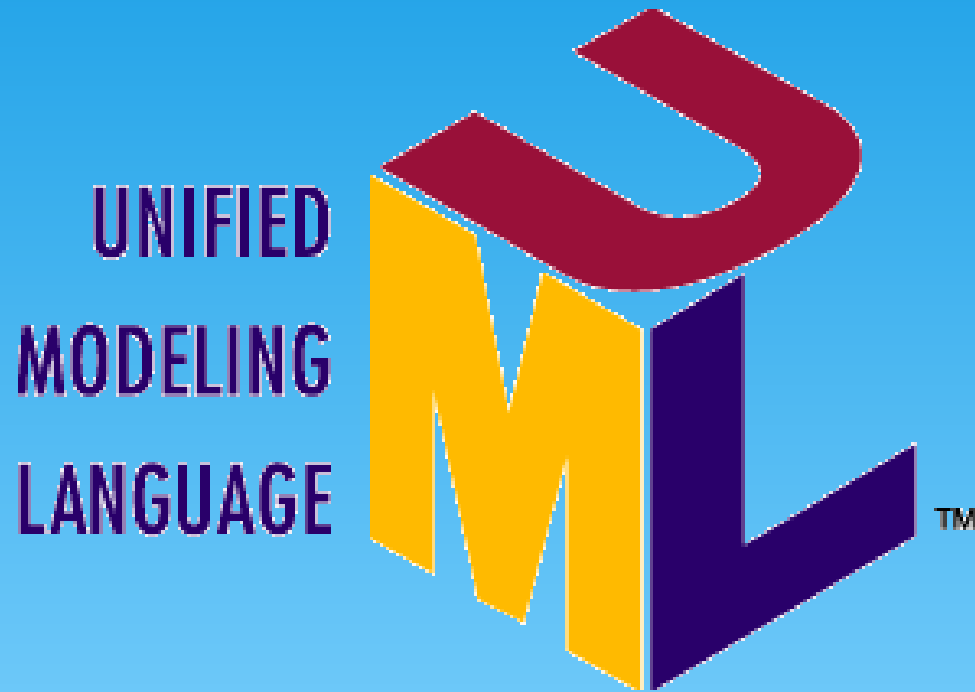


# Manual de UML



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# O que é o UML?

- \* Linguagem de Modelagem Unificada é uma representação visual de um determinado sistema de forma padronizada, atendendo as várias partes do sistema.
- \* Ou seja, que possui a mesma forma de representação, para diferentes sistemas.

# O que é o UML?

- \* “O Unified Modeling Language (UML) – é a especificação mais usada do OMG, e serve para representar modelos do mundo, não apenas a estrutura das aplicações, como também comportamentos, arquitetura, processos do negócio e estrutura dos dados.”

# O que representar?

Em um Jogo

* Estrutura da aplicação?	→	Códigos, Arquivos e pastas
* Comportamentos?	→	Iniciado, encerrado, pausado
* Arquitetura?	→	Apresentação, Serviços, Banco
* Processos de negócios?	→	Relação jogo e jogador
* Estrutura dos dados?	→	Dados em forma de classe (Personagem, Inimigos, Save)

# Como representar?

- \* Diagrama de Classe
- \* Diagrama de Caso de Uso
- \* Diagrama de Sequência
- \* Diagrama de Estado
- \* Diagrama de Componentes
- \* ...

# Ferramentas

- \* Astah (<http://astah.net/>)
- \* DIA (<https://wiki.gnome.org/Apps/Dia/>)
- \* ArgoUML (<http://www.argouml.tigris.org/>)
- \* **Ferramentas Online:**
  - \* Draw (<https://www.draw.io/>)
  - \* Creately(<http://creately.com/Draw-UML-and-Class-Diagrams-Online>)
  - \* yUML (<http://yuml.me/>)

# Astah – Baixando - Windows

Link: <http://astah.net/download>



**astah Student**

**We give students Astah licenses for FREE!**

[Download Now](#)

Files are totally compatible between Astah Professional and Astah Community.

**astah community**

A free UML editor -  
ready to use the instant  
you download it.

**Download**

[Windows 64-bit](#)

See our [feature matrix](#) to find out how Community compares to Professional

# Astah – Baixando - Linux

Link: <http://astah.net/faq/professional/how-to-run-astah-on-linux>

## Forma 1

**Now install Astah. Choose which way you wish to install: Deb Package or Apt Repository**

Using Deb Package

1. Download the Astah installer in Deb Package and save it in the preferred directory (e.g. /tmp)
2. Move to the directory in which you download and then check the file size by using the stat command
3. Become a root user and to install

```
#dpkg -i astah-professional(astah-community, astah-sysml or astah-gsn)_7.x_all.deb
```

4. Run Astah by typing:

```
$astah-pro (astah-com, astah-sysml or astah-gsn)
```



# Astah – Baixando - Linux

Link: <http://astah.net/faq/professional/how-to-run-astah-on-linux>

## Forma 2

### Using Apt Repository

1. Become root user
2. Receive a public key for the ChangeVision's APT Repository

```
# apt-key adv --keyserver pgp.nic.ad.jp --recv-keys C22BD678
```

3. Add a line shown below at the end of /etc/apt/sources.list and add ChangeVision's APT Repository

```
deb http://members.change-vision.com/repos/apt/ astah main
```

4. Update the Apt repository

```
# apt-get update
```

5. Install Astah from the ChangeVision Apt repository

```
# apt-get install astah-professional (astah-community, astah-sysml or astah-gsn)
```

# Astah – Baixando - Linux

Link: <http://astah.net/faq/professional/how-to-run-astah-on-linux>

## Forma 3

### Download and Install Astah

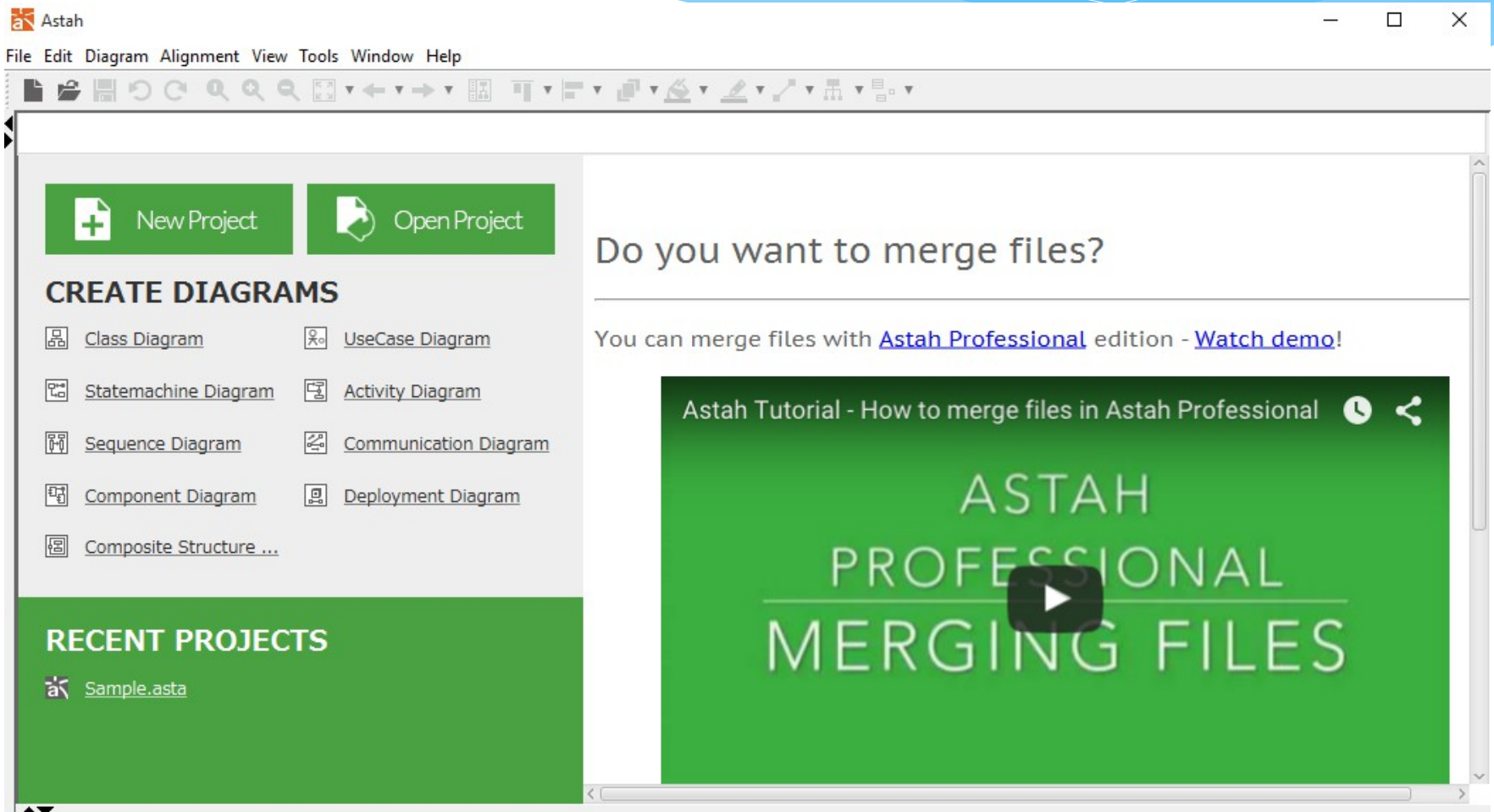
1. Download the zip file for the preferred Astah ([Professional](#), [Community](#), [SysML](#)) or [GSN](#)) and save it in the preferred directory (e.g. /tmp)
2. Move to the directory in which you downloaded and then check the file size by using the stat command
3. Extract the zip file by using unzip command
4. Modify the Shell script in the Astah file to apply to your environment and then change the permission for it to be executable

```
#chmod 755 ./astah
```

