DIGITAL TWINS

BaSyx:
Software installation
step-by-step instruction towards running
BaSyx examples locally

PROF. DR. CHRISTOPH LEGAT – V 1.0.0

OVERVIEW

This guide is made for Windows (Version 11) operating system – status 04/2024

↗ Step 1: Download and install softwar packages

  ↗ Step 1.A: Integrated Development Environment – Eclipse IDE for Java Developers

  ↗ Step 1.B: Distributed Version Control System – git

  ↗ Step 1.C: Distributed Version Control System GUI – TortoiseGit

  ↗ Step 1.E: Containerization Engine – Docker

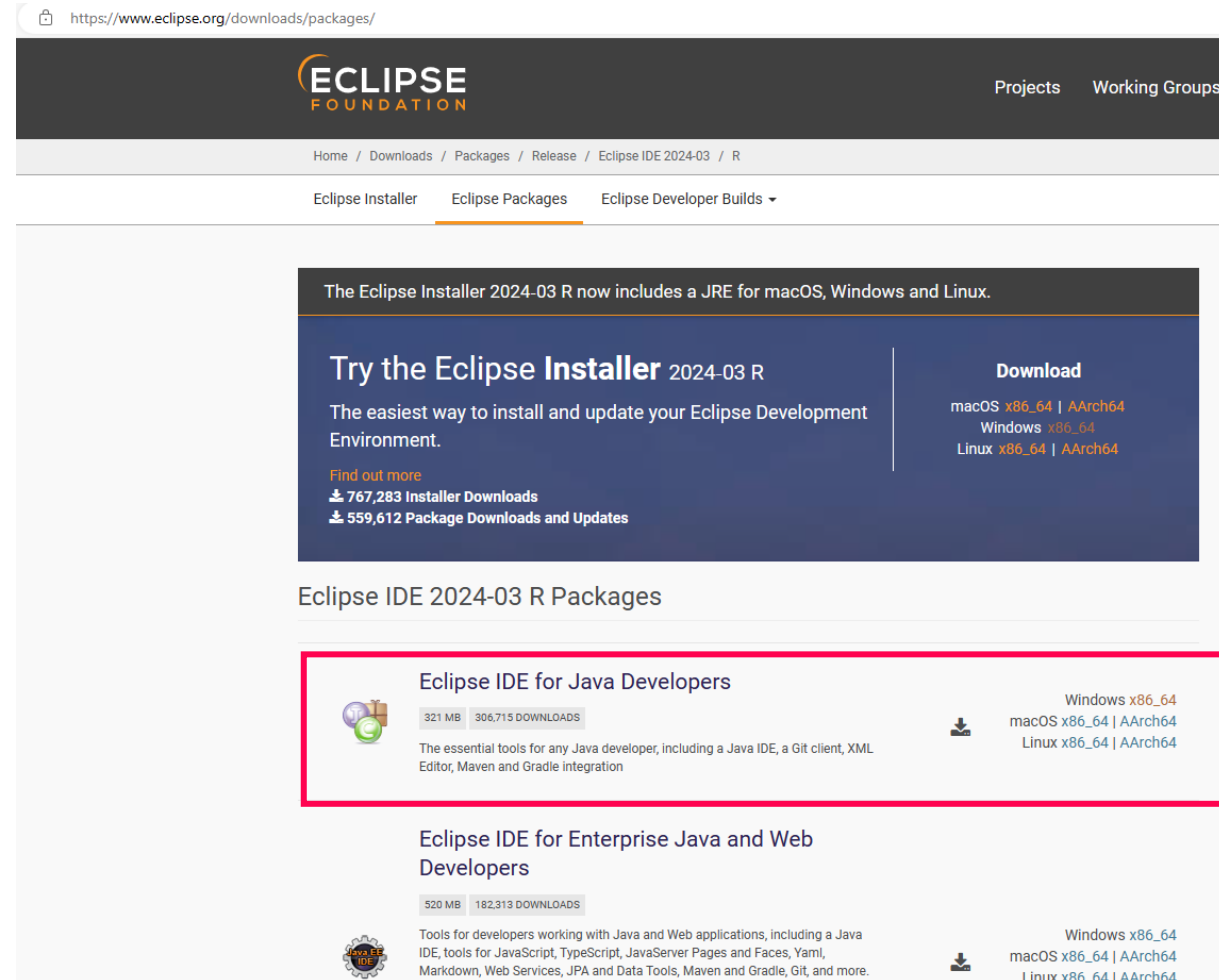↗ Step 2: Clone BaSyx git repostory

↗ Step 3: Start BaSyx examples

STEP 1: DOWNLOAD AND INSTALL SOFTWARE PACKAGES

Step 1.A: Integrated Development Environment – Eclipse IDE for Java Developers

↗ Go to https://www.eclipse.org/downloads/packages/

