</body>");
        out.println("</html>");
    }
}
```
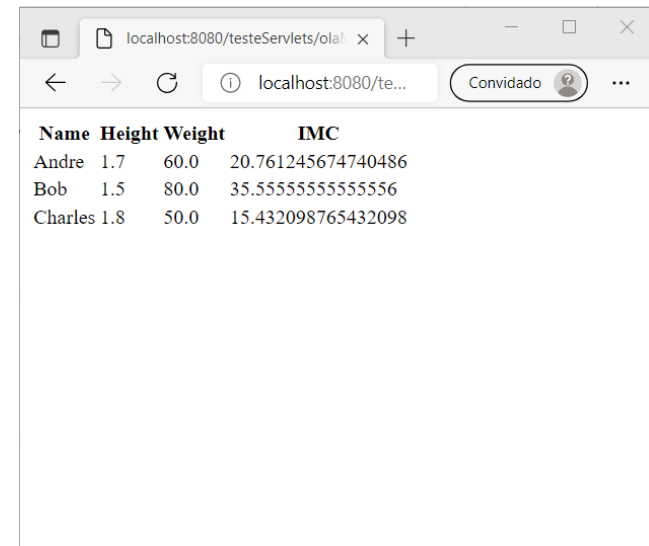
Name	Height	Weight	IMC
Andre	1.7	60.0	20.761245674740486

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Exemplo 3

```java
public class OlaMundo extends HttpServlet {
    protected void service (HttpServletRequest request,HttpServletResponse response)
        throws ServletException, IOException {

        ArrayList<Person> persons = new ArrayList<Person>();
        persons.add(new Person("Andre", 1.70, 60));
        persons.add(new Person("Bob", 1.50, 80));
        persons.add(new Person("Charles", 1.80, 50));

        PrintWriter out = response.getWriter();
        out.println("<html>");
        out.println("<head>");
        out.println("</head>");
        out.println("<body>");
        out.println("<table>");
        out.println("<tr><th>Name</th><th>Height</th><th>Weight</th><th>IMC</th></tr>");
        for(Person p: persons) {
            out.print("<tr>");
            out.print("<td>" + p.getName() + "</td>");
            out.print("<td>" + p.getHeight() + "</td>");
            out.print("<td>" + p.getWeight() + "</td>");
            out.print("<td>" + p.imc() + "</td>");
            out.println("</tr>");
        }
        out.println("</table>");
        out.println("</body>");
        out.println("</html>");
    }
}
```
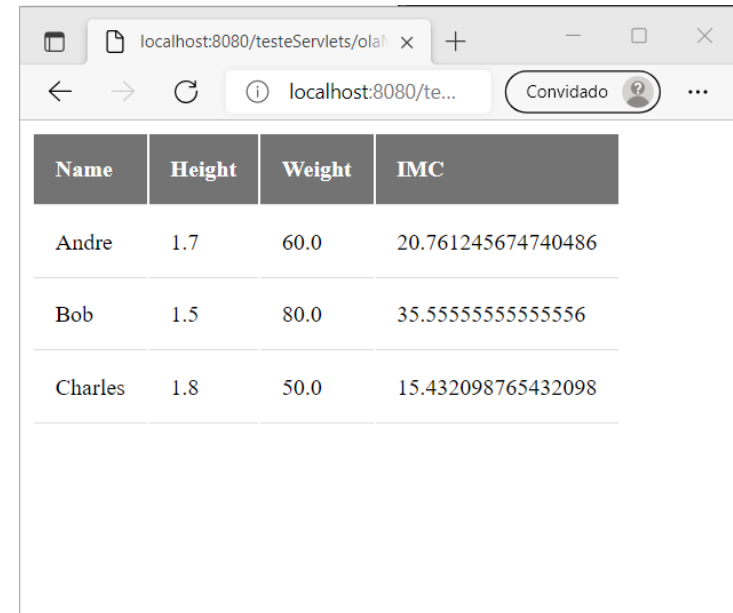
localhost:8080/testeServlets/ola

localhost:8080/te...   Convidado

Name	Height	Weight	IMC
Andre	1.7	60.0	20.761245674740486
Bob	1.5	80.0	35.55555555555556
Charles	1.8	50.0	15.432098765432098

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Exemplo 4

