

ws-eclipse - course/src/application/Program.java - Eclipse

File Edit Source Refactor Navigate Search Project Run Window Help

Quick Access

Package Explorer X

course

JRE System Library [JavaS]

src

application

Program.java

```
public static void main(String[] args) {
    method1();
    System.out.println("End of program");
}
```

Problems Javadoc Declaration Console X Coverage

Program (1) [Java Application] C:\Program Files\Java\jre-10.0.1\bin\javaw.exe (4 de jun de 2018 22:18:44)

\*\*\*METHOD1 START\*\*\*

\*\*\*METHOD2 START\*\*\*

Alex Maria Bob

5

Invalid position!

java.lang.ArrayIndexOutOfBoundsException: 5

at application.Program.method2(Program.java:28)

at application.Program.method1(Program.java:17)

at application.Program.main(Program.java:10)

21:01

54%

```
package application;

import java.util.Locale;
import java.util.Scanner;

public class Program {

    public static void main(String[] args) {

        Locale.setDefault(Locale.US);
        Scanner sc = new Scanner(System.in);

        int n = sc.nextInt();
        double[] vect = new double[n];

        for (int i=0; i<n; i++) {
            vect[i] = sc.nextDouble();
        }

        double sum = 0.0;
        for (int i=0; i<n; i++) {
            sum += vect[i];
        }
        double avg = sum / n;

        System.out.printf("AVERAGE HEIGHT: %.2f\n", avg);

        sc.close();
    }
}
```

21:00



54%

ws-eclipse - course/src/application/Program.java - Eclipse

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Package Explorer

- course
  - Java System Library (JavaSE-10)
- src
  - application
    - Program.java

```
14     double[] vect = new double[n];
15
16     for (int i=0; i<n; i++) {
17         vect[i] = sc.nextDouble();
18     }
19
20     double sum = 0.0;
21     for (int i=0; i<n; i++) {
22         sum += vect[i];
23     }
24     double avg = sum / n;
25
26     System.out.printf("AVERAGE HEIGHT: %.2f%n" + avg);
27
28     sc.close();
29 }
```

Problems JavaDoc Declarations  Coverage  
<terminated> Program (1) [Java Application] C:\Program Files\Java\jre-10.0.1\bin\javaw.exe (29 de maio de 2018 19:43:04)

3  
1.72  
1.56  
1.80

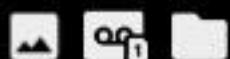
AVERAGE HEIGHT: 1.6900000000000002

Writable

Smart Insert

26:51

21:00



54%

ws-eclipse - course/src/application/Program.java - Eclipse

File Edit Source Refactor Navigate Search Project Run Window Help

Quick Access

Package Explorer

- course
  - Java System Library [javaSE-10]
- src
  - application
    - Program.java

```
11     scanner sc = new Scanner(System.in);  
12  
13     int n = sc.nextInt();  
14     double[] vect = new double[n];  
15  
16     for (int i=0; i<n; i++) {  
17         vect[i] = sc.nextDouble();  
18     }  
19
```

Problems JavaDoc Declaration Console Coverage

<terminated> Program (1) [Java Application] C:\Program Files\Java\jre-10.0.1\bin\javaw.exe (29 de maio de 2018 19:42:04)

```
3  
1.72  
1.56  
1.80
```

AVERAGE HEIGHT: 1.6933333333333334

20:59

54%

ws-eclipse - course/src/application/Program.java - Eclipse

File Edit Source Refactor Navigate Search Project Run Window Help

Quick Access

Package Explorer

course  
  > RE System Library [javase-10]  
  src  
    application  
      > Program.java

```
11     Scanner sc = new Scanner(System.in);
12
13     int n = sc.nextInt();
14     double[] vect = new double[n];
15
16     for (int i=0; i<n; i++) {
17         vect[i] = sc.nextDouble();
18     }
19
20     double sum = 0.0;
21     for (int i=0; i<n; i++) {
22         sum += vect[i];
23     }
24     double avg = sum / n;
25
26     System.out.println("AVERAGE HEIGHT: " + avg);
27
28     sc.close();
```

Problems Javadoc Declaration Console Coverage

<terminated> Program (1) [Java Application] C:\Program Files\Java\jre-10.0.1\bin\javaw.exe (29 de mai de 2018 19:37:14)

3  
1.72  
1.65  
1.80

Writable Smart Insert 27:1

20:59



54%

ws-eclipse - course/src/application/Program.java - Eclipse

File Edit Source Refactor Navigate Search Project Run Window Help

The screenshot shows the Eclipse IDE interface with the following details:

- Top Bar:** Displays the time (20:59), battery level (54%), and system icons.
- Menu Bar:** File, Edit, Source, Refactor, Navigate, Search, Project, Run, Window, Help.
- Toolbar:** Standard Eclipse toolbar with icons for file operations, search, and run.
- Package Explorer:** Shows the project structure:
  - course (selected)
  - > JRE System Library [javaSE-10]
  - src
    - application
    - > Program.java
- Code Editor:** The file "Program.java" is open, showing the following Java code:

```
11     Scanner sc = new Scanner(System.in);
12
13     int n = sc.nextInt();
14     double[] vect = new double[n];
15
16     for (int i=0; i<n; i++) {
17         vect[i] = sc.nextDouble();
18     }
19
20     double sum = 0.0;
21     for (int i=0; i<n; i++) {
22         sum += vect[i];
23     }
24
25     sc.close();
26 }
27 }
28 }
```
- Console:** Shows the output of the program:

```
3
1.72
1.65
1.80
```

Problems Javadoc Declaration Console Coverage

&lt;terminated&gt; Program (1) [Java Application] C:\Program Files\Java\jre-10.0.1\bin\javaw.exe (29 de mai de 2018 19:37:14)

3  
1.72  
1.65  
1.80

Writable

Smart Insert

22:13

20:56

55%

ws-eclipse - course/src/application/Program.java - Eclipse

File Edit Source Refactor Navigate Search Project Run Window Help

Quick Access

Package Explorer

course

src

application

Program.java

```
* Program.java
1 import java.util.Locale;
2 import java.util.Scanner;
3
4 public class Program {
5
6     public static void main(String[] args) {
7
8         Locale.setDefault(Locale.US);
9         Scanner sc = new Scanner(System.in);
10
11         int n = sc.nextInt();
12         double[] vect = new double[n];
13
14         for (int i=0; i<n; i++) {
15             vect[i] = sc.nextDouble();
16         }
17
18         sc.close();
19
20
21     }
22 }
23 }
```

Problems Issues Declaration Console

No consoles to display at this time.

Writable Smart Insert 17:29

POI F9 19:15  
PTB2 26/05/2018



```
1 package app;
2
3 import java.time.LocalDate;
4
5 public class Program {
6
7     public static void main(String[] args) {
8
9         LocalDate d01 = LocalDate.now();
10
11        System.out.println(d01);
12
13    }
14
15 }
```

2022-07-23



```
1 package app;
2
3 import java.time.LocalDate;
4 import java.time.LocalDateTime;
5
6 public class Program {
7
8     public static void main(String[] args) {
9
10         LocalDate d01 = LocalDate.now();
11         LocalDateTime d02 = LocalDateTime.now();
12
13         System.out.println("d01 = " + d01);
14         System.out.println("d02 = " + d02);
15
16     }
17 }
```

d01 = 2022-07-23  
d02 = 2022-07-23T18:35:48.586963400



```
public class Program {  
    public static void main(String[] args) {  
        LocalDate d01 = LocalDate.now();  
        LocalDateTime d02 = LocalDateTime.now();  
        Instant d03 = Instant.now();  
  
        LocalDate d04 = LocalDate.parse("2022-07-20");  
  
        System.out.println("d01 = " + d01);  
        System.out.println("d02 = " + d02);  
        System.out.println("d03 = " + d03);  
    }  
}  
d01 = 2022-07-23  
d02 = 2022-07-23T18:36:48.482399300  
d03 = 2022-07-23T21:36:48.483398900Z
```



```
public class Program {
    public static void main(String[] args) {
        LocalDate d01 = LocalDate.now();
        LocalDateTime d02 = LocalDateTime.now();
        Instant d03 = Instant.now();

        LocalDate d04 = LocalDate.parse("2022-07-20");
        LocalDateTime d05 = LocalDateTime.parse("2022-07-20T");

        System.out.println("d01 = " + d01);
        System.out.println("d02 = " + d02);
        System.out.println("d03 = " + d03);
        System.out.println("d04 = " + d04);
    }
}
```

```
d01 = 2022-07-23
d02 = 2022-07-23T18:39:39.103209900
d03 = 2022-07-23T21:39:39.1032099002
d04 = 2022-07-20
```

16:53



59%

projects - JavaEE Application - Spring Boot Project

File Edit Source Refactor Design Search Project Run Window Help

Package Explorer X

src

- mule

- m JRE System Library (javaSE-17)

+ app

Program.java

```
public static void main(String[] args) {
    localDate d01 = localDate.now();
    LocalDateTime d02 = LocalDateTime.now();
    Instant d03 = Instant.now();

    LocalDate d04 = LocalDate.parse("2022-07-20");
    LocalDateTime d05 = localDateTime.parse("2022-07-20T01:30:26");

    System.out.println("d01 = " + d01.toString());
    System.out.println("d02 = " + d02.toString());
    System.out.println("d03 = " + d03.toString());
    System.out.println("d04 = " + d04.toString());
    System.out.println("d05 = " + d05.toString());
}
```

Run Dashboard X

Build

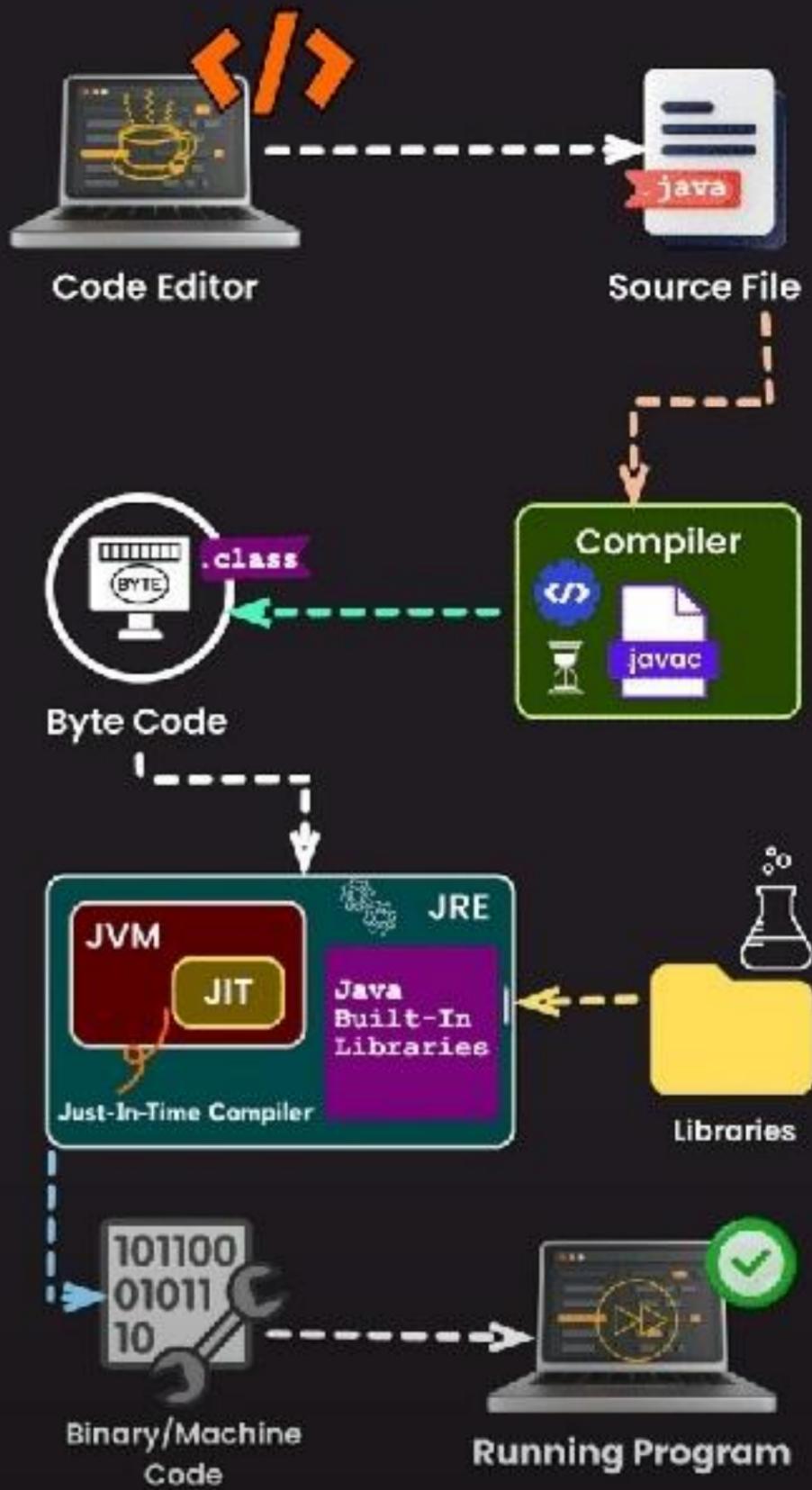
Problems Available Declaration Console

```
d01 = 2022-07-23
d02 = 2022-07-23T18:41:54.284389
d03 = 2022-07-23T21:41:54.284389Z
d04 = 2022-07-20
d05 = 2022-07-20T01:30:26
```