↗ Download „Eclipse IDE for Java Developers"

↗ Install the downloaded software

STEP 1: DOWNLOAD AND INSTALL SOFTWARE PACKAGES

Step 1.A: Integrated Development Environment – Eclipse IDE for Java Developers

↗ Check correctness of this step:

  ↗ Start „Eclipse IDE for Java Developers" on your computer

    🔵 Eclipse IDE for Java Developers - 2024-03

  ↗ Eclipse IDE Launcher will start for defining the workspace location (see image top right)

  ↗ Click Launch

  ↗ Afterwards, the Eclipse IDE will start (see image bottom right)
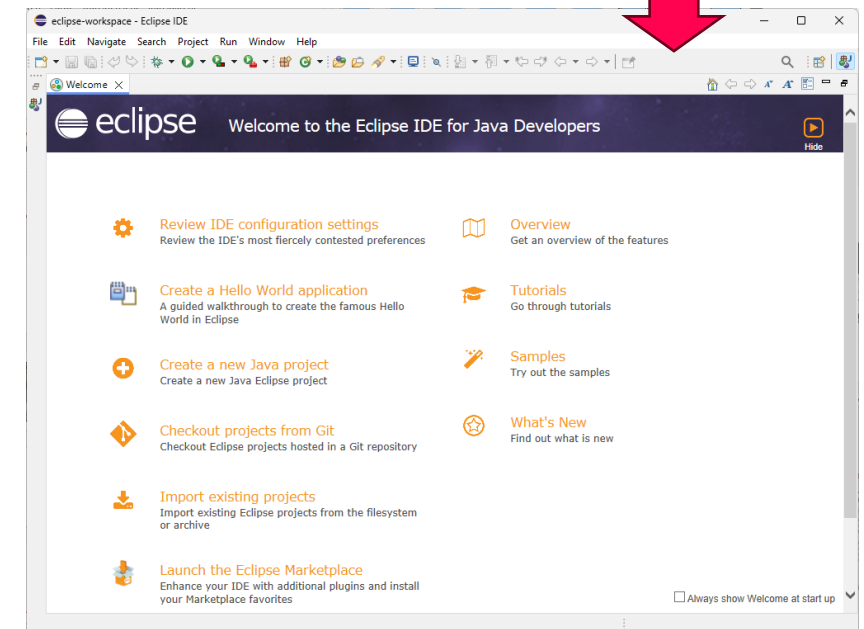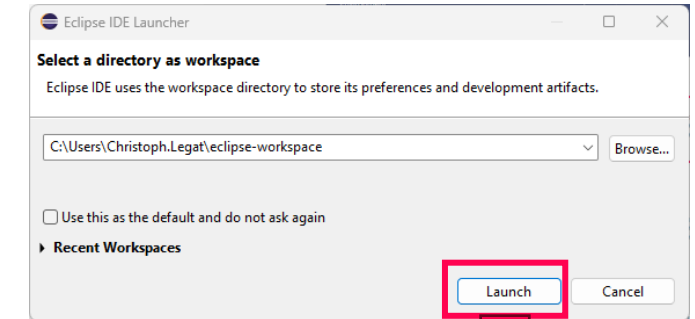
STEP 1: DOWNLOAD AND INSTALL SOFTWARE PACKAGES

Step 1.B: Distributed Version Control System – git

↗ Go to https://git-scm.com/download/win

↗ Download „Git for Windows"