```java
public class OlaMundo extends HttpServlet {
    protected void service (HttpServletRequest request,HttpServletResponse response)
        throws ServletException, IOException {

        ArrayList<Person> persons = new ArrayList<Person>();
        persons.add(new Person("Andre", 1.70, 60));
        persons.add(new Person("Bob", 1.50, 80));
        persons.add(new Person("Charles", 1.80, 50));

        PrintWriter out = response.getWriter();
        out.println("<html>");
        out.println("<head>");
        out.println("<link rel='stylesheet' href='css/style.css'>");
        out.println("</head>");
        out.println("<body>");
        out.println("<table>");
        out.println("<tr><th>Name</th><th>Height</th><th>Weight</th><th>IMC</th></tr>");
        for(Person p: persons) {
            out.print("<tr>");
            out.print("<td>" + p.getName() + "</td>");
            out.print("<td>" + p.getHeight() + "</td>");
            out.print("<td>" + p.getWeight() + "</td>");
            out.print("<td>" + p.imc() + "</td>");
            out.println("</tr>");
        }
        out.println("</table>");
        out.println("</body>");
        out.println("</html>");
    }
}
```
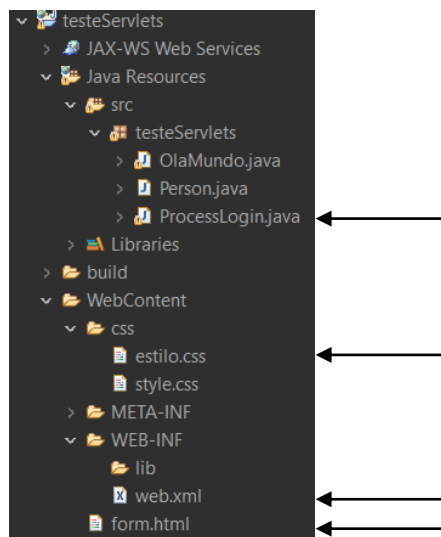
Name	Height	Weight	IMC
Andre	1.7	60.0	20.761245674740486
Bob	1.5	80.0	35.55555555555556
Charles	1.8	50.0	15.432098765432098

```css
th {
    background-color:  #737373;
    color: white;
}

th, td {
    padding: 15px;
    text-align: left;
    border-bottom: 1px solid #ddd;
}
```

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Exemplo 5

```
testeServlets
  JAX-WS Web Services
  Java Resources
    src
      testeServlets
        OlaMundo.java
        Person.java
        ProcessLogin.java  ←——————
    Libraries
  build
  WebContent
    css
      estilo.css  ←——————
      style.css
    META-INF
    WEB-INF
      lib
      web.xml  ←——————
    form.html  ←——————
```

```css
1  p, legend, label {
2          font-style: italic;
3  }
4
5  input[type=email] {
6          height: 20px;
7  }
8
9  input[type=password] {
10         height: 20px;
11 }
12
13 button {
14         height: 30px;
15         color: white;
16         font-style: italic;
17         font-weight: bold;
18         border-radius: 12px;
19 }
20
21 button[type=submit] {
22         background-color: #1f5709;
23 }
```

```java
1  public class ProcessLogin  extends HttpServlet {
2      protected void service (HttpServletRequest request,HttpServletResponse response)
3          throws ServletException, IOException {
4
5          response.setContentType("text/html");
6          PrintWriter out = response.getWriter();
7
8          String email = request.getParameter("email");
9          String passwd = request.getParameter("password");
10
11         out.println("<html>");
12         out.println("<head>");
13         out.println("<link rel='stylesheet' href='css/style.css'>");
14         out.println("</head>");
15         out.println("<body>");
16         out.println("<b>=== Tentativa de login ===</b><br>");
17         out.println("<b>Email:</b> " + email + "<br>");
18         out.println("<b>Password:</b> " + passwd + "<br>");
19         out.println("</body>");
20         out.println("</html>");
21         out.close();
22     }
23 }
```

