



Object-Oriented Programming In Mechatronic Systems

Summer School

Final Project Preparations

Aachen, Germany, August 10th, 2018

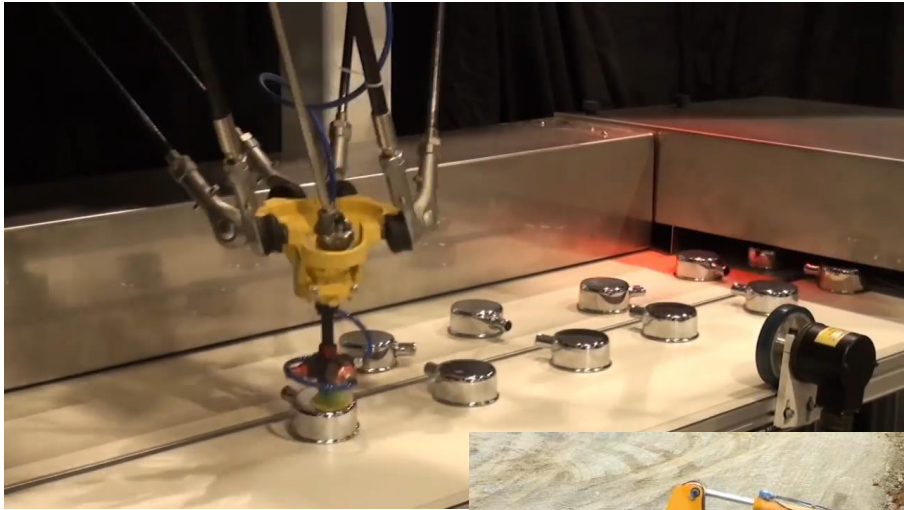
Cybernetics Lab IMA & IfU
Faculty of Mechanical Engineering
RWTH Aachen University



Final Project

Final Project: Motivation

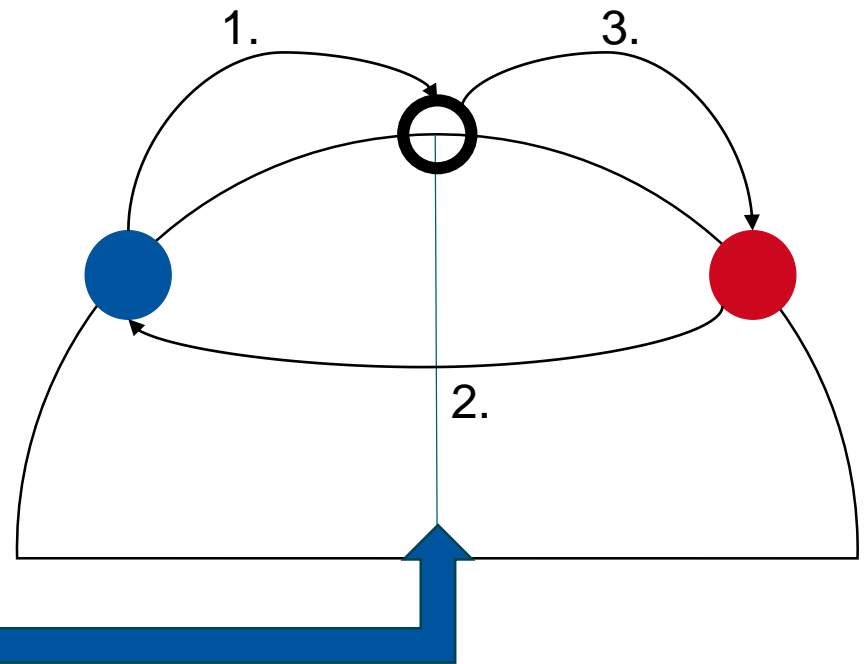
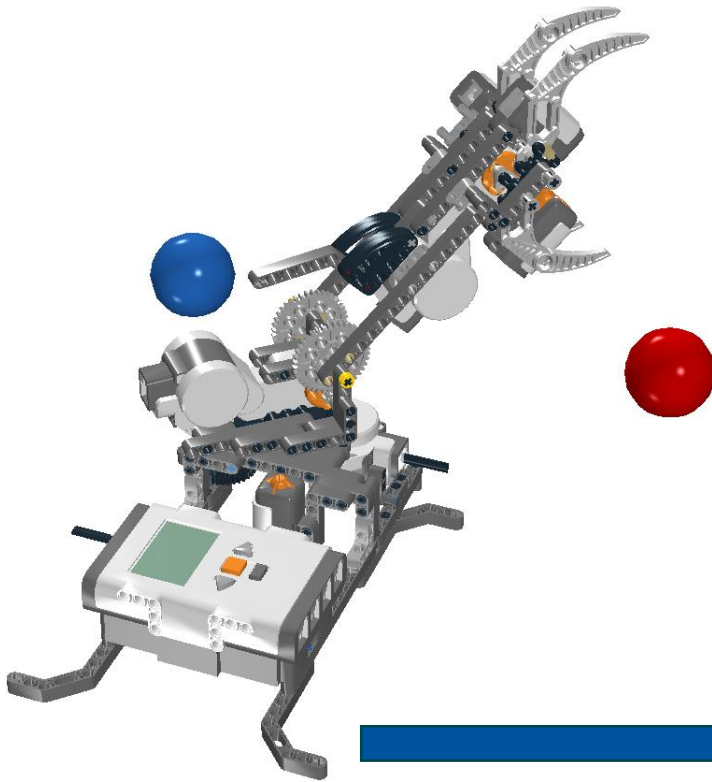
Mechatronic systems are everywhere!