Java EE IDE 17 - editor.java - Run - editor.html - 0.0.5.27.0.1 (44-bit) - English - Dark Intense



# Java



**Comece já**

## Java Devs Brasil

Paulo Basto • 3º e +

54 min •

:

A dica de hoje é para você que está em transição de carreira ou buscando novas oportunidades de trabalho para o mês de agosto: segue lista dos SITES com VAGAS EM HOME OFFICE!!

Aproveite para conferir as vagas disponíveis!

- 1 - Authentic Jobs: <https://authenticjobs.com/>
- 2 - Virtual Vocations: <https://lnkd.in/g2Z-Uet2>
- 3 - Wework: [https://lnkd.in/gd5\\_KEkB](https://lnkd.in/gd5_KEkB)
- 4 - Remotar Jobs: <https://remotar.com.br>
- 5 - Jobatus Brasil: <https://lnkd.in/dA2Th9sP>
- 6 - UpWork: <https://www.upwork.com/>
- 7 - AngelList: <https://wellfound.com/>
- 8 - Remoteok: <https://remoteok.com/>
- 9 - Working Nomads: <https://lnkd.in/dpuPewwT>
- 10 - Jobspresso: <https://jobspresso.co/>

Além disso, preparei alguns cursos pagos para você que precisa aprender novas habilidades que as empresas estão pedindo nas vagas.

Cursos com desconto de até 80%

Curso Excel e PowerBi

<https://lnkd.in/dMCJakKn>

ExcelProfissional com Técnicas e Apresentações Avançadas

<https://lnkd.in/d28vq9rU>

Curso de inspetor de Qualidade e Analista de qualidade

<https://lnkd.in/dFe6CdgW>

Curso Analista de Logística

<https://lnkd.in/d-NSWXK2>

Curso de Lançamentos Contábeis

<https://lnkd.in/dgJIDHsRb>





2

Fill in the blanks to declare a method that takes one argument of type int and returns the factorial of that number. The factorial is the product of all whole numbers from 1 to the given number.

```
static int fact( int num) {
```

```
    int res = 1;
```

```
    for(int x=1; x <= num; x++) {
```

```
        res *= x ;
```

```
}
```

```
return res;
```

```
}
```

ANSWER

CHECK



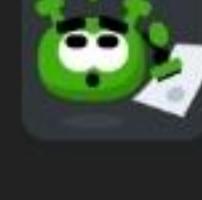
[Bot](#)

## PROBLEM

## CODE

## RESULT

```
1 import java.util.Scanner;
2
3 public class Program {
4     //your code goes here
5
6     String bot(int x){
7         |
8         if (x == 1){
9             return System.out.println("Order
confirmed");
10
11     }
12     } elseif (x ==2){
13         return
System.out.println("""info@sololearn.com""");
14
15     }else{
16         return System.out.println("Try
again");
17     }
18     /*
19      User message: "1", Reply: "Order
confirmed"
20      User message: "2", Reply:
"info@sololearn.com"
21      For any other number, the reply should
be: "Try again".
22     */
```

**Your code is not running****The code has six errors:**

1. Invalid method declaration; return type required.
2. Missing identifier.
3. Missing closing parenthesis.
4. Illegal start of expression.
5. Missing semicolon.
6. Illegal start of type.

Was this hint helpful?



TAB

&lt;

&gt;

!

/

.

RUN





3

# if Statement

Any of the following comparison operators may be used to form the condition:

< less than

> greater than

!= not equal to

== equal to

<= less than or equal to

>= greater than or equal to

For example:

CODE PLAYGROUND

JAVA

```
int age = 24;  
if(age >= 18) {  
    System.out.println("Welcome");  
}
```

Tap to try |

—  
24 COMMENTS

CONTINUE



3

JAVA

```
public class Vehicle {  
    private String color;  
  
    Vehicle() {  
        this.setColor("Red");  
    }  
    Vehicle(String c) {  
        this.setColor(c);  
    }  
  
    // Setter  
    public void setColor(String c) {  
        this.color = c;  
    }  
}
```

The class above has two constructors, one without any parameters setting the color attribute to a default value of "Red", and another constructor that accepts a parameter and assigns it to the attribute.

Now, we can use the constructors to create objects of our class.

—  
COMMENTS

CONTINUE





2

Fill in the blanks to create an object of the A class in the B class and call its "test" method.

```
public class A {
```

```
    public void test() {
```

```
        System.out.println("Hi");
```

```
}
```

```
}
```

```
class B {
```

```
    public static void main(String args[ ]) {
```

```
        A obj = new A();
```

```
        obj. test();
```

```
}
```

7 COMMENTS

Job well done

CONTINUE





## Creating Classes &amp; Objects

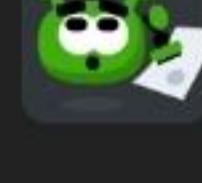


## PROBLEM

## CODE

## RESULT

```
1 public class Main {  
2     public static void main(String[] args) {  
3         //create a Loading object with the  
4         same name  
5         Loading loading = new Loading();  
6         loading.LoadingMessage();  
7     }  
8 }  
9  
10 class Loading {  
11     //complete the class, add  
12     LoadingMessage() method  
13  
14     public void LoadingMessage (){  
15         System.out.println ("Loading");  
16     }  
17 }  
18  
19 }  
20 }
```



TAB

&lt;

&gt;

!

/

.

RUN



ws-eclipse - course/src/application/Program.java - Eclipse

File Edit Source Refactor Navigate Search Project Run Window Help

Quick Access

Package Explorer X Program.java X

```
14  
15  public static void method1() {  
16      System.out.println("****METHOD1 START****");  
17      method2();  
18      System.out.println("****METHOD1 END****");  
19  }  
20
```

Problems Javadoc Declaration Console Coverage

Program (1) [Java Application] C:\Program Files\Java\jre-10.0.1\bin\javaw.exe (4 de jun de 2018 22:18:44)

```
***METHOD1 START***  
***METHOD2 START***  
Alex Maria Bob  
5  
Invalid position!  
java.lang.ArrayIndexOutOfBoundsException: 5  
    at application.Program.method2(Program.java:28)  
    at application.Program.method1(Program.java:17)  
    at application.Program.main(Program.java:10)
```

Writable Smart Insert 17:9

ws-eclipse - course/src/application/Program.java - Eclipse

File Edit Source Refactor Navigate Search Project Run Window Help

Quick Access

Package Explorer    \*Program.java

```
20
21     public static void method2() {
22         System.out.println("***METHOD2 START***");
23         Scanner sc = new Scanner(System.in);
24
25         try {
26             String[] vect = sc.nextLine().split(" ");
27             int position = sc.nextInt();
28             System.out.println(vect[position]);
29         }
30         catch (ArrayIndexOutOfBoundsException e) {
31             System.out.println("Invalid position!");
32             e.printStackTrace(); // Line 32
33         }
34         catch (InputMismatchException e) {
35             System.out.println("Input error");
36         }
37         sc.close();
38         System.out.println("***METHOD2 END***");
```

Problems Javadoc Declaration Console Coverage

No consoles to display at this time.

Writable Smart Insert 32:27

ws-eclipse - course/src/application/Program.java - Eclipse

File Edit Source Refactor Navigate Search Project Run Window Help

Quick Access

Package Explorer \*Program.java

```
1 package application;
2
3 import java.util.InputMismatchException;
4 import java.util.Scanner;
5
6 public class Program {
7
8     public static void main(String[] args) {
9
10         method2();
11
12         System.out.println("End of program");
13     }
14
15     public static void method2() {
16
17
18     public static void method2() {
19         System.out.println("***METHOD2 START***");
```

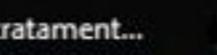
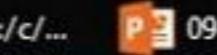
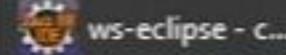
Problems Javadoc Declaration Console Coverage

<terminated> Program (1) [Java Application] C:\Program Files\Java\jre-10.0.1\bin\javaw.exe (4 de jun de 2018 22:08:19)

\*\*\*METHOD2 START\*\*\*

Alex Maria Bob

Writable Smart Insert 15:35



ws-eclipse - course/src/application/Program.java - Eclipse

File Edit Source Refactor Navigate Search Project Run Window Help

Quick Access

Package Explorer X Program.java X

```
8 public static void main(String[] args) {  
9  
10    Scanner sc = new Scanner(System.in);  
11  
12    try {  
13        String[] vect = sc.nextLine().split(" ");  
14        int position = sc.nextInt();  
15        System.out.println(vect[position]);  
16    } catch (Exception e) {  
17        System.out.println("Input error");  
18    }  
19    sc.close();  
20}
```

Problems Javadoc Declaration Console Coverage

<terminated> Program (1) [Java Application] C:\Program Files\Java\jre-10.0.1\bin\javaw.exe (4 de jun de 2018 22:01:21)

Maria Alex Bob  
a  
Input error  
End of program



nelioalves / c...

ws-eclipse - c...

MINGW64:/c/...

09-tratament...

Profile: Untitl...

\_videos-grava...

POR 22:01  
PTB2 04/06/2018 Últim...

ws-eclipse - course/src/application/Program.java - Eclipse

File Edit Source Refactor Navigate Search Project Run Window Help

Quick Access

Package Explorer X Program.java X

```
7 public static void main(String[] args) {  
8     Scanner sc = new Scanner(System.in);  
9  
10    try {  
11        String[] vect = sc.nextLine().split(" ");  
12        int position = sc.nextInt();  
13        System.out.println(vect[position]);  
14    }  
15    catch (ArrayIndexOutOfBoundsException e) {  
16        System.out.println("Invalid position!");  
17    }  
18  
19    System.out.println("End of program");  
20  
21    sc.close();  
22}  
23}  
24}  
25}
```

Problems Javadoc Declaration Console X Coverage

No consoles to display at this time.

Writable Smart Insert 17:51

ws-eclipse - course/src/application/Program.java - Eclipse

File Edit Source Refactor Navigate Search Project Run Window Help

Quick Access

Package Explorer X Program.java X

```
1 package application;
2
3 import java.util.Scanner;
4
5 public class Program {
6
7     public static void main(String[] args) {
8
9         Scanner sc = new Scanner(System.in);
10
11        String[] vect = sc.nextLine().split(" ");
12        int position = sc.nextInt();
13        System.out.println(vect[position]);
14
15        sc.close();
16    }
17}
18
```

Problems Javadoc Declaration Console X Coverage

No consoles to display at this time.

Writable Smart Insert 11:1

nelioalves / c... ws-eclipse - c... MINGW64:/c... 09-tratament... Profile: Untitl... \_videos-grava... 21:56 POR PTB2 04/06/2018 Udemy



## HTML5 e CSS3

Jeferson Francisco Soterio · 2 d · 29

...