5. Execute the shell Script

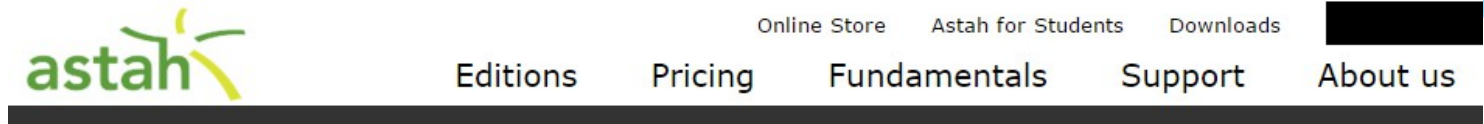
```
#./astah
```

# Astah – Conhecendo a Interface



# Astah – Tradução

Link: <http://astah.net/features/gui-localization>



## GUI Localization

The Astah GUI can be localized in viarious languages by using the external resource files.



- [How to use resource files](#)
- [How to create resource files](#)
- [How to release resource files](#)

Version	Language/Country	File	Developer	Email	Date
7.0.x	English/-	<a href="#">astah-gui_en_7_0_x.zip</a>	(Sample)	-	June 24, 2015
6.9.x	English/-	<a href="#">astah-gui_en_6_9_x.zip</a>	(Sample)	-	October 9, 2014

# Astah – Conhecendo a Interface



File Edit **Diagram** Alignment View Tools Window Help

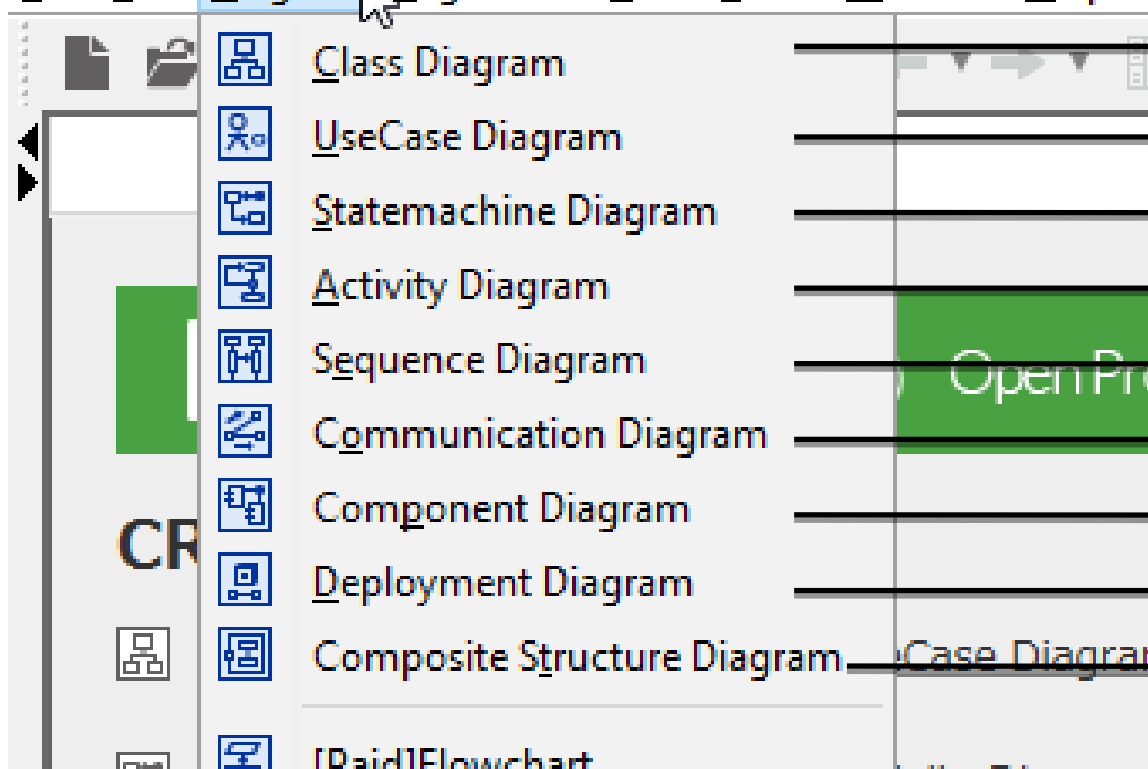


Diagrama de Classe

Diagrama de Caso de Uso

Diagrama de Estado

Diagrama de Atividade

Diagrama de Sequencia

Diagrama de Comunicação

Diagrama de Componente

Diagrama de Distribuição

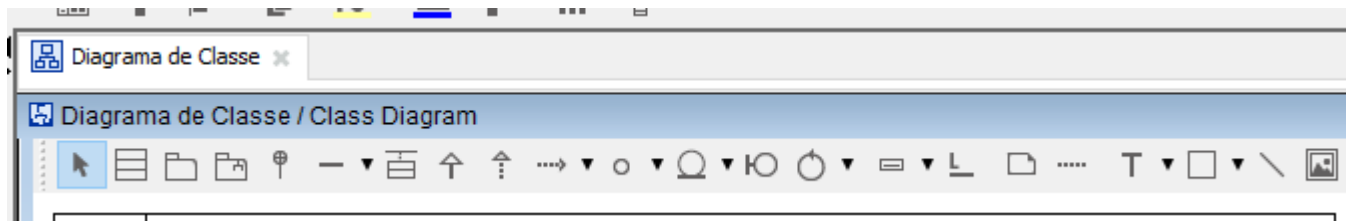
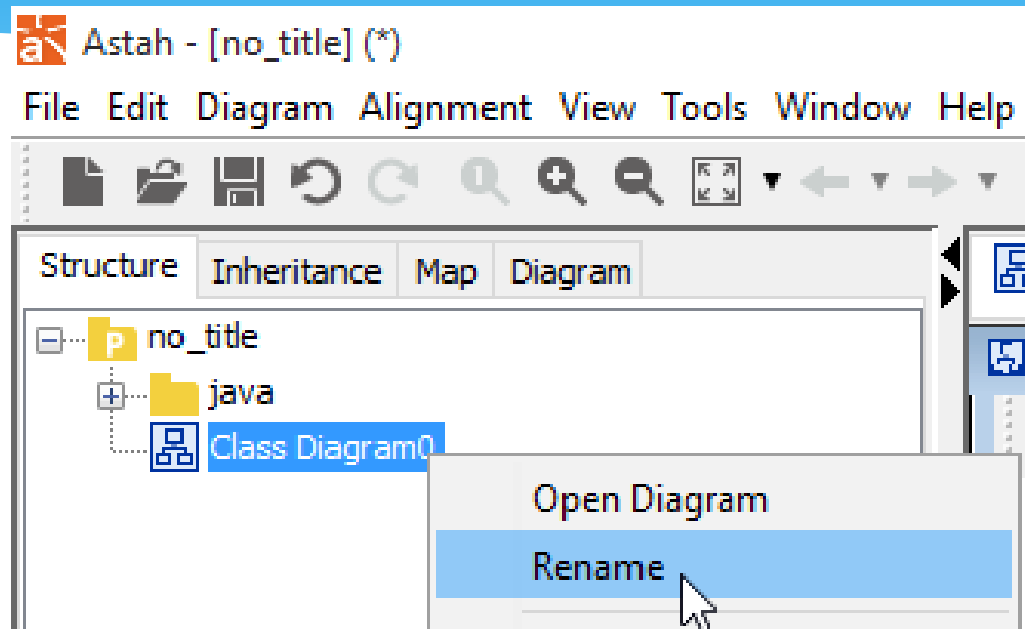
Diagrama de Estrutura Composta