Final Project: Robot Programming

In the final project, you will program a real robot!

- We use LEGO Mindstorm robots
- The task: Find and swap colored balls with the robot



Final Project: Robot Programming

The robots have several elements



Touch sensor



Light sensor



Ultrasonic
sensor



NXT (Brick):
The robot's core



Ports



Buttons

Preparing for Robot Programming

Preparing for Robot Programming

After finishing the preparation, you can start with the final project!

- Find teams to work together
- Get a LEGO Mindstorms robot pack
- Follow the instructions to install required software & prepare your Laptop

Download the installation files from our website



https://sloumotion.github.io/opms_2018/

Module 7 - Introduction to Mechatronic Systems

Topics

- Excursus: Introduction to Mechatronic Systems

Material

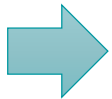
- [Lecture Slides](#)

Final Project

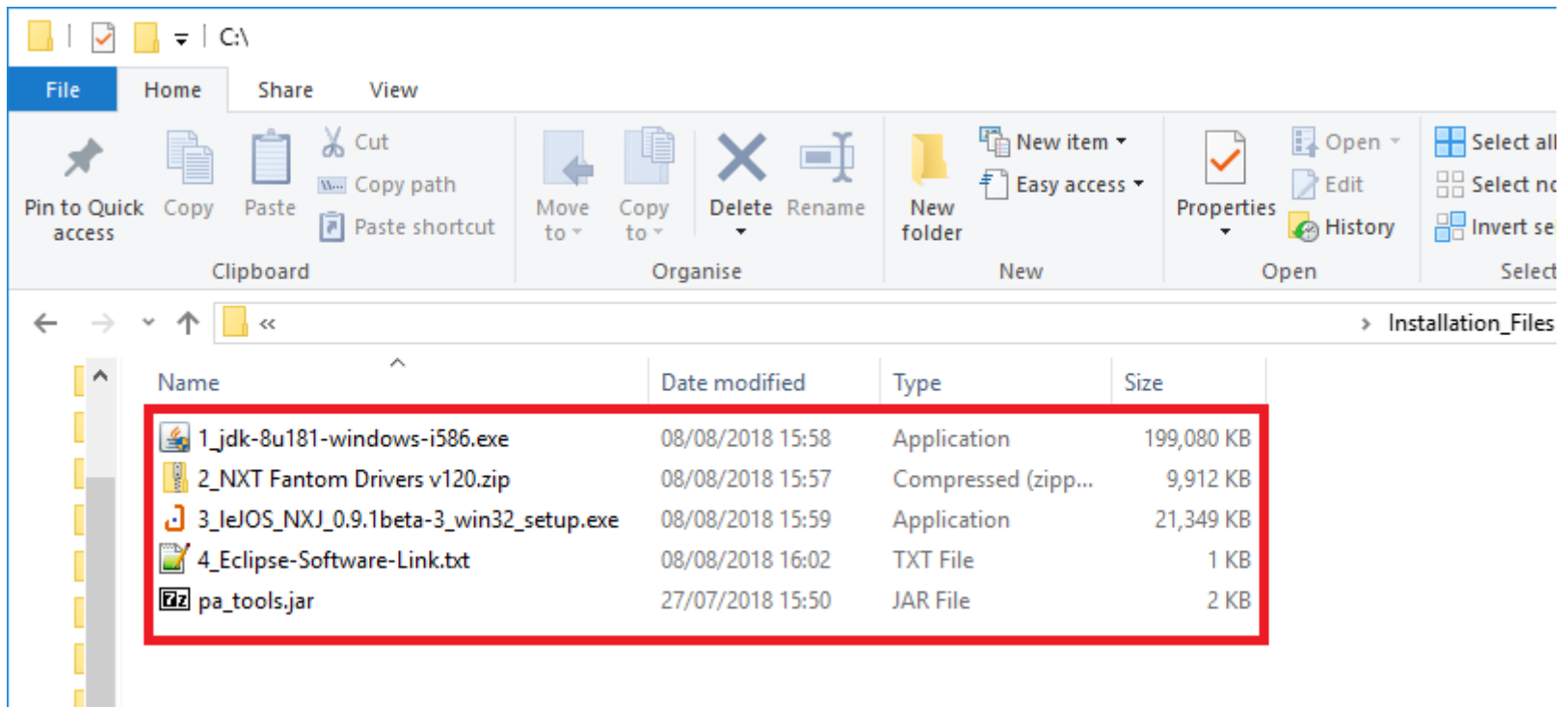
- [Setup Instructions](#)
- [Installation Files](#)
- [Project Template](#)

