



NOVA SCHOOL OF
SCIENCE & TECHNOLOGY

Arquitectura Para Integração de Sistemas

Aula Pratica 2

O que é o BPMN?

- BPMN - acrônimo para Business Process Modeling Notation
- Novo padrão para modelar processos de negócios e serviços web
- Fornece aos utilizadores um conjunto padrão da indústria de sintaxe e semântica em diagrama, por meio de um diagrama gráfico para facilitar a representação dos processos de negócios

Porque é importante o BPMN?

- Fornece um padrão onde não existia um padrão
- BPMN ajuda com o processo
 - Design
 - Deployment
 - Execution
 - Maintenance
 - Optimization
- Ajuda na interoperabilidade entre as ferramentas de gestão de processos de negócios
 - Suporte à geração de linguagens de execução de processos

Objectivos do BPMN?

- Fornece uma notação
 - que seja facilmente compreensível por um público empresarial
 - capaz de fornecer detalhes técnicos para fins de implementação
 - suporta a geração de linguagens de execução baseadas em XML

Objectivos do BPMN?

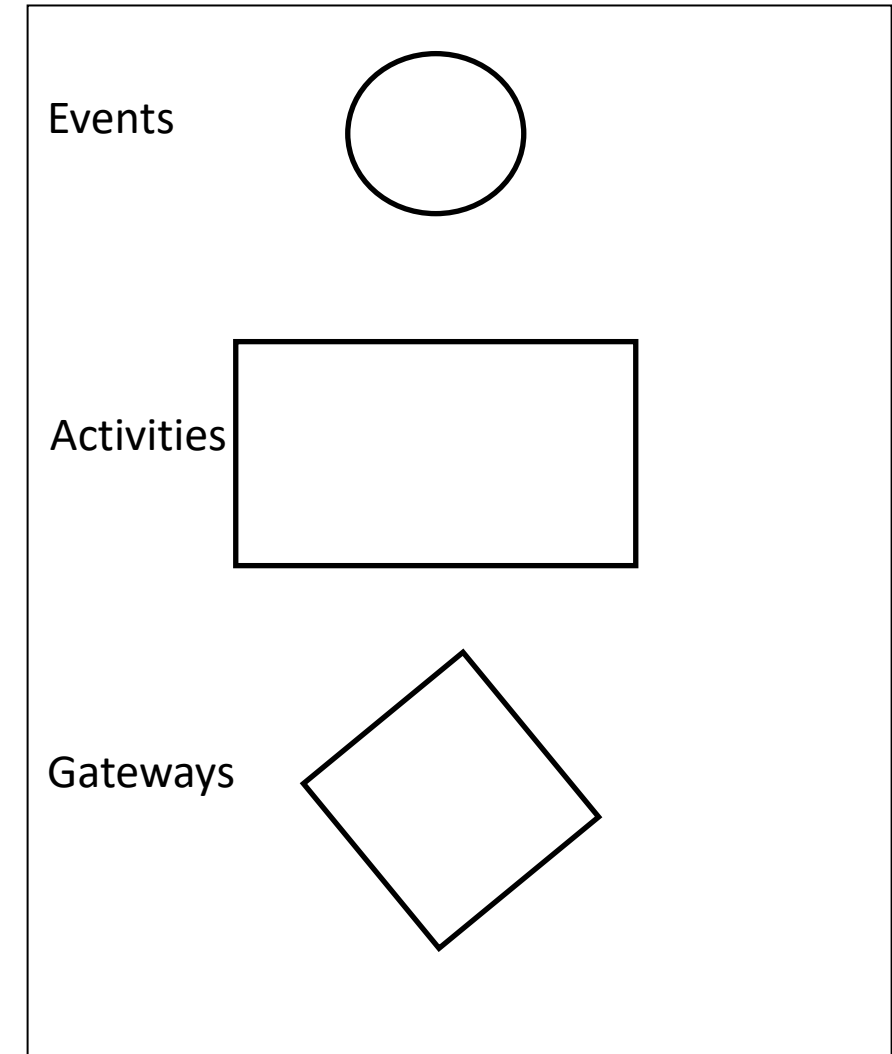
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 - capaz de fornecer detalhes técnicos para fins de implementação
 - suporta a geração de linguagens de execução baseadas em XML

BPMN: Basics

- Os diagramas Workflow são feitos de símbolo padrão “Elements”:
 - Flow Objects
 - Connecting Objects
 - Swimlanes
 - Artifacts