# Astah – Diagrama de Classe

- \* Quando usar?

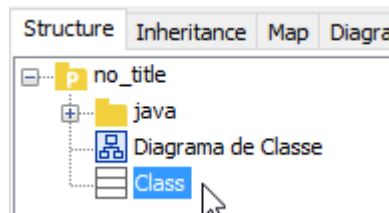
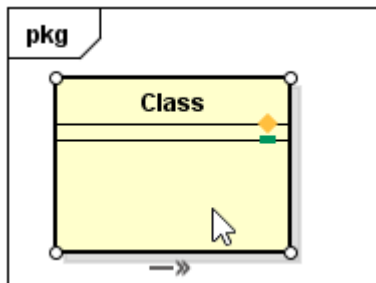
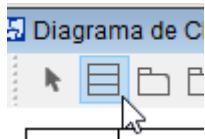
- \* Quando o programador precisa saber quais serão as dependências e relações entre as classes.
- \* Quando analista quer se comunicar com o cliente utilizando uma notação de fácil compreensão, para buscar novas informações sobre objetos.

# Astah – Diagrama de Classe

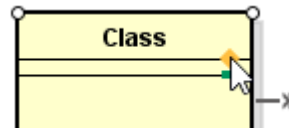


# Astah – Diagrama de Classe

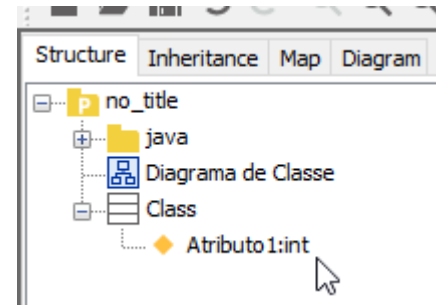
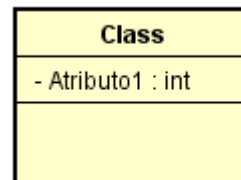
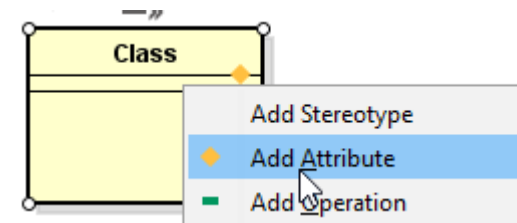
## Criando Classe



## Adicionando Atributo



ou

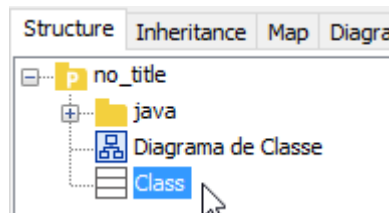
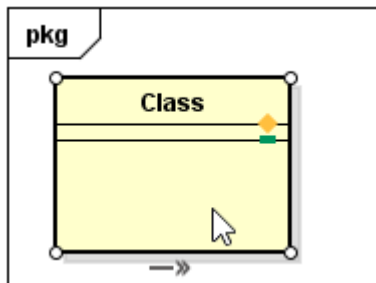
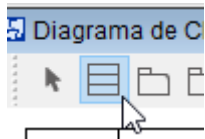


Base	Stereotype	Constraint
Name	Atributo1	
Type	int	
Type Modifier		
Aggregation	composite	
Initial Value		
Visibility	private	
Static	false	
ReadOnly	false	
Multiplicity		
Derived	false	
Definition		

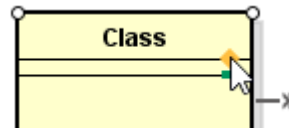


# Astah – Diagrama de Classe

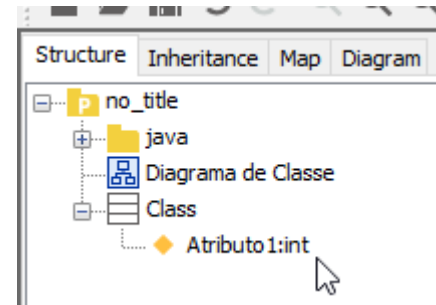
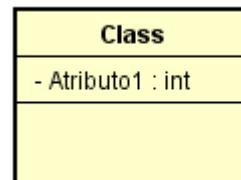
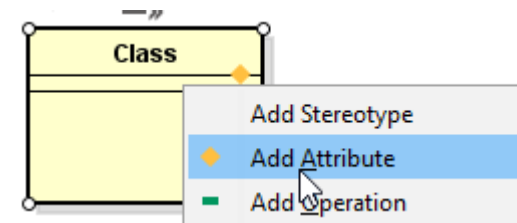
## Criando Classe



## Adicionando Atributo



ou



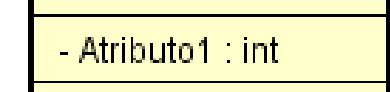
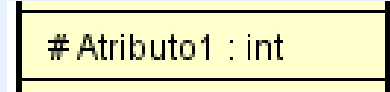
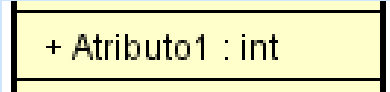
Base	Stereotype	Constraint
Name	Atributo1	
Type	int	
Type Modifier		
Aggregation	composite	
Initial Value		
Visibility	private	
Static	false	
ReadOnly	false	
Multiplicity		
Derived	false	
Definition		

# Astah – Diagrama de Caso de Uso

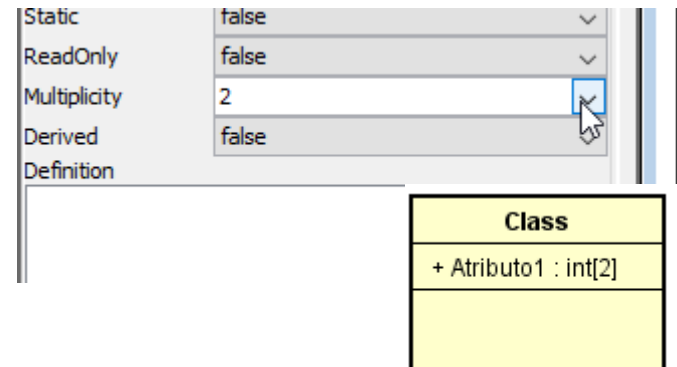
## Informações do Atributo

### Representação

NomeDoAtributo : TipoDoAtributo

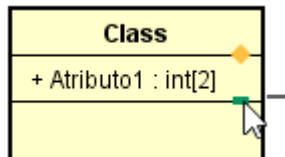
Visibilidade	Representação
Private	-  - Atributo1 : int
Protected	#  # Atributo1 : int
Public	+  + Atributo1 : int