Preparing for Robot Programming

Download the installation files from our website



https://sloumotion.github.io/opms_2018/



Preparing for Robot Programming

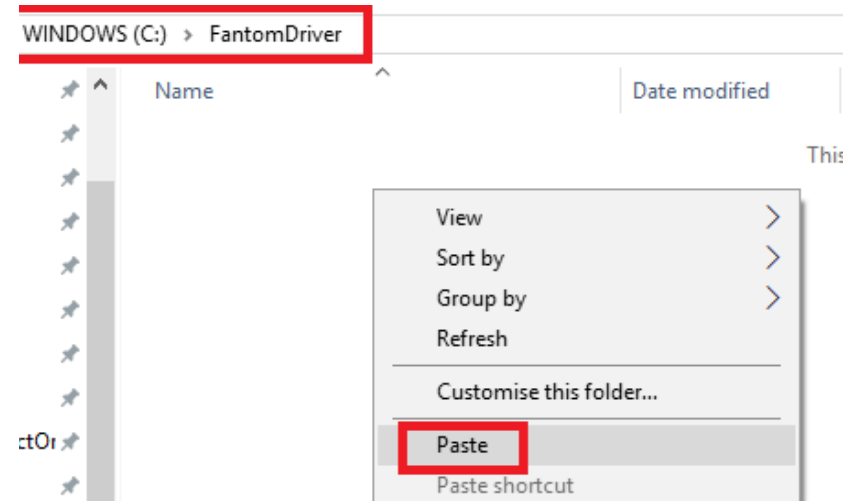
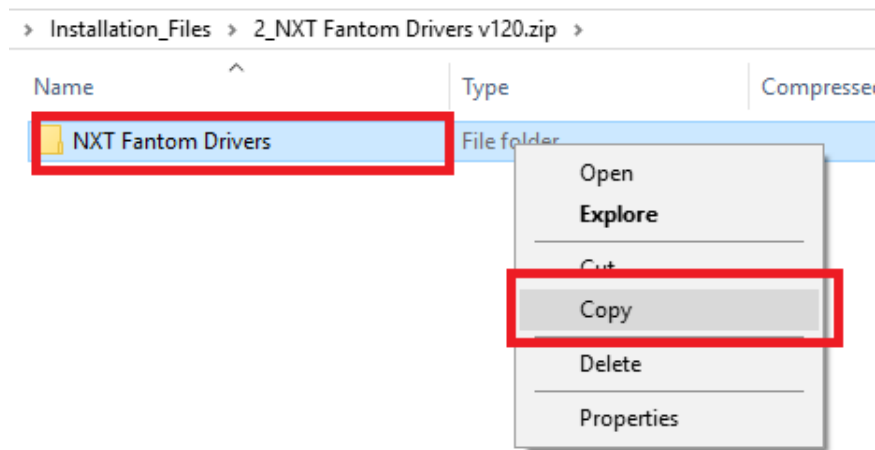
1. Java SDK (32 bit)

- Run (double-click) 1_jdk-8u181-windows-i586.exe
- Follow the instructions

Preparing for Robot Programming

2. Extract the Fantom driver

- On your laptop, create the directory C:\FantomDriver\
- Enter (double-click) 2_NXT Fantom Drivers v120.zip
- Right-click the folder and copy it to the directory created above