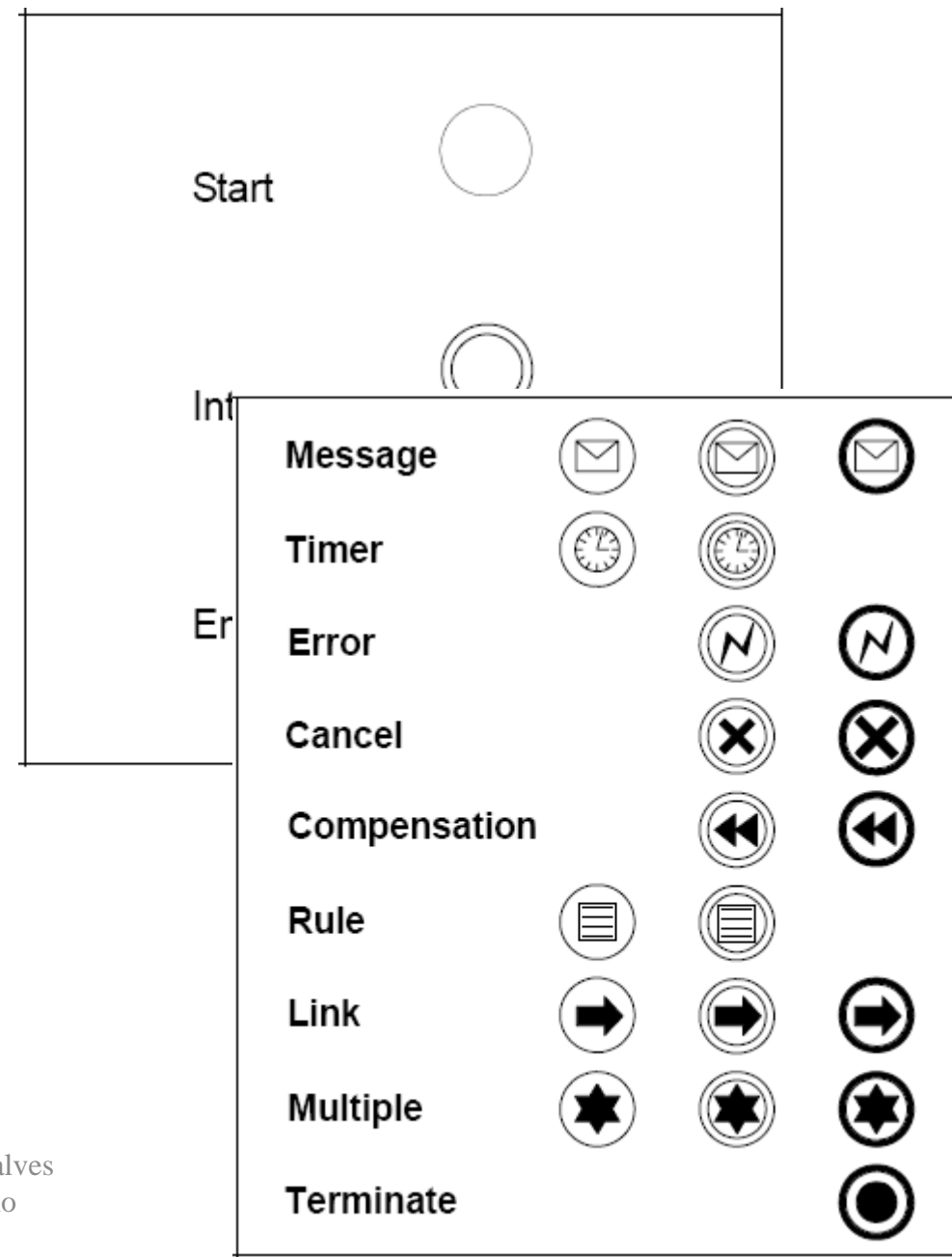
BPMN: Flow Objects

- Existem três tipos de Flow Objects
 - Events
 - Activities
 - Gateways



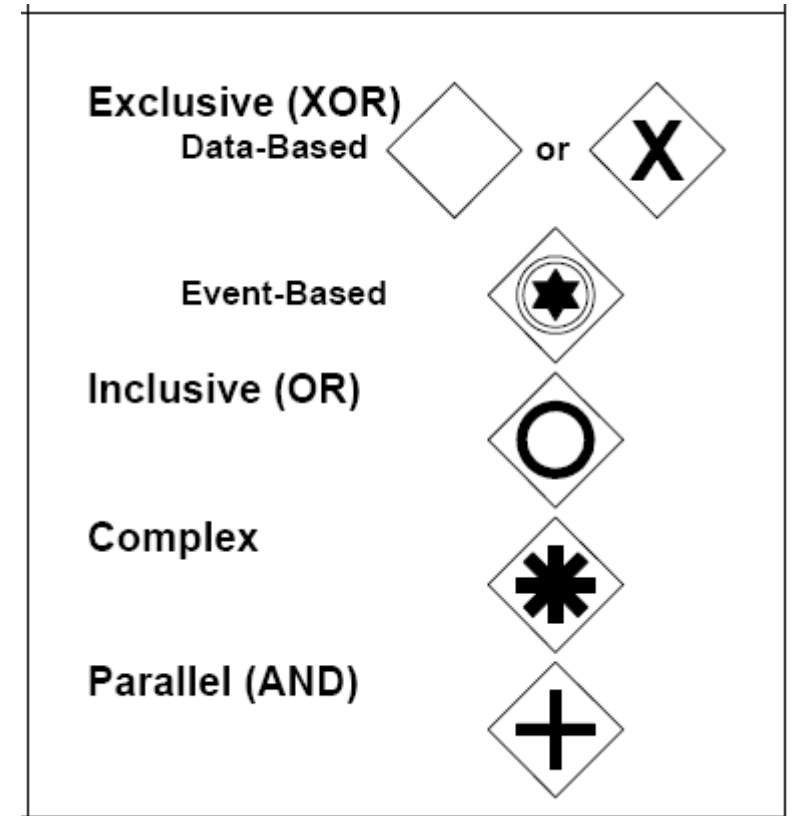
BPMN: Events

- A circunferência do elemento de evento descreve o "quando"
- O centro do elemento de evento pode descrever "o quê"

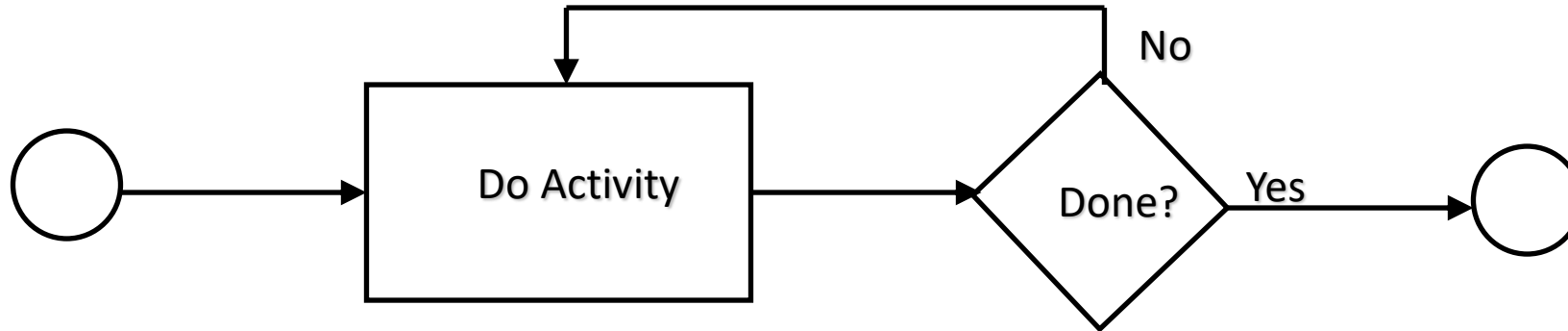


BPMN: Gateway Types

- O interior do elemento Gateway descreve "o quê"




BPMN: Simple Workflow



BPMN: Connecting Objects

- Existem três tipos de Connecting Objects
 - Sequence Flow
 - Message Flow
 - Association