↗ Install the downloaded software with standard settings
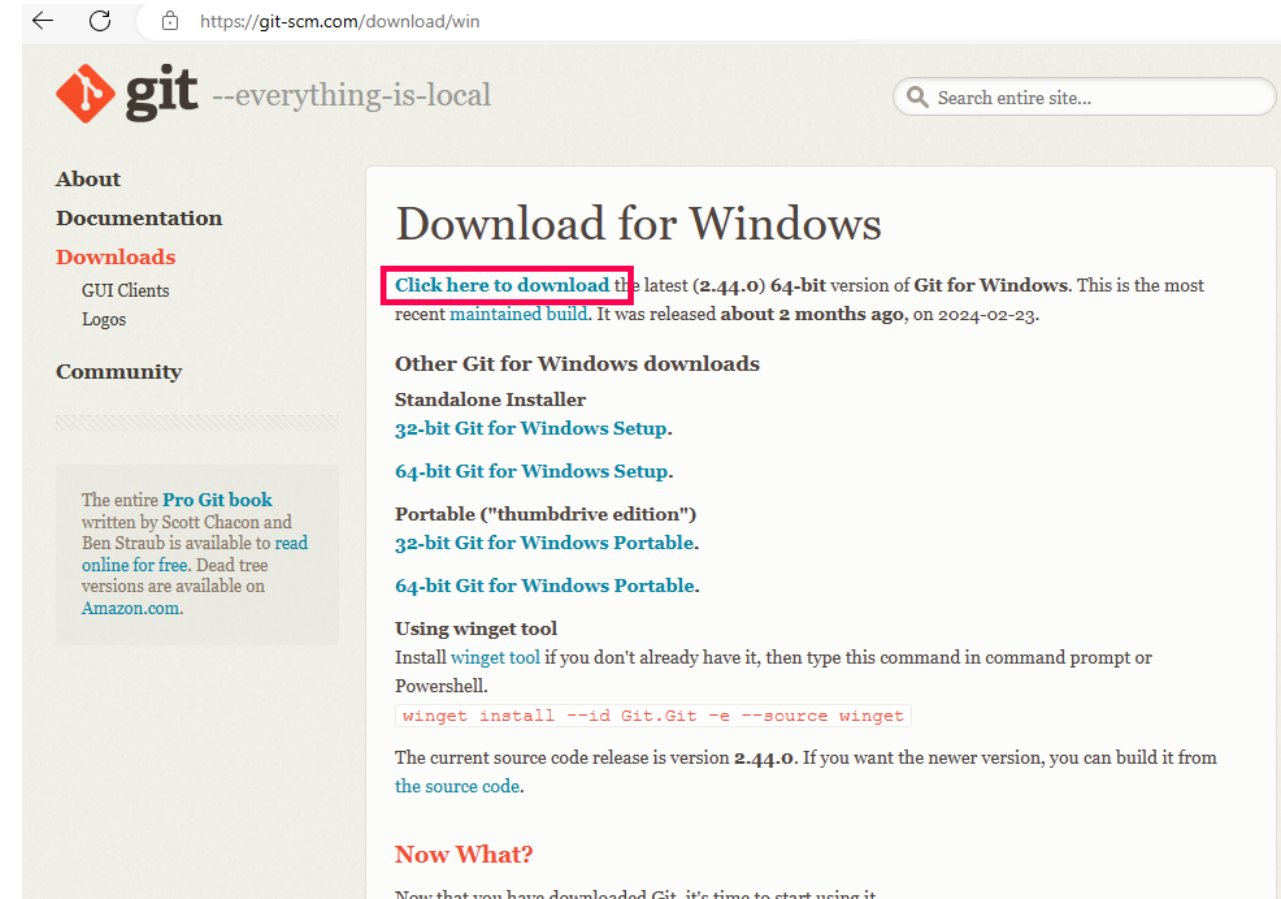
STEP 1: DOWNLOAD AND INSTALL SOFTWARE PACKAGES

Step 1.B: Distributed Version Control System – git

↗ Check correctness of this step:

   ↗ Press windows button on task bar and search for "git" (see image #1)