Preparing for Robot Programming

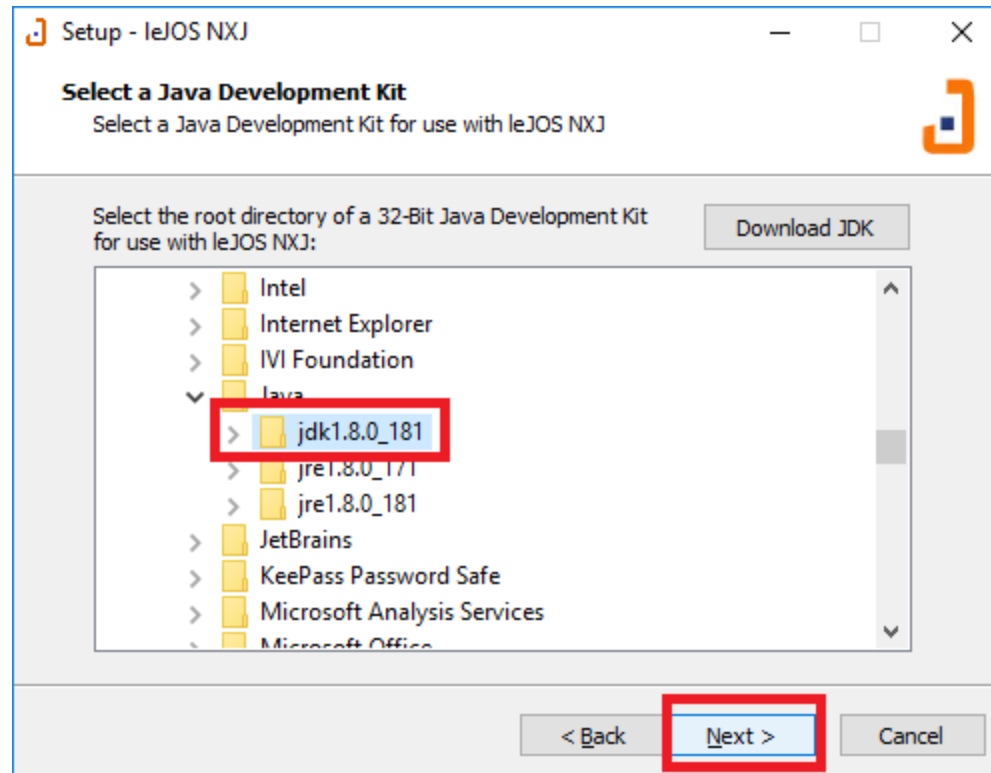
Install leJOS

- Run 3_leJOS_NXJ_0.9.1beta-3_win32_setup.exe



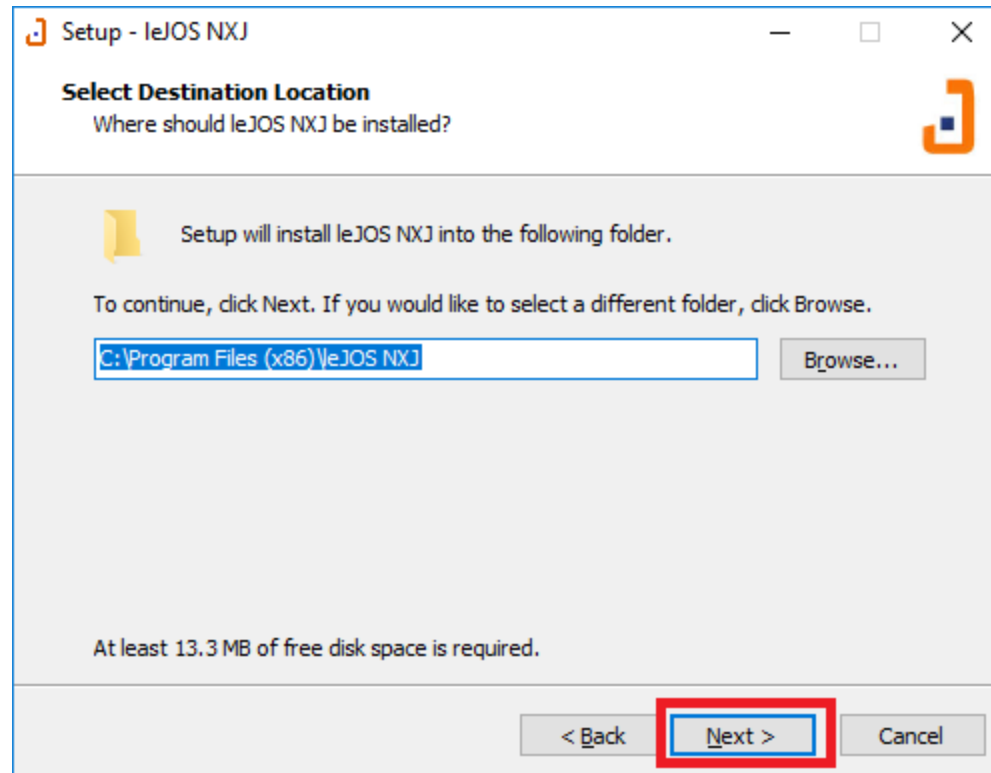
