

The banner features a dark blue header with a molecular or network graphic on the left. In the center, the text "Curso de Extensão" and "Tecnologias Microsoft" is displayed above the UNICAMP logo, which consists of a circular emblem with radiating lines and the word "UNICAMP" below it. A light blue horizontal bar runs across the middle of the banner. Below this bar, the code "INF-0997" is printed. The main title "Azure DevOps – Pipeline com YAML" is centered in a large, bold, dark font. The footer of the banner contains the professor's name "Prof. José Alexandre D'Abruzzi Pereira" and two email addresses: [joseadp@gmail.com](mailto:joseadp@gmail.com) and [josep@dei.uc.pt](mailto:josep@dei.uc.pt). The date "26 de Novembro de 2022" is also present. At the bottom, there is a dark bar with the "INSTITUTO DE COMPUTAÇÃO" logo.

INF-0997

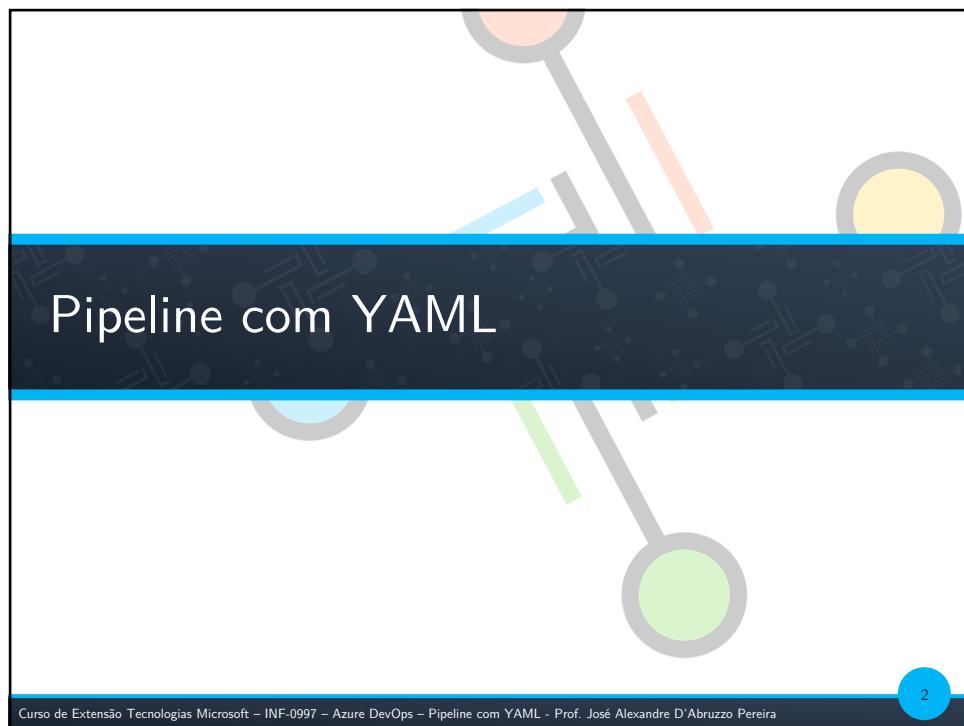
# Azure DevOps – Pipeline com YAML

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26 de Novembro de 2022

INSTITUTO DE COMPUTAÇÃO

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The main content area is a white rectangle with rounded corners, set against a dark background with a molecular or network graphic. The title "Pipeline com YAML" is centered in a large, bold, dark font. The footer of the slide contains the course information: "Curso de Extensão Tecnologias Microsoft – INF-0997 – Azure DevOps – Pipeline com YAML - Prof. José Alexandre D'Abruzzi Pereira". A small blue circle with the number "2" is located in the bottom right corner of the slide area.

# Pipeline com YAML

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**Criar novo projeto**

**Create new project**

Project name \* prep-treinamento-yaml

Description

Visibility

- Public Anyone on the internet can view the project. Certain features like TFVC are not supported.
- Private Only people you give access to will be able to view this project.

Public projects are disabled for your organization. You can turn on public visibility with organization policies.

Advanced

Version control Git Work item process Basic

Cancel Create

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**Iniciar novo repositório Git**

**Clone to your computer**

HTTPS SSH https://joseadp-unicamp-ext-030.dev.azure.com/joseadp-unicamp-ext-030/prep-treinamento-yaml/ OR Clone in VS Code

Generate Git Credentials

Having problems authenticating in Git? Be sure to get the latest version [Git for Windows](#) or our plugins for [IntelliJ](#), [Eclipse](#), [Android Studio](#) or [Windows command line](#).

**Push an existing repository from command line**

```
git remote add origin https://joseadp-unicamp-ext-030.dev.azure.com/joseadp-unicamp-ext-030/prep-treinamento-yaml/_git/prep-treinamento-yaml
```

**Import a repository**

**Initialize main branch with a README or gitignore**

Add a README Add a .gitignore: None Initialize

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## Criar novo arquivo

Azure DevOps interface showing a repository named 'prep-treinamento-yaml'. A 'New file' dialog box is open, prompting for a file name ('index.html'). Below the dialog, there are sections for 'Build and Test' and 'Contribute'.

**New file**

New file name  
index.html

Let this section explain the objectives or the motivation  
Use slashes to create multiple subfolders like "sub/folder".

Cancel Create

Build and Test  
TODO: Describe and show how to build your code and run the tests.

Contribute  
TODO: Explain how other users and developers can contribute to make your code better.

5

## Alterar arquivo e commitar

Azure DevOps interface showing a repository named 'prep-treinamento-yaml'. An 'index.html' file is selected. A 'Commit' dialog box is open, containing the commit message 'Added index.html' and fields for 'Branch name' (set to 'main') and 'Work items to link'.

**Commit**

Comment  
Added index.html

Branch name  
main

Work items to link  
Search work items by ID or title

Cancel Commit

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Criar um pipeline com YAML

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Azure DevOps joseadp-unicamp-ext-030 / prep-treinamento-yaml / Pipelines

Search

Connect Select Configure Review

New pipeline

**Where is your code?**

- Azure Repos Git - YAML**  
Free private Git repositories, pull requests, and code search
- Bitbucket Cloud - YAML**  
Hosted by Atlassian
- Github - YAML**  
Home to the world's largest community of developers
- Github Enterprise Server - YAML**  
The self-hosted version of Github Enterprise
- Other Git**  
Any generic Git repository
- Subversion**  
Centralized version control by Apache

Use the classic editor to create a pipeline without YAML.

Project settings

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Selecionar o repositório

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Azure DevOps joseadp-unicamp-ext-030 / prep-treinamento-yaml / Pipelines

Search

✓ Connect **Select** Configure Review

New pipeline

**Select a repository**

Filter by keywords prep-treinamento-yaml

prep-treinamento-yaml

Project settings

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## Selecionar o Starter Pipeline

Azure DevOps - prep-treinamento-yaml / Pipelines

**Configure your pipeline**

**HTML** Archive your static HTML project and save it with the build record.

**Starter pipeline** Start with a minimal pipeline that you can customize to build and deploy your code.

**Existing Azure Pipelines YAML file** Select an Azure Pipelines YAML file in any branch of the repository.

Show more

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## Arquivo Gerado pelo Azure DevOps

Azure DevOps - prep-treinamento-yaml / Pipelines

**Review your pipeline YAML**

**Save**

**Variables** Save and run

```

1 # Starter pipeline
2 # Start with a minimal pipeline that you can customize to build and deploy your code.
3 # Add steps that build, run tests, deploy, and more:
4 # https://aka.ms/yaml
5
6 trigger:
7   - main
8
9 pool:
10  vmImage: ubuntu-latest
11
12 steps:
13   - script: echo Hello, world!
14     displayName: 'Run a one-line script'
15
16   - script: |
17     echo Add other tasks to build, test, and deploy your project.
18     echo See https://aka.ms/yaml
19     displayName: 'Run a multi-line script'
20

```

Cuidado com a identação!

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## Commit na main

The screenshot shows the Azure DevOps interface for a pipeline named 'prep-treinamento-yaml'. On the left, there's a sidebar with 'Overview', 'Boards', 'Repos', 'Pipelines' (selected), 'Environments', 'Releases', 'Library', 'Task groups', 'Deployment groups', 'Build Usage', 'Test Plans', and 'Artifacts'. The main area displays the YAML configuration for the pipeline:

```

# Starter pipeline
# Start with a minimal pipeline that you can customize to build and deploy your project
# Add steps that build, run tests, deploy, and more:
# https://aka.ms/yaml

trigger:
- main

pool:
  vmImage: ubuntu-latest

steps:
- script: echo Hello, world!
  displayName: 'Run a one-line script'

- script: |
    echo Add other tasks to build, test, and deploy your project.
    echo See https://aka.ms/yaml
  displayName: 'Run a multi-line script'

```

A modal window titled 'Save' is open, asking 'Saving will commit azure-pipelines.yml to the repository.' It contains a 'Commit message' field with 'Set up CI with Azure Pipelines' and two radio buttons: 'Commit directly to the main branch' (selected) and 'Create a new branch for this commit'. A 'Save' button is at the bottom right of the modal.

At the bottom of the page, it says 'Curso de Extensão Tecnologias Microsoft – INF-0997 – Azure DevOps – Pipeline com YAML - Prof. José Alexandre D'Abruzzo Pereira'.

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## Editar o arquivo

The screenshot shows the Azure DevOps interface for editing the pipeline 'prep-treinamento-yaml'. The left sidebar is identical to the previous screenshot. The main area shows the same YAML code as before. To the right of the code, there's a 'Tasks' pane with a search bar and a list of available tasks:

- .NET Core
- Android signing
- Ant
- App Center distribute
- App Center test
- Archive file
- ARM template deployment
- Azure App Service deploy
- Azure App Service manage

At the bottom of the page, it says 'Curso de Extensão Tecnologias Microsoft – INF-0997 – Azure DevOps – Pipeline com YAML - Prof. José Alexandre D'Abruzzo Pereira'.

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## Build Iniciado usando o formato YAML

Azure DevOps joseadp-unicamp-ext-030 / prep-treinamento-yaml / Pipelines / prep-treinamento-yaml / 20221105.1

#20221105.1 • Updated azure-pipelines.yml

Triggered by José Alexandre D'Abruzzi Pereira

Repository and version: prep-treinamento-yaml / main 45aef1b

Time started and elapsed: Today at 15:02 24s

Related: 0 work items 0 artifacts

Tests and coverage: Get started

Jobs:

Name	Status	Duration
Job	Success	7s

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## Job com o nome alterado

Azure DevOps joseadp-unicamp-ext-030 / prep-treinamento-yaml / Pipelines / prep-treinamento-yaml / 20221105.1

← Jobs in run #20221105.1

Jobs:

- Job 7s
- Initialize job 2s
- Checkout prep-treinamento-yaml 2s
- Run a one-line script <1s
- Rodar script no modo multi-line <1s
- Post-job: Checkout p... <1s
- Finalize Job <1s
- Report build status <1s

Rodar script no modo multi-line

```

1 Starting: Rodar script no modo multi-line
=====
2 Task : Command line
3 Description : Run a command line script using Bash on Linux and macOS and cmd.exe on Windows
4 Version : 2.201.1
5 Author : Microsoft Corporation
6 Help : https://docs.microsoft.com/azure/devops/pipelines/tasks/utility/command-line
7
8 Generating script.
9 =====
10 ===== Starting Command Output =====
11 /usr/bin/bash --norc /home/vsts/work/_temp/6:919844-3703-49eb-9882-aed272ec0deb.sh
12 Add other tasks to build, test, and deploy your project.
13 See https://aka.ms/yaml
14 Finishing: Rodar script no modo multi-line

```

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```

# Starter pipeline
# Start with a minimal pipeline that you can customize to build and deploy
# Add steps that build, run tests, deploy, and more:
# https://aka.ms/yaml

trigger:
- main

pool:
vmImage: ubuntu-latest

steps:
- script: |
    echo Hello, world!
    displayName: 'Run a one-line script'
  - script: |
    echo Add other tasks to build, test, and deploy your project.
    echo See https://aka.ms/yaml
    displayName: 'Radar script no modo multi-line'
  
```

The screenshot shows the Azure DevOps interface with the 'Variables' tab selected. Under 'Tasks', there is a list of available tasks including .NET Core, .NET Core Build, .NET Core Test, Android signing, Ant, App Center distribute, App Center test, Archive files, ARM template deployment, Azure App Service deploy, and Azure App Service manage.

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The screenshot shows the 'Pipeline settings' dialog box over the pipeline configuration. The dialog contains fields for processing new run requests (Enabled, Paused, Disabled), the YAML file path (set to 'azure-pipelines.yml'), and an option to automatically link work items included in this run. Buttons for 'Cancel' and 'Save' are at the bottom.

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Triggers

prep-treinamento-yaml

Continuous integration

**prep-treinamento-yaml**

Scheduled

No builds scheduled

Build completion

Build when another build completes

Override the YAML continuous integration trigger from here

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```

main:
  trigger:
    - feature/*
  pool:
    vmImage: ubuntu-latest
  steps:
    - script:
        displayName: 'Run a one-line script'
      - script:
          echo Add other tasks to build, test, and deploy your project.
          echo See https://aka.ms/yaml
        displayName: 'Rodar script no modo multi-line'

```

Variables Save

Tasks

- .NET Core
- Android signing
- Ant
- App Center distribute
- App Center test
- Archive file
- ARM template deployment
- Azure App Service deploy
- Azure App Service manage

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## Editar index.html na main

Azure DevOps interface showing the 'index.html' file in the 'main' branch. The file content is '

# Pipeline com YAML - Rodar trigger (editado pela master)

'. A blue box highlights the 'Commit' button.