   ↗ Starting Git Bash results in opening the command line (see image #2)

   ↗ Go to the explorer > right clock > "show more options" > git is available in menu (see image #3)

STEP 1: DOWNLOAD AND INSTALL SOFTWARE PACKAGES

Step 1.C: Distributed Version Control System GUI – TortoiseGit

↗ Go to https://tortoisegit.org/

↗ Download „TortoiseGit"

↗ Install the downloaded software with standard settings

STEP 1: DOWNLOAD AND INSTALL SOFTWARE PACKAGES

Step 1.C: Distributed Version Control System GUI – TortoiseGit
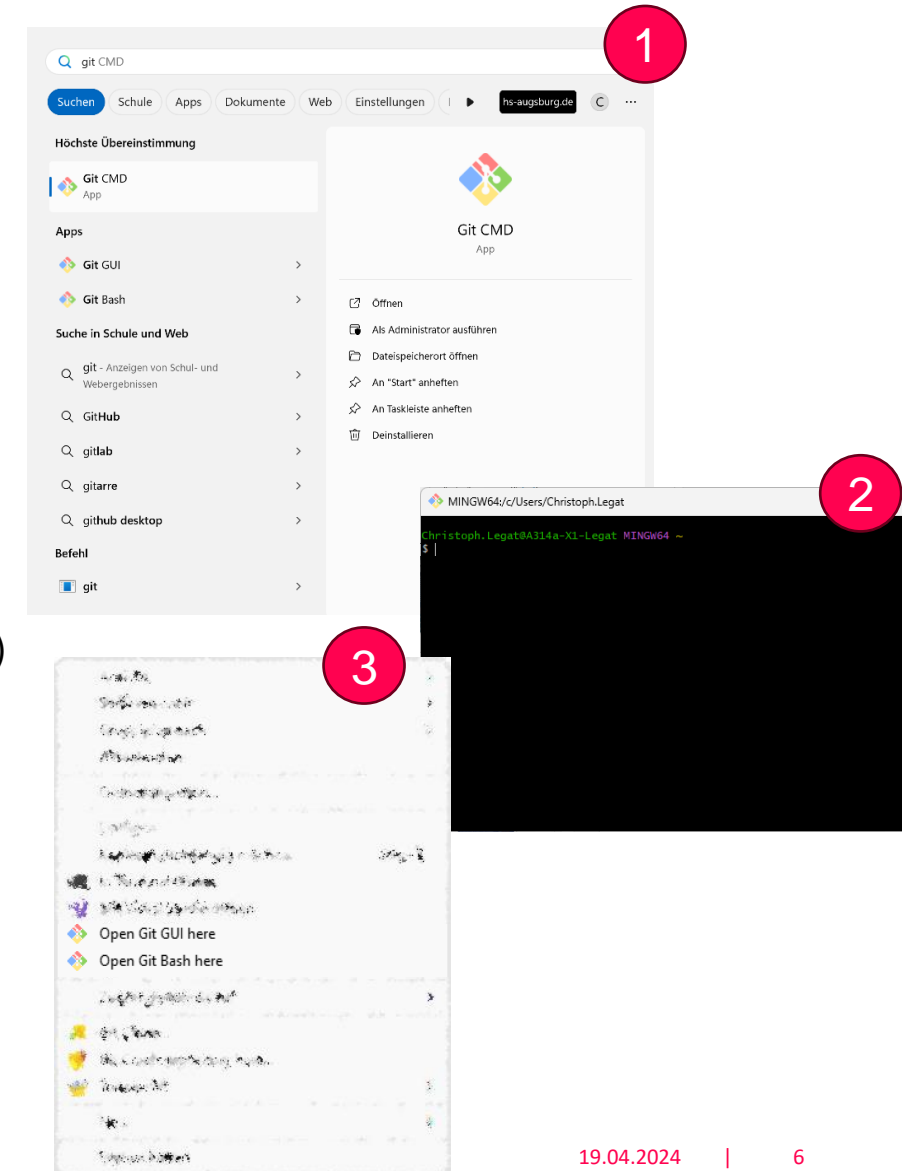
↗ Check correctness of this step:

   ↗ Go to the explorer
     > right clock
     > "show more options"
     > some TortoiseGit options are available in menu (see image)
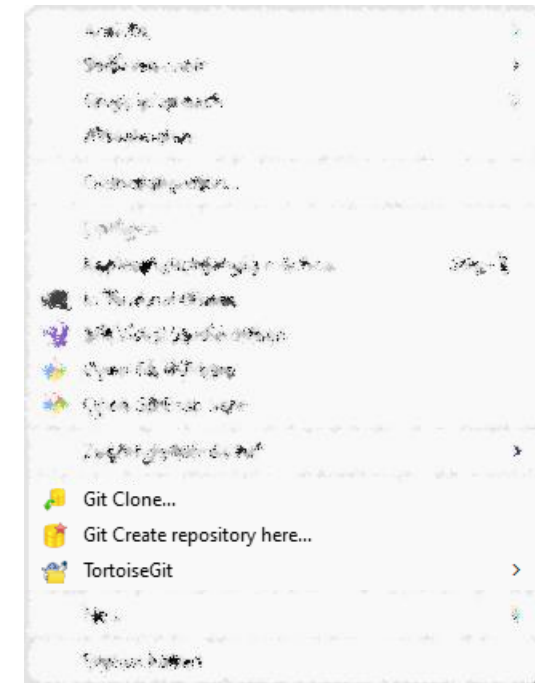
STEP 1: DOWNLOAD AND INSTALL SOFTWARE PACKAGES

Step 1.E: Containerization Engine – Docker

↗ Go to https://docs.docker.com/desktop/install/windows-install/

↗ Install the downloaded software with standard settings

Digital Twins: Asset Administration Shell: Software installation Step-by-step instruction – Prof. Dr. Christoph Legat

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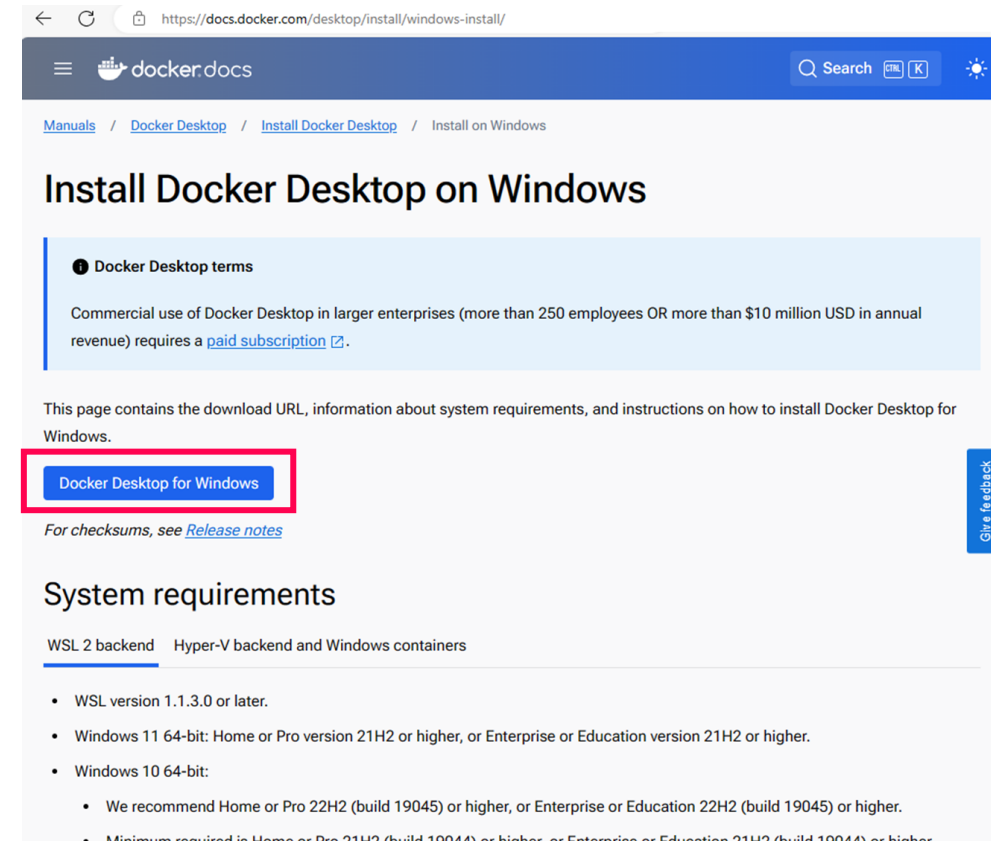
STEP 1: DOWNLOAD AND INSTALL SOFTWARE PACKAGES