### Multiplicidade

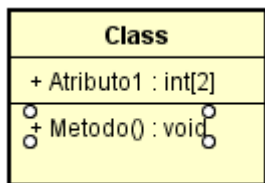
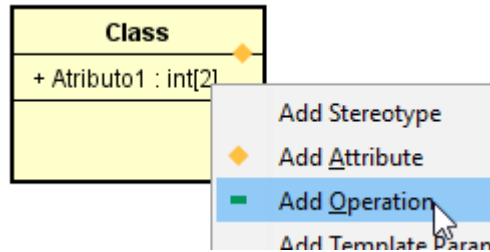


# Astah – Diagrama de Classe

## Adicionando Métodos



ou



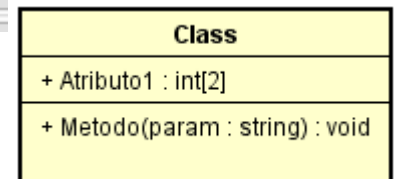
Post Condition	Body Condition	Constraint
Base	Parameters	Stereotype
Name	Metodo	
Return Value	void	
Type Modifier		
Visibility	public	
Static	false	
Abstract	false	
Leaf	false	
Definition		

## Adicionando Parametros

Post Condition	Body Condition	Constraint
Base	Parameters	Stereotype
Name	Type	Type Modi...
param	string	in

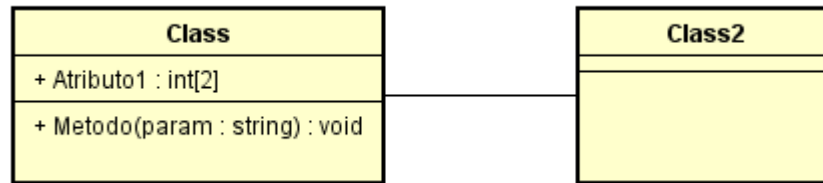
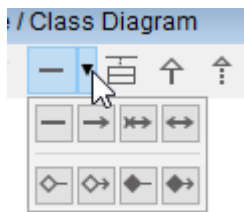
Buttons: Add, Delete, Edit

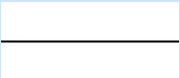
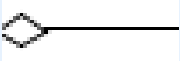
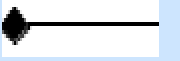
Buttons: Up, Down



# Astah – Diagrama de Classe

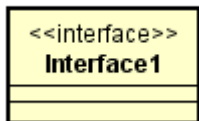
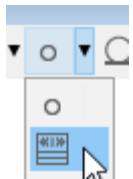
## Associações



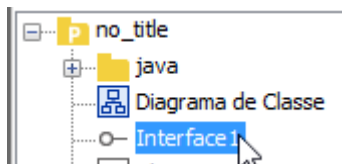
Símbolo	Nome	Função
	Associação	Uma classe se comunica com outra
	Agregação	A existência do Objeto-Parte não depende do Objeto-Todo
	Composição	A existência do Objeto-Parte não faz sentido se o Objeto-Todo não existir

# Astah – Diagrama de Classe

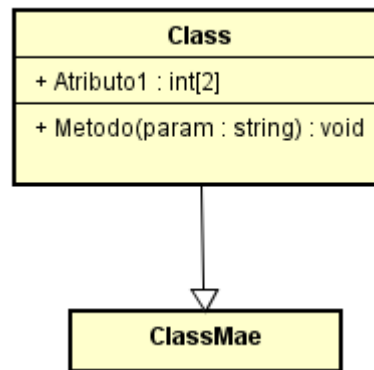
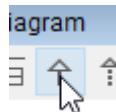
## Interfaces



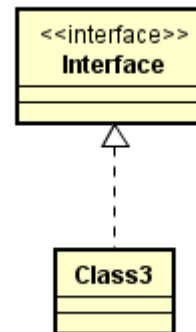
Interface1



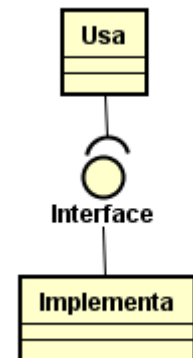
## Herança:



## Realização

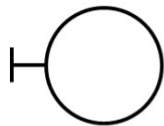


## Requer interface



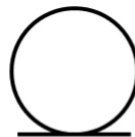
# Astah – Diagrama de Classe

Boundary/Control/Entity



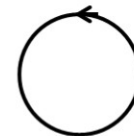
Boundary

Classe Fronteira



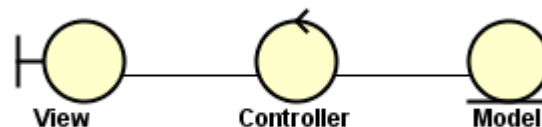
Entity

Classe entidade  
(Implementa objetos)



Control

Classes Controllers



# Astah – Diagrama de Caso de Uso

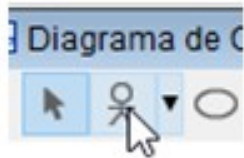
## \* Quando usar?

- \* Um caso de uso é a descrição do comportamento do sistema do ponto de vista do usuário