X

condições múltiplas com switch:



**Jeferson Francisco Soterio**

2 d ·

condições múltiplas com switch:

```
ex004.js X
C:\Users\Usuario\Documents> exercicios > JS ex004.js > ...
1 let idade = 22;
2 switch (true) {
3     case idade < 16:
4         console.log("Não vota!");
5         break;
6     case idade >= 16 && idade < 18:
7         console.log("Voto opcional!");
8         break;
9     case idade >= 18 && idade < 65:
10        console.log("Voto obrigatório!");
11        break;
12    case idade >= 65:
13        console.log("Voto opcional!");
14        break;
15    default:
16        console.log("[VOTE 22!]");
17        break;
18 }
19
```

nivelamento-JPA.pdf - Foxit Reader

Arquivo Página Inicial Comentar Exibir Formulário Proteger Compartilhar Ajuda Extras

Iniciar nivelamento-JPA.pdf x

Merge and split PDFs

**4) Incluindo JPA para persistir os objetos em banco de dados**

**Passos:**

**1) Crie uma base de dados MySQL vazia**

- Instale o Xampp no seu computador
- Inicie o Apache e o MySQL
- No PhpMyAdmin, crie uma base de dados chamada "aulajpa"

**2) Acrescente as bibliotecas Hibernate e MySQL Connector ao projeto**

- Crie uma pasta "lib" no projeto: Botão direito no projeto -> New -> Folder
- Copie os arquivos .jar anexos à aula
- Botão direito no projeto -> Buildpath -> Configure build path
- Aba Libraries -> Add JARs (selecione os arquivos)
- Apply and Close

**3) Configure o JPA no seu projeto por meio do arquivo persistence.xml**

- Crie uma pasta "META-INF" a partir da pasta "src"
- Dentro da pasta META-INF crie um arquivo "persistence.xml"
- Conteúdo do arquivo persistence.xml:

```
<?xml version="1.0" encoding="UTF-8"?>
```

5 / 5 158,09% 00:19 POR 00:19 Última

30 Projeto A... Disco Local ... ws-sts - tim... acenelio/wo... nívelamento... Profile: Untit... 30-02 Nivela... nívelamento...

ws - aulajpa/src/aplicacao/Programa.java - Spring Tool Suite

File Edit Source Refactor Navigate Search Project Run Window Help

Quick Access

Package Explorer X Pessoajava Programajava X

```
package aplicacao;

import dominio.Pessoa;

public class Programa {

    public static void main(String[] args) {

        Pessoa p1 = new Pessoa(1, "Carlos da Silva", "carlos@gmail.com");
        Pessoa p2 = new Pessoa(2, "Joaquim Torres", "joaquim@gmail.com");
        Pessoa p3 = new Pessoa(3, "Ana Maria", "ana@gmail.com");
        System.out.println(p1);
        System.out.println(p2);
        System.out.println(p3);
    }
}
```

Problems Javadoc Declaration Search Console X

```
<terminated> Programa [Java Application] C:\Program Files\Java\jdk1.8.0_144\bin\javaw.exe (5 de nov de 2017 16:07:41)
Pessoa [id=1, nome=Carlos da Silva, email=carlos@gmail.com]
Pessoa [id=2, nome=Joaquim Torres, email=joaquim@gmail.com]
Pessoa [id=3, nome=Ana Maria, email=ana@gmail.com]
```

ws - aulajpa/src/dominio/Pessoa.java - Spring Tool Suite

File Edit Source Refactor Navigate Search Project Run Window Help

Quick Access

Package Explorer X

aulajpa

- JRE System Library [JavaSE-1.8]
- src
- dominio
- Pessoa.java

Servers

spring-boot-ionic-backend [boot] [devtools] [spring-boot-io]

\*Pessoa.java X

```
package dominio;

import java.io.Serializable;

public class Pessoa implements Serializable {
    /**
     *
     */
    private static final long serialVersionUID = 1L;
    private Integer id;
    private String nome;
    private String email;

    public Pessoa() {
    }

    public Pessoa(Integer id, String nome, String email) {
        super();
        this.id = id;
        this.nome = nome;
        this.email = email;
    }
}
```

Problems Javadoc Declaration Search Console X

No consoles to display at this time.

Writable Smart Insert 6:1

02-nivelamento-jpa.pdf - Foxit Reader

Arquivo Página Inicial Comentar Exibir Formulário Proteger Compartilhar Ajuda Extras

Iniciar 02-nivelamento-jpa.pdf

Procurar Document Tracking and Updating PDF new

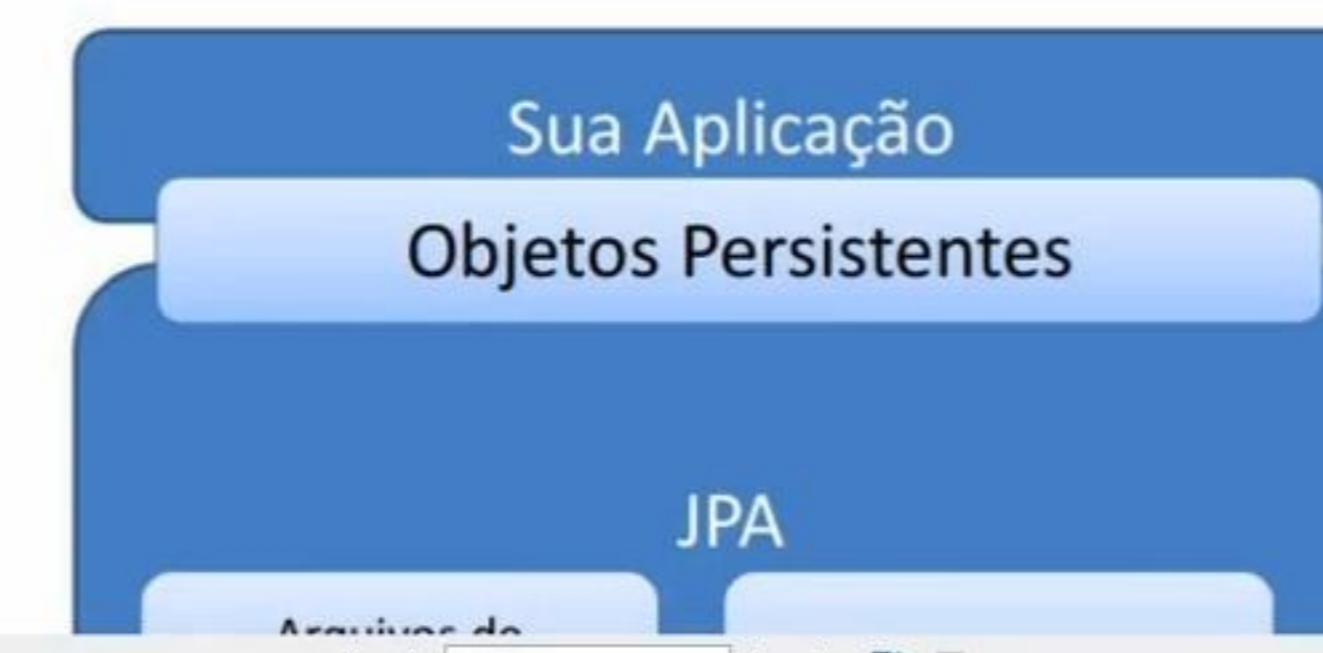
## 2) JPA

Java Persistence API (JPA) é a especificação padrão da plataforma Java EE (pacote `javax.persistence`) para mapeamento objeto-relacional e persistência de dados.

JPA é apenas uma especificação (JSR 338):  
[http://download.oracle.com/otn-pub/jcp/persistence-2\\_1-fr-eval-spec/JavaPersistence.pdf](http://download.oracle.com/otn-pub/jcp/persistence-2_1-fr-eval-spec/JavaPersistence.pdf)

Para trabalhar com JPA é preciso incluir no projeto uma **implementação** da API (ex: Hibernate).

Arquitetura de uma aplicação que utiliza JPA:



Sua Aplicação

Objetos Persistentes

JPA

Arquivos do

2 / 4

150%

POR PTB2 15:48 05/11/2017

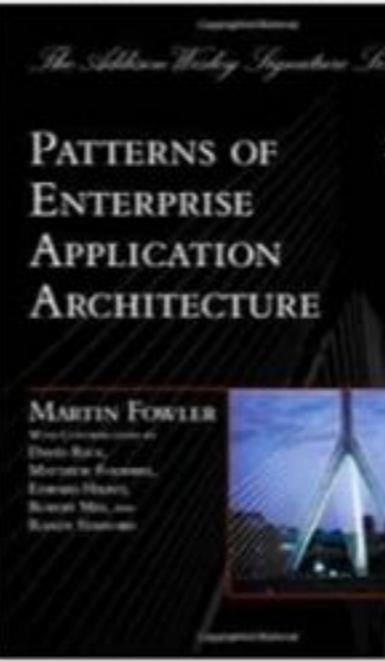
02-nivelamento-jpa.pdf - Foxit Reader

Arquivo Página Inicial Comentar Exibir Formulário Proteger Compartilhar Ajuda Extras

Iniciar 02-nivelamento-jpa.pdf

# banco de dados relacional.

Martin Fowler: ~30% do esforço de se fazer um sistema



```
f.setCod_filme(resultado.getInt("cod_filme");
f.setDescricao(resultado.getString("descricao"));
f.setAno(resultado.getInt("ano"));
CategoriaDao catDao = new CategoriaDao();
Categoria aux = catDao.buscaPorCodigo(f.getAno());
f.setCategoria(aux);

}
resultado.close();
c.close();
} catch (SQLException e) {
System.out.println("Erro ao tentar Lista");
e.printStackTrace();
}
return f;
}
```

**Toda hora tem que ficar transportando de tabela para objeto e vice-versa**

Outros problemas que devem ser tratados:

- Contexto de persistência (objetos que estão ou não atrelados a uma conexão em um dado momento)
- Mapa de identidade (cache de objetos já carregados)
- Carregamento tardio (lazy loading)
- Outros

Arquivo Página Inicial Comentar Exibir Formulário Proteger Compartilhar Ajuda Extras

Iniciar 02-nivelamento-jpa.pdf

## PROBLEMA:

Por vários anos, a maior dificuldade de se usar a abordagem orientada a objetos é a comunicação com o banco de dados relacional.