Sequence Flow 

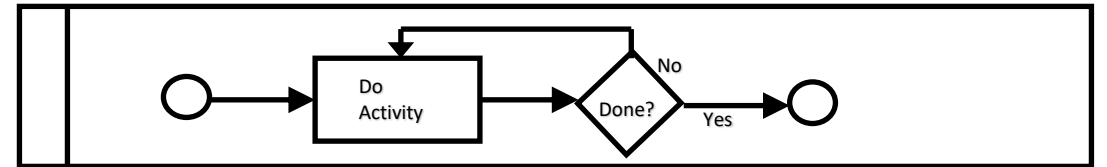
Message Flow 

Association 

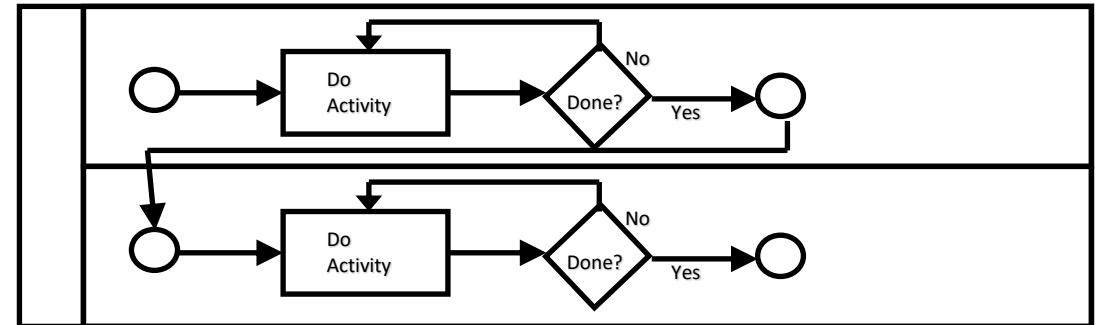
BPMN: Swimlane Objects

- Existem dois tipos de Swimlane Objects
 - Pools
 - Lanes

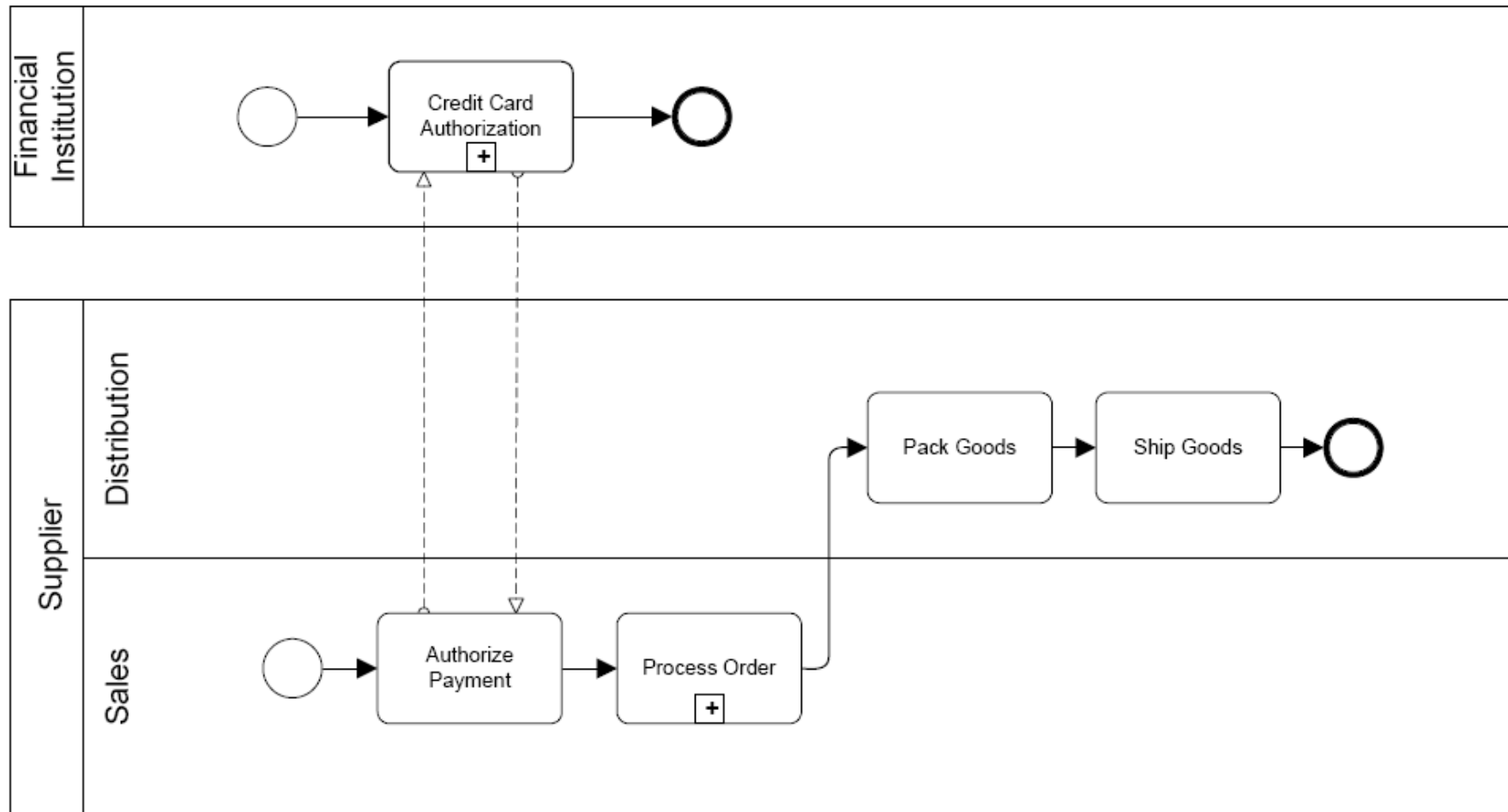
Pool



Lanes



BPMN: Simple Flow



BPMN: Artifacts

- Existem três tipos de Connecting Objects

- Data Object
- Group
- Annotation

Data Object

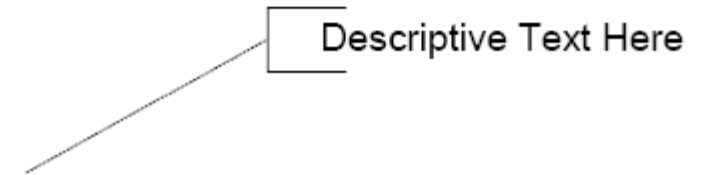


Name

Group

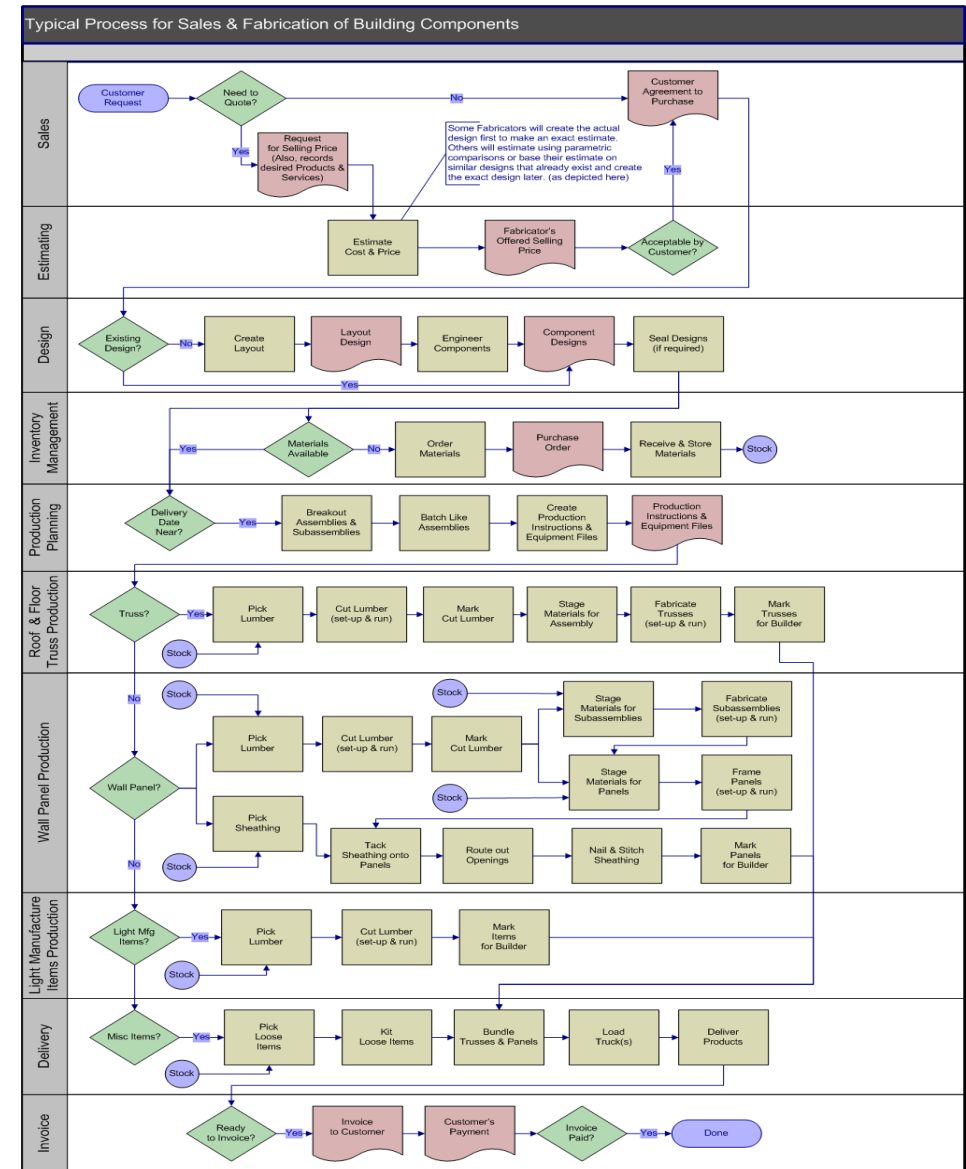


Annotation



BPMN: Workflow Diagrams

- Os elementos podem ser combinados para criar diagramas de fluxo de trabalho



Preparação da Componente Prática

Trazer de casa o seguinte software pré-instalado

1. Java SE (<https://www.oracle.com/pt/java/technologies/javase-downloads.html>)
 2. Apache Tomcat server (<https://tomcat.apache.org/download-90.cgi>), de preferência instalem a versão '32-bit/64-bit Windows Service Installer'
 3. Para realizar este trabalho é necessário instalar o ACTIVITI BPMN Engine (<http://activiti.org/download.html>) no vosso computador. O Activiti é uma ferramenta *open-source* de modelação de *workflows* que pode executar processos de negócios descritos na linguagem BPMN 2.0. Para fazerem a instalação sigam as instruções deste site <https://www.activiti.org/userguide/>, nomeadamente as instruções do capítulo 2.1 "One minute version".
 4. Postman (<https://www.postman.com/downloads/>) e instalar