Preparing for Robot Programming

Install leJOS



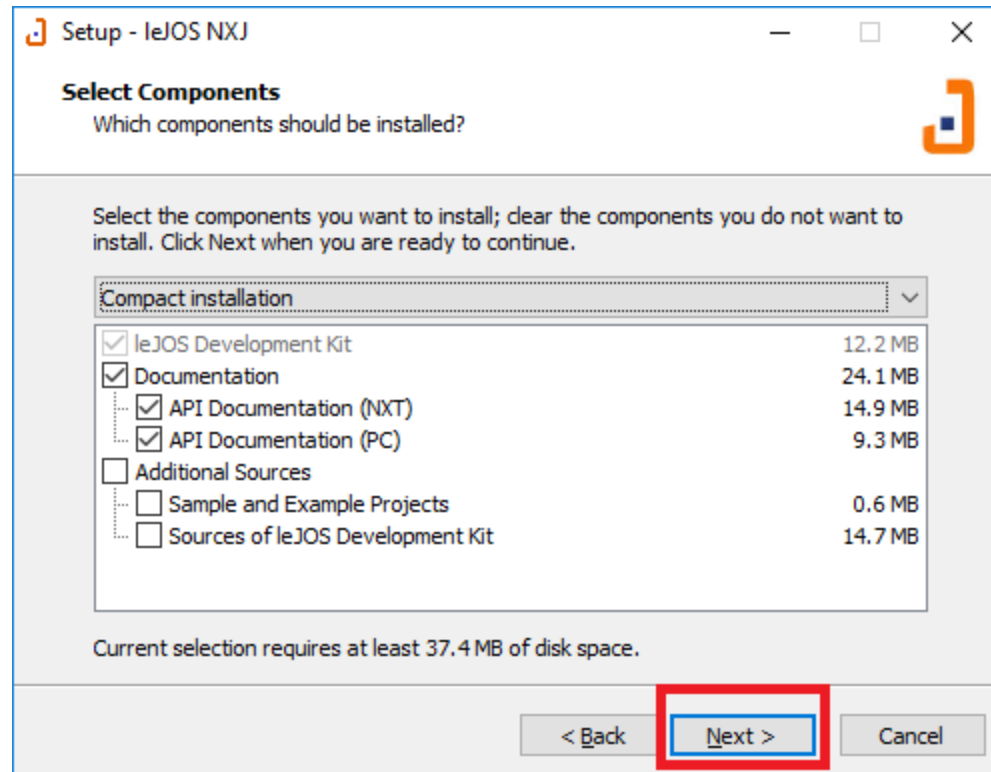
Preparing for Robot Programming

Install leJOS