Martin Fowler: ~30% do esforço de se fazer um sistema



```
public Filme buscaPorCodigo(int cod) {  
    Filme f = null;  
    Connection c = FabricaDeConexao.getConexao();  
    try {  
        PreparedStatement  
        stmt = c.prepareStatement("select * from  
        stmt.setInt(1, cod);  
        ResultSet resultado = stmt.executeQuery();  
        if (resultado.next()) {  
            f = new Filme();  
            f.setCod_filme(resultado.getInt("cod"));  
            f.setDescricao(resultado.getString("descricao"));  
            f.setAno(resultado.getInt("ano"));  
            CategoriaDao catDao = new CategoriaDao();  
            Categoria aux = catDao.buscaPorCodigo(cod);  
            f.setCategoria(aux);  
        }  
        resultado.close();  
        c.close();  
    } catch (SQLException e) {  
        System.out.println("Erro ao tentar Lista de Filmes");  
        e.printStackTrace();  
    }  
    return f;  
}
```

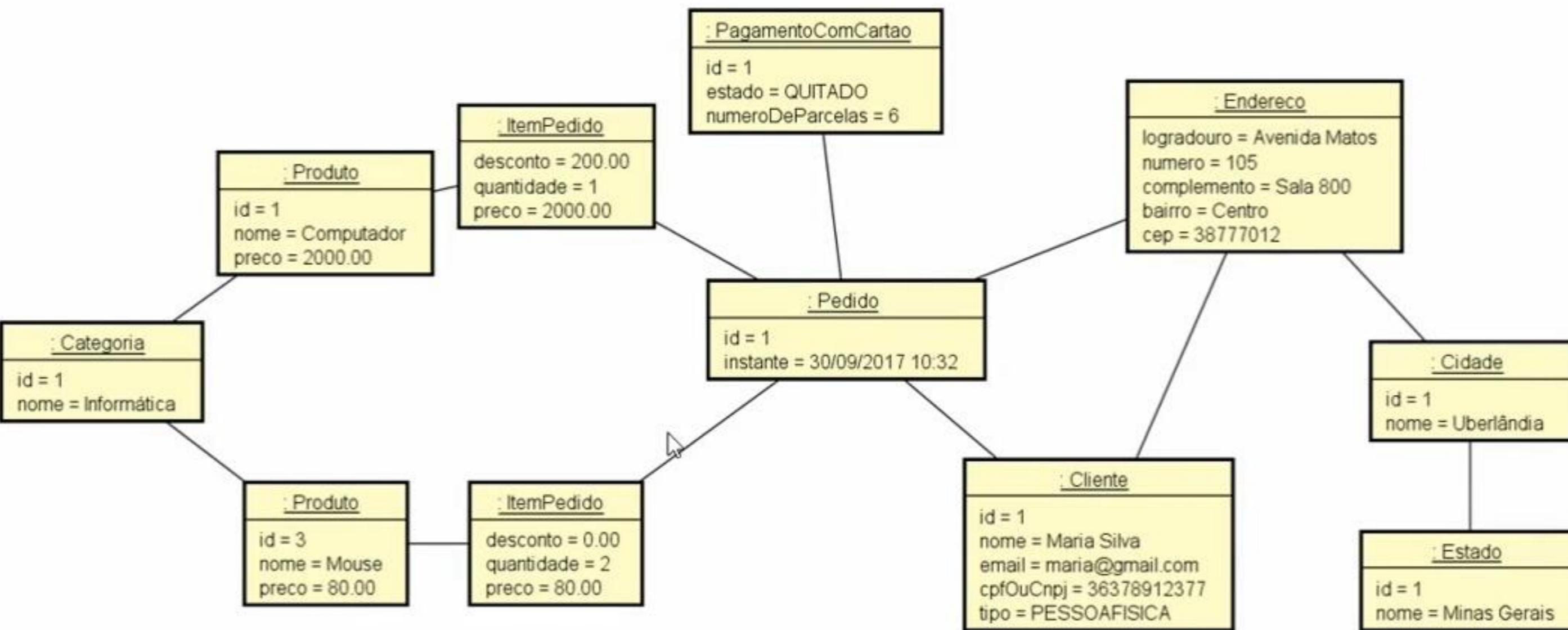
Toda hora tem que ficar transportando de tabela para objeto e vice-versa

# Por que o uso de agregados?

- **Problema 1:** incompatibilidade de impedância
- **Problema 2:** grande volume de dados e acessos (em cluster)
- **Ele já possui a estrutura de objetos associados**
- **É uma unidade natural de replicação e fragmentação**
  - Todos os dados de um agregado estão armazenados **JUNTOS** e no **MESMO NODO** do cluster
  - *Nota: não suportam todo suporte ACID como bancos relacionais, mas garantem atomicidade no agregado.*

```
{  
    "id": 1,  
    "instante": "30/09/2017 01:32",  
    "pagamento": {  
        "@type": "pagamentoComCartao",  
        "id": 1,  
        "estado": "QUITADO",  
        "numeroDeParcelas": 6  
    },  
    "cliente": {  
        "id": 1,  
        "nome": "Maria Silva"  
    },  
    "enderecoDeEntrega": {  
        "id": 1,  
        "logradouro": "Rua Flores",  
        "numero": "300"  
    },  
    "itens": [  
        {  
            "quantidade": 1,  
            "preco": 2000,  
            "produto": {"id": 1, "nome": "Computador"}  
        },  
        {  
            "quantidade": 2,  
            "preco": 80,  
            "produto": {"id": 3, "nome": "Mouse"}  
        }  
    ]  
}
```

# Objetos em memória



```
{  
    "id": 1,  
    "instante": "30/09/2017 01:32",  
    "pagamento": {  
        "@type": "pagamentoComCartao",  
        "id": 1,  
        "estado": "QUITADO",  
        "numeroDeParcelas": 6  
    },  
    "cliente": {  
        "id": 1,  
        "nome": "Maria Silva"  
    },  
    "enderecoDeEntrega": {  
        "id": 1,  
        "logradouro": "Rua Flores",  
        "numero": "300"  
    },  
    "itens": [  
        {  
            "quantidade": 1,  
            "preco": 2000,  
            "produto": {"id": 1, "nome": "Computador"}  
        },  
        {  
            "quantidade": 2,  
            "preco": 80,  
            "produto": {"id": 3, "nome": "Mouse"}  
        }  
    ]  
}
```

## Agregado: pedido

- Conjunto de objetos relacionados, tratados como uma unidade
- Não normalizado

Dados  
frequentemente  
acessados juntos



Normalização

# Agregado

É um conjunto de objetos relacionados que desejamos tratar como uma unidade.



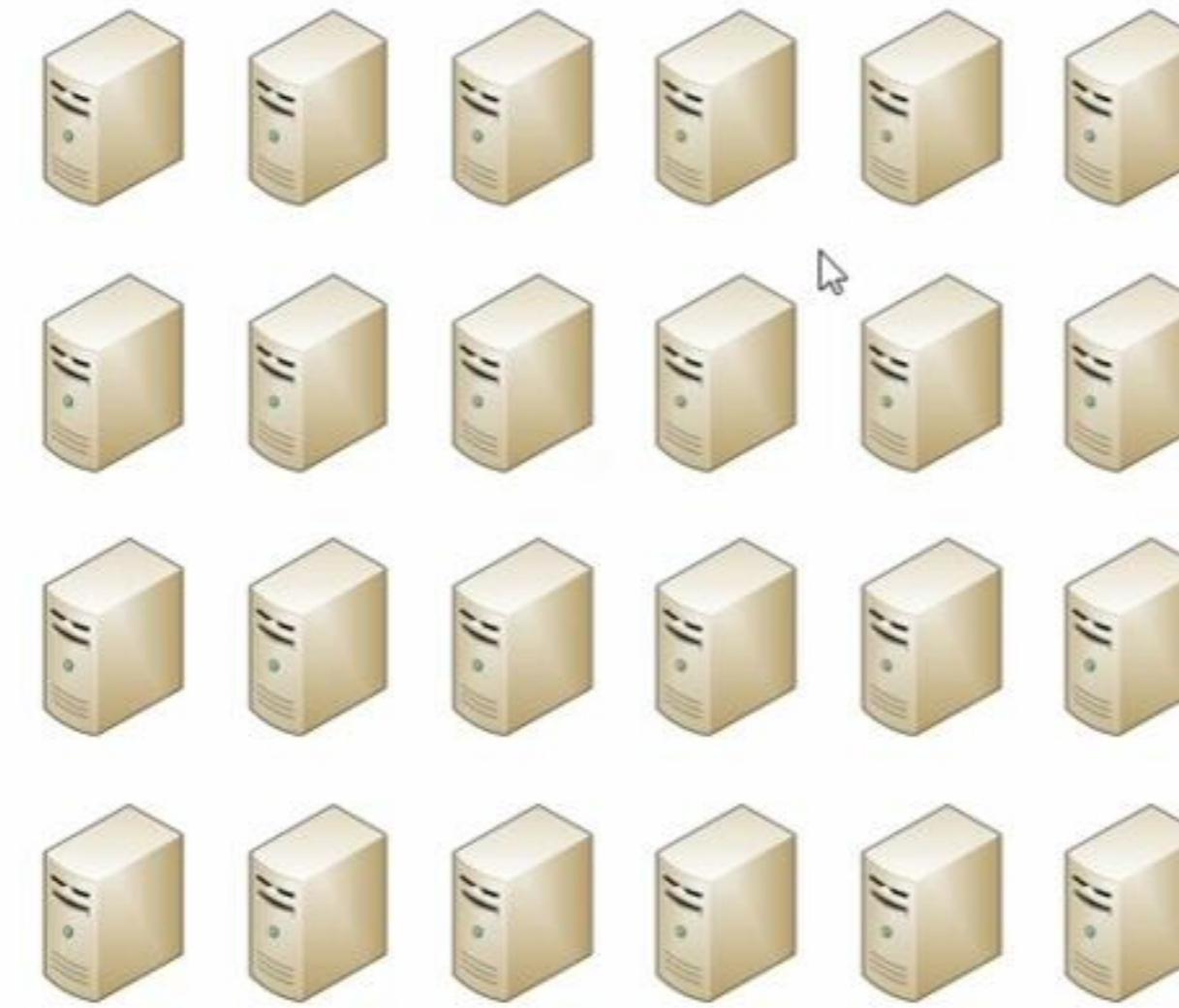
# NoSQL

- Primeiras influências: Google (BigTable) e Amazon (Dynamo)
- O nome NoSQL é acidental
- Características mais comuns:
  - Não utilizam modelo relacional
  - Tem uma boa execução em clusters
  - Código aberto
  - Século XXI
  - Não tem esquema

# BD relacional vs. cluster



# Primeira decisão (infra): escala vertical ou horizontal?

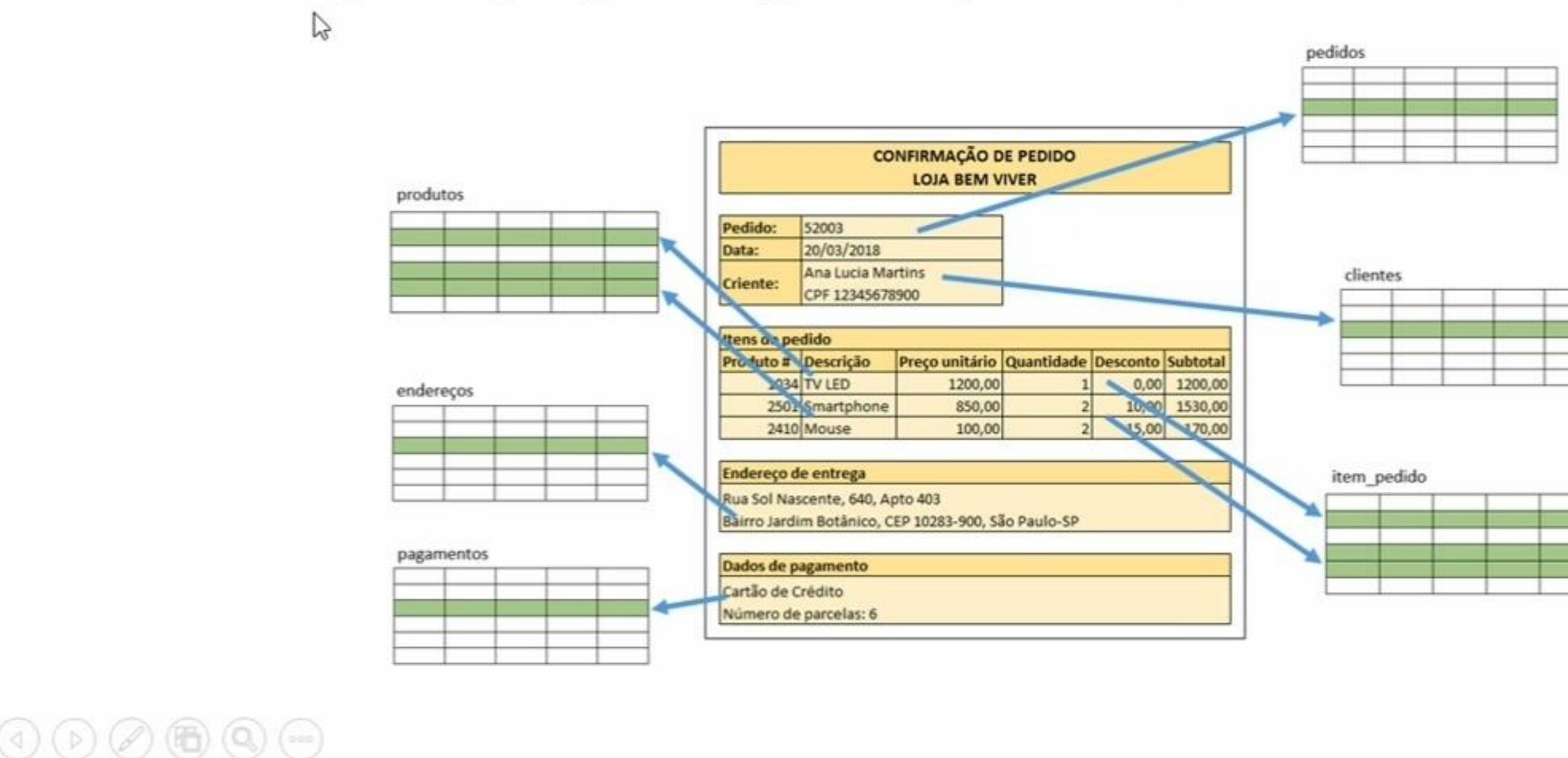


- Custo
- Resiliência (alta confiabilidade)
- Crescimento menos limitado
- Virtualização