Step 1.E: Containerization Engine – Docker

↗ Check correctness of this step:

  ↗ "Docker Desktop" is available on the system and starts (see image #1)

  ↗ "docker" command is available in command line (see image #2)

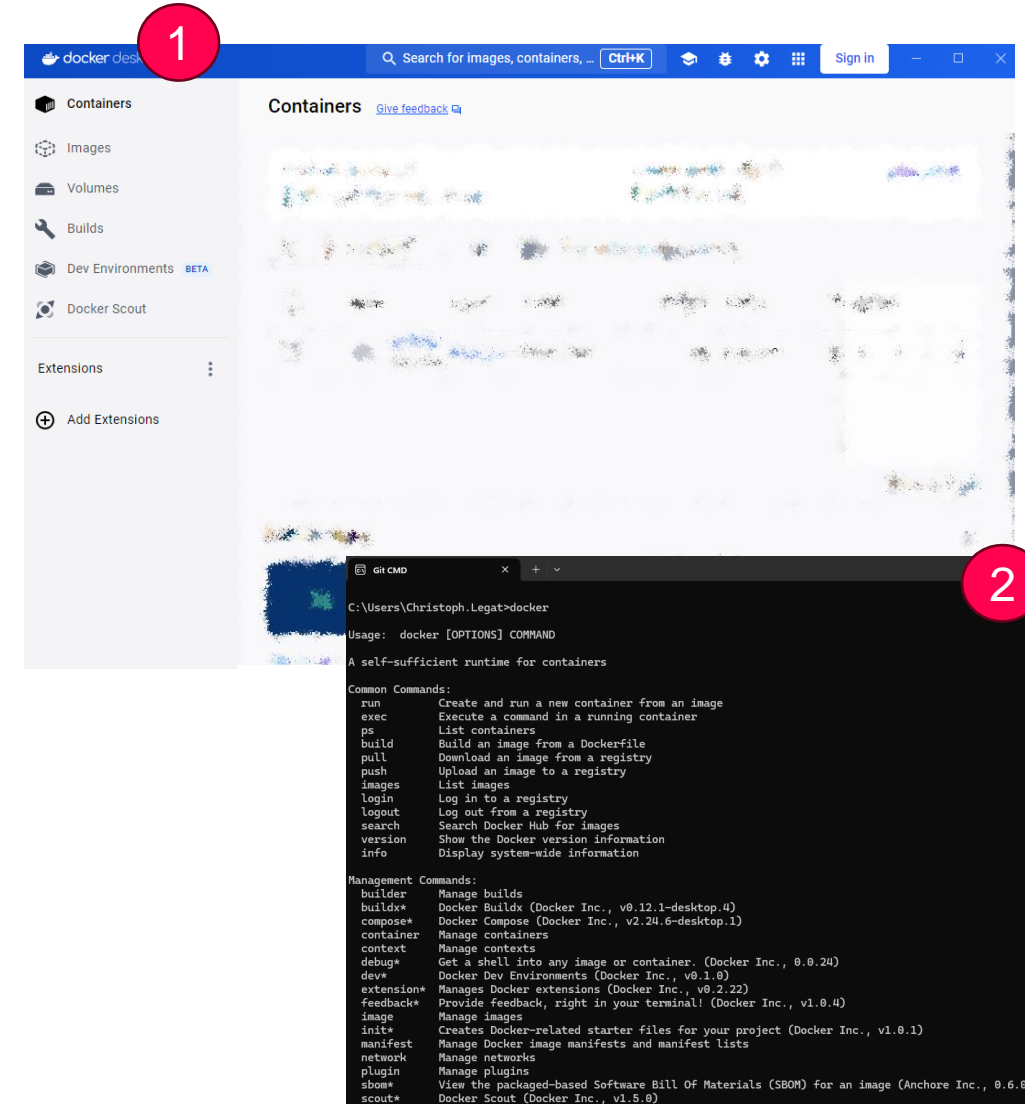# STEP 2: CLONE BASYX GIT REPOSITORY

Step 2: Variant A – using command line

↗ Open command line in your eclipse workspace folder

↗ This can either be done by

  ↗ using the explorer, navigate to the folder, right click, select "open in terminal"

  ↗ Open the command line (Windows Start->"CMD") and navigate to the folder

    ↗ Changing directory: https://learn.microsoft.com/en-us/windows-server/administration/windows-commands/cd

    ↗ List files: https://learn.microsoft.com/en-us/windows-server/administration/windows-commands/dir