**Build não inicia!**

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## Criar nova branch

Azure DevOps interface showing the 'Create a branch' dialog. The 'Name' field is set to 'feature/change'. A blue box highlights the 'Create' button.

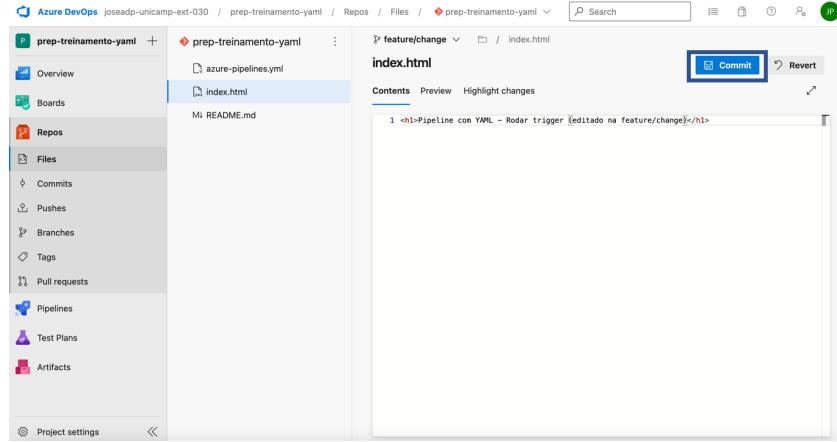
**Build não inicia!**

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## Alterar na branch feature/change

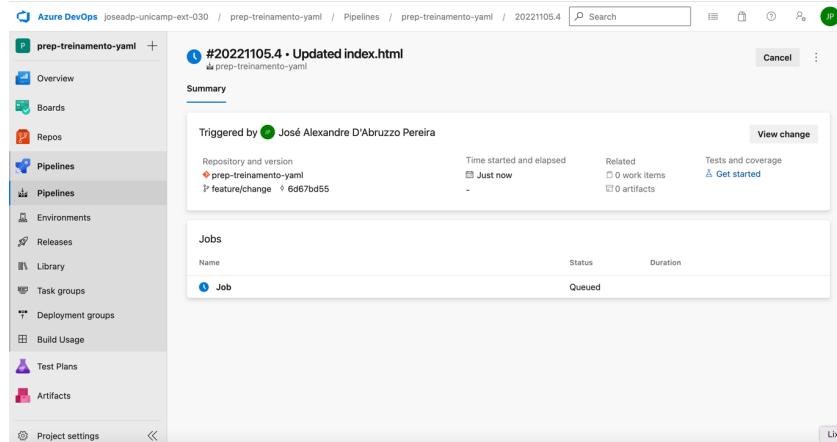


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## Pipeline é iniciado



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## Alterar agente de execução

The screenshot shows the Azure DevOps interface for editing a pipeline. The left sidebar has 'Pipelines' selected. The main area displays the YAML code for the pipeline:

```

1 # Starter pipeline
2 # Start with a minimal pipeline that you can customize to build and deploy yo
3 # Add steps that build, run tests, deploy, and more:
4 # https://aka.ms/yaml
5
6 trigger:
7 - feature/*
8
9 pool:
10  vmImage: windows-2019
11
12 steps:
13 - script: echo Hello, world!
14   displayName: 'Run a one-line script'
15
16 - script: |
17   echo Add other tasks to build, test, and deploy your project.
18   echo See https://aka.ms/yaml
19   displayName: 'Rodar script no modo multi-line'
20

```

On the right, there is a 'Tasks' pane with various options like .NET Core, Android signing, and App Center distribute.

At the bottom, it says 'Curso de Extensão Tecnologias Microsoft – INF-0997 – Azure DevOps – Pipeline com YAML - Prof. José Alexandre D'Abruzzo Pereira'.

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## Pipeline executado no Windows

The screenshot shows the Azure DevOps interface for viewing a pipeline run. The left sidebar has 'Pipelines' selected. The main area shows the 'Jobs in run #20221105.5' section, with a single job listed:

Job	Duration
Job	11s

Details for the job show:

- Pool: Azure Pipelines
- Image: windows-2019
- Agent: Hosted Agent
- Started: Just now
- Duration: 11s

Below the job details, a list of steps is shown:

- Checkout prep-treinamento-yaml (5s)
- Run a one-line script (1s)
- Rodar script no modo multi-line (1s)
- Post-job: Checkout p... (<1s)
- Finalize Job (<1s)
- Report build status (<1s)

At the bottom, it says 'Curso de Extensão Tecnologias Microsoft – INF-0997 – Azure DevOps – Pipeline com YAML - Prof. José Alexandre D'Abruzzo Pereira'.

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## Triggers: Agendamento de Builds

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```


```

    # Starter pipeline
    # Start with a minimal pipeline that you can customize to build and deploy your code
    # Add steps that build, run tests, deploy, and more:
    # https://aka.ms/yaml

    schedules:
      - cron: "45 16 * * *"
        displayName: "Agendamento pelo YAML"
        branches:
          - include:
              - main
            always: true

    pool:
      vmImage: windows-2019

    steps:
      - script: echo Hello, world!
        displayName: 'Run a one-line script'
      - script: |
          echo Add other tasks to build, test, and deploy your project.
          echo See https://aka.ms/yaml
        displayName: 'Rodar script no modo multi-line'
  
```


```

**Removemos “triggers”**

- Formato Cron
- Branches
- always para indicar quando inicia

Cards on the right side of the editor list various Azure DevOps tasks:

- .NET Core
- Android signing
- Ant
- App Center distribute
- App Center test
- Archive files
- Deploy an Azure Resource Manager (ARM) template to all the deployment scopes
- Azure App Service deploy
- Azure App Service manage

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## Formato do Cron

```

# ───────── minute (0 - 59)
#   ┌───────── hour (0 - 23)
#     ┌───────── day of the month (1 - 31)
#       ┌───────── month (1 - 12)
#         ┌───────── day of the week (0 - 6) (Sunday to Saturday;
#           7 is also Sunday on some systems)
#
# * * * * * <command to execute>

```

<https://en.wikipedia.org/wiki/Cron>

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## Iniciado através do scheduler

```

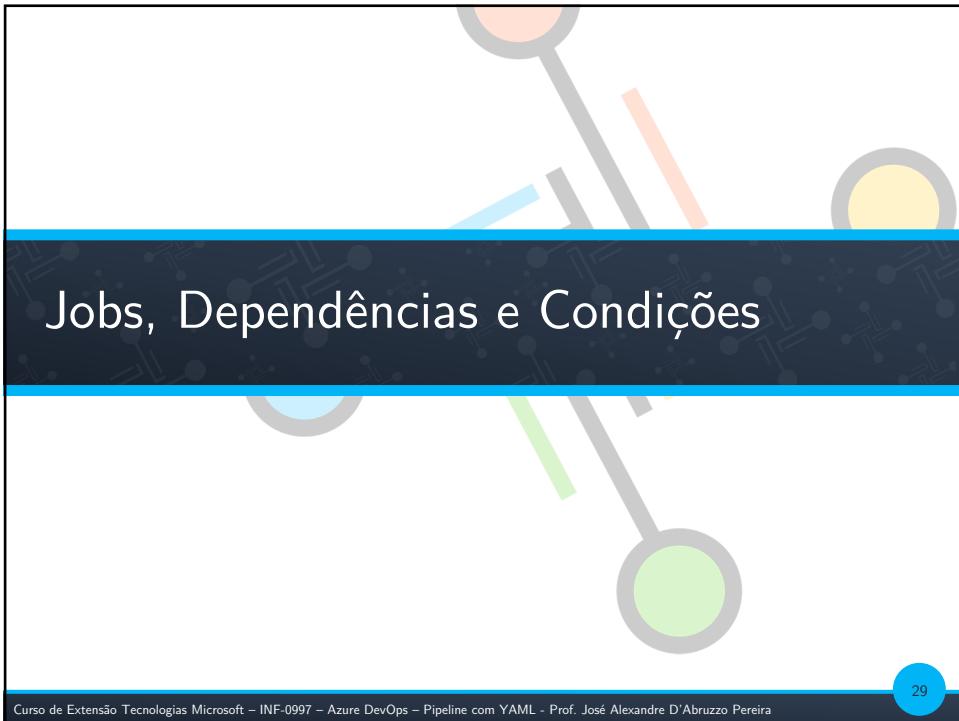
1 Starting: Checkout prep-treinamento-yaml@main to s
=====
2 Task : Get sources
3 Description : Get sources from a repository. Supports Git, TfsVC, and SVN repositories.
4 Version : 1.10.0
5 Author : Microsoft
6 Help : [More Information](https://go.microsoft.com/fwlink/?LinkId=798199)
=====
7 Syncing repository: prep-treinamento-yaml (Git)
8 Prepending Path environment variable with directory containing 'git.exe'.
9 git version
10 git version 2.35.1.windows.1
11 git ls-remote
12 git ls-remote https://github.com/username/repo.git
13 git config --get-all http.extraheader
14 git config --get-all https.extraheader
15 git init "D:\val\"
16 Initialized empty Git repository in D:/a/1/s/.git/
17 git remote add origin https://joseadp-unicamp-ext-030dev.azure.com/joseadp-unicamp-ext-030/pre-treinamento-yaml.git
18 git config gc.auto 0
19 git config --get-all http.extraheader
20 git config --get-all https.extraheader
21 git config --get-all http.extraheader
22 git config --get-all https.extraheader
23 git config http.version HTTP/1.1
24 git --config-env=http.extraheader=env_var_http.extraheader fetch --force --tags --prune --prune-tags
remote: Azure Repos
remote: Found 5 objects to send. (0 ms)
26 From https://dev.azure.com/joseadp-unicamp-ext-030/pre-treinamento-yaml/_git/pre-treinamento-yaml
27

```

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**Create a repository**

Repository type: Git  
Repository name: jobs-yaml  
Add a README

**Introduction**  
TODO: Give a short introduction of your project behind this project.

**Getting Started**  
TODO: Guide users through getting your project up and running.  
1. Installation process  
2. Software dependencies  
3. Latest releases  
4. API references

**Build and Test**  
TODO: Describe and show how to build your project.

Cancel Create

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The screenshot shows the Azure DevOps interface for the project 'joseadp-unicamp-ext-030'. The 'Repos' tab is selected. In the 'Jobs-YAML' repository, the 'index.html' file is being edited. The code editor contains the line '

# Jobs com YAML

'. The top right corner features a 'Commit' button. A blue circular progress bar at the bottom right indicates the step is 31.

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The screenshot shows the Azure DevOps interface for the project 'joseadp-unicamp-ext-030'. The 'Pipelines' tab is selected. A modal dialog box titled 'Delete 'prep-treinamento-yaml'' is open, asking for confirmation to delete the pipeline. The message states: 'Are you sure? This action cannot be undone. This will permanently delete the pipeline 'prep-treinamento-yaml'. Deletion includes all builds and associated artifacts.' The input field contains 'prep-treinamento-yaml' and the 'Delete' button is highlighted. A blue circular progress bar at the bottom right indicates the step is 32.

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Criar pipeline para o novo repositório

New pipeline Select Configure Review

Filter by keywords prep-treinamento-yaml

jobs-yaml prep-treinamento-yaml

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Editar arquivo (criado do starter pipeline)

Save and Run

Review your pipeline YAML

Variables Save and run