# Astah – Diagrama de Caso de Uso

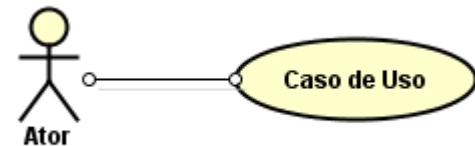
Ator



Caso de Uso



Associação

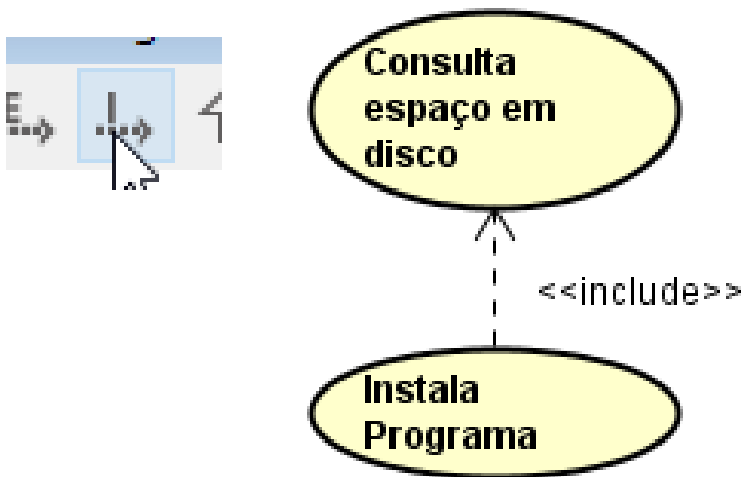




# Astah – Diagrama de Caso de Uso

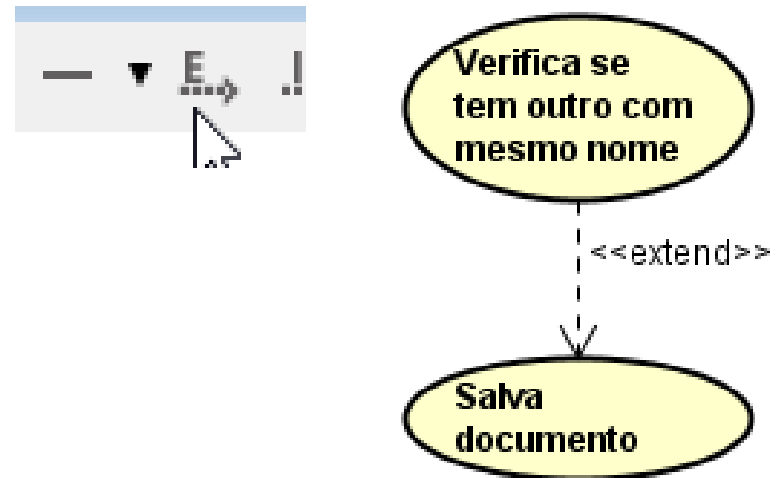
## Include

Quando que um caso de uso for executado, outro OBRIGATORIAMENTE será executado



## Extend

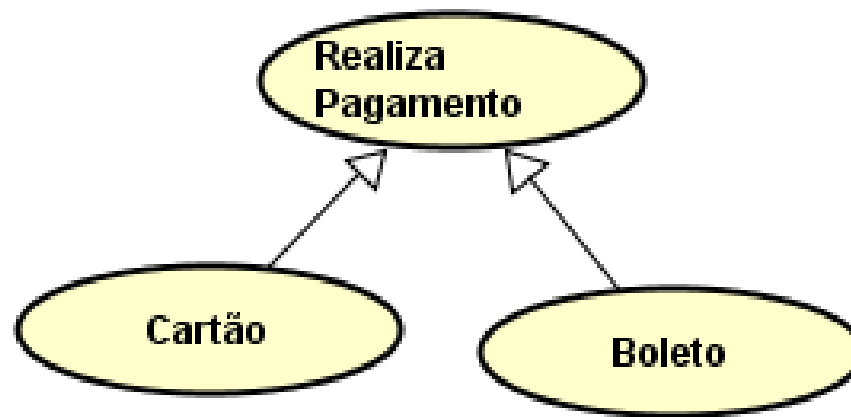
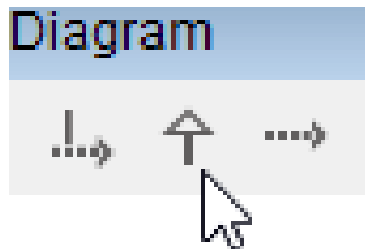
Quando que um caso de uso for executado, outro PODERÁ ser executado



# Astah – Diagrama de Caso de Uso

## Generalização

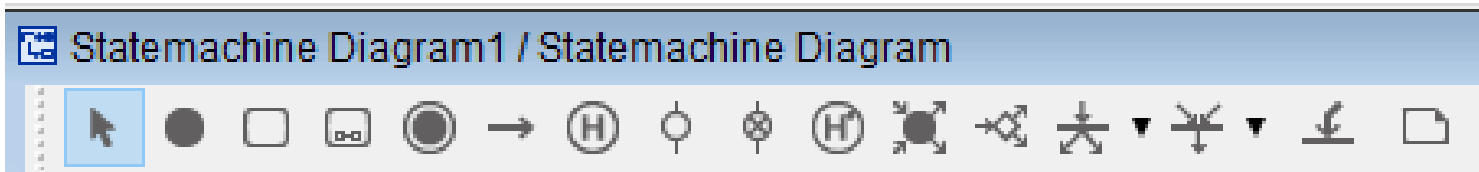
Executa um Caso de Uso e uma variação



# Astah – Diagrama de Estado

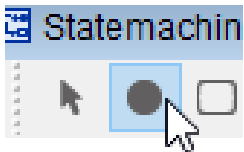
## \* Quando usar?

- \* Representar o estado/Comportamento de um objeto;
- \* Baseado em estados

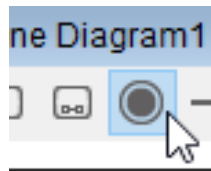


# Astah – Diagrama de Estado

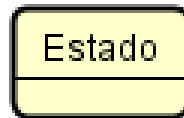
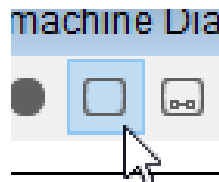
Estado Inicial



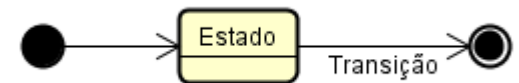
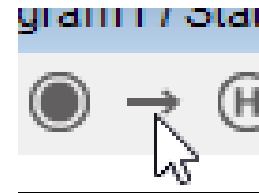
Estado Final



Estado



Transição



# Astah – Diagrama de Estado

## Representação da Transição

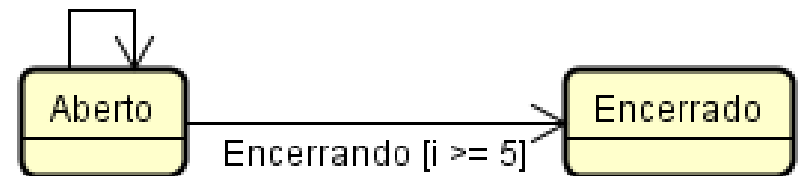
Transição [Condição]/Ação

Trigger [Guard]/Action

Base	
Source	Estado
Target	FinalState0
Trigger	
Transição	
Guard	
Action	

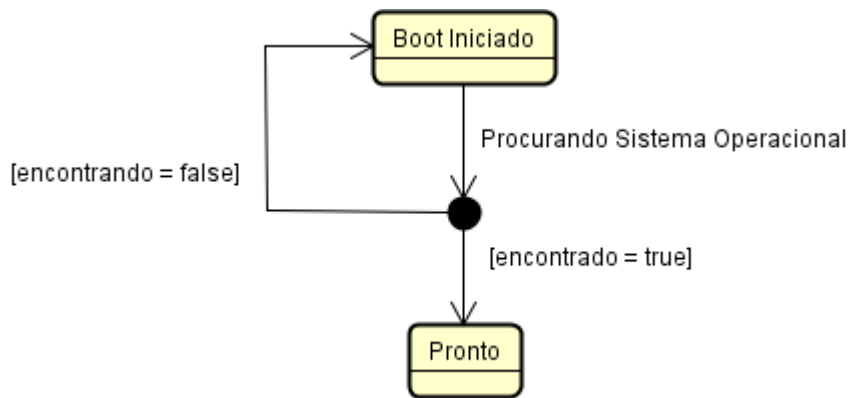
## Exemplo de Inscrições

Cadastro [i < 5] / i++

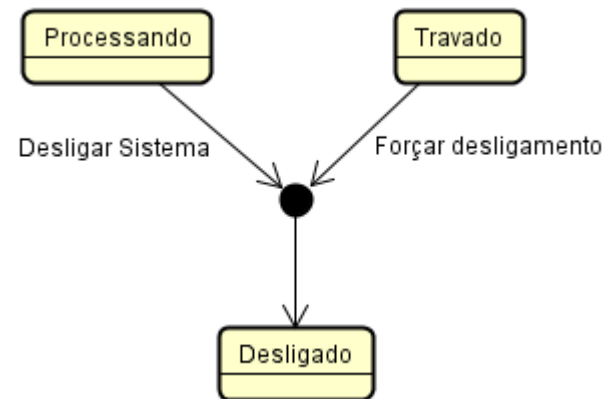


# Astah – Diagrama de Estado

Bifurcação



Junção



# Astah – Diagrama de Atividade

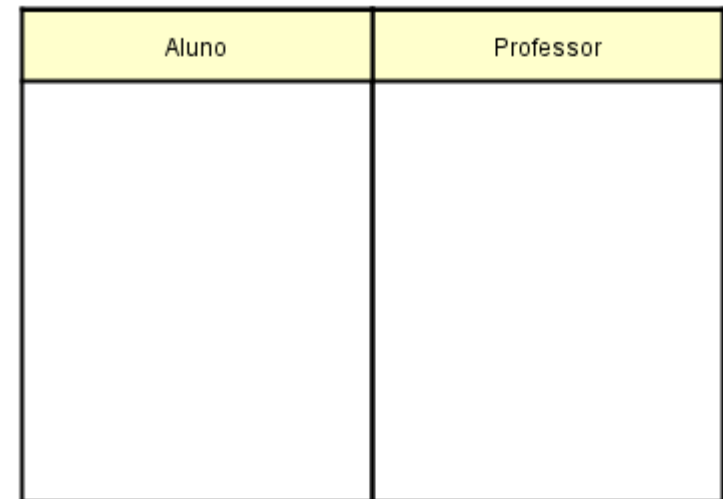
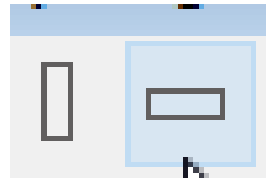
## \* Quando usar?

- \* Demonstrar o fluxo de atividades em um único processo.
- \* Baseado em ações.