↗ Enter "git clone https://github.com/eclipse-basyx/basyx-java-server-sdk"

git config --system core.longpaths true

STEP 2: CLONE BASYX GIT REPOSITORY

Step 2: Variant A – using command line

↗ Check correctness of this step:

  ↗ Repository was cloned without any failure, see image

STEP 2: CLONE BASYX GIT REPOSITORY

Step 2: Variant B – using ToirtoiseGit UI

↗ Open your eclipse workspace folder in the explorer

↗ Open context menu (right click) and select "Git Clone.." (see image #1)

↗ Enter URL of the repo: https://github.com/eclipse-basyx/basyx-java-server-sdk (see image #2)
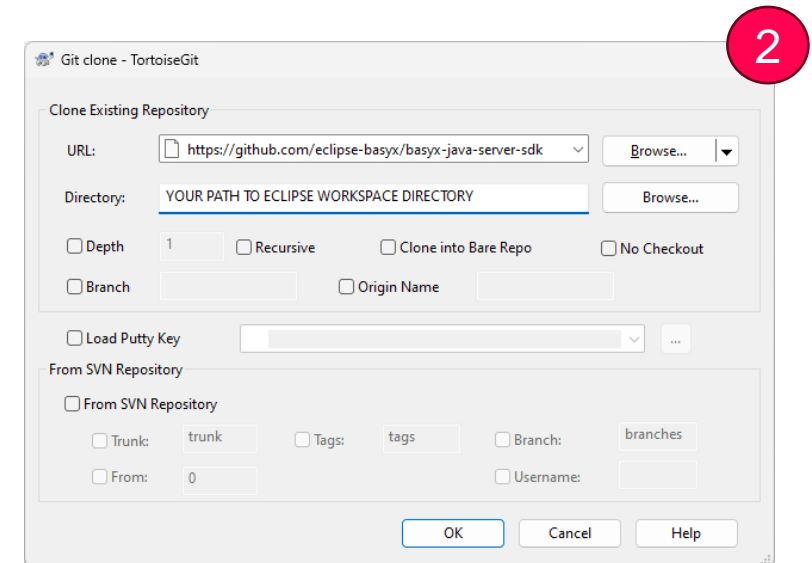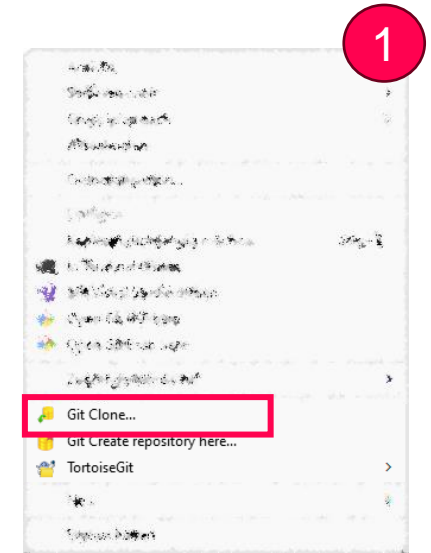
STEP 2: CLONE BASYX GIT REPOSITORY

Step 2: Variant B – using ToirtoiseGit UI

↗ Check correctness of this step:

↗ Repository was cloned without any failure (indicated by "Success" message), see image
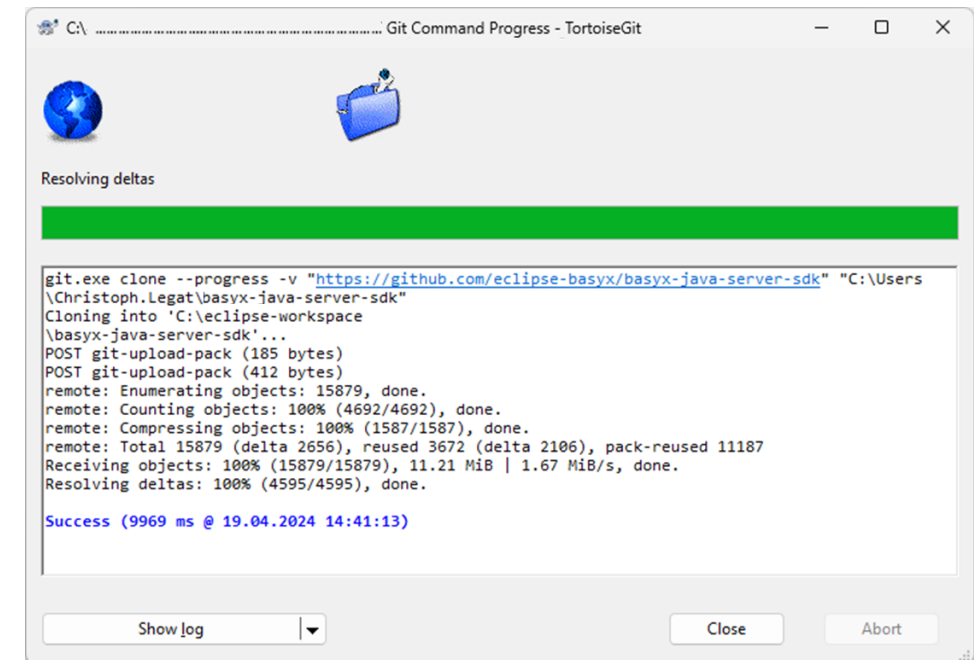
STEP 2: CLONE BASYX GIT REPOSITORY

Known Issues and Solutions

↗ Problem: Cloning of some files failed with message **"Filename too long„**

    ↗ Solution: Open command line as administrator and use the following
       command: git config --system core.longpaths true

STEP 3: START BASYX EXAMPLES

↗ Go folder of your eclipse workspace in the command line

↗ Switch to subdirectory "examples"

↗ Use command "docker-compose up –d"

↗ Check for success:

    ↗ Firstly, various elements are pulled (image #1 shows final situation)

    ↗ Secondly, various containers are started (image #2 shows final situation)

```
\basyx-java-server-sdk\examples> docker-compose up –d
```

1

```
✓aas-web-ui_v2 17 layers [##################]      0B/0B      Pulled
✓aas-env 5 layers [######]        0B/0B      Pulled
✓mongo 9 layers [##########]        0B/0B      Pulled
✓sm-registry 6 layers [########]        0B/0B      Pulled
✓aas-registry 5 layers [######]        0B/0B      Pulled
✓aas-discovery 5 layers [######]        0B/0B      Pulled
✓mqtt 3 layers [####]      0B/0B      Pulled
```

2

```
[+] Running 7/8
 - Network examples_default            Created
 ✓Container examples-mqtt-1            Healthy
 ✓Container examples-mongo-1           Healthy
 ✓Container examples-aas-discovery-1   Started
 ✓Container examples-aas-registry-1    Healthy
 ✓Container examples-sm-registry-1     Healthy
 ✓Container examples-aas-env-1         Healthy
 ✓Container aas-web-ui_v2              Started
```

PROF. DR. CHRISTOPH LEGAT

Faculty of Electrical Engineering
Professorship for Digital Twins of Mechatronic Systems

Technische Hochschule Augsburg

An der Hochschule 1

86161 Augsburg

T +49 821 5586 3846

christoph.legat@tha.de

www.tha.de