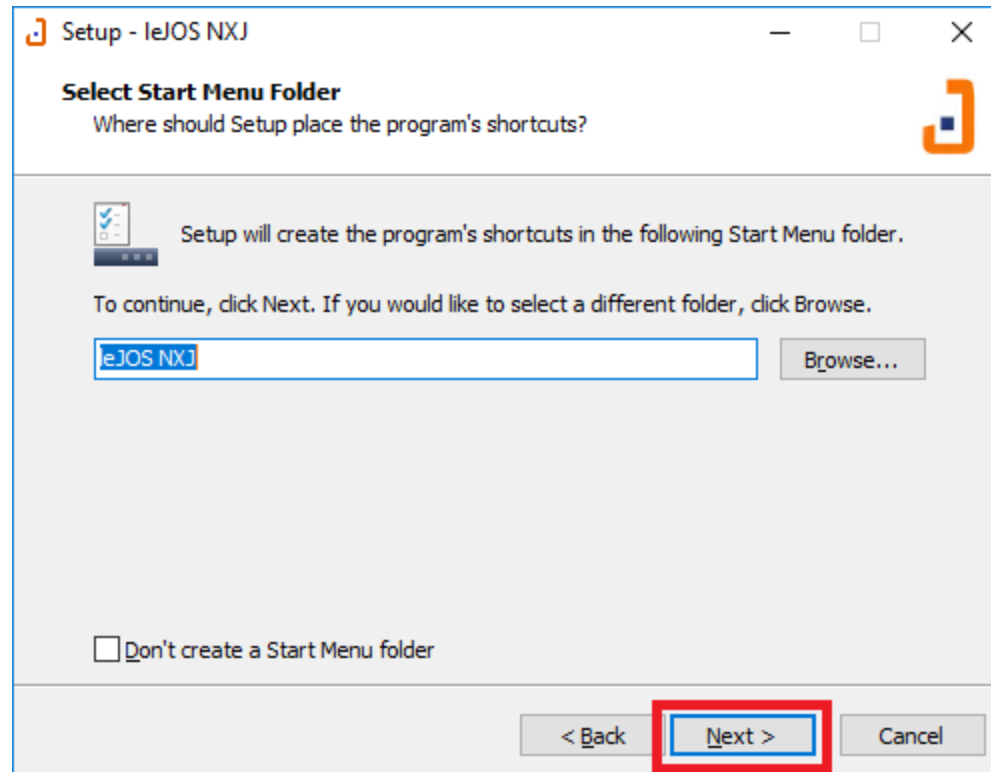
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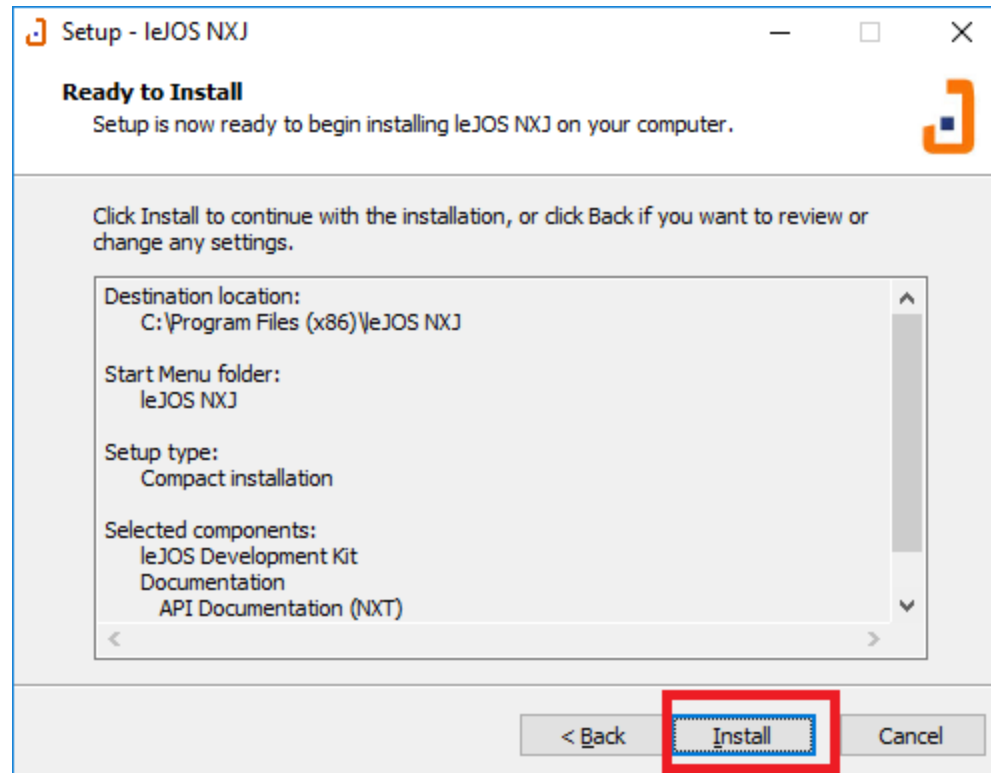
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