 5. Façam o download do "Eclipse IDE for Java EE Developers" usando este link: <https://www.eclipse.org/downloads/packages/release/2020-12/r/eclipse-ide-java-developers>. Criem um workspace, de preferência na pasta do projeto
- **Atenção:** devem compilar o código com a mesma versão do JAVA instalada em 1!

Exercícios Práticos

- Acedam ao Moodle e descarreguem o ficheiro “trabalho_2.pdf”
- No final da aula, é necessária a submissão Individual no Moodle de um documento com as respostas ao exercícios
- Seguir a partir de:
 - #Lab 2: Utilização do ACTIVITI para modelar e executar processo de negócio

Algumas Bases

Executar o Activiti

Escrever no vosso Browser:

- <http://localhost:8080/activiti-app>

Sempre que fecharem a janela terminal, perdem estas configurações. Se quiserem uma solução permanente, têm que editar as variáveis de ambiente no ficheiro ~/.bash_profile



Para lançar o Tomcat em Windows

- Aceder a "Programas\Apache Software ...\Tomcat...\Bin"
- Executar "tomcat9.exe"
- Caso tenham problemas na var ambiente
 - setx -m JAVA_HOME "C:\Progra~1\Java\jdk1.8.0_XX"

Para Macs:

- Abrir readme.txt (seguir as instruções)
- Aceder a ".../bin"
- Depois de configuradas as variáveis de ambiente

```
export CATALINA_HOME=/Volumes/Data/Work/FCT/Lectures/AIS_20_21/apache-tomcat-9.0.43
export JAVA_HOME=/Volumes/Macintosh\ HD/Library/Java/JavaVirtualMachines/jdk1.8.0_201.jdk/Contents/Home
```