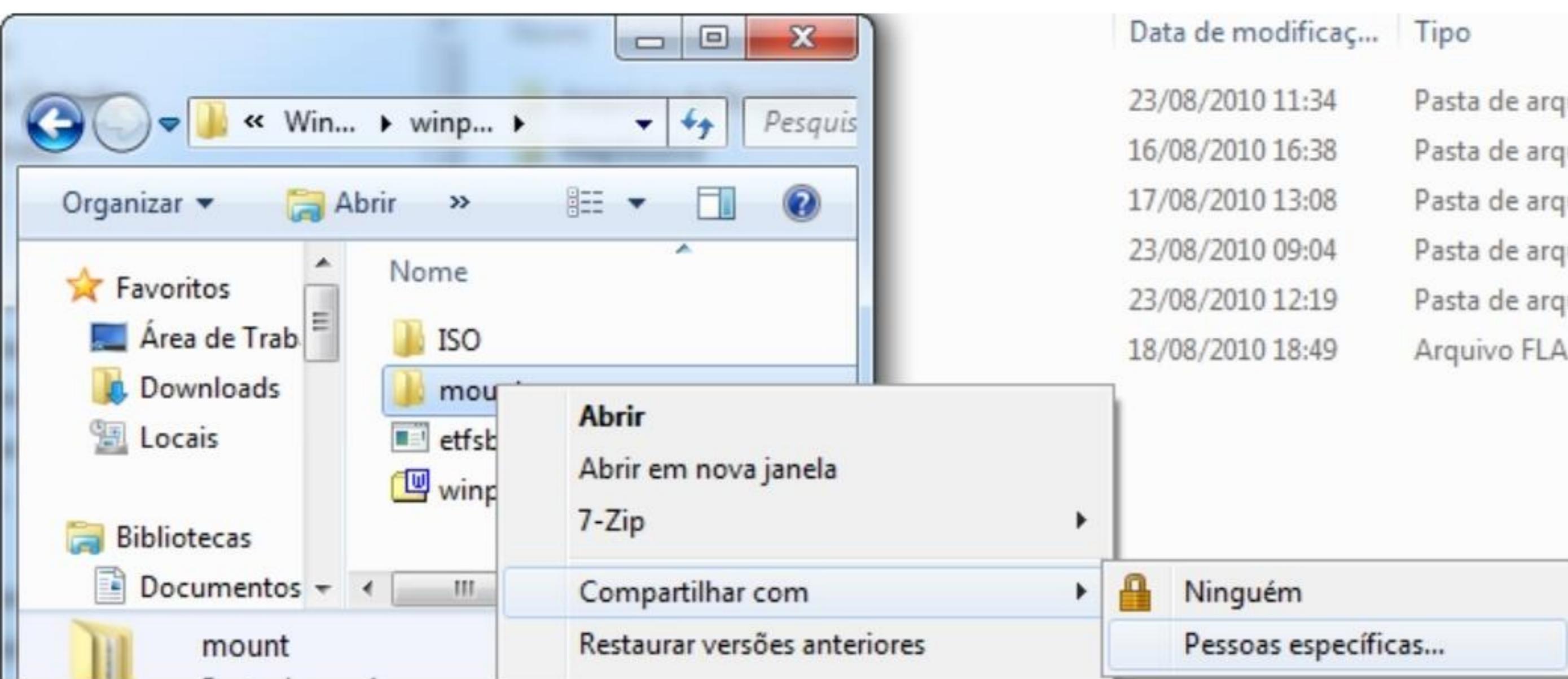
```
(...) from
    pedido pedido0_
left outer join
    cliente cliente1_
        on pedido0_.cliente_id=cliente1_.id
left outer join
    perfis perfis2_
        on cliente1_.id=perfis2_.cliente_id
left outer join
    endereco endereco3_
        on pedido0_.endereco_de_entrega_id=endereco3_.id
left outer join
    cidade cidade4_
        on endereco3_.cidade_id=cidade4_.id
left outer join
    estado estado5_
        on cidade4_.estado_id=estado5_.id
left outer join
    cliente cliente6_
        on endereco3_.cliente_id=cliente6_.id
left outer join
    pagamento pagamento7_
        on pedido0_.id=pagamento7_.pedido_id
left outer join
    pagamento_com_cartao pagamento7_1_
        on pagamento7_.pedido_id=pagamento7_1_.pedido_id
left outer join
    pagamento_com_boleto pagamento7_2_
        on pagamento7_.pedido_id=pagamento7_2_.pedido_id
where (...)
```

# Com ou sem ORM:

- Transações e junções degradam performance!

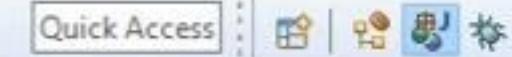


de compartilhar com , e marcar a opção pessoas específicas, conforme imagem abaixo :



Isso irá fazer aparecer o assistente de compartilhamento de arquivos, e como o

File Edit Source Refactor Navigate Search Project Run Window Help



```
1 package entities;
2
3 public class BusinessAccount extends Account {
4
5     private Double loanLimit;
6
7     public BusinessAccount() {
8         super();
9     }
10
11    public BusinessAccount(Integer number, String holder, Double balance, Double loanLimit) {
12        super(number, holder, balance);
13        this.loanLimit = loanLimit;
14    }
15
16    public Double getLoanLimit() {
17        return loanLimit;
18    }
19
20    public void setLoanLimit(Double loanLimit) {
21        this.loanLimit = loanLimit;
22    }
23 }
24
```

Writable

Smart Insert

19 : 1

ws-eclipse - course/src/entities/BusinessAccount.java - Eclipse

File Edit Source Refactor Navigate Search Project Run Window Help

\*Program.java \*Account.java \*BusinessAccount.java

Quick Access

```
6
7  public BusinessAccount() {
8      super();
9  }
10
11 public BusinessAccount(Integer number, String holder, Double balance, Double loanLimit) {
12     super(number, holder, balance);
13     this.loanLimit = loanLimit;
14 }
15
16 public Double getLoanLimit() {
17     return loanLimit;
18 }
19
20 public void setLoanLimit(Double loanLimit) {
21     this.loanLimit = loanLimit;
22 }
23
24
25
26
27
28 }
29
```

Writable Smart Insert 25 : 5

ws-eclipse - course/src Undo Typing Ctrl+Z

File Edit Source Refa Revert File Save Ctrl+S

Open Declaration F3  
Open Type Hierarchy F4  
Open Call Hierarchy Ctrl+Alt+H  
Show in Breadcrumb Alt+Shift+B  
Quick Outline Ctrl+O  
Quick Type Hierarchy Ctrl+T  
Open With >  
Show In Alt+Shift+W >

Cut Ctrl+X  
Copy Ctrl+C  
Copy Qualified Name  
Paste Ctrl+V  
Quick Fix Ctrl+1  
Source Alt+Shift+S > **Selected**  
Refactor Alt+Shift+T >  
Local History >  
References >  
Declarations >  
Add to Snippets...  
Coverage As >  
Run As >  
Debug As >  
Profile As >  
Validate >  
Team >  
Compare With >  
Replace With >  
Preferences...

Ctrl+Shift+V Toggle Comment  
Ctrl+Shift+\ Remove Block Comment  
Alt+Shift+J Generate Element Comment  
Ctrl+I Correct Indentation  
Ctrl+Shift+F Format  
Ctrl+Shift+J Format Element  
Ctrl+Shift+M Add Import  
Ctrl+Shift+O Organize Imports  
Ctrl+Shift+L Sort Members...  
Clean Up...  
Override/Implement Methods...  
Generate Getters and Setters...  
Generate Delegate Methods...  
Generate hashCode() and equals()...  
Generate toString()...  
Generate Constructor using Fields...  
Generate Constructors from Superclass...

Writable Smart Insert 17:5

Externalize Strings... ws-eclipse... MINGW64... 08-heranc... 11:32 POR PTB2 02/06/2018 Udemy

1 packa  
2 publi  
3 tends Account {  
4  
5 p  
6 p  
7 }  
8 p  
9 }  
10 p  
11 p  
12 p  
13 p  
14 p  
15 p  
16 p  
17 p  
18 p  
19 p  
20 p  
21 }

1 \*Program.java

```
package entities;

public class Product {

    public String name;
    public double price;
    public int quantity;

    public double totalValueInStock() {
        return price * quantity;
    }

    public void addProducts(int quantity) {
        this.quantity += quantity;
    }

    public void removeProducts(int quantity) {
        this.quantity -= quantity;
    }

    public String toString() {
        return name
            + ", $ "
            + String.format("%.2f", price)
            + ","
            + quantity
            + " units, Total: $ "
            + String.format("%.2f", totalValueInStock());
    }
}
```

ws-eclipse - course/src/entities/Product.java - Eclipse

File Edit Source Refactor Navigate Search Project Run Window Help

Quick Access

Package Explorer X Program.java \*Product.java

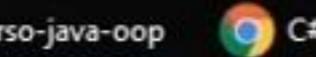
```
9     public double totalValueInStock() {  
10        return price * quantity;  
11    }  
12  
13    public void addProducts(int quantity) {  
14        this.quantity += quantity;  
15    }  
16  
17    public void removeProducts(int quantity) {  
18        this.quantity -= quantity;  
19    }  
20  
21    public String toString() {  
22        return name  
23            + ", $ "  
24            + price  
25            + ", "  
26            + quantity  
27            + " units, Total: $" |
```

Problems Javadoc Declaration Console Coverage

<terminated> Program (1) [Java Application] C:\Program Files\Java\jre-10.0.1\bin\javaw.exe (26 de mai de 2018 18:27:40)

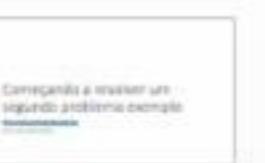
Enter product data:  
Name: TV

Writable Smart Insert 27:33





19



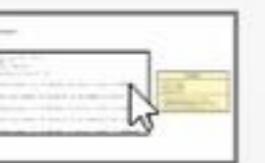
20



21



22



23



24



25



26



# Discussão

- Toda classe em Java é uma subclasse da classe Object
- Object possui os seguintes métodos:
  - getClass - retorna o tipo do objeto
  - equals - compara se o objeto é igual a outro
  - hashCode - retorna um código hash do objeto
  - toString - converte o objeto para string
  -

ws-eclipse - course/src/application/Program.java - Eclipse

File Edit Source Refactor Navigate Search Project Run Window Help

Quick Access

Package Explorer X \*Program.java X Product.java

```
8 public class Program {  
9  
10    public static void main(String[] args) {  
11        Locale.setDefault(Locale.US);  
12        Scanner sc = new Scanner(System.in);  
13  
14        Product product = new Product();  
15        System.out.println("Enter product data: ");  
16        System.out.print("Name: ");  
17        product.name = sc.nextLine();  
18        System.out.print("Price: ");  
19        product.price = sc.nextDouble();  
20        System.out.print("Quantity in stock: ");  
21        product.quantity = sc.nextInt();  
22  
23        System.out.println(product);  
24  
25        sc.close();  
26    }  
27}  
28}
```

Problems Javadoc Declaration Console X Coverage

<terminated> Program (1) [Java Application] C:\Program Files\Java\jre-10.0.1\bin\javaw.exe (26 de mai de 2018 18:26:51)  
Enter product data..