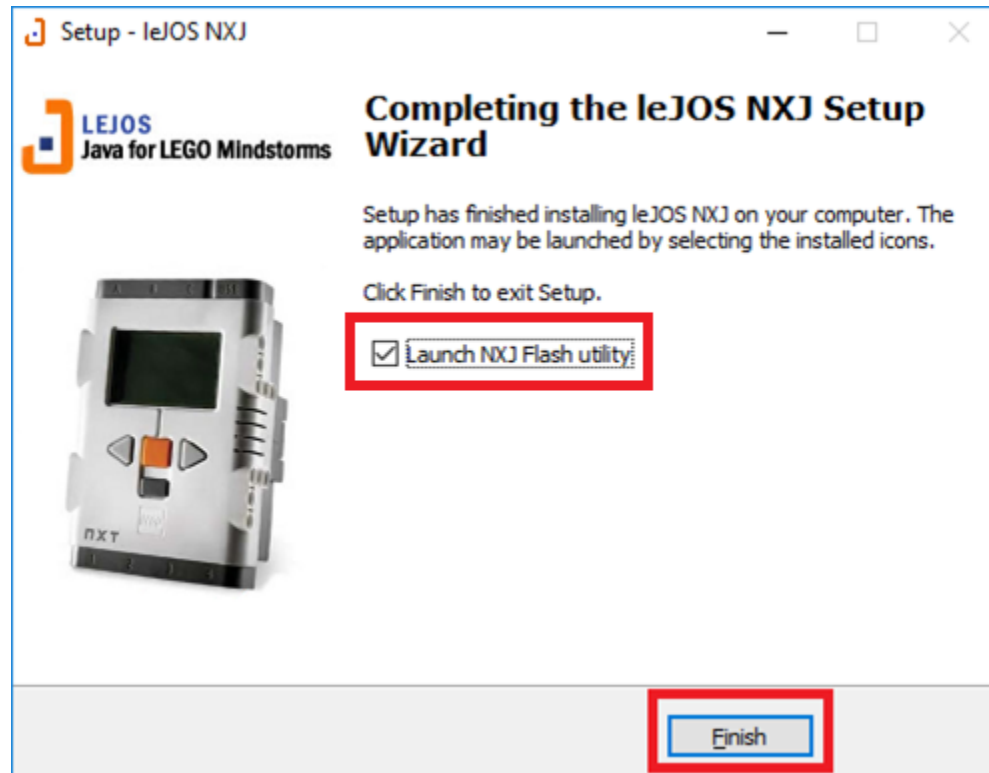
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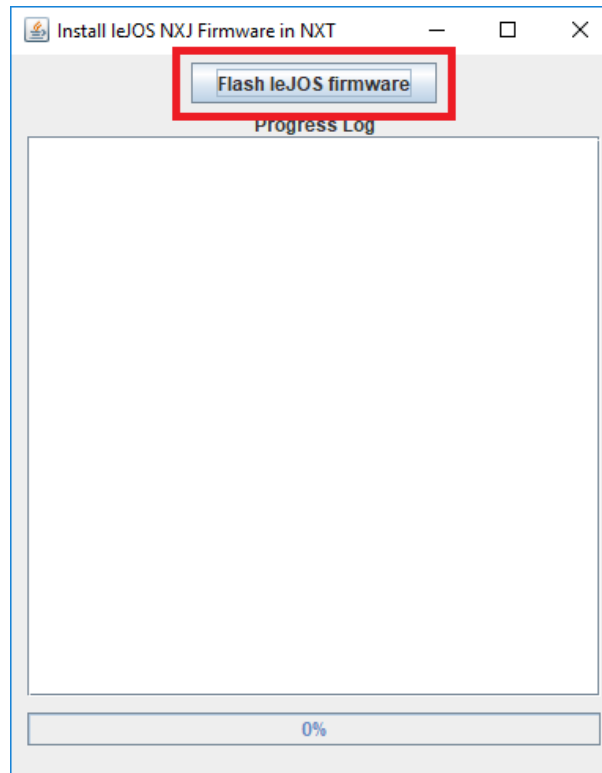
Preparing for Robot Programming