- Na linha de comandos, executar:
 - sh catalina.sh start

```
bin — nano ~/.bash_profile — 103x35
GNU nano 2.0.6 File: /Users/carlos/.bash_profile
export CATALINA_HOME=/Volumes/Data/Work/FCT/Lectures/AIS_21_22/apache-tomcat-9.0.43
export JAVA_HOME=/Volumes/Macintosh\ HD/Library/Java/JavaVirtualMachines/jdk1.8.0_201.jdk/Contents/Home
```



- Credenciais:
 - admin
 - Test

Nota: Podem definir outros utilizadores mas perder-se-ão sempre que o tomcat for parado

Importar uma App Activiti com um Processo

The screenshot displays the Activiti web interface. At the top, there are three main sections: 'Kickstart App' (labeled with a large orange circle containing the number 1), 'Task App', and 'Identity management'. Below these is a navigation bar with tabs for 'Processes', 'Forms', 'Decision Tables', and 'Apps' (which is selected). To the right of the 'Apps' tab is a dropdown menu for 'Administrator'. Below the navigation bar, the 'App definitions' section is visible. It includes a search bar, a status message 'You have 2 app definitions', and two app cards: 'Exercicio20App' (version v1) and 'Exercicio22App' (version v5). On the right side of the 'App definitions' section, there are two buttons: 'Create App' and 'Import App'. An orange arrow labeled '2' points to the 'Apps' tab, and another orange arrow labeled '3' points to the 'Import App' button.

Kickstart App

Task App

Identity management

Processes Forms Decision Tables Apps Administrator

App definitions

Create App Import App

Search

You have 2 app definitions

Last modified

My app definitions

Shared with Me

Shared with others

Exercicio20App

Exercicio22App

Criar um Processo

The image shows the Camunda BPM web interface. At the top, there are three main sections: 'Kickstart App' (labeled with a large orange circle '1'), 'Task App', and 'Identity management'. Below these, the 'Processes' tab is selected in the navigation bar. The 'Business Process Models' section shows a search bar and a list of processes. Two processes are visible: 'Exercicio20' (modified at 9:06 PM) and 'Exercicio22' (modified at 8:49 PM). An orange arrow labeled '2' points to the 'Processes' tab. Another orange arrow labeled '3' points to the 'Create Process' button in the top right corner of the 'Business Process Models' section.

Kickstart App

Task App

Identity management

Processes Forms Decision Tables Apps Administrator

Business Process Models

Create Process Import Process

You have 2 business process models

My processes

Exercicio20 Today at 9:06 PM

Exercicio22 Today at 8:49 PM

Associar uma form a uma Actividade

The screenshot displays the Camunda BPM web console interface. The top navigation bar includes tabs for Processes, Forms, Decision Tables, and Apps, with the user role 'Administrator' on the right. A toolbar with various icons for editing and viewing is located below the navigation bar.

On the left, a sidebar lists available elements:

- ▼ Start Events
 - Start event
 - Start timer event
 - Start signal event
 - Start message event
 - Start error event
- ▼ Activities
 - User task
 - Service task
 - Script task
 - Business rule task
 - Receive task
 - Manual task
 - Mail task
 - Camel task
 - Mule task
 - Decision task

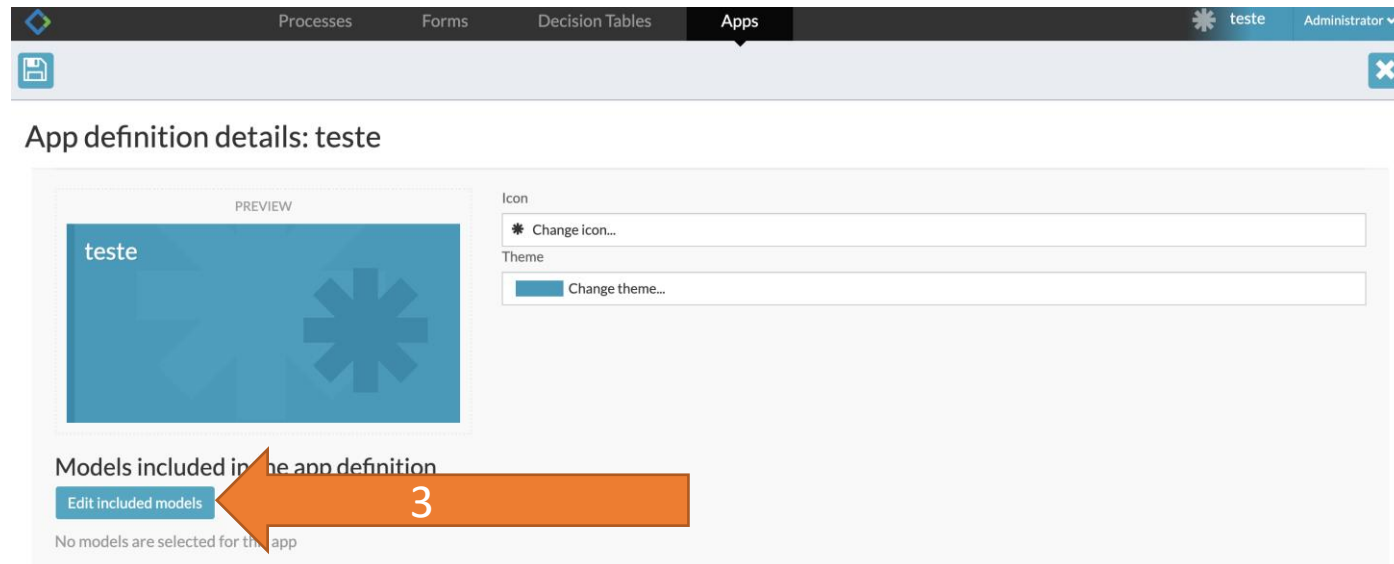
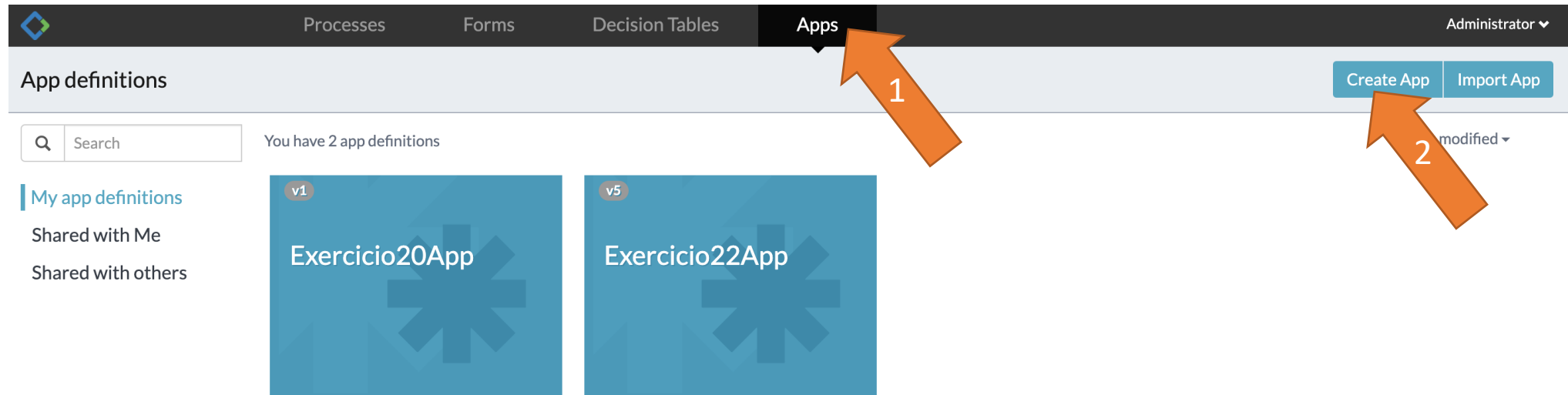
The main workspace shows a process diagram with a start event connected to a task. The task is currently selected, and its configuration panel is visible at the bottom.