Writable Smart Insert 24:32

ws-eclipse - course/src/application/Program.java - Eclipse

File Edit Source Refactor Navigate Search Project Run Window Help

Quick Access

Package Explorer X Program.java X Product.java

```
8 public class Program {  
9  
10    public static void main(String[] args) {  
11  
12        Locale.setDefault(Locale.US);  
13        Scanner sc = new Scanner(System.in);  
14  
15        Product product = new Product();  
16        System.out.println("Enter product data: ");  
17        System.out.print("Name: ");  
18        product.name = sc.nextLine();  
19        System.out.print("Price: ");  
20        product.price = sc.nextDouble();  
21        System.out.print("Quantity in stock: ");  
22        product.quantity = sc.nextInt();  
23  
24        System.out.println(product.toString());  
25  
26        sc.close();  
27    }  
28 }
```

Problems Javadoc Declaration Console X Coverage

<terminated> Program (1) [Java Application] C:\Program Files\Java\jre-10.0.1\bin\javaw.exe (26 de mai de 2018 18:26:51)  
Enter product data..

Writable Smart Insert 24:35



ws-eclipse - course/src/entities/Product.java - Eclipse

File Edit Source Refactor Navigate Project Run Window Help

Quick Access

Package Explorer X Program.java \*Product.java X

```
4
5     public String name;
6     public double price;
7     public int quantity;
8
9     public double totalValueInStock() {
10         return price * quantity;
11     }
12
13     public void addProducts(int quantity) {
14         this.quantity += quantity;
15     }
16
17     public void removeProducts(int quantity) {
18         this.quantity -= quantity;
19     }
20
21     public String toString() {
22
23 }
```

Problems Javadoc Declaration Console Coverage

<terminated> Program (1) [Java Application] C:\Program Files\Java\jre-10.0.1\bin\javaw.exe (26 de mai de 2018 18:23:31)

Enter product data:

Name: TV

Writable Smart Insert 22:9

Profile: Untitled... 03-classes-atr... ws-eclipse - c... \_videos-grava... curso-java-oop C# Curso Co... POR 18:25 PTB2 26/05/2018 Udemy

ws-eclipse - course/src/application/Program.java - Eclipse

File Edit Source Refactor Navigate Search Project Run Window Help

Quick Access

Package Explorer X Program.java X Product.java

```
8 public class Program {  
9  
10    public static void main(String[] args) {  
11        Locale.setDefault(Locale.US);  
12        Scanner sc = new Scanner(System.in);  
13  
14        Product product = new Product();  
15        System.out.println("Enter product data: ");  
16        System.out.print("Name: ");  
17        product.name = sc.nextLine();  
18        System.out.print("Price: ");  
19        product.price = sc.nextDouble();  
20        System.out.print("Quantity in stock: ");  
21        product.quantity = sc.nextInt();  
22  
23        System.out.println(product.name + ", " + product.price + ", " + product.qua  
24  
25        sc.close();  
26    }  
27}  
28}
```

Problems Javadoc Declaration Console X Coverage

No consoles to display at this time.

Writable Smart Insert 25:1



Profile: Untitled...

03-classes-atr...

ws-eclipse - c...

\_videos-grava...

curso-java-oop

C# Curso Co...



POR 18:16

PTB2 26/05/2018 Udemy

ws-eclipse - course/src/application/Program.java - Eclipse

File Edit Source Refactor Navigate Search Project Run Window Help

Quick Access

Package Explorer X Program.java X Product.java

```
4 import java.util.Scanner;
5
6 import entities.Product;
7
8 public class Program {
9
10    public static void main(String[] args) {
11
12        Locale.setDefault(Locale.US);
13        Scanner sc = new Scanner(System.in);
14
15        Product product = new Product();
16        System.out.println("Enter product data: ");
17        System.out.print("Name: ");
18        product.name = sc.nextLine();
19        System.out.print("Price: ");
20        product.price = sc.nextDouble();
21        System.out.print("Quantity in stock: ");
22        product.quantity = sc.nextInt();
23
24    }
25}
```

Problems Javadoc Declaration Console X Coverage

No consoles to display at this time.

Writable Smart Insert 24:9

File Edit Source Refactor Navigate Search Project Run Window Help

The screenshot shows the Eclipse IDE interface with the following details:

- Title Bar:** ws-eclipse - course/src/application/Program.java - Eclipse
- Menu Bar:** File, Edit, Source, Refactor, Navigate, Search, Project, Run, Window, Help.
- Toolbar:** Standard Eclipse toolbar icons.
- Quick Access:** A panel on the right containing icons for recent files, projects, and other tools.
- Package Explorer:** Shows the project structure:
  - course
    - JRE System Library [JavaSE-10]
    - src
      - application
        - Program.java
      - entities
        - Product.java
- Editor:** Displays the content of Program.java:

```
1 package application;
2
3 import java.util.Locale;
4 import java.util.Scanner;
5
6 import entities.Product;
7
8 public class Program {
9
10    public static void main(String[] args) {
11
12        Locale.setDefault(Locale.US);
13        Scanner sc = new Scanner(System.in);
14
15        Product product = new Product();
16        System.out.println("Enter product data: ");
17        System.out.print("Name: ");
18        product.name = sc.nextLine();
19
20
21}
```
- Console:** Shows "No consoles to display at this time."
- Bottom Status Bar:** Writable, Smart Insert, 19:9.
- Taskbar:** Shows other open windows: Profile Untitled..., 03-classes-atr..., ws-eclipse - c..., \_videos-grava..., curso-java-oop..., C# Curso Co..., and a system tray with icons for battery, signal, and date/time (POR 18:14 PTB2 26/05/2018).

ws-eclipse - course/src/entities/Product.java - Eclipse

File Edit Source Refactor Navigate Search Project Run Window Help

Quick Access

Package Explorer X Program.java \*Product.java X

```
1 package entities;
2
3 public class Product {
4
5     public String name;
6     public double price;
7     public int quantity;
8
9     public double totalValueInStock() {
10         return price * quantity;
11     }
12
13     public void addProducts(int quantity) {
14         this.quantity += quantity;
15     }
16 }
17
```

Problems Javadoc Declaration Console X Coverage

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ws-eclipse - course/src/entities/Product.java - Eclipse

File Edit Source Refactor Navigate Search Project Run Window Help

Quick Access

Package Explorer X Program.java \*Product.java X

```
1 package entities;
2
3 public class Product {
4
5     public String name;
6     public double price;
7     public int quantity;
8
9 }
10
```

Problems Javadoc Declaration Console X Coverage

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ws-eclipse - course/src/entities/Product.java - Eclipse

File Edit Source Refactor Navigate Project Run Window Help

Quick Access

Package Explorer X Program.java Product.java

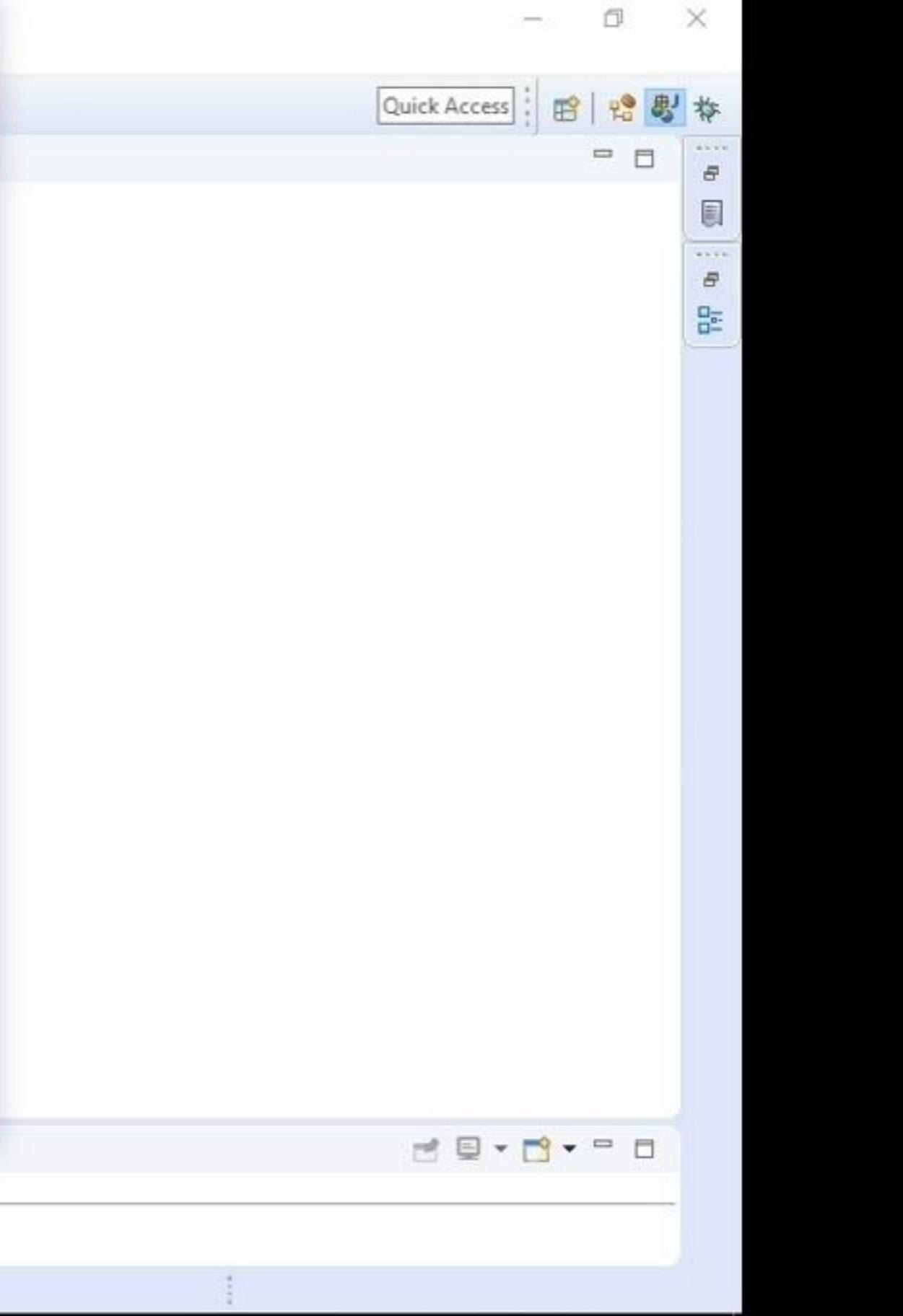
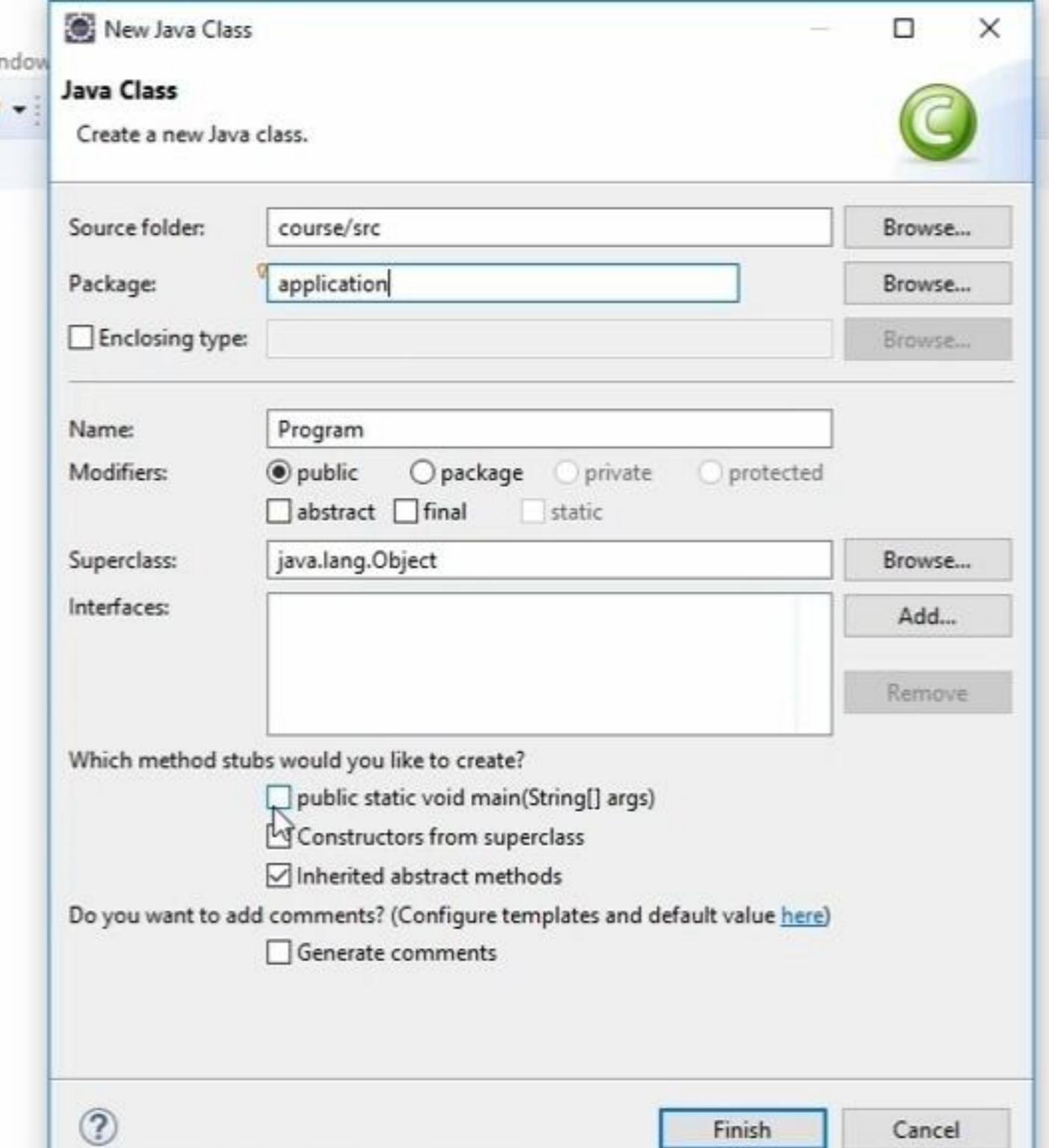
```
1 package entities;
2
3 public class Product {
4
5 }
6
```