```

1 jobs:
2   - job: job1
3     pool:
4       vmImage: 'ubuntu-22.04'
5     steps:
6       - bash: echo 'primeiro job'
7

```

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## Pipeline executado

The screenshot shows the Azure DevOps interface for a pipeline run. On the left, the pipeline structure is visible with a job named 'job1' containing several steps: 'Initialize job', 'Checkout jobs-yaml@...', 'Bash', 'Post-job: Checkout j...', 'Finalize Job', and 'Report build status'. The 'Bash' step is highlighted with a green checkmark. On the right, the execution log for this step is displayed, showing the command being run and its output:

```

1 Starting: Bash
2 =====
3 Task : Bash
4 Description : Run a Bash script on macOS, Linux, or Windows
5 Version : 3.201.1
6 Author : Microsoft Corporation
7 Help : https://docs.microsoft.com/azure/devops/pipelines/tasks/utility/bash
8
9 Generating script.
10 Script contents:
11 echo 'primeiro job'
12 ===== Starting Command Output ==
13 /usr/bin/bash /home/vsts/work/_temp/13ab0d35-f4be-4f36-9921-f6e8194be1af.sh
14 primeiro job
15 Finishing: Bash

```

At the bottom of the page, a blue circle contains the number '35'.

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## Alterar pipeline

The screenshot shows the Azure DevOps pipeline editor for a file named 'jobs.yaml'. The left sidebar lists various project components like Boards, Repos, Pipelines, etc. The main area displays the YAML code for the pipeline:

```

1 jobs:
2   - job: job1
3     pool:
4       vmImage: 'ubuntu-22.04'
5     steps:
6       - bash: echo 'primeiro job'
7
8   - job: job2
9     pool:
10      vmImage: 'ubuntu-22.04'
11    steps:
12      - bash: echo 'segundo job'
13

```

To the right of the code editor, a 'Tasks' pane is open, listing various build and deployment tasks:

- .NET Core
- Android signing
- Ant
- App Center distribute
- App Center test
- Archive files
- ARM template deployment
- Azure App Service deploy
- Azure App Service manage

At the top right, there are 'Save' and 'Run' buttons. At the bottom, a blue circle contains the number '36'.

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## Jobs sem dependência executados

Azure DevOps Pipeline run #20221105.2 showing two parallel jobs, job1 and job2, executing sequentially. Each job contains tasks such as Initialize job, Checkout jobs-yaml, Bash, and Post-job: Checkout. The total duration for both jobs is less than 1 second.

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## Adicionar um displayName, novos jobs e outras vmlImages

**Save and Run**

```

4   pool:
5     vmImage: 'ubuntu-22.04'
6   steps:
7     - bash: echo 'primeiro job'
8
9   job: job2
10    displayName: "Segundo Job"
11    pool:
12      vmImage: 'windows-2019'
13    steps:
14      - bash: echo 'segundo job'
15
16   job: job3
17    displayName: "Terceiro Job"
18    pool:
19      vmImage: 'ubuntu-latest'
20    steps:
21      - bash: echo 'primeiro job'
22
23   job: job4
24    displayName: "Quarto Job"
25    pool:
26      vmImage: 'windows-latest'
27    steps:
28      - bash: echo 'segundo job'
29

```

Azure DevOps Pipeline configuration (YAML) defining four jobs (job1, job2, job3, job4) with different display names and pool configurations. The pipeline also includes a sidebar with various task options.

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## Pipeline Iniciado

**#20221105.3 - Update azure-pipelines.yml for Azure Pipelines**

Triggered by José Alexandre D'Abreu Pereira

Name	Status	Duration
Primeiro Job	Queued	
Segundo Job	Success	6s
Terceiro Job	Success	5s
Quarto Job	Queued	

Repository and version: jobs-yaml main 0360c4d8

Time started and elapsed: Just now 1m 10s

Related: 0 work items 0 artifacts

Tests and coverage: Get started

Google Chrome

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## Pipeline finalizado

**#20221105.3 - Update azure-pipelines.yml for Azure Pipelines**

This run is being retained as one of 3 recent runs by main (Branch).

Triggered by José Alexandre D'Abreu Pereira

Name	Status	Duration
Primeiro Job	Success	5s
Segundo Job	Success	6s
Terceiro Job	Success	5s
Quarto Job	Success	10s

Repository and version: jobs-yaml main 0360c4d8

Time started and elapsed: Yesterday at 21:56 1m 49s

Related: 0 work items 0 artifacts

Tests and coverage: Get started

Run new

View retention leases

Google Chrome

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## Dependência entre jobs

```

jobs:
- job: job1
  dependsOn: job4
  displayName: 'Primeiro Job'
  pool:
    vmImage: 'ubuntu-22.04'
  steps:
    - bash: echo 'primeiro job'
  ...
- job: job2
  displayName: "Segundo Job"
  pool:
    vmImage: 'windows-2019'
  steps:
    - bash: echo 'segundo job'
  ...
- job: job3
  displayName: "Terceiro Job"
  pool:
    vmImage: 'ubuntu-latest'
  steps:
    - bash: echo 'terceiro job'
  ...
- job: job4
  displayName: "Quarto Job"
  pool:
    ...
  steps:
    - bash: echo 'quarto job'
  ...
  
```

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## Primeiro Job executado após o quarto

Name	Status	Duration
Segundo Job	Success	8s
Terceiro Job	Success	3s
Quarto Job	Success	8s
Primeiro Job	Queued	

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**Condições: failed**

The screenshot shows the Azure DevOps interface for a pipeline named 'prep-treinamento-yaml'. The 'Pipelines' tab is selected. On the right, a code editor displays a YAML file named 'jobs.yaml'. A specific line of code is highlighted with a blue box: '# condition: failed()'. This indicates that the job will only run if the previous job fails. The pipeline definition includes multiple jobs and steps across different environments (Ubuntu 22.04, Windows 2019, and Ubuntu latest) and branches (main, job1, job2, job3, job4).

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**Primeiro Job não executado**

The screenshot shows the Azure DevOps pipeline run summary for run #20221106.3. The 'Pipelines' tab is selected. The summary table shows two jobs: 'Quarto Job' (Success, 11s) and 'Primeiro Job' (Skipped). The pipeline was triggered by José Alexandre D'Abreu. The run is retained as one of three recent runs.

Name	Status	Duration
Quarto Job	Success	11s
Primeiro Job	Skipped	

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Condições: succeeded

```

1 jobs:
2   - job: job1
3     displayName: "Primeiro Job"
4     dependsOn: job4
5     condition: succeeded()
6     pool:
7       vmImage: 'ubuntu-22.04'
8     steps:
9       - bash: echo 'primeiro job'
10
11 # - job: job2
12 #   displayName: "Segundo Job"
13 #   pool:
14 #     vmImage: 'windows-2019'
15 #   steps:
16 #     - bash: echo 'segundo job'
17 ...
18 # - job: job3
19 #   displayName: "Terceiro Job"
20 #   pool:
21 #     vmImage: 'ubuntu-latest'
22 #   steps:
23 #     - bash: echo 'primeiro job'
24
25 - job: job4
26   displayName: "Quarto Job"

```

Variables Save

Tasks

- .NET Core
- Android signing
- Ant
- App Center distribute
- App Center test
- Archive files
- ARM template deployment
- Azure App Service deploy
- Azure App Service manage

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Job 1 para ser executado

#20221106.4 • Update azure-pipelines.yml for Azure Pipelines

Triggered by José Alexandre D'Abreu Pereira

Repository and version	Time started and elapsed	Related	Tests and coverage
jobs-yaml main ↴ cfbad48b	Just now 35s	0 work items 0 artifacts	<a href="#">Get started</a>

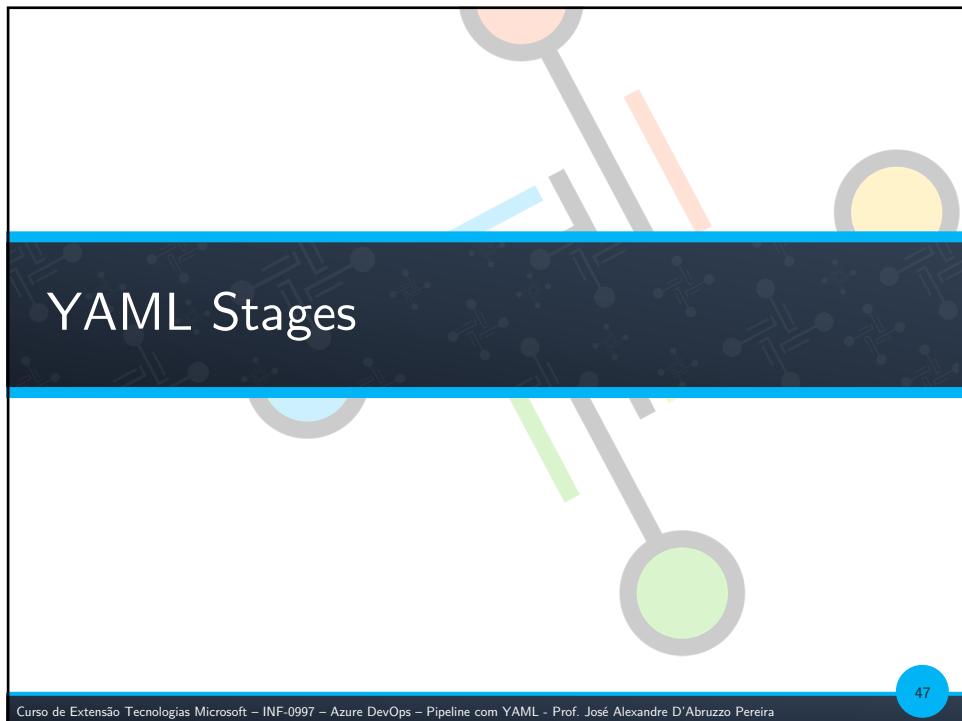
Jobs

Name	Status	Duration
Quarto Job	Success	13s
Primeiro Job	Queued	

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Excluir pipeline anterior

Azure DevOps joseadp-unicamp-ext-030 / prep-treinamento-yaml / Pipelines

Pipelines

Recently run pipelines

Delete 'jobs-yaml'?

Please type the name of the pipeline to confirm.

Cancel Delete

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```

1  jobs:
2    - job: job1
3      displayName: "Primeiro Job"
4      dependsOn: job4
5      condition: succeeded()
6      pool:
7        vmImage: 'ubuntu-22.04'
8      steps:
9        - bash: echo 'primeiro job'
10
11   # - job: job2
12   #   displayName: "Segundo Job"
13   #   pool:
14   #     vmImage: 'windows-2019'
15   #   steps:
16   #     - bash: echo 'segundo job'
17
18   # - job: job3
19   #   displayName: "Terceiro Job"
20   #   pool:
21   #     vmImage: 'ubuntu-latest'
22   #   steps:

```

Arquivo anterior é carregado porque  
ele ainda está no repositório

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```

1  stages:
2    - stage: stageA
3      displayName: "Stage A"
4      jobs:
5        - job: jobA
6          displayName: "Job Stage A1"
7          pool:
8            vmImage: windows-2019
9        - job: jobA2
10       displayName: "Job Stage A2"
11       pool:
12         vmImage: windows-2019

```

Save and Run

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## Dois jobs executados

Azure DevOps Pipeline details:

- Job Stage A1:**
  - Initialize job: <1s
  - Checkout jobs-yaml: 4s
  - Post-job: Checkout j...: <1s
  - Finalize Job: <1s
  - Report build status: <1s
- Job Stage A2:**
  - Initialize job: <1s
  - Checkout jobs-yaml: 3s
  - Post-job: Checkout j...: <1s
  - Finalize Job: <1s

Overall Pipeline Status: In Progress

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## Criar outros dois stages

YAML Pipeline Configuration:

```

13 - stage: stageB
14   displayName: "Stage B"
15   jobs:
16     - job: jobB1
17       displayName: "Job Stage B1"
18       pool:
19         vmImage: windows-2019
20     - job: jobB2
21       displayName: "Job Stage B2"
22       pool:
23         vmImage: windows-2019
24
25 - stage: stageC
26   displayName: "Stage C"
27   jobs:
28     - job: jobC1
29       displayName: "Job Stage C1"
30       pool:
31         vmImage: windows-2019
32     - job: jobC2
33       displayName: "Job Stage C2"
34       pool:
35         vmImage: windows-2019
36

```

Save and Run

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## Layout da execução é diferente

**#20221106.2 • Update azure-pipelines.yml for Azure Pipelines**

Triggered by José Alexandre D'Abreu Pereira

Repository and version: jobs-yaml main f15f15f9

Time started and elapsed: Just now 23s

Related: 0 work items 0 artifacts

Tests and coverage: Get started

**Stages**

Stage A	Stage B	Stage C
1/2 completed Job Stage A1 Job Stage A2	Not started Job Stage B1 Job Stage B2	Not started Job Stage C1 Job Stage C2

Cancel

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## Log da Execução

**Jobs in run #20221106.2**

Job Stage B2

1 Pool: Azure Pipelines  
2 Image: windows-2019  
3 Agent: Hosted Agent  
4 Started: Just now  
5 Duration: 4s  
6  
7 ▶ Job preparation parameters

Stage A

- Job Stage A1 8s
- Job Stage A2 9s

Stage B

- Job Stage B1
- Job Stage B2 4s
  - Initialize job <1s
  - Checkout jobs-yaml@... 3s
  - Post-job: Checkout jobs-yaml@... <1s
  - Finalize Job <1s

Stage C

- Job Stage C1
- Job Stage C2

view raw log

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The screenshot shows the Azure DevOps Pipeline summary for a run triggered by José Alexandre D'Abreu Pereira. The pipeline has three stages: Stage A, Stage B, and Stage C. Stage A has two jobs completed (Job Stage A1 and Job Stage A2) in 54s. Stage B has two jobs completed (Job Stage B1 and Job Stage B2) in 47s. Stage C has two jobs completed (Job Stage C1 and Job Stage C2) in 46s. All stages are marked as completed with green checkmarks.

**Summary**

Triggered by José Alexandre D'Abreu Pereira

Repository and version  
jobs-yaml  
main ↗ f151f59

Time started and elapsed  
Today at 20:45  
3m 11s

Related  
0 work items  
0 artifacts

Tests and coverage

**Stages**

Stage	Jobs	Time
Stage A	2 jobs completed Job Stage A1 Job Stage A2	54s
Stage B	2 jobs completed Job Stage B1 Job Stage B2	47s
Stage C	2 jobs completed Job Stage C1 Job Stage C2	46s

**Actions**

- Run stage
- Rerun stage

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The screenshot shows the Azure DevOps Pipeline editor for the 'jobs-yaml' pipeline. A new stage, 'Stage D', has been added to the pipeline. The pipeline structure is as follows:

```

    main
      - job: jobB1
        displayName: "Job Stage B1"
        pool:
          vmImage: windows-2019
      - job: jobB2
        displayName: "Job Stage B2"
        pool:
          vmImage: windows-2019
      - stage: stageC
        displayName: "Stage C"
        jobs:
          - job: jobC1
            displayName: "Job Stage C1"
            pool:
              vmImage: windows-2019
          - job: jobC2
            displayName: "Job Stage C2"
            pool:
              vmImage: windows-2019
      - stage: stageD
        displayName: "Stage D"
        jobs:
          - job: jobD1
            displayName: "Job Stage D1"
            pool:
              vmImage: windows-2019
          - job: jobD2
            displayName: "Job Stage D2"
            pool:
              vmImage: windows-2019
  
```

The 'Tasks' pane on the right lists various build tasks available for selection.

**Variables**

**Tasks**

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## Dependências entre Stages

The screenshot shows the Azure DevOps Pipeline editor interface. On the left, there's a sidebar with options like Overview, Boards, Repos, Pipelines, Environments, Releases, Library, Task groups, Deployment groups, Build Usage, Test Plans, Artifacts, and Project settings. The Pipelines section is selected. In the main area, there's a code editor titled 'jobs-yaml' containing YAML pipeline code. The code defines four stages: Stage A, Stage B, Stage C, and Stage D. Stage A depends on Stage B, Stage B depends on Stage C, and Stage C depends on Stage D. Each stage has a job named 'job01' with a specific display name and pool configuration. To the right of the code editor is a 'Tasks' pane listing various build and deployment tasks such as .NET Core, Android signing, Ant, App Center distribute, App Center test, Archive files, ARM template deployment, Azure App Service deploy, and Azure App Service manage. At the top right, there are 'Save' and 'Run' buttons. A blue circle at the bottom right contains the number '57'. At the very bottom, it says 'Curso de Extensão Tecnologias Microsoft – INF-0997 – Azure DevOps – Pipeline com YAML - Prof. José Alexandre D'Abruzzo Pereira'.

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## Execução do Pipeline

The screenshot shows the Azure DevOps Pipeline execution summary for run #20221106.3. The summary is triggered by José Alexandre D'Abruzzo Pereira. It displays the repository and version information (jobs-yaml, main commit 686b6020), the time started and elapsed (Just now), related work items (0), and tests and coverage (Get started). Below this, there's a 'Stages' section with four stages: Stage A, Stage B, Stage C, and Stage D. Stage A is marked as 'Not started'. Stage B is also 'Not started'. Stage C is 'Not started'. Stage D is also 'Not started'. Stage A has a dependency arrow pointing to Stage B. Stage B has a dependency arrow pointing to Stage C. Stage C has a dependency arrow pointing to Stage D. A blue circle at the bottom right contains the number '58'. At the very bottom, it says 'Curso de Extensão Tecnologias Microsoft – INF-0997 – Azure DevOps – Pipeline com YAML - Prof. José Alexandre D'Abruzzo Pereira'.

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## Stages C e D iniciados

**Summary**

Git fetch failed with exit code 128, back off 4.417 seconds before retry.  
Stage B - Job Stage B1 - Checkout jobs-yaml@main to s

Stages	Jobs	Duration
Stage A	2 jobs completed	40s
Stage B	2 jobs completed	1m 19s
Stage C	1/2 completed	6s
Stage D	1/2 completed	36s

Cancel

Cancel

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## Pipeline finalizado

**Summary**

Stage B - Job Stage B1 - Checkout jobs-yaml@main to s

Stages	Jobs	Duration
Stage A	2 jobs completed	40s
Stage B	2 jobs completed	1m 19s
Stage C	2 jobs completed	37s
Stage D	2 jobs completed	1m 31s

Rerun stage

Rerun stage

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## Criar outro stage sem dependência

The screenshot shows the Azure DevOps Pipeline editor interface. On the left, there's a sidebar with options like Overview, Boards, Repos, Pipelines (which is selected), Environments, Releases, Library, Task groups, Deployment groups, Build Usage, Test Plans, and Artifacts. Below the sidebar is a 'Project settings' button.

The main area displays the YAML configuration for the pipeline:

```

40 - stage: stageD
41   displayName: "Stage D"
42   dependsOn: stageB
43   jobs:
44     - job: jobD1
45       displayName: "Job Stage D1"
46       pool:
47         vmImage: windows-2019
48     - job: jobD2
49       displayName: "Job Stage D2"
50       pool:
51         vmImage: windows-2019
52
53 - stage: stageE
54   displayName: "Stage E"
55   jobs:
56     - job: jobE1
57       displayName: "Job Stage E1"
58       pool:
59         vmImage: windows-2019
60     - job: jobE2
61       displayName: "Job Stage E2"
62       pool:
63         vmImage: windows-2019

```

To the right of the YAML editor is a 'Tasks' pane containing a list of available tasks:

- .NET Core
- Android signing
- Ant
- App Center distribute
- App Center test
- Archive files
- ARM template deployment
- Azure App Service deploy
- Azure App Service manage

At the bottom of the screen, a footer bar reads: 'Curso de Extensão Tecnologias Microsoft – INF-0997 – Azure DevOps – Pipeline com YAML - Prof. José Alexandre D'Abruzzo Pereira'. A blue circular icon with the number '61' is located in the bottom right corner of the screenshot area.

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## Mesmo sem dependência, segue o fluxo

The screenshot shows the Azure DevOps Pipeline status interface. The left sidebar is identical to the previous screenshot. The main area displays a summary of the pipeline run:

**#20221106.4 • Update azure-pipelines.yml for Azure Pipelines**

Triggered by **José Alexandre D'Abruzzo Pereira**

Repository and version: **jobs-yaml** **700a6gee**

Time started and elapsed: **Just now**

Related: **0 work items**

Tests and coverage: **0 artifacts**

**Stages** **Jobs**

The pipeline consists of five stages: Stage A, Stage B, Stage C, Stage D, and Stage E. Stage A has a solid blue circle indicating it's the active stage. Stage B is represented by an open circle. Stage C is also an open circle. Stage D is an open circle. Stage E is an open circle. All stages are labeled 'Not started'.

At the bottom of the screen, a footer bar reads: 'Curso de Extensão Tecnologias Microsoft – INF-0997 – Azure DevOps – Pipeline com YAML - Prof. José Alexandre D'Abruzzo Pereira'. A blue circular icon with the number '62' is located in the bottom right corner of the screenshot area.

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**Pipeline finalizado**

This run is being retained as one of 3 recent runs by main (Branch).

**Summary**

Triggered by José Alexandre D'Abruzzi Pereira

Repository and version: jobs-yaml / main 700a6aee

Time started and elapsed: Today at 21:00, 5m 13s

Related: 0 work items, 0 artifacts

Tests and coverage: Get started

**Stages**

Stage	Jobs	Duration
Stage A	2 jobs completed	46s
Stage B	2 jobs completed	49s
Stage C	2 jobs completed	1m 59s
Stage D	2 jobs completed	1m 26s
Stage E	2 jobs completed	1m 12s

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## Tasks e Variáveis no YAML

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Azure DevOps - Pipeline com YAML

```

1 pool:
2   vmImage: ubuntu-latest
3
4 steps:
5   - script: echo "Usando uma task no YAML"
6     displayName: "Rodando script"

```

The pipeline configuration shows a single step using the 'script' task to run a PowerShell command. The command is `echo "Usando uma task no YAML"`. The step is named 'Rodando script'.

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Azure DevOps - Pipeline com YAML

**PowerShell**

Type:  Inline

Script:

```
# Write your PowerShell commands here.
Write-Host "Task no YAML"
```

Preference Variables

Advanced

About this task Add

The dialog box shows the configuration for adding a PowerShell task. The 'Type' is set to 'Inline'. The 'Script' field contains the PowerShell command `Write-Host "Task no YAML"`. There are also sections for 'Preference Variables' and 'Advanced' settings.

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**Salvar Task**

**Save and Run**

`jobs-yaml`

```

1 pool:
2   - vmImage: ubuntu-latest
3
4 steps:
5   - script: echo "Usando uma task no YAML"
6     displayName: "Rodando script"
7   - task: PowerShell@2
8     inputs:
9       targetType: 'inline'
10      script: |
11        # Write your PowerShell commands here.
12
13        Write-Host "Task no YAML"

```

**Tasks**

- .NET Core
- Android signing
- Ant
- App Center distribute
- App Center test
- Archive files
- ARM template deployment
- Azure App Service deploy
- Azure App Service manage

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**Pipeline em execução**

**#20221106.5 • Update azure-pipelines.yml for Azure Pipelines**

**Summary**

Triggered by **José Alexandre D'Abruzzo Pereira**

Repository and version	Time started and elapsed	Related	Tests and coverage
jobs-yaml main 9a322010	Just now	0 work items 0 artifacts	<a href="#">View change</a>

**Jobs**

Name	Status	Duration
<b>Job</b>	Queued	

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## Pipeline finalizado

Azure DevOps interface showing a completed pipeline run. The left sidebar has 'Pipelines' selected. The main area shows a list of jobs: 'Job' (9s), 'Initialize job' (2s), 'Checkout jobs-yaml@...' (3s), 'Rodando script' (<1s), 'PowerShell' (1s), 'Post-job: Checkout j...' (<1s), 'Finalize Job' (<1s), and 'Report build status' (<1s). A modal window titled 'Rodando script' displays the command output, which includes generating a script and running it. The output shows the command 'echo "Usando uma task no YAML"' being executed.

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## Tarefa de Publish do Artefato

Azure DevOps interface showing the pipeline configuration. The left sidebar has 'Pipelines' selected. The main area shows a YAML pipeline definition named 'jobs-yaml'. The code defines a 'pool' and a single 'steps' section. The 'steps' section contains a 'task: PowerShell@2' with inputs, target type set to 'inline', and a script block containing the command '# Write your PowerShell commands here.' A 'Tasks' pane on the right shows a search bar with 'publish bu...' and a list of available tasks: '.NET Core', 'Publish build artifacts', and 'Publish code coverage results'.

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## Configuração da Task

The screenshot shows the Azure DevOps interface for pipeline configuration. On the left, the sidebar lists 'Overview', 'Boards', 'Repos', 'Pipelines' (which is selected), 'Environments', 'Releases', 'Library', 'Task groups', 'Deployment groups', 'Build Usage', 'Test Plans', and 'Artifacts'. The main area displays a YAML file named 'azure-pipelines.yml' under the 'main' branch. The file contains the following code:

```

1 pool:
2   vmImage: ubuntu-latest
3
4 steps:
5 - script: echo "Usando uma task no YAML"
6   displayName: "Rodando script"
7
8 - task: PowerShell@2
9   inputs:
10    targetType: 'inline'
11    script: |
12      # Write your PowerShell commands here.
13      Write-Host "Task no YAML"

```

A modal window titled 'Publish build artifacts' is open on the right, showing the configuration for publishing artifacts. It includes fields for 'Path to publish' (set to '.'), 'Artifact name' (set to 'drop'), and 'Artifact publish location' (set to 'Azure Pipelines'). The 'Advanced' section is also visible.

At the bottom, a footer bar reads 'Curso de Extensão Tecnologias Microsoft – INF-0997 – Azure DevOps – Pipeline com YAML - Prof. José Alexandre D'Abruzzo Pereira'.

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## Task Adicionada

The screenshot shows the same Azure DevOps pipeline configuration as the previous one, but with a new task added. The YAML file now includes a 'PublishBuildArtifacts' task:

```

1 pool:
2   vmImage: ubuntu-latest
3
4 steps:
5 - script: echo "Usando uma task no YAML"
6   displayName: "Rodando script"
7
8 - task: PowerShell@2
9   inputs:
10    targetType: 'inline'
11    script: |
12      # Write your PowerShell commands here.
13      Write-Host "Task no YAML"
14
15 - task: PublishBuildArtifacts@1
16   inputs:
17    PathToPublish: '.'
18    ArtifactName: 'drop-yaml'
19    publishLocation: 'Container'

```

The 'Save' button is highlighted in blue at the top right of the editor. A modal window titled 'Save and Run' is open on the right, listing various tasks available for selection. The tasks listed include .NET Core, Android signing, Ant, App Center distribute, App Center test, Archive files, ARM template deployment, Azure App Service deploy, and Azure App Service manage.

At the bottom, a footer bar reads 'Curso de Extensão Tecnologias Microsoft – INF-0997 – Azure DevOps – Pipeline com YAML - Prof. José Alexandre D'Abruzzo Pereira'.

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## Pipeline com artefato gerado

```

1 Starting: PublishBuildArtifacts
2 =====
3 Task : Publish build artifacts
4 Description : Publish build artifacts to Azure Pipelines or a Windows file share
5 Version : 1.280.0
6 Author : Microsoft Corporation
7 Help : https://docs.microsoft.com/azure/devops/pipelines/tasks/utility/publish-build-artifacts?view=azure-devops&tabs=yaml
8
9 Async Command Start: Upload Artifact
10 Uploading 31 files
11 Max dedup parallelism: 192
12 Building file tree
13 Uploaded 0 out of 27,889 bytes.
14 Uploaded 27,987 out of 27,989 bytes.
15 Associated artifacts
16 Local files: 31 — Associated files: 0 (0%)
17 File upload succeed.
18 Upload '/home/vsts/work/1/s' to file container: '#/29587425/drop-yaml'
19 Associated artifact 41 with build 79
20 Async Command End: Upload Artifact
21 Finishing: PublishBuildArtifacts

```

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## Adicionar nova variável

```

1 pool:
2   - vmImage: ubuntu-latest
3
4 steps:
5   - script: echo 'Usando uma task no YAML'
6     displayName: "Rodando script"
7     settings:
8       - task: PowerShell@2
9         inputs:
10           targetType: 'inline'
11           script: |
12             # Write your PowerShell commands here.
13             Write-Host "Task no YAML"
14   - task: PublishBuildArtifacts@1
15     inputs:
16       PathToPublish: '.'
17       ArtifactName: 'drop-yaml'
18       publishLocation: 'Container'

```

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The screenshot shows the Azure DevOps interface for configuring a pipeline. On the left, the navigation bar includes 'Overview', 'Boards', 'Repos', 'Pipelines' (selected), 'Environments', 'Releases', 'Library', 'Task groups', 'Deployment groups', 'Build Usage', 'Test Plans', and 'Artifacts'. Below this is a 'Project settings' button.

The main area displays the YAML configuration for the pipeline:

```

1 pool:
2   - vmImage: ubuntu-latest
3
4 steps:
5   - script: echo "Usando uma task no YAML"
6     displayName: "Rodando script"
7
8   - task: PowerShell@2
9     inputs:
10    targetType: 'inline'
11    script: |
12      # Write your PowerShell commands here.
13      Write-Host "Task no YAML"
14
15   - task: PublishBuildArtifacts@1
16     inputs:
17       PathToPublish: '.'
18       ArtifactName: 'drop-yaml'
19       publishLocation: 'Container'

```

A modal window titled 'New variable' is open, prompting for a 'Name' (set to 'greeting') and a 'Value' (set to 'Usando variável pelo YAML'). It also includes options to 'Keep this value secret' and 'Let users override this value when running this pipeline'. A note explains how to reference variables in scripts. Examples provided include Batch script, PowerShell script, and Bash script.

At the bottom of the modal are 'Learn about variables', 'Cancel', and 'OK' buttons. The number '75' is visible in a blue circle at the bottom right.

Caption: Curso de Extensão Tecnologias Microsoft – INF-0997 – Azure DevOps – Pipeline com YAML - Prof. José Alexandre D'Abruzzo Pereira

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The screenshot shows the same Azure DevOps interface as the previous one, but with a focus on the pipeline tasks. The 'Variables' tab is selected in the top right.

The YAML configuration remains the same as in the previous screenshot:

```

1 pool:
2   - vmImage: ubuntu-latest
3
4 steps:
5   - script: echo "Usando uma task no YAML"
6     displayName: "Rodando script"
7
8   - task: PowerShell@2
9     inputs:
10    targetType: 'inline'
11    script: |
12      # Write your PowerShell commands here.
13      Write-Host "Task e Variável no YAML"
14      Write-Host $(greeting)
15
16   - task: PublishBuildArtifacts@1
17     inputs:
18       PathToPublish: '.'
19       ArtifactName: 'drop-yaml'
20       publishLocation: 'Container'

```

The 'Tasks' pane on the right lists various build and deployment tasks, such as .NET Core, Android signing, Ant, App Center distribute, App Center test, Archive files, ARM template deployment, Azure App Service deploy, and Azure App Service manage.

At the bottom of the modal are 'Search tasks', 'Variables', 'Save', and '...' buttons. The number '76' is visible in a blue circle at the bottom right.

Caption: Curso de Extensão Tecnologias Microsoft – INF-0997 – Azure DevOps – Pipeline com YAML - Prof. José Alexandre D'Abruzzo Pereira

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Pipeline finalizado com a variável usada

```

1 Starting: PowerShell
2 =====
3 Task      : PowerShell
4 Description : Run a PowerShell script on Linux, macOS, or Windows
5 Version   : 2.210.0
6 Author    : Microsoft Corporation
7 Help      : https://docs.microsoft.com/azure/devops/pipelines/tasks/utility/powershell
8
9 Generating script.
10 =====
11 Starting Command Output ===
12 Task e Variável no YAML
13 Usando variável pelo YAML
14
15 Generating PowerShell

```

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## Templates com YAML

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The screenshot shows the Azure DevOps Pipelines interface. On the left, there's a sidebar with options like Overview, Boards, Repos, Pipelines, Environments, Releases, Library, Task groups, Deployment groups, Build Usage, Test Plans, and Artifacts. The Pipelines option is selected. In the main area, under 'Recently run pipelines', there's a card for 'jobs-yaml'. A modal window titled 'Delete 'jobs-yaml'' is open, asking for confirmation: 'Are you sure? This action cannot be undone. This will permanently delete the pipeline 'jobs-yaml'. Deletion includes all builds and associated artifacts.' Below the message, there's a text input field containing 'jobs-yaml' and two buttons: 'Cancel' and 'Delete'. At the bottom of the page, a footer bar reads 'Curso de Extensão Tecnologias Microsoft – INF-0997 – Azure DevOps – Pipeline com YAML - Prof. José Alexandre D'Abruzzo Pereira'.

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The screenshot shows the Azure DevOps Repos interface. On the left, there's a sidebar with Options like Overview, Boards, Repos, Files, Commits, Pushes, Branches, Tags, Pull requests, Pipelines, Test Plans, and Artifacts. The Files option is selected. In the main area, under 'Repos', there's a list of files for a repository named 'jobs-yaml'. One file, 'azure-pipelines.yml', is highlighted with a red icon. A modal window titled 'Commit' is open, showing a 'Comment' field with the text 'Deleted azure-pipelines.yml'. Below it, there's a 'Branch name' field set to 'main'. At the bottom right of the modal, there are 'Cancel' and 'Commit' buttons. At the bottom of the page, a footer bar reads 'Curso de Extensão Tecnologias Microsoft – INF-0997 – Azure DevOps – Pipeline com YAML - Prof. José Alexandre D'Abruzzo Pereira'.

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## Criar um arquivo template.yml

The screenshot shows the Azure DevOps interface for a repository named 'prep-treinamento-yaml'. The left sidebar shows project navigation options like Overview, Boards, Repos, Files, Commits, Pushes, Branches, Tags, Pull requests, Pipelines, Test Plans, and Artifacts. The main area displays the 'jobs-yaml' folder, which contains 'index.html' and 'README.md'. A 'New file' dialog box is open, prompting for a file name, with 'template.yml' typed in. Below the dialog, there is a 'Getting Started' section with a TODO list: '1. Installation process', '2. Software dependencies', '3. Latest releases', and '4. API references'. At the bottom right of the main area, there is a 'Build and Test' section. The footer of the page reads 'Curso de Extensão Tecnologias Microsoft – INF-0997 – Azure DevOps – Pipeline com YAML - Prof. José Alexandre D'Abruzzo Pereira'.

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## Alterar template e commitar

The screenshot shows the same Azure DevOps interface as the previous one, but now the 'template.yml' file is open in the main editor. The code content is as follows:

```

1 stages:
2   - stage: stage_A
3     jobs:
4       - job: job1
5         steps:
6           - script: echo "Execução a partir do template YAML."

```

The 'Commit' button is highlighted in blue at the top right of the editor. The footer of the page is identical to the previous one.

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Criar Pipeline

Azure DevOps / prep-treinamento-yaml / Pipelines

Connect Select Configure Review

New pipeline

**Where is your code?**

- Azure Repos Git - YAML**  
Free private Git repositories, pull requests, and code search
- Bitbucket Cloud - YAML  
Hosted by Atlassian
- Github - YAML  
Home to the world's largest community of developers
- Github Enterprise Server - YAML  
The self-hosted version of GitHub Enterprise
- Other Git  
Any generic Git repository
- Subversion  
Centralized version control by Apache

Use the classic editor to create a pipeline without YAML.

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Configurar pipeline

Azure DevOps / prep-treinamento-yaml / Pipelines

✓ Connect ✓ Select Configure Review

New pipeline

**Configure your pipeline**

- HTML  
Archive your static HTML project and save it with the build record.
- Starter pipeline**  
Start with a minimal pipeline that you can customize to build and deploy your code.
- Existing Azure Pipelines YAML file  
Select an Azure Pipelines YAML file in any branch of the repository.

Show more

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## Alterar o arquivo do pipeline

Save and Run

Review your pipeline YAML