The configuration panel for the task is titled 'teste' and contains the following settings:

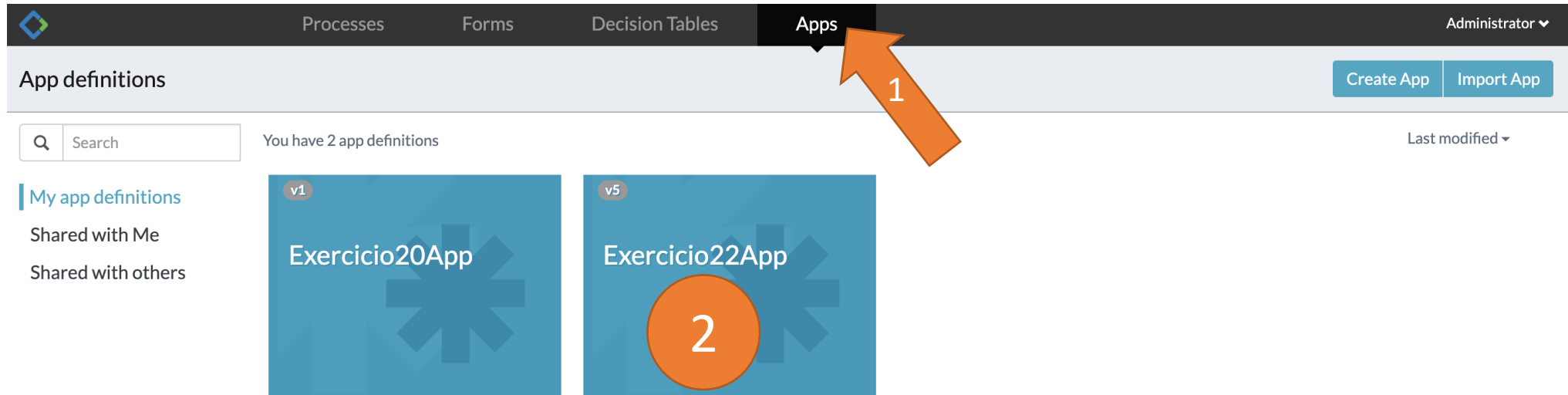
Property	Value
Multi-instance type :	None
Collection (Multi-instance) :	No value
Completion condition (Multi-instance) :	No value
Assignments :	No assignment selected
Referenced form :	No reference selected
Priority :	No value
Task listeners :	No task listeners configured
Form key (Multi-instance) :	No value
Is for compensation :	<input type="checkbox"/>
Form key :	No value
Due date :	No value
Form properties :	No form properties selected

A large orange arrow points to the 'Referenced form' field, which is currently set to 'No reference selected'.

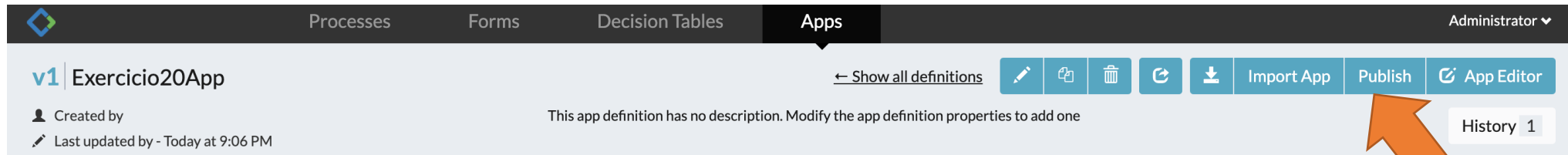
Criar uma App e associar um processo



Executar um uma App

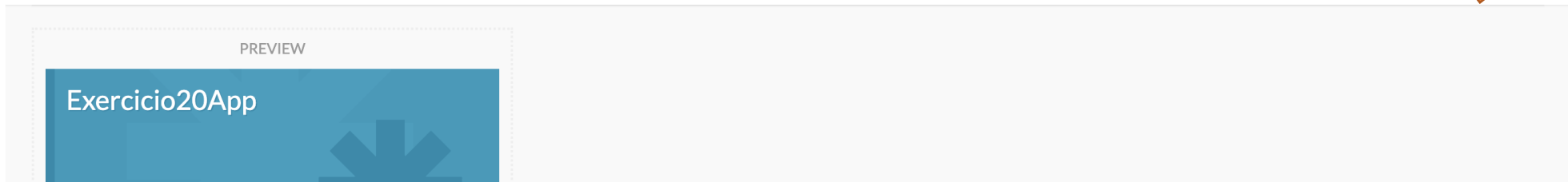


This screenshot shows the 'Apps' tab in a software interface. The top navigation bar includes 'Processes', 'Forms', 'Decision Tables', and 'Apps' (highlighted with an orange arrow labeled '1'). The 'App definitions' section shows a search bar and a list of app definitions. Two app definitions are visible: 'Exercicio20App' (v1) and 'Exercicio22App' (v5). The 'Exercicio22App' card has an orange circle with the number '2' on it. The interface also shows 'Create App' and 'Import App' buttons in the top right corner.