Install leJOS



Preparing for Robot Programming

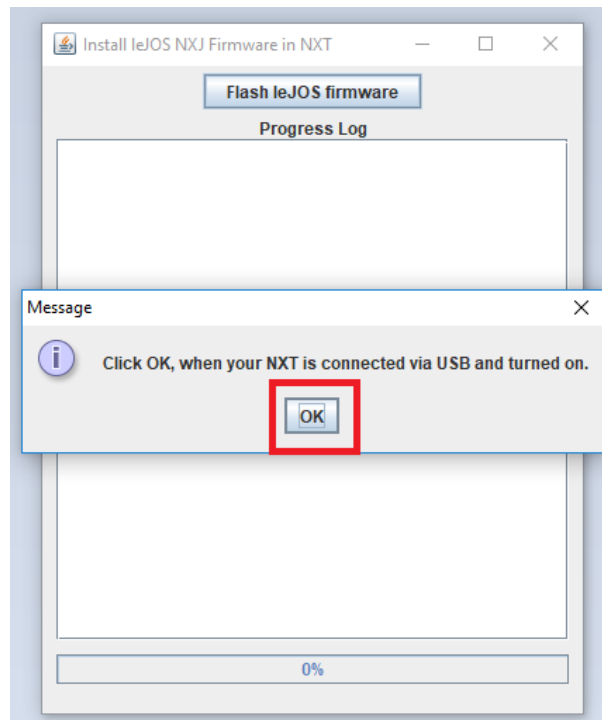
Prepare the robot: Flash leJOS



Preparing for Robot Programming

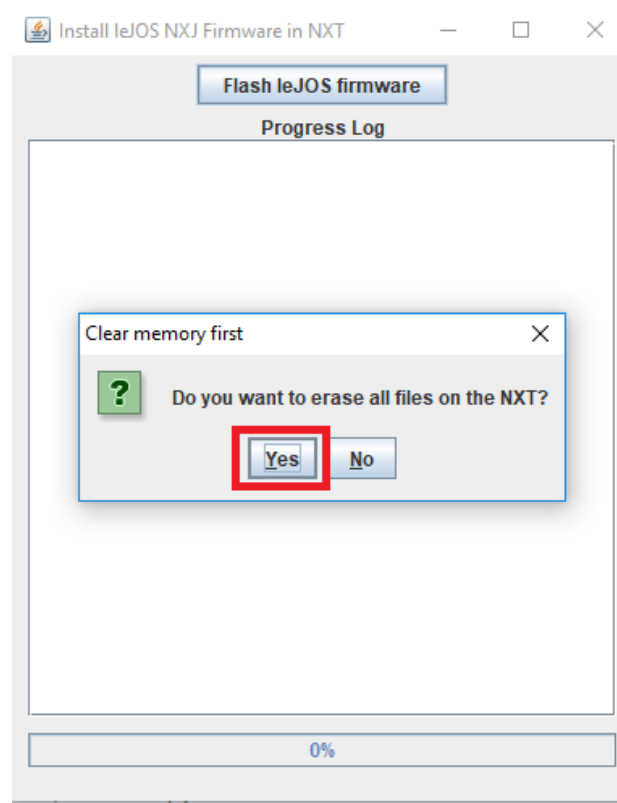
Prepare the robot: Flash leJOS

Connect the robot via USB
& turn it on



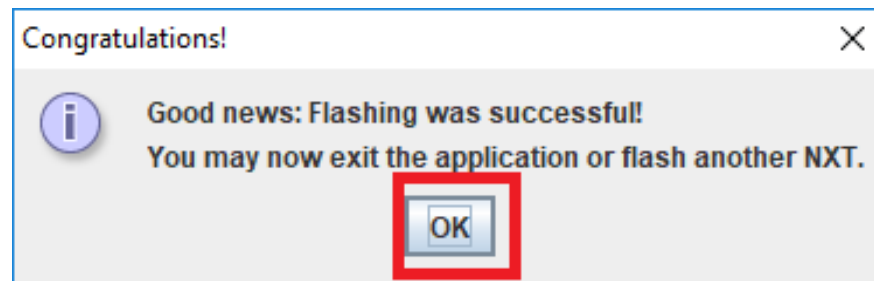
Preparing for Robot Programming

Prepare the robot: Flash leJOS



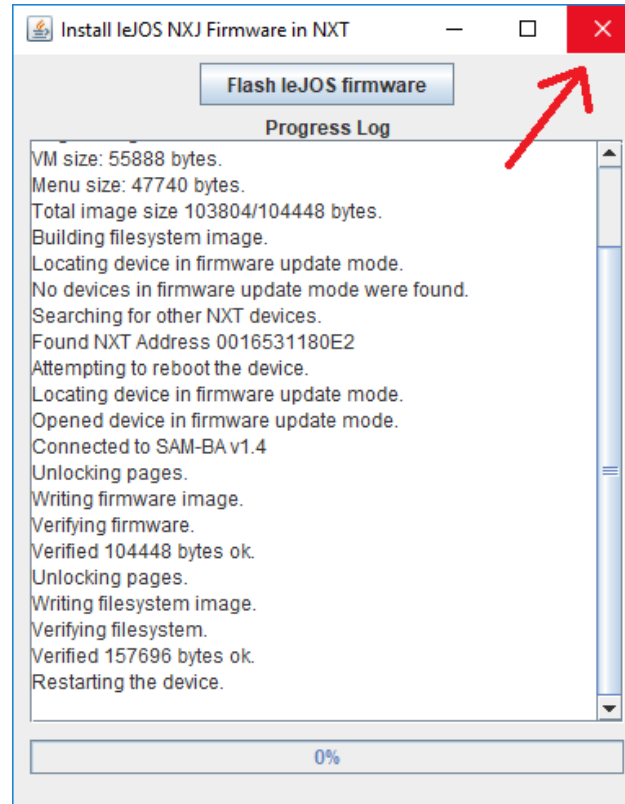
Preparing for Robot Programming

Prepare the robot: Flash leJOS