```

1 # Starter pipeline
2 # Start with a minimal pipeline that you can customize to build and deploy your code.
3 # Add steps that build, run tests, deploy, and more:
4 # https://aka.ms/yaml
5
6 trigger:
7 - main
8
9 extends:
10 | template: template.yml
11

```

Variables Show assistant

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## Pipeline executado

#20221106.4 • Updated template.yml

Triggered by José Alexandre D'Abreu Pereira

Summary

Triggered by José Alexandre D'Abreu Pereira

Repository and version

- jobs-yaml
- main 165bd1f9

Time started and elapsed

- Just now
- 18s

Related

- 0 work items
- 0 artifacts

Tests and coverage

View 22 changes

Jobs

Name	Status	Duration
job1	Success	7s

Run new

View retention leases

View 22 changes

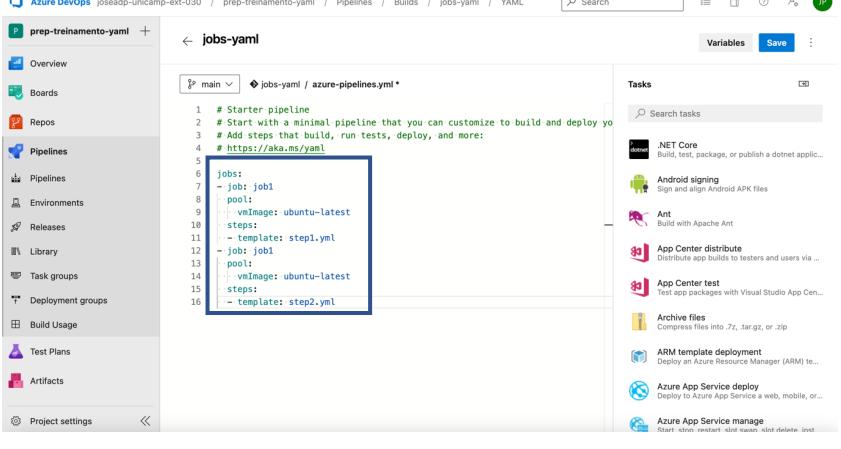
Get started

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## Incluir templates nos steps



The screenshot shows the Azure DevOps Pipeline editor interface. On the left, there's a sidebar with options like Overview, Boards, Repos, Pipelines (which is selected), Releases, Library, Task groups, Deployment groups, Build Usage, Test Plans, and Artifacts. Below that is a Project settings button. The main area has a title bar "jobs-yaml" and a "Variables" tab. The code editor contains the following YAML:

```

1 # Starter pipeline
2 # Start with a minimal pipeline that you can customize to build and deploy your code
3 # Add steps that build, run tests, deploy, and more:
4 # https://aka.ms/yaml
5
6 jobs:
7   - job: job1
8     pool:
9       vmImage: ubuntu-latest
10    steps:
11      - template: step1.yml
12    - job: job1
13      pool:
14        vmImage: ubuntu-latest
15      steps:
16        - template: step2.yml

```

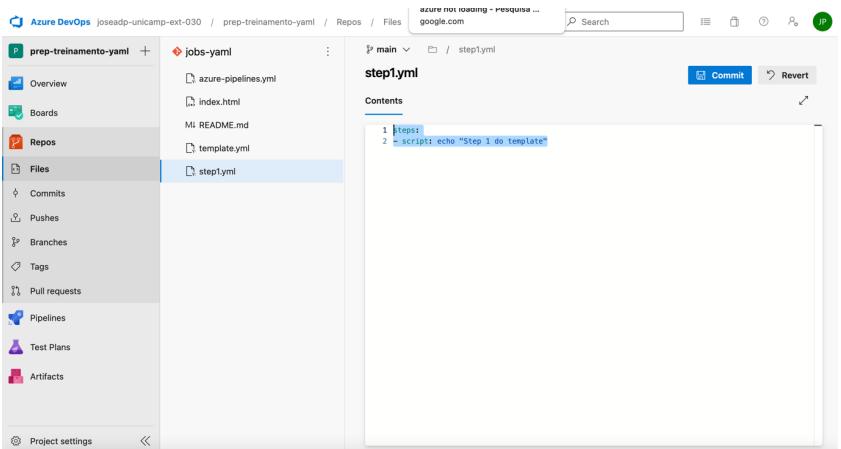
To the right of the code editor is a "Tasks" pane with a search bar and a list of available tasks:

- .NET Core
- Android signing
- Ant
- App Center distribute
- App Center test
- Archive files
- ARM template deployment
- Azure App Service deploy
- Azure App Service manage

At the bottom of the screen, a footer bar reads "Curso de Extensão Tecnologias Microsoft – INF-0997 – Azure DevOps – Pipeline com YAML - Prof. José Alexandre D'Abreu Pereira". A blue circular progress bar at the bottom right indicates the slide number.

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## Inserir os dois arquivos de steps: step1.yml



The screenshot shows the Azure DevOps Repository interface. On the left, there's a sidebar with Overview, Boards, Repos (selected), Files, Commits, Pushes, Branches, Tags, Pull requests, Pipelines, Test Plans, and Artifacts. Below that is a Project settings button. The main area shows a file tree under "jobs-yaml": "step1.yml", "index.html", "README.md", and "template.yml". The "step1.yml" file is open in the editor. It contains the following YAML:

```

1 steps:
2   - script: echo "Step 1 do template"

```

At the top of the editor are "Commit" and "Revert" buttons. At the bottom, there's a footer bar with the same course information as the previous slide, and a blue circular progress bar at the bottom right indicating the slide number.

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Inserir os dois arquivos de steps: step2.yml

```

1 steps:
2 - script: echo "Step 2 do template"

```

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Pipeline executado a partir do template

```

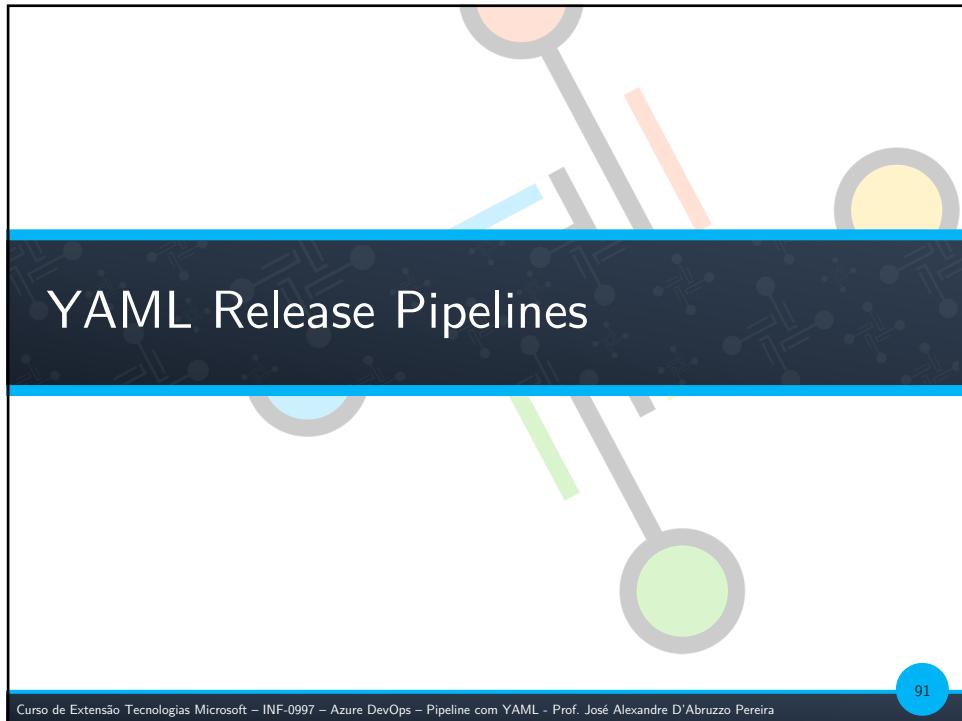
1 Starting: CmdLine
2 =====
3 Task : Command line
4 Description : Run a command line script using Bash on Linux and macOS and cmd.exe on Windows
5 Version : 2.281.1
6 Author : Microsoft Corporation
7 Help : https://docs.microsoft.com/azure/devops/pipelines/tasks/utility/command-line
8
9 Generating script.
10 Script contents:
11 echo "Step 2 do template"
12 ===== Starting Command Output =====
13 Step 2 do template
14 ===== Finishing: CmdLine

```

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## Configurar task

Azure DevOps josedap-unicamp-ext-030 / prep-treinamento-yaml / Pipelines / Builds / jobs.yaml / YAML

```

1 # Starter pipeline
2 # Start with a minimal pipeline that you can customize to build and deploy your code
3 # Add steps that build, run tests, deploy, and more:
4 # https://aka.ms/yaml
5
6 jobs:
7 - job: job1
8   pool:
9     vmImage: ubuntu-latest
10   steps:
11     - template: step1.yml
12 - job: job2
13   pool:
14     vmImage: ubuntu-latest
15   steps:
16

```

**Azure App Service deploy**

Connection type \* Azure Resource Manager

Azure subscription \* Azure for Students(94da526a-e00e-4...)

App Service type \* Web App on Windows

App Service name \* apipipelines-unicamp2

Deploy to Slot or App Service Environment

Virtual application

Package or folder \* [ ]

About this task Add

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## Adicionar task

Azure DevOps josedap-unicamp-ext-030 / prep-treinamento-yaml / Pipelines / Builds / jobs.yaml / YAML

```

1 # Starter pipeline
2 # Start with a minimal pipeline that you can customize to build and deploy your code
3 # Add steps that build, run tests, deploy, and more:
4 # https://aka.ms/yaml
5
6 jobs:
7 - job: job1
8   pool:
9     vmImage: ubuntu-latest
10   steps:
11     - template: step1.yml
12 - job: job2
13   pool:
14     vmImage: ubuntu-latest
15   steps:
16

```

**Azure App Service deploy**

App Service type \* Web App on Windows

App Service name \* apipipelines-unicamp2

Deploy to Slot or App Service Environment

Virtual application

Package or folder \* [ ]

File Transforms & Variable Substitution ...

Additional Deployment Options ...

Post Deployment Action ...

Application and Configuration Settings ...

About this task Add

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## Task Adicionada

The screenshot shows the Azure DevOps Pipeline editor for the 'prep-treinamento-yaml' project. The left sidebar shows 'Pipelines' selected. The main area displays a YAML configuration file with a new task added at line 16:

```

1 # Starter pipeline
2 # Start with a minimal pipeline that you can customize to build and deploy yo
3 # Add steps that build, run tests, deploy, and more:
4 # https://aka.ms/yaml
5
6 jobs:
7 - job: job1
8   pool:
9     vmImage: ubuntu-latest
10   steps:
11     - template: step1.yml
12 - job: job2
13   pool:
14     vmImage: ubuntu-latest
15   steps:
16     - task: AzureRmWebAppDeployment@4
17       inputs:
18         ConnectionType: 'AzureRM'
19         azureSubscription: 'Azure for Students(94da526a-e80e-4c39-9477-8ef61179'
20         appType: 'webapp'
21         WebAppName: 'azpipelines-unicamp2'
22         packageForLinux: '_'

```

A modal window titled 'Tasks' lists various Azure DevOps tasks, with the 'AzureRmWebAppDeployment@4' task highlighted. A blue circle with the number '95' is visible in the bottom right corner.

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## Pipeline pede permissão

The screenshot shows the Azure DevOps Pipeline status for run #202211071. The left sidebar shows 'Pipelines' selected. The main area displays a summary of the pipeline run and a message indicating permission is needed:

**#202211071 • Update azure-pipelines.yml for Azure Pipelines**

Triggered by José Alexandre D'Abruzzo Pereira

Repository and version  
jobs-yaml  
main 4e6feb8c

Time started and elapsed  
Just now

Related  
0 work items  
0 artifacts

Tests and coverage  
[Get started](#)

This pipeline needs permission to access a resource before this run can continue

**Jobs**

Name	Status	Duration
job1	Waiting	
job2	Waiting	

A blue circle with the number '96' is visible in the bottom right corner.

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The screenshot shows the Azure DevOps interface for a pipeline run. The left sidebar has 'Pipelines' selected. The main area displays a pipeline run titled '#20221107.1 - Update azure-pipelines.yml for Azure Pipelines'. A modal window titled 'Waiting for review' is open, showing a 'Permission needed' section for 'Azure for Students... Service connection'. It includes a 'Permit' button. The pipeline summary indicates it was triggered by José Alexandre D'Abruzzo Pereira, repository 'jobs-yaml' at commit 'main 4e6feb8c', and started 'Just now'. The pipeline consists of two jobs: 'job1' and 'job2'.

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The screenshot shows the Azure DevOps interface for a completed pipeline run. The left sidebar has 'Pipelines' selected. The main area displays a pipeline run titled '#20221107.1' with a green checkmark icon. A log window titled 'AzureRmWebAppDeployment' shows the deployment process. The log output includes:

```

1 Starting: AzureRmWebAppDeployment
2 =====
3 Task : Azure App Service deploy
4 Description : Deploy to Azure App Service a web, mobile, or API app using Docker, Java, .NET Core, .NET Framework, Node.js, Python, Ruby, or Go
5 Version : 4.212.0
6 Author : Microsoft Corporation
7 Help : https://aka.ms/azureappservice/troubleshooting
8 =====
9 Got service connection details for Azure App Service: 'azpipelines-unicamp2'
10 Trying to update App Service Application settings. Data: {"WEBSITE_RUN_FROM_PACKAGE": "1"}
11 App Service Application settings are already present.
12 Package deployment using ZIP Deploy initiated.
13 Successfully deployed web package to App Service.
14 NOTE: Run F5 or Package makes website read-only, so you will receive an error when writing files to the site.
15 Successfully updated App Service configuration details.
16 App Service Application URL: https://azpipelines-unicamp2.azurewebsites.net
17 Finishing: AzureRmWebAppDeployment
18 =====
19 =====
20 =====

```

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The screenshot shows the "Commit" interface for the file "index.html" in the "jobs-yaml" branch. The commit message is "Release com Azure Pipelines usando YAML". The URL is: [https://dev.azure.com/joseadp-unicamp-ext-030/\\_git/prep-treinamento-yaml/edit/main/jobs-yaml/index.html?version=1&branchName=main&path=index.html&id=1](https://dev.azure.com/joseadp-unicamp-ext-030/_git/prep-treinamento-yaml/edit/main/jobs-yaml/index.html?version=1&branchName=main&path=index.html&id=1)

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# Pipeline iniciado

Azure DevOps pipeline status for run #20221107.2. The pipeline has been triggered by José Alexandre D'Abreu. It shows two jobs: job1 and job2, both in the Queued state. The repository is jobs-yaml, main branch, commit 2df3e9fa. The time started and elapsed is just now (1s). There are 0 work items and 0 artifacts related.

Triggered by José Alexandre D'Abreu

Repository and version  
jobs-yaml  
main 2df3e9fa

Time started and elapsed  
Just now 1s

Related 0 work items 0 artifacts

Tests and coverage

Jobs

Name	Status	Duration
job1	Queued	
job2	Queued	

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# Deploy feito

Azure DevOps pipeline logs for run #20221107.2. The log shows the execution of the AzureRmWebAppDeployment task. The log output includes:

```

1 Starting: AzureRmWebAppDeployment
2 =====
3 Task : Azure App Service deploy
4 Description : Deploy to Azure App Service a web, mobile, or API app using Docker, Java, .NET, Node.js, Python, Ruby, or Go
5 Version : 4.212.0
6 Author : Microsoft Corporation
7 Help : https://aka.ms/azureappservice/troubleshooting
8 =====
9 Got service connection details for Azure App Service: 'azpipelines-unicamp2'
10 Trying to update App Service Application settings. Data: {"WEBSITE_RUN_FROM_PACKAGE": "1"}
11 App Service Application settings are already present.
12 Package deployment using ZIP Deploy initiated.
13 Successfully deployed web package to App Service.
14 Failed to find 'appServiceAuthType' configuration in the deployment slot. This is a known limitation for read-only slots, so you will receive an error when writing files to the slot.
15 Successfully added release annotation to the Application Insight: 'azpipelines-unicamp2'
16 App Service Application URL: https://azpipelines-unicamp2.azurewebsites.net
17 Finishing: AzureRmWebAppDeployment

```

Jobs

- job1 (4s)
- job2 (15s)

Initial job (3s)

Checkout jobs-yaml@... (2s)

AzureRmWebAppDep... (8s)

Post-job: Checkout j... (less than 1s)

Finalize Job (less than 1s)

Report build status (less than 1s)

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## Página atualizada

Release com Azure Pipelines usando YAML



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## YAML no Visual Studio Code

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The screenshot shows the Azure DevOps Pipelines interface. On the left, there's a sidebar with options like Overview, Boards, Repos, Pipelines, Environments, Releases, Library, Task groups, Deployment groups, Build Usage, Test Plans, and Artifacts. The Pipelines option is selected. In the main area, under 'Recently run pipelines', there's a card for 'jobs-yaml'. A modal window titled 'Delete 'jobs-yaml'' is open, asking for confirmation: 'Are you sure? This action cannot be undone. This will permanently delete the pipeline 'jobs-yaml'. Deletion includes all builds and associated artifacts.' Below the message, there's a text input field containing 'jobs-yaml' and two buttons: 'Cancel' and 'Delete'. At the bottom of the page, a footer bar reads 'Curso de Extensão Tecnologias Microsoft – INF-0997 – Azure DevOps – Pipeline com YAML - Prof. José Alexandre D'Abruzzo Pereira'.

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The screenshot shows the Azure DevOps Repos interface. On the left, there's a sidebar with Options like Overview, Boards, Repos, Files, Commits, Pushes, Branches, Tags, Pull requests, Pipelines, Test Plans, and Artifacts. The Files option is selected. In the main area, there's a list of files in the 'jobs-yaml' folder, including 'azure-pipelines.yml', 'index.html', 'README.md', 'step1.yml', 'step2.yml', and 'template.yml'. A commit dialog box is open over the files list. The dialog has a 'Comment' section with the text 'Deleted azure-pipelines.yml', a 'Branch name' section with 'main', and a 'Work items to link' section with a dropdown menu. At the bottom right of the dialog are 'Cancel' and 'Commit' buttons. At the bottom of the page, a footer bar reads 'Curso de Extensão Tecnologias Microsoft – INF-0997 – Azure DevOps – Pipeline com YAML - Prof. José Alexandre D'Abruzzo Pereira'.

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## Clonar no VS Code

Azure DevOps | joseadp-unicamp-ext-030 / prep-treinamento-yaml / Repos / Files / jobs-yaml

**Clone Repository**

Command line

HTTPS SSH https://joseadp-unicamp-ext-030@dev.azure.com/joseadp-unicamp-ext-030/prep-treinamento-yaml/\_git/jobs-yaml

Generate Git Credentials

IDE

Clone in VS Code

Having trouble authenticating in Git? Be sure to get the latest version of the Windows Git Plugins for IntelliJ, Eclipse, Android Studio or Windows command line.

**Introduction**

TODO: Give a short introduction of your project and what's behind this project.

**Getting Started**

TODO: Guide users through getting your project up and running, talk about:

1. Installation process

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## Projeto no VS Code

Get Started – jobs-yaml

Visual Studio Code  
Editing evolved

Start

New File... Open... Clone Git Repository...

Recent

Recent projects listed:

- icpe2023.spec.org ~/Projects
- uc-phd-josep-cfg-dataset [SSH: zema-21] ~/Projects
- zema-21 [SSH: zema-21] ~home
- uc-phd-josep-code ~/Projects
- uc-masters-software-vulnerabilities [SSH: josep-cloud2] ~home/a...

Walkthroughs

Get Started with VS Code  
Discover the best customizations to make VS Code yours.

Learn the Fundamentals  
Jump right into VS Code and get an overview of the must-have features.

Boost your Productivity

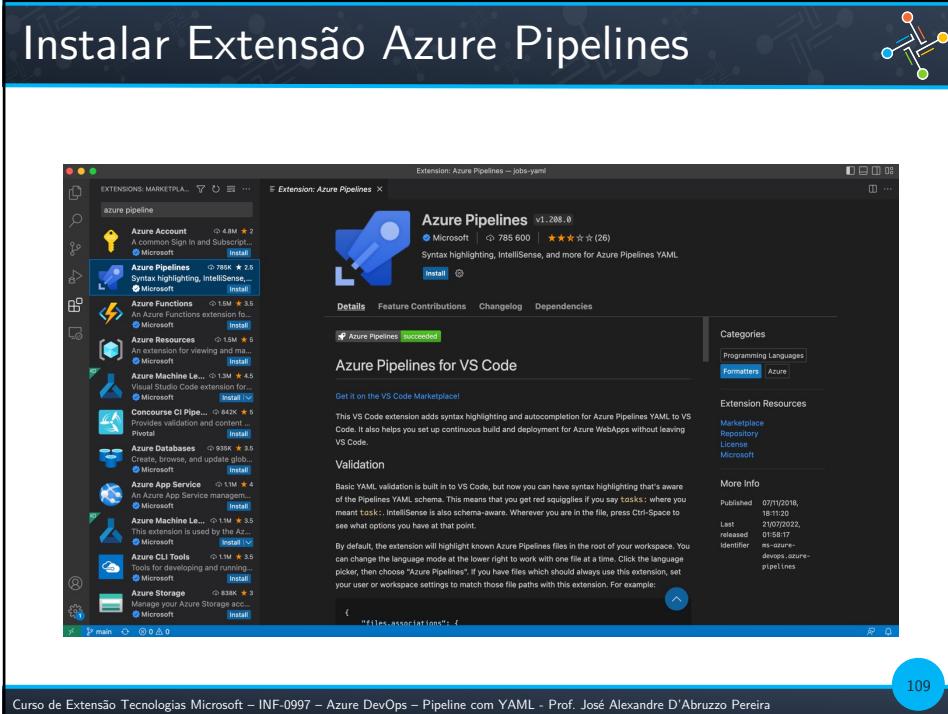
Get started with JavaScript and Node.js Updated

Show welcome page on startup

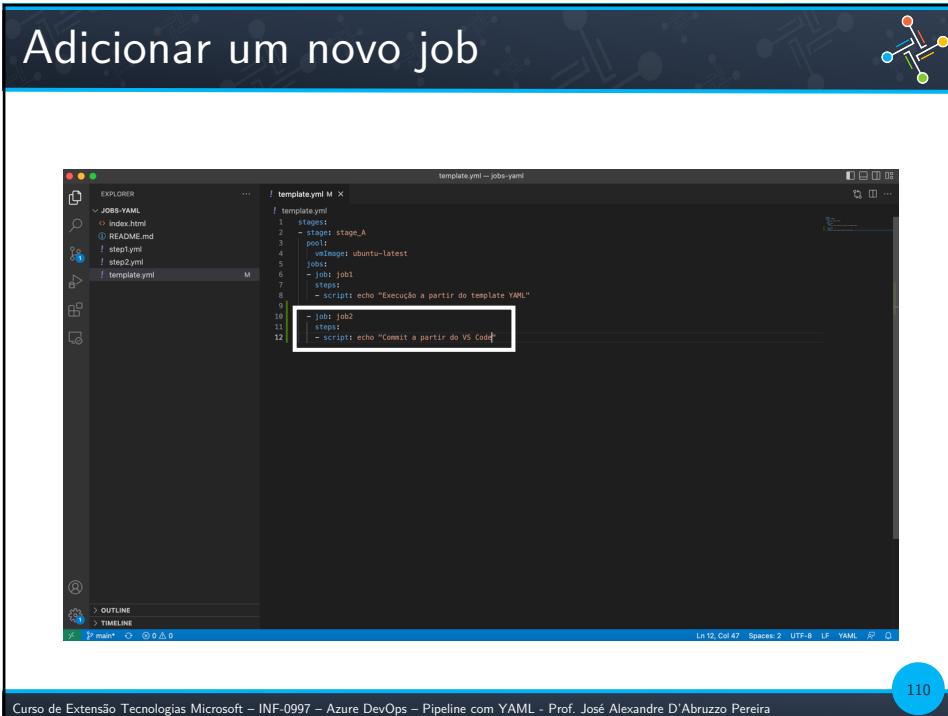
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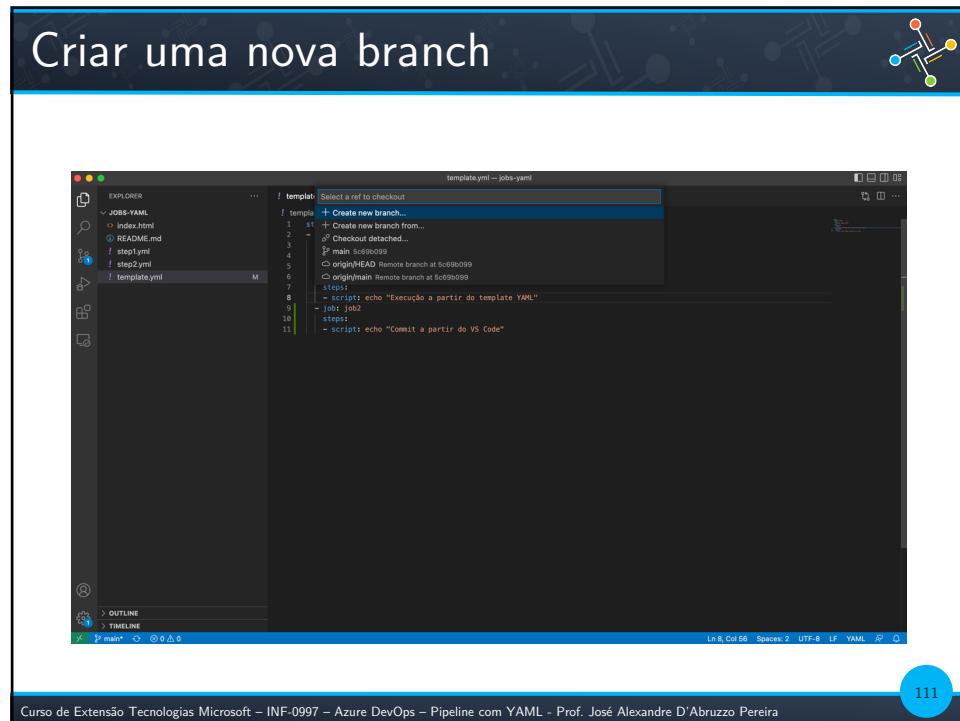
108



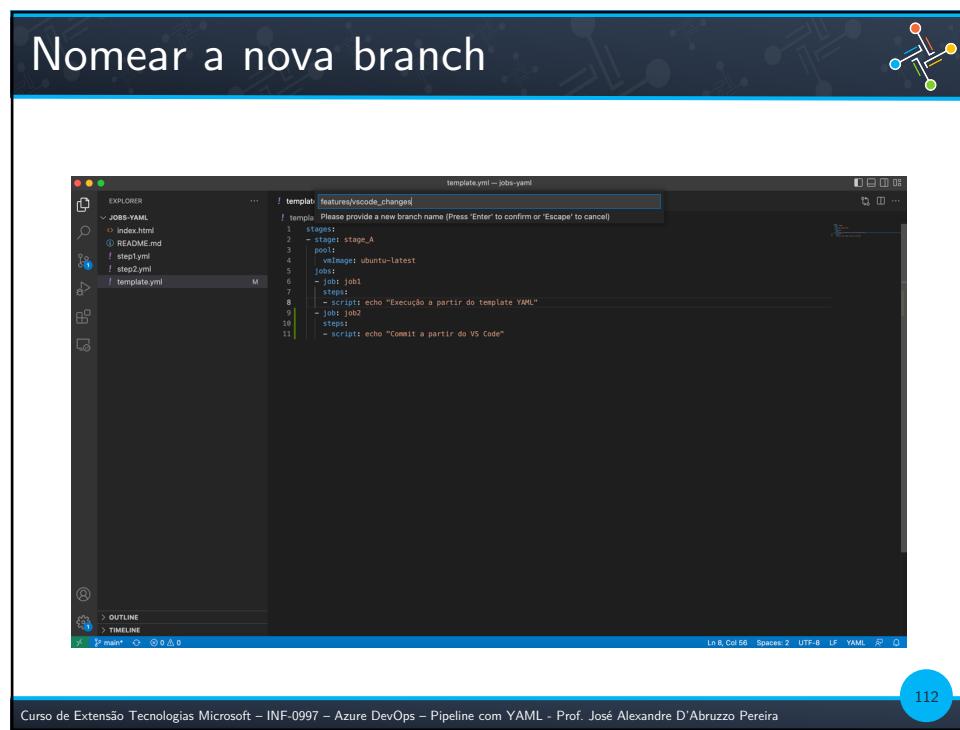
109



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111



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# Commit e Push pelo Terminal