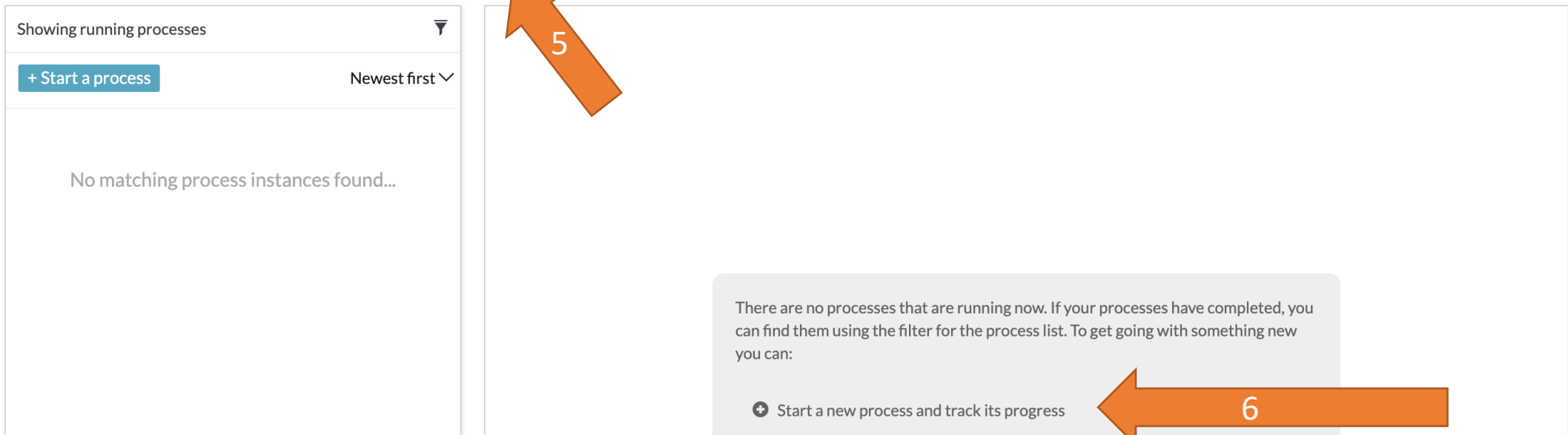
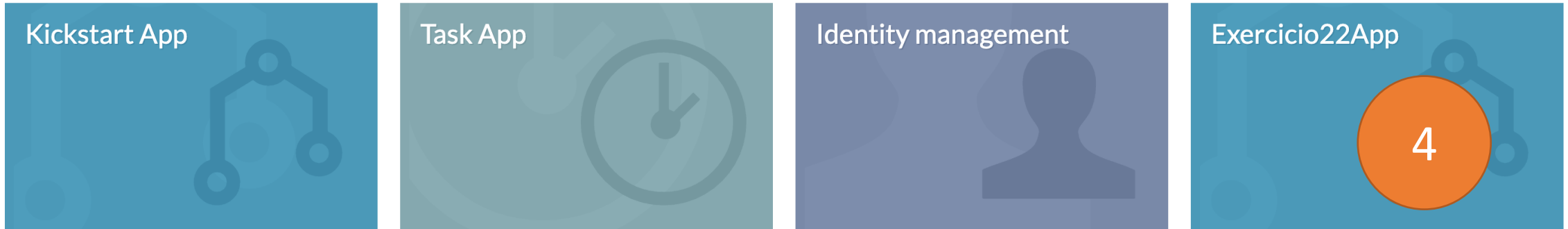
This screenshot shows the details of the 'Exercicio20App' (v1). The top navigation bar is the same as the previous screenshot. The 'App definition details: Exercicio20App' section shows the app's name, version, and a 'Show all definitions' link. Below this, there are icons for editing, deleting, and publishing. The 'Publish' button is highlighted with an orange arrow labeled '3'. The interface also shows 'Import App' and 'App Editor' buttons in the top right corner.