# Astah – Diagrama de Atividade

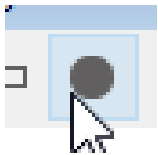
Divisórias



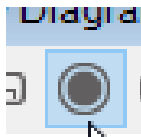


# Astah – Diagrama de Atividade

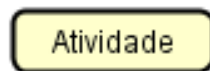
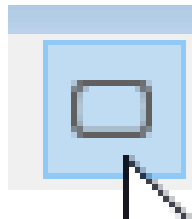
Nó Inicial



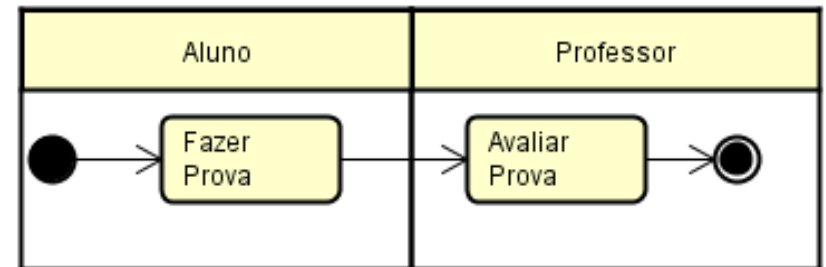
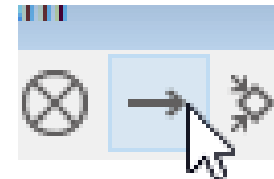
Nó Final



Atividade



Controle de Fluxo



# Astah – Diagrama de Atividade

## Representação do Fluxo

[Condição]/Ação

[Guard]/Action

Base	Stereotype
Source	Fazer Prova
Target	Avaliar Prova
Guard	

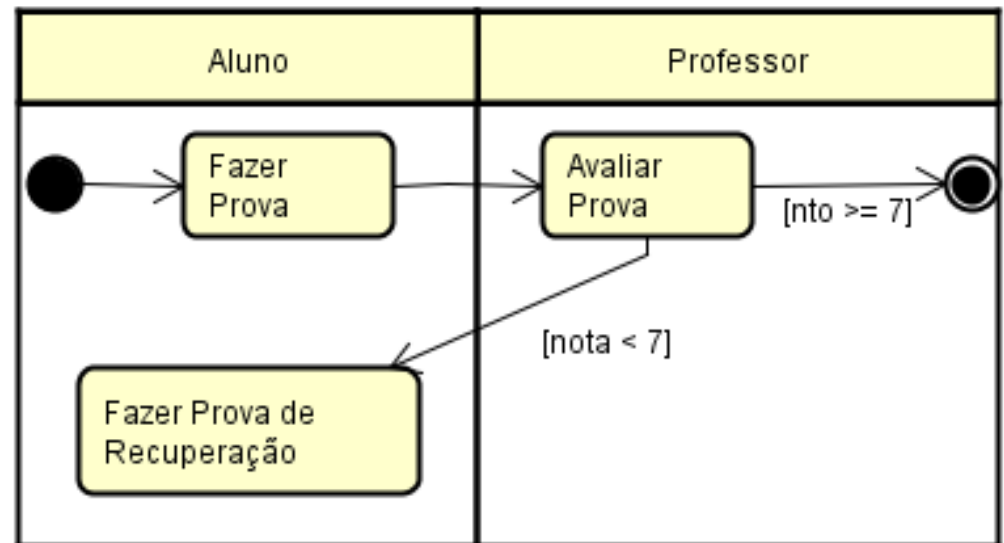
  

Action

Weight

Close

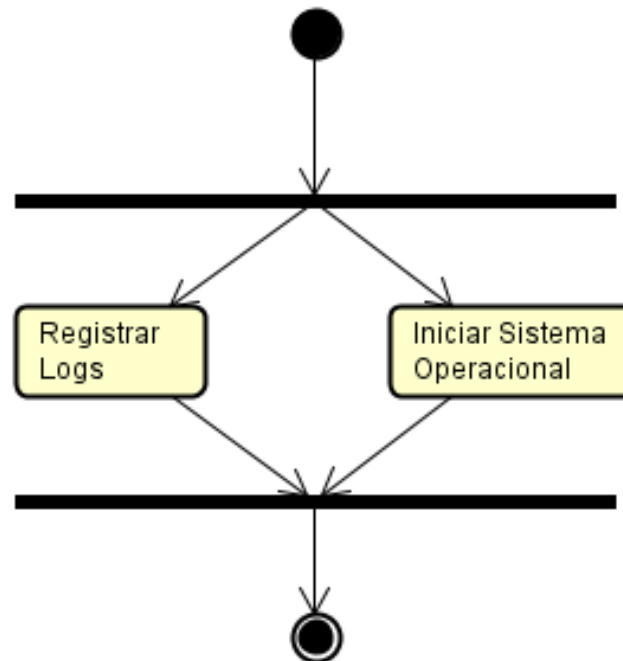


# Astah – Diagrama de Atividade

Bifurcação e Junção



Processo Paralelo



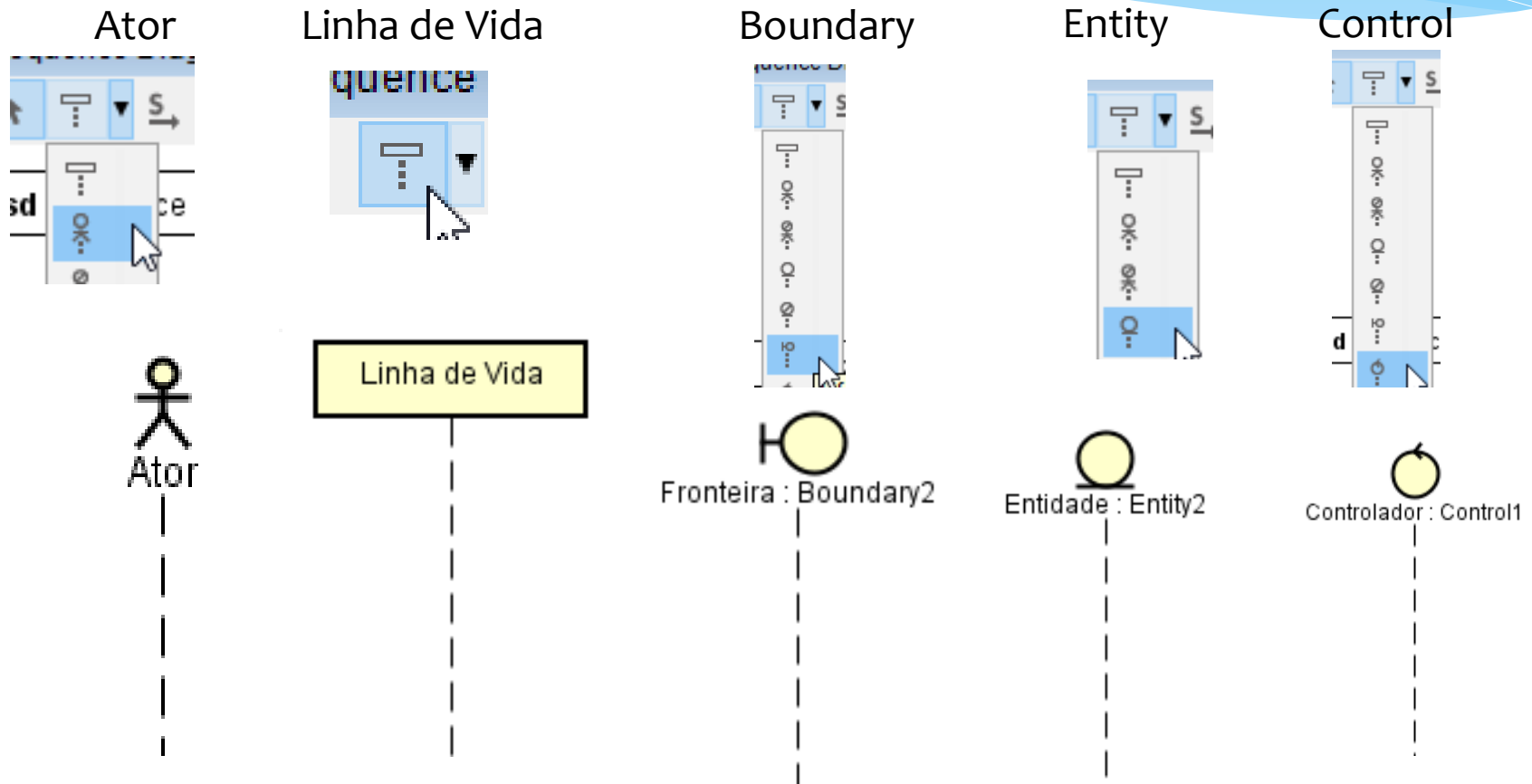
# Astah – Diagrama de Sequencia

## \* Quando usar?

- \* Descrever como objetos colaboram ao longo do tempo.