```html
1  <html>
2      <head>
3          <title>Login</title>
4          <link rel="stylesheet" href="css/estilo.css">
5      </head>
6      <body>
7          <p> Introduzir dados de login </p>
8          <form action="processLogin" method="post">
9              <fieldset>
10                 <legend>Dados Pessoais:</legend>
11                 <label>Email:</label><br>
12                 <input name="email" type="email"><br>
13                 <label>Password:</label><br>
14                 <input name="password" type="password"><br>
15                 <button type="submit">Login</button>
16             </fieldset>
17         </form>
18     </body>
19 </html>
```

```xml
1  <?xml version="1.0" encoding="ISO-8859-1"?>
2
3  <!DOCTYPE web-app
4      PUBLIC "-//Sun Microsystems, Inc.//DTD Web Application 2.3//EN"
5      "http://java.sun.com/dtd/web-app_2_3.dtd">
6
7  <web-app>
8      <servlet>
9          <servlet-name>loginServlet</servlet-name>
10         <servlet-class>testeServlets.ProcessLogin</servlet-class>
11     </servlet>
12     <servlet-mapping>
13         <servlet-name>loginServlet</servlet-name>
14         <url-pattern>/processLogin</url-pattern>
15     </servlet-mapping>
16 </web-app>
```
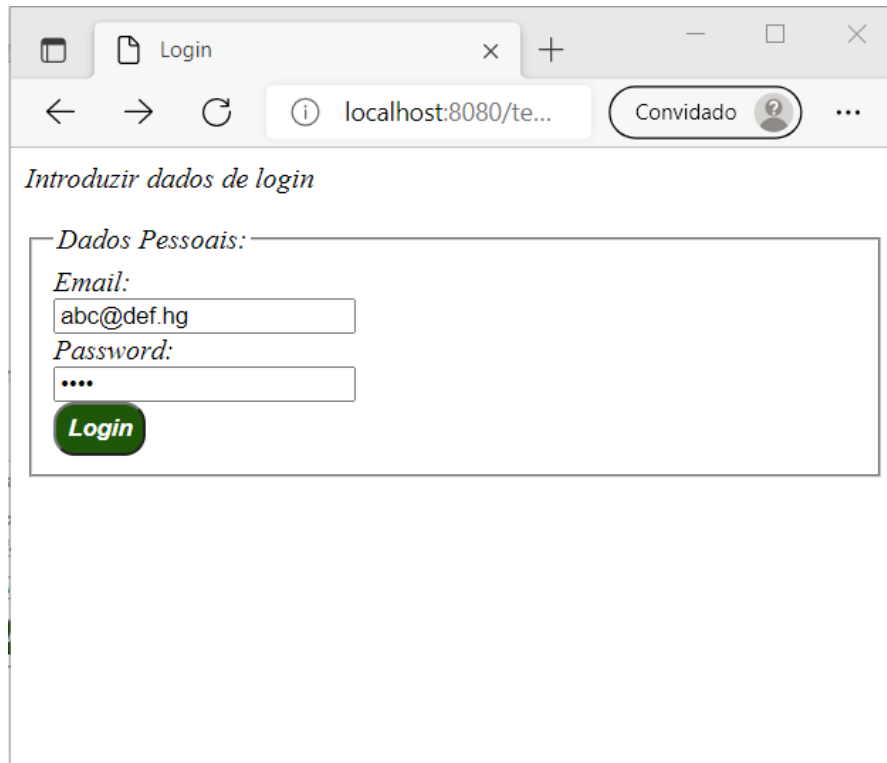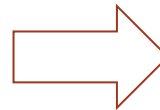
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Exemplo 5

Do conhecimento à prática.