App definition details: Exercicio20App

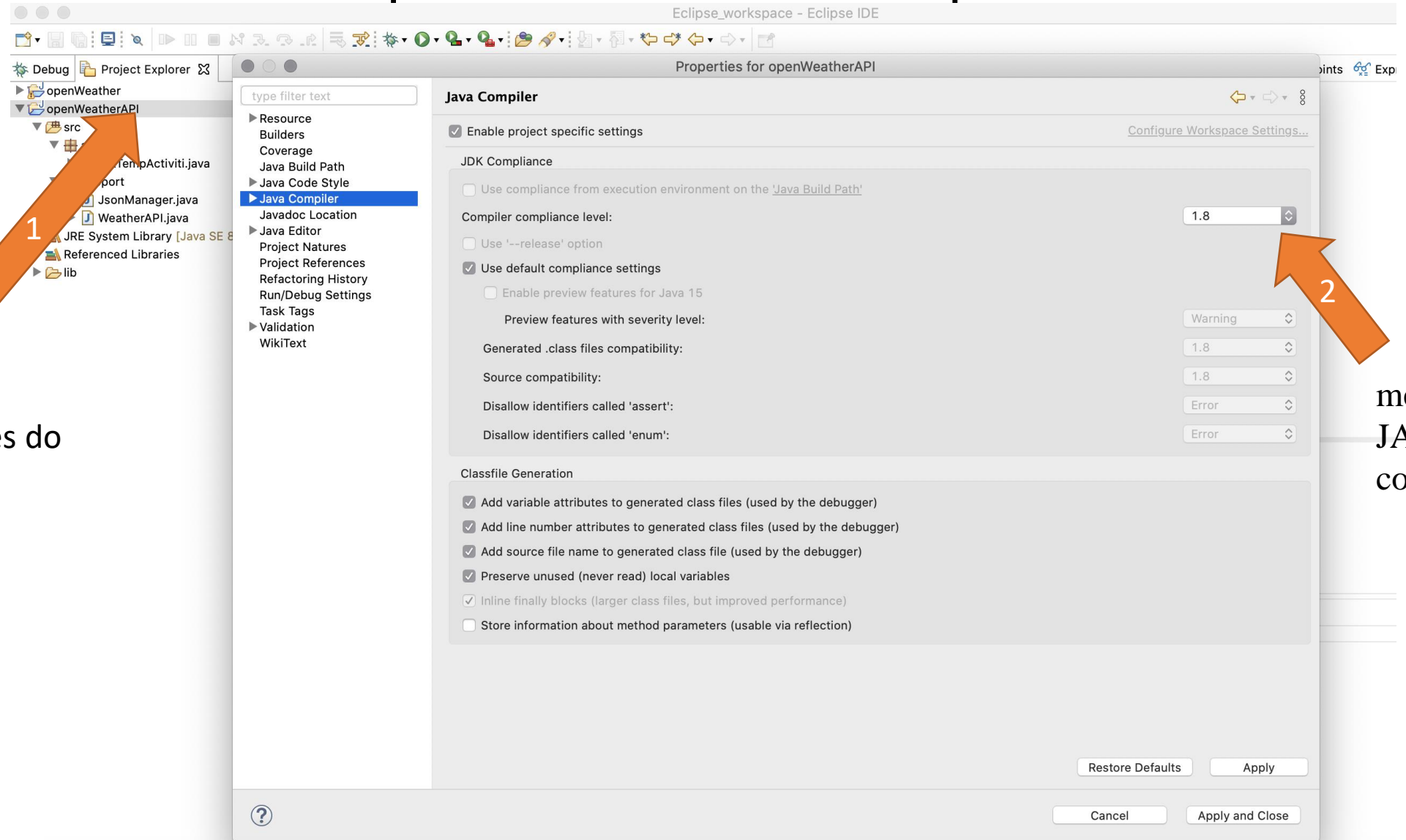


This screenshot shows a preview of the 'Exercicio20App'. The preview area is labeled 'PREVIEW' and shows a blue card with the text 'Exercicio20App' and a large blue arrow pointing downwards. The card is set against a light gray background.

Executar uma App e o seu processo



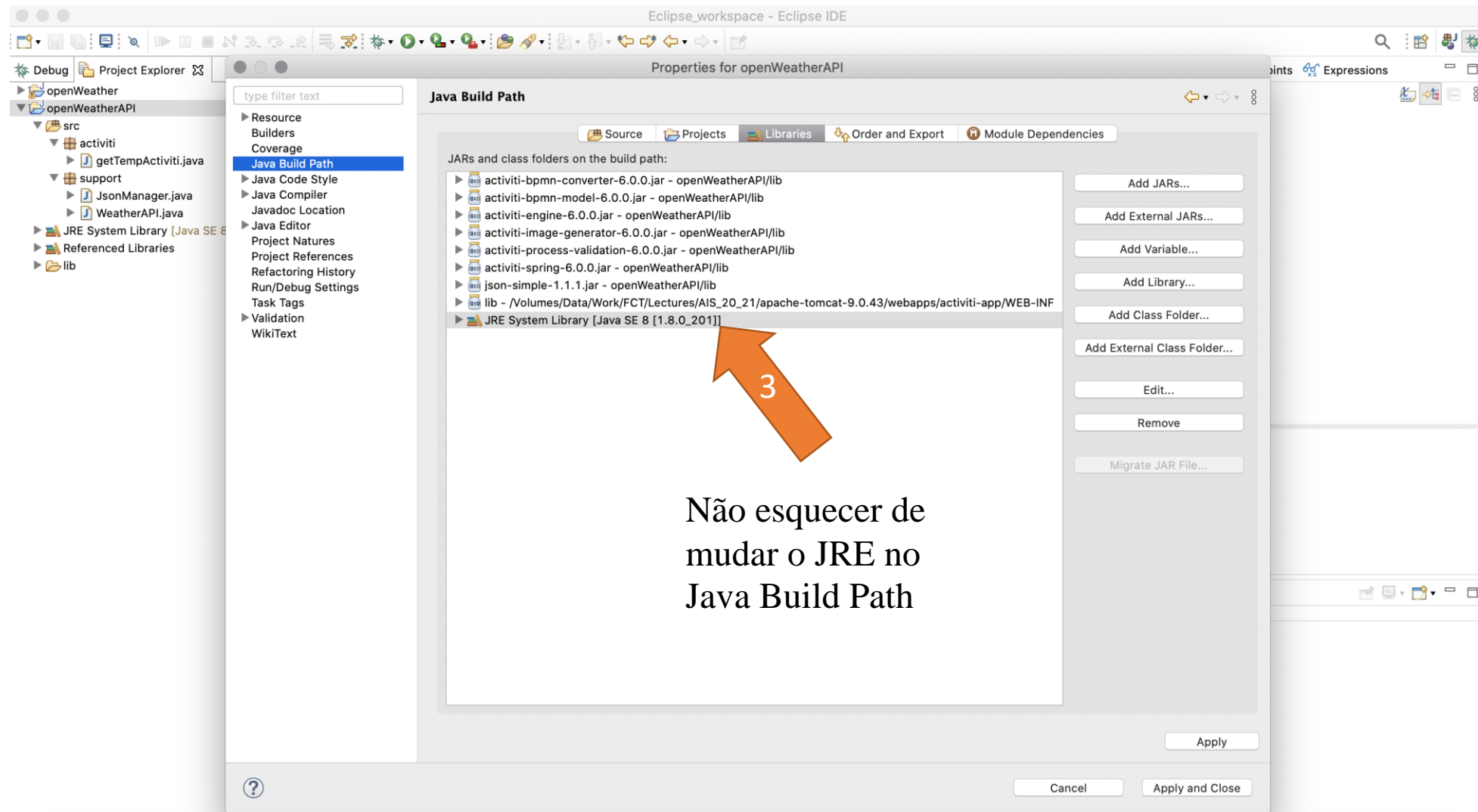
Mudar o Compiler Java no Eclipse



Aceder às
propriedades do
projecto

mesma versão do
JAVA instalada
com o ACTIVITI

Mudar o Compiler Java no Eclipse



Criar um ficheiro .JAR