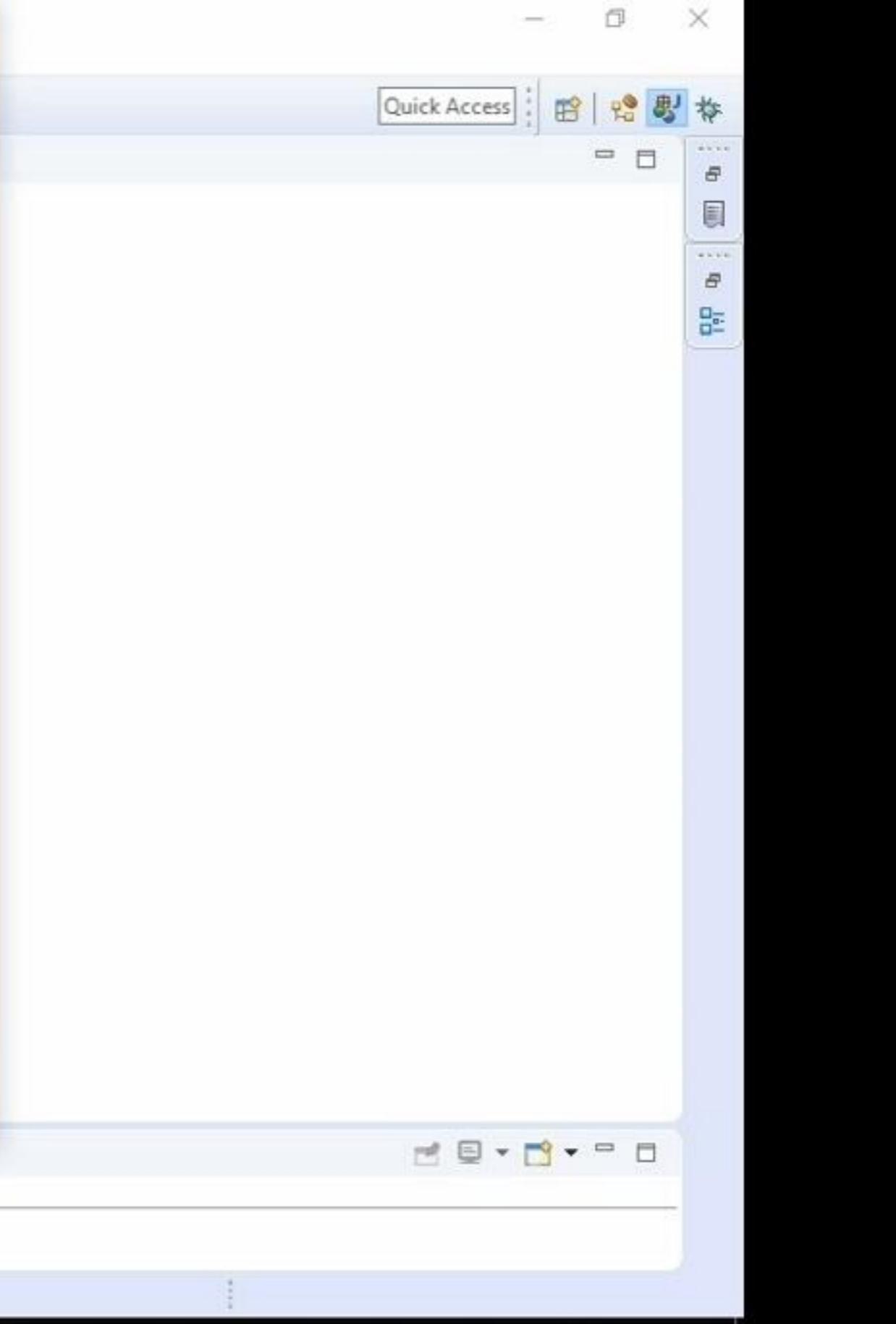
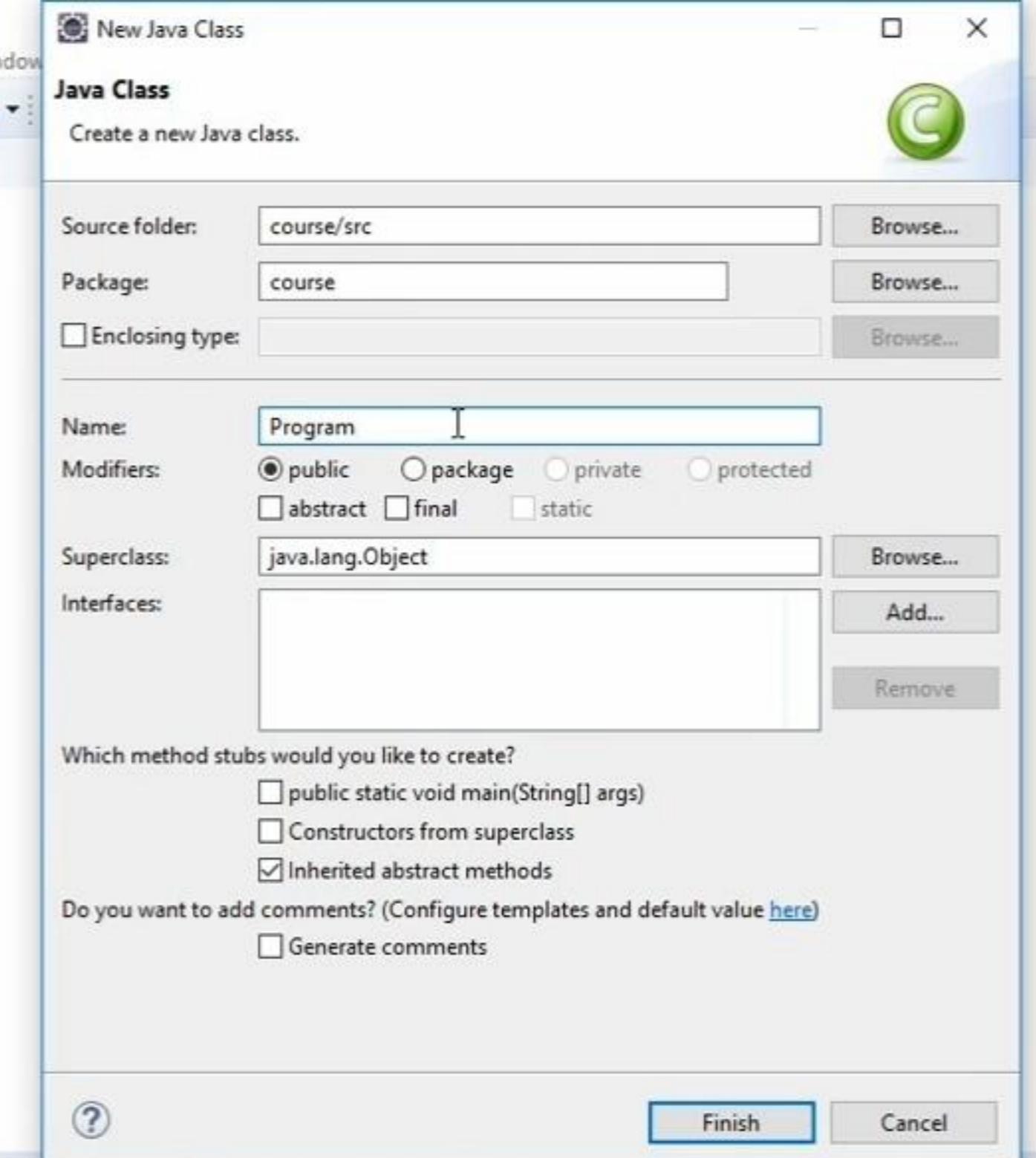
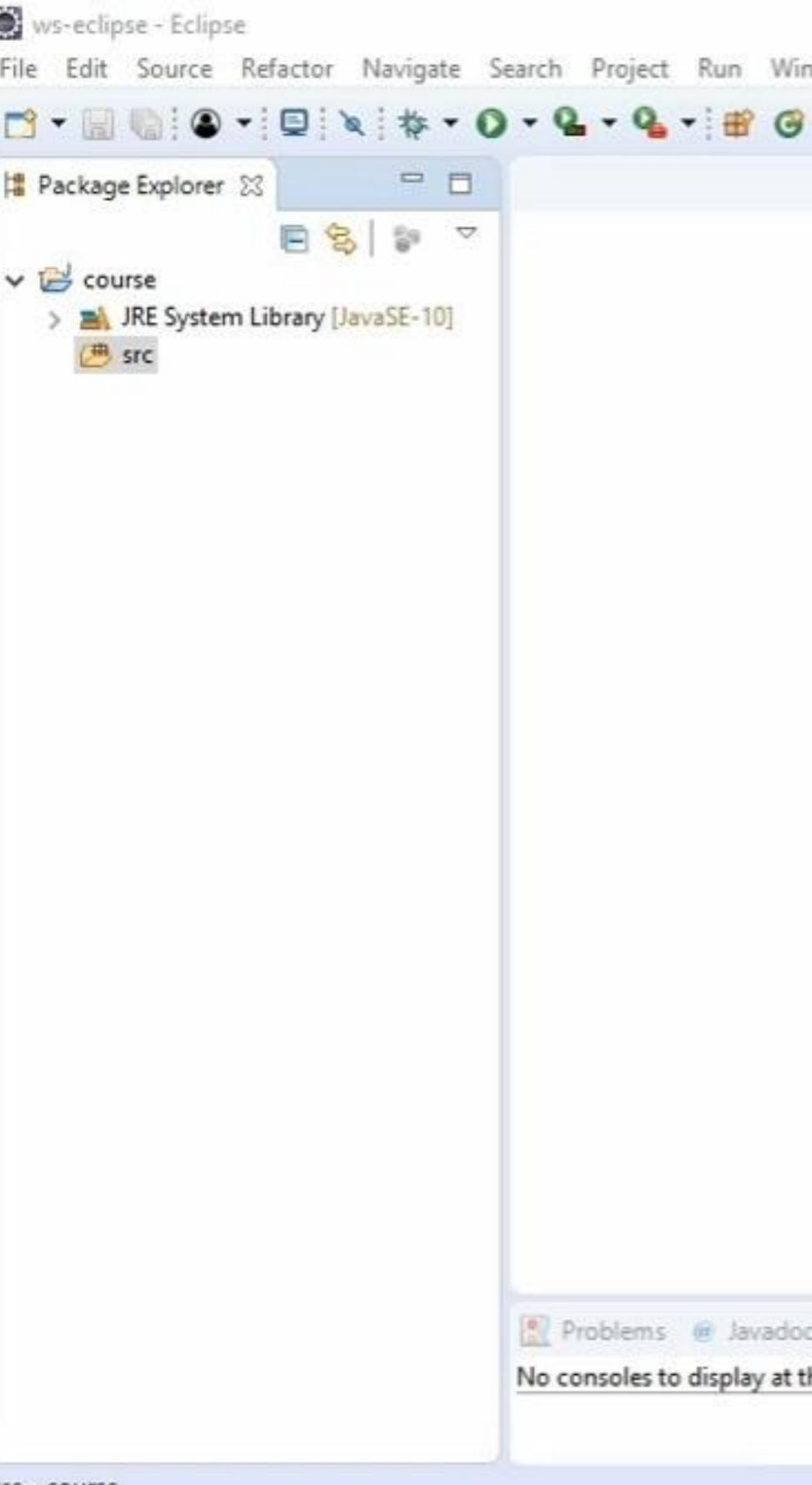
Problems Javadoc Declaration Console Coverage