```

template.yml - jobs-yaml
...
1 stages
2 - stage: stage_A
3   pool:
4     image: ubuntu-latest
5   jobs:
6     - job: job1
7       steps:
8         - script: echo "Execução a partir do template YAML"
9     - job: job2
10    steps:

git push --set-upstream origin features/vscode_changes
fatal: Authentication failed for 'https://dev.azure.com/joseadp-unicamp-ext-030/prep-treinamento-yaml/_git/jobs-yaml'
remote: http://dev.azure.com/joseadp-unicamp-ext-030/prep-treinamento-yaml/_git/jobs-yaml
  Basic (106d4x1) push --set-upstream origin features/vscode_changes
remote: Storing index... done (33 ms)
remote: http://dev.azure.com/joseadp-unicamp-ext-030/prep-treinamento-yaml/_git/jobs-yaml
  New branch 'features/vscode_changes' created from 'origin/main'.
Branch 'main' set up to track remote branch 'main' from 'origin'.
remote: Storing objects... (3/3) (151 ms)
remote: Compressing objects... (0/0) (0 bytes)
remote: Writing objects... (3/3) (378.00 KiB/s), done.
remote: Analyzing objects... (3/3) (151 ms)
remote: Processing objects... (0/0) (0 bytes)
remote: Storing index... done (33 ms)
remote: http://dev.azure.com/joseadp-unicamp-ext-030/prep-treinamento-yaml/_git/jobs-yaml
  New branch 'features/vscode_changes' created from 'origin/main'.
Branch 'main' set up to track remote branch 'main' from 'origin'.
josealexandredabruzzoperreira@IP-de-Jose-jobs-yaml % git push -u origin -all
[...]

```

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# Nova branch criada

Azure DevOps joseadp-unicamp-ext-030 / prep-treinamento-yaml / Repos / Files / jobs-yaml

**Files**

**Contents History**

You updated features/vscode\_changes 5m ago Create a pull request

Name	Last change	Commits
index.html	Yesterday	2af3e9fa Updated index.html José ...
MI README.md	sábado	05ad20a7 Added README.md José ...
step1.yml	domingo	1732ed44 Added step1.yml José Alex...
step2.yml	domingo	7ad479f2 Added step2.yml José Ale...
template.yml	domingo	165bd119 Updated template.yml José...

**Introduction**  
TODO: Give a short introduction of your project. Let this section explain the objectives or the motivation behind this project.

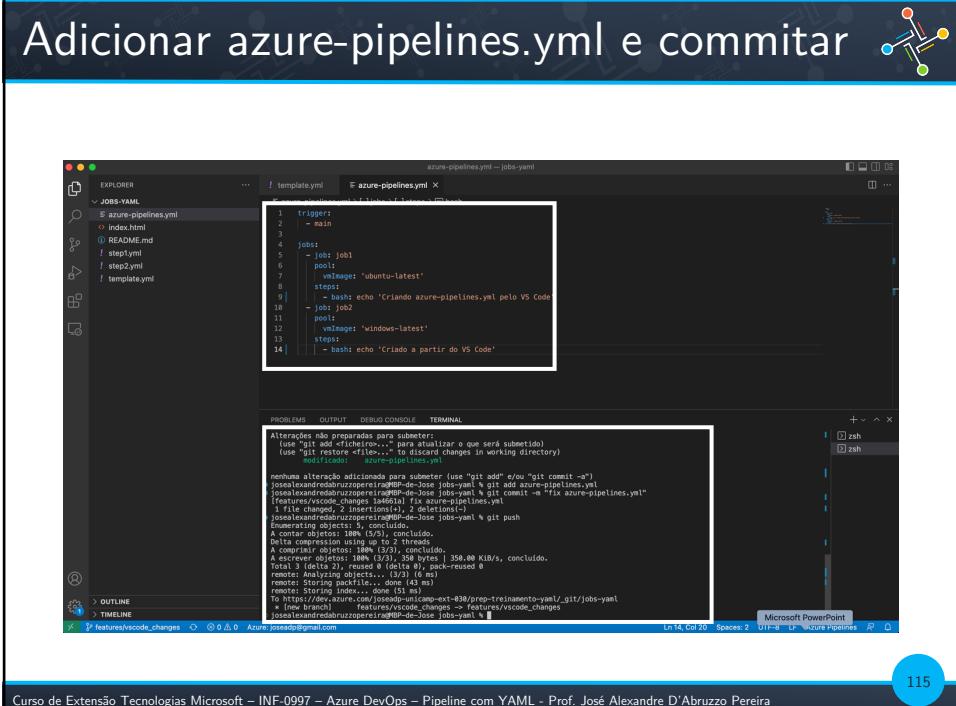
**Getting Started**  
TODO: Guide users through getting your code up and running on their own system. In this section you can talk about:

1. Installation process

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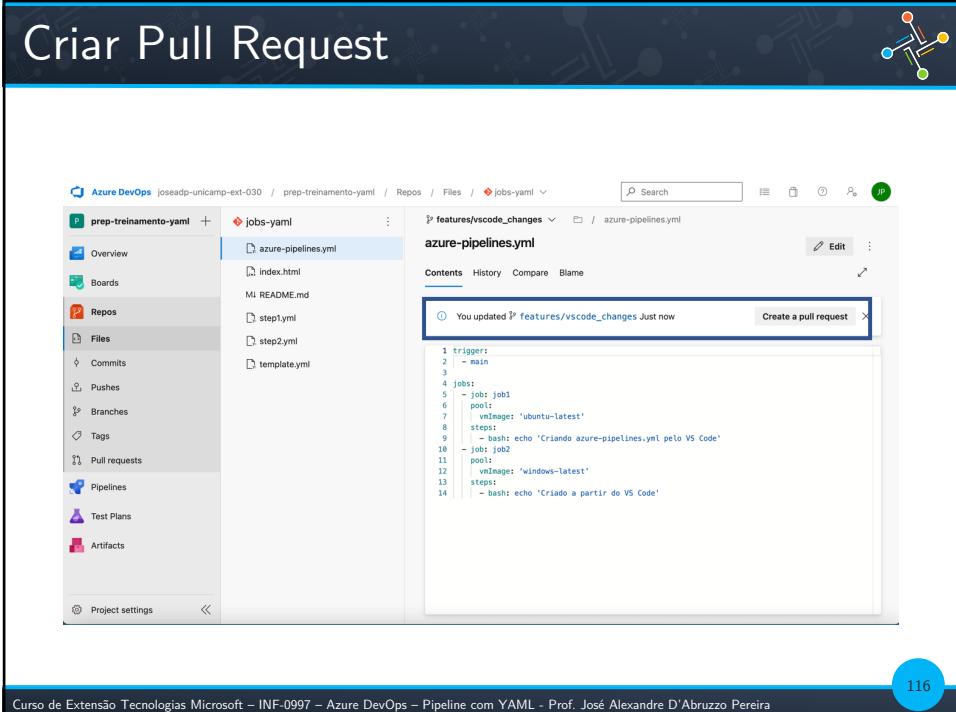
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## Criar Pull Request

Azure DevOps joseadp-unicamp-ext-030 / prep-treinamento-yaml / Repos / Pull requests / jobs-yaml

Title: Changes using VS Code

Description: Describe the code that is being reviewed

Reviewers: Search users and groups to add as reviewers

Work items to link: Search work items by ID or title

Tags:

Create

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## Aprovar e completar Pull Request

Changes using VS Code

Merge type: Merge (no fast forward)

Post-completion options:

- Complete associated work items after merging
- Delete features/vscode\_changes after merging
- Customize merge commit message

Add a comment...

José Alexandre D'Abruzzi Pereira approved the pull request

José Alexandre D'Abruzzi Pereira joined as a reviewer

José Alexandre D'Abruzzi Pereira created the pull request

Cancel Complete merge

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Pipeline pode ser criado automaticamente...

... mas depende das permissões (security issues)

The screenshot shows the Azure DevOps Pipelines interface for a project named 'prep-treinamento-yaml'. A successful pipeline run is displayed, labeled '#20221108.1 • Merged PR 2: fix azure-pipelines.yaml'. The summary section indicates it was manually run by José Alexandre D'Abreu Pereira. The repository is 'jobs-yaml' with commit 'main 752fb7eb'. The run started at 23:10 today and lasted 48 seconds. There are two jobs listed: 'job1' and 'job2', both of which were successful. A sidebar on the left lists various DevOps features like Overview, Boards, Repos, Pipelines, Environments, Releases, Library, Task groups, Deployment groups, Build Usage, Test Plans, Artifacts, and Project settings.

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Dúvidas?

Azure DevOps –  
Pipeline com YAML

[josep@dei.uc.pt](mailto:josep@dei.uc.pt)

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