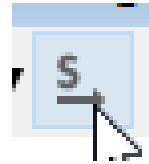


# Astah – Diagrama de Sequencia



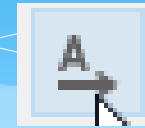
# Astah – Diagrama de Sequencia

## Mensagem Síncrona

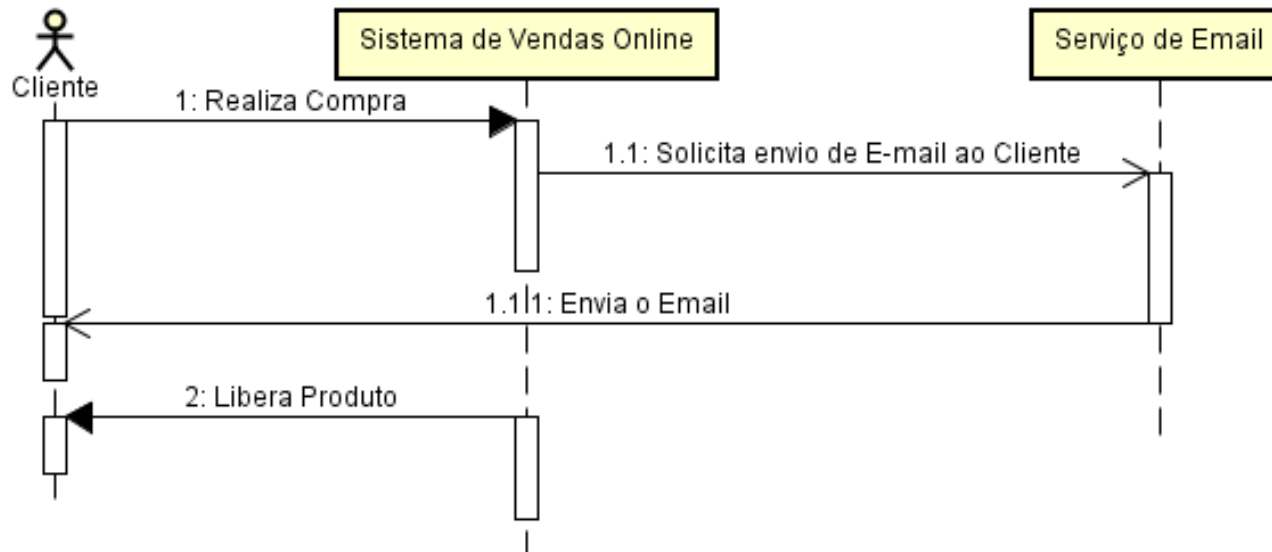


O sistema só continua,  
após completar essa tarefa

## Mensagem Assíncrona

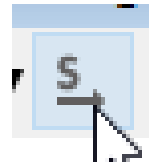


O sistema continua, sem esperar  
retorna da mensagem



# Astah – Diagrama de Sequencia

## Mensagem Síncrona



A sequência só continua, após completar essa tarefa

## Mensagem Assíncrona

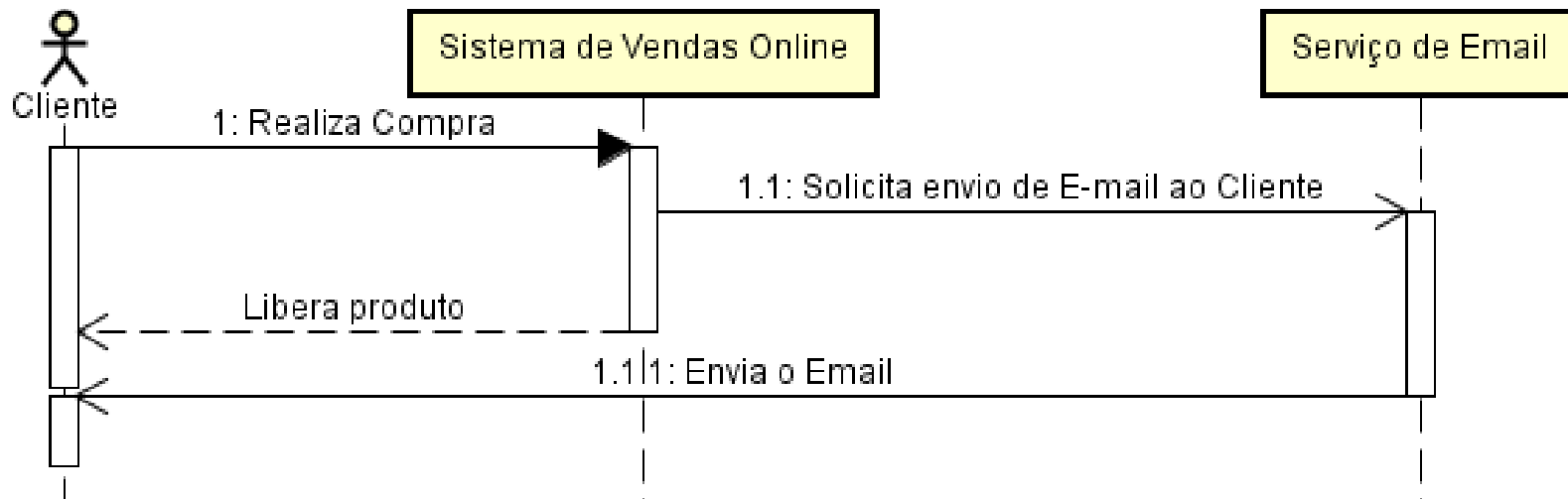


A sequência continua, sem esperar retorno da mensagem

## Resposta



Responde a mensagem



# Astah – Diagrama de Sequencia

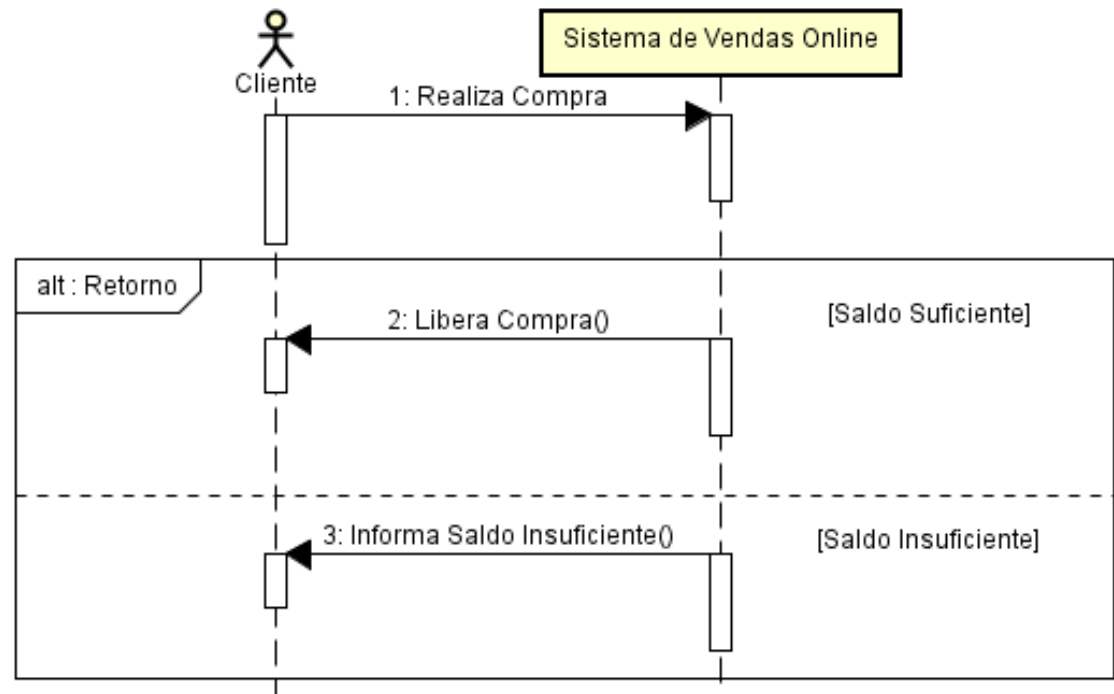
Condições



Base	Operand
Name	Retorno
Operator	alt
	alt
	assert
	break
	consider
	critical
	ignore
	loop
	neg
	opt
	par
	seq
	strict