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# Outro exemplo



Fazer um programa para ler os dados de um produto em estoque (nome, preço e quantidade no estoque). Em seguida:

- Mostrar os dados do produto (nome, preço, quantidade no estoque, valor total no estoque)
- Realizar uma entrada no estoque e mostrar novamente os dados do produto
- Realizar uma saída no estoque e mostrar novamente os dados do produto



Para resolver este problema, você deve criar uma CLASSE conforme projeto ao lado:

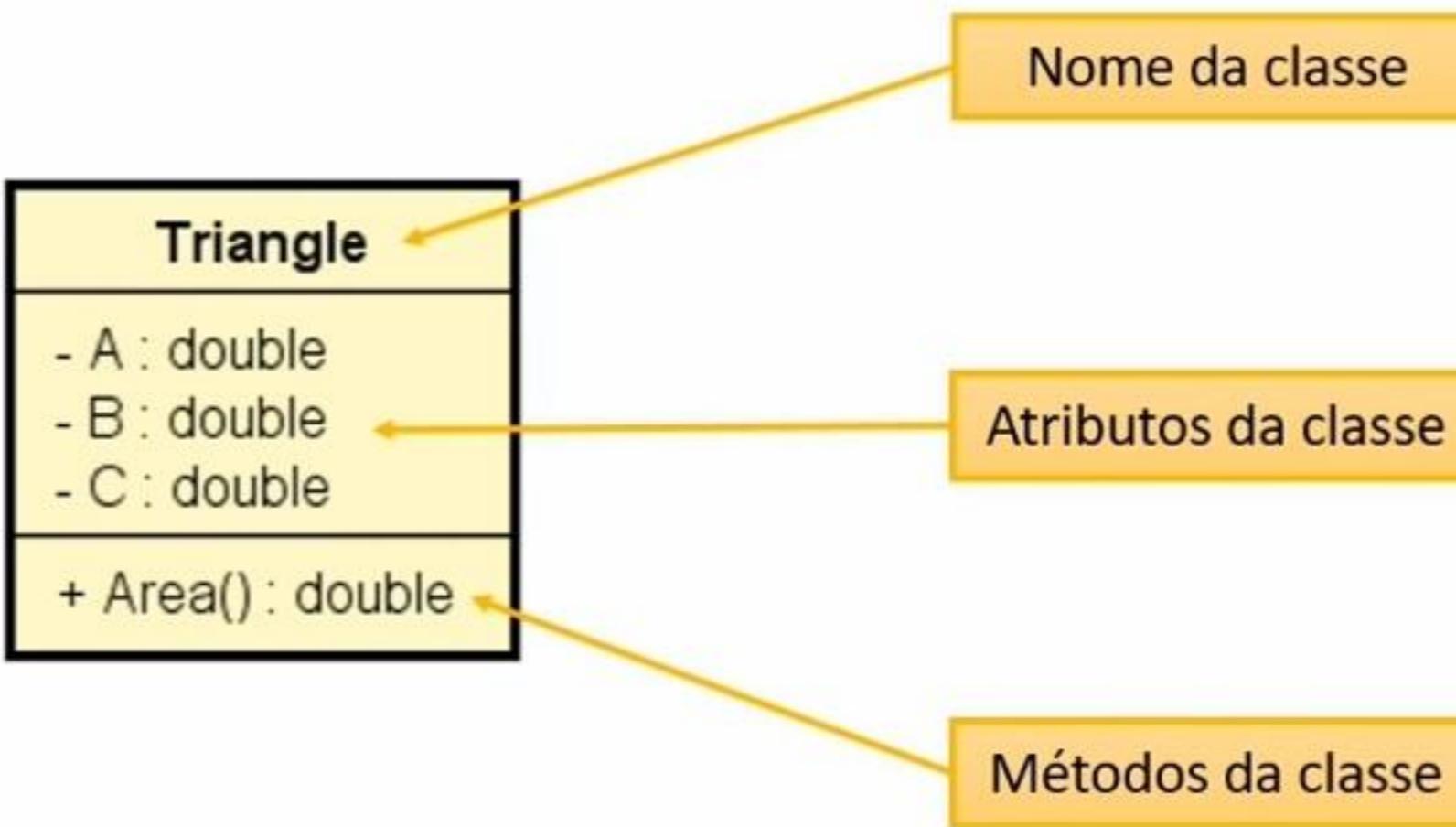
(veja exemplo na próxima página)



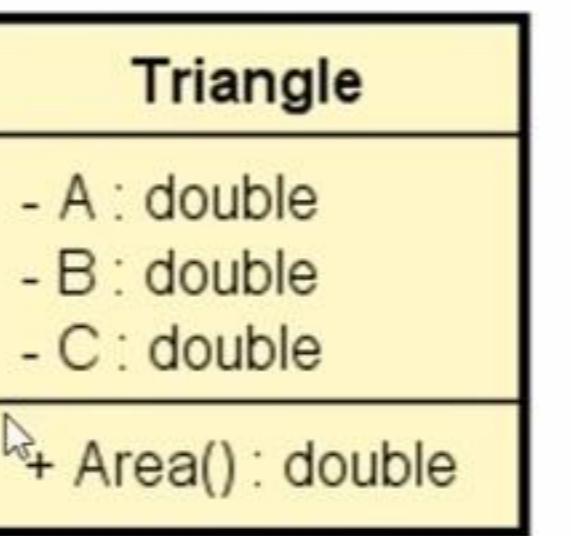
Product
- Name : string - Price : double - Quantity : int
+ TotalValueInStock() : double + AddProducts(quantity : int) : void + RemoveProducts(quantity : int) : void

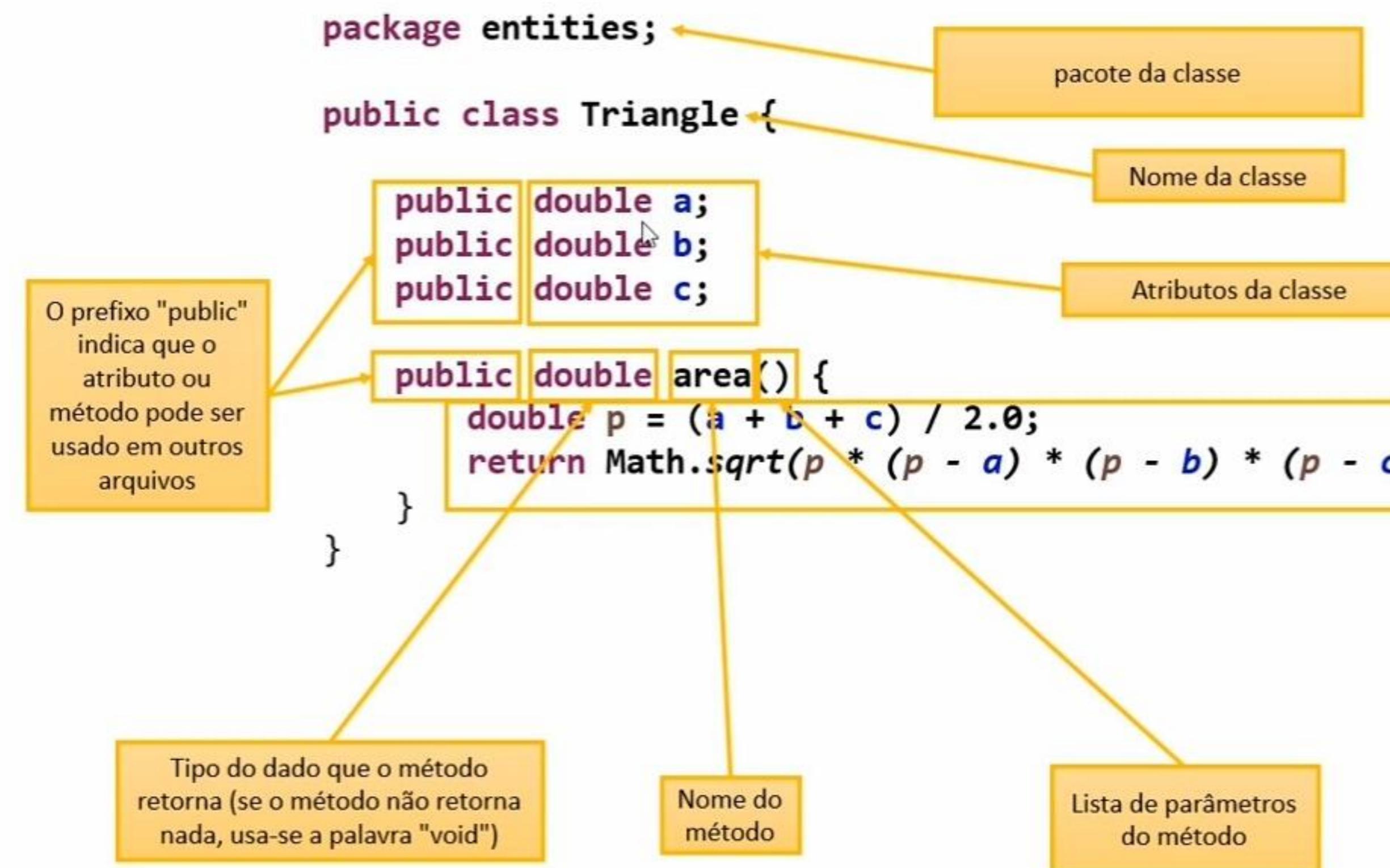


# Projeto da classe (UML)



# Projeto da classe (UML)





```
package entities;

public class Triangle {

    public double a;
    public double b;
    public double c;

    public double area() {
        double p = (a + b + c) / 2.0;
        return Math.sqrt(p * (p - a) * (p - b) * (p - c));
    }
}
```

```
package application;

import java.util.Locale;
import java.util.Scanner;

import entities.Triangle;

public class Program {

    public static void main(String[] args) {

        Locale.setDefault(Locale.US);
        Scanner sc = new Scanner(System.in);

        Triangle x, y;
        x = new Triangle();
        y = new Triangle();

        System.out.println("Enter the measures of triangle X: ");
        x.a = sc.nextDouble();
        x.b = sc.nextDouble();
        x.c = sc.nextDouble();
        System.out.println("Enter the measures of triangle Y: ");
        y.a = sc.nextDouble();
        y.b = sc.nextDouble();
        y.c = sc.nextDouble();

        double areaX = x.area();
        double areaY = y.area();
        (...)
```