Close

Base	Operand
Name	Guard
	Saldo Suficiente
	Saldo Insuficiente





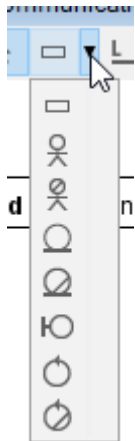
# Astah – Diagrama de Comunicação

- \* Quando usar?

- \* Os diagramas de comunicação são utilizados para mostrar como os objetos interagem para executar o comportamento de um caso de uso específico ou de parte de um caso de uso. É semelhante ao Diagrama de Sequência, porém dando maior foco a classes e interfaces.

# Astah – Diagrama de Comunicação

Objetos que irão se relacionar



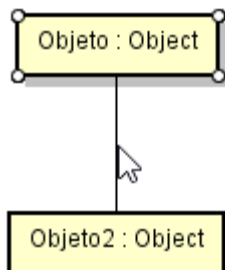
NomeDoObjeto : NomeDaClasse

Objeto : Object

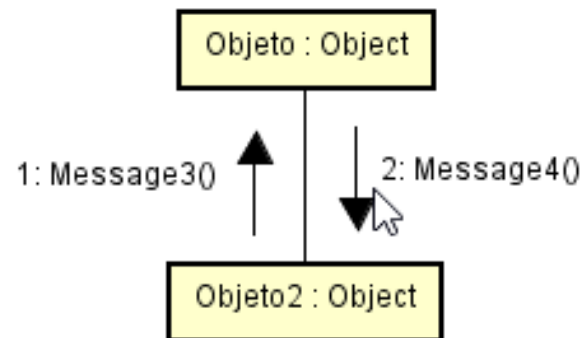
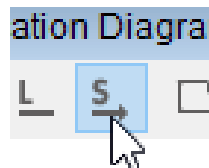
# Astah – Diagrama de Comunicação

## \* Relacionamentos

Inicia uma relação



Adiciona uma mensagem



# Astah – Diagrama de Componente

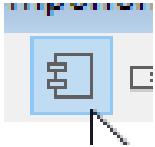
- \* Quando usar?

- \* Mostram os elementos reutilizáveis de software e sua interdependência



# Astah – Diagrama de Componente

Componente



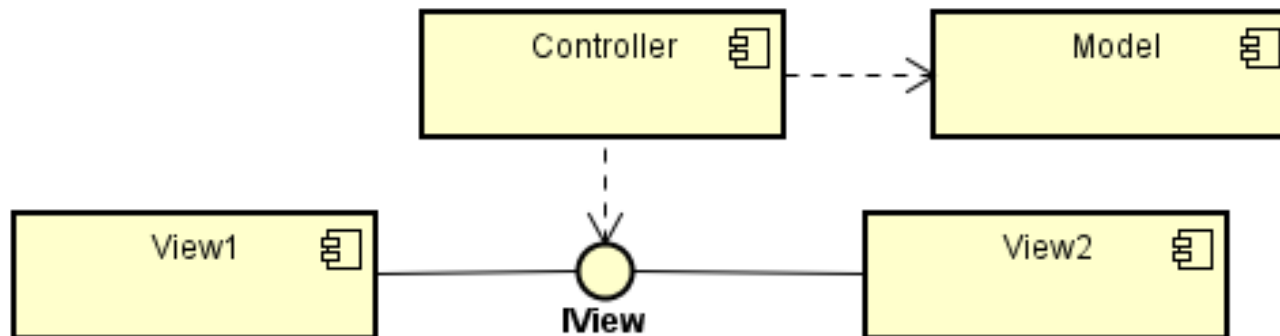
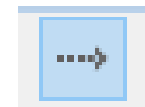
Interface



Fornecer/Usar de Interface



Dependência



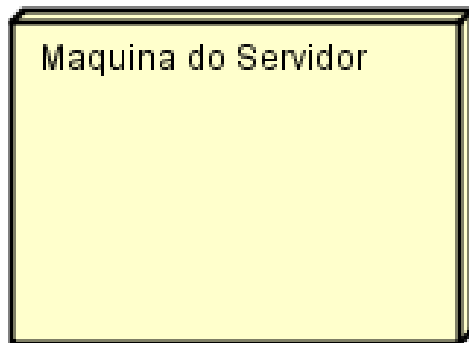
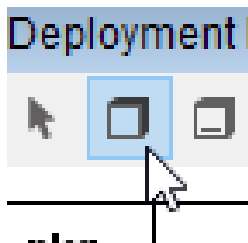
# Astah – Diagrama de Distribuição (Deployment/Implantação)

- \* Quando usar?

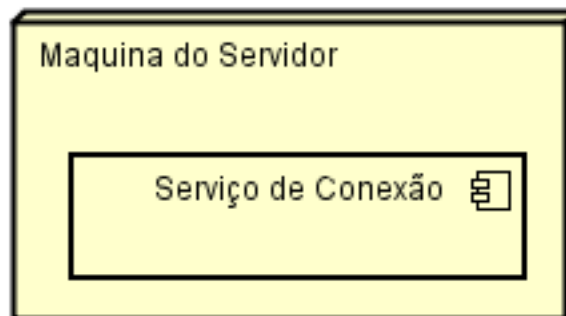
- \* Os diagramas de distribuição mostram a distribuição de hardware do sistema

# Astah – Diagrama de Distribuição (Deployment/Implantação)

Nós (Hardware)

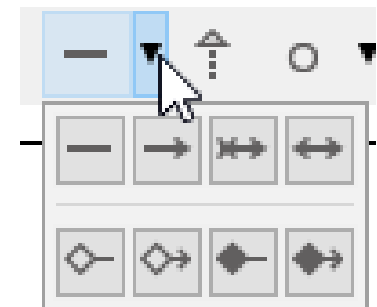


Componentes

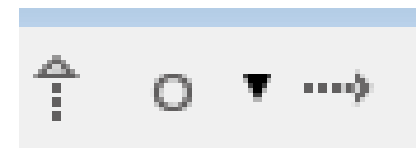


Associações

Simple  
Agregação  
Composição



Implementação, Interface  
e Dependência



# Tarefa

- \* Realizar através dos diagramas de Caso de Uso, Sequencia, Classe, Atividade e Estado as seguintes representações (Não pode repetir diagramas):
  - \* Realização de matricula;
  - \* Realizar prova;
  - \* Lançar nota;
  - \* Aprovar/reprovar aluno.
- \* Atores:
  - \* Professor;
  - \* Sistema Acadêmico;
  - \* Aluno;
  - \* Secretaria.



# Tarefa 2

- \* Através do Diagrama de Sequência fazer um diagrama que atenda os seguintes requisitos de um locadora de DVD:
  - \* Primeiramente o atendente deve verificar se o cliente está cadastrado. Se este não estiver, a locação deve ser recusada.
  - \* Em seguida deve verificar se o cliente possui alguma locação pendente, caso em que também recusará o empréstimo.
  - \* Se o cliente existir e não tiver locações pendentes, então a locação deverá ser registrada e as cópias emprestadas ao cliente.
  - \* Durante o registro da locação deverão ser registrados também todos os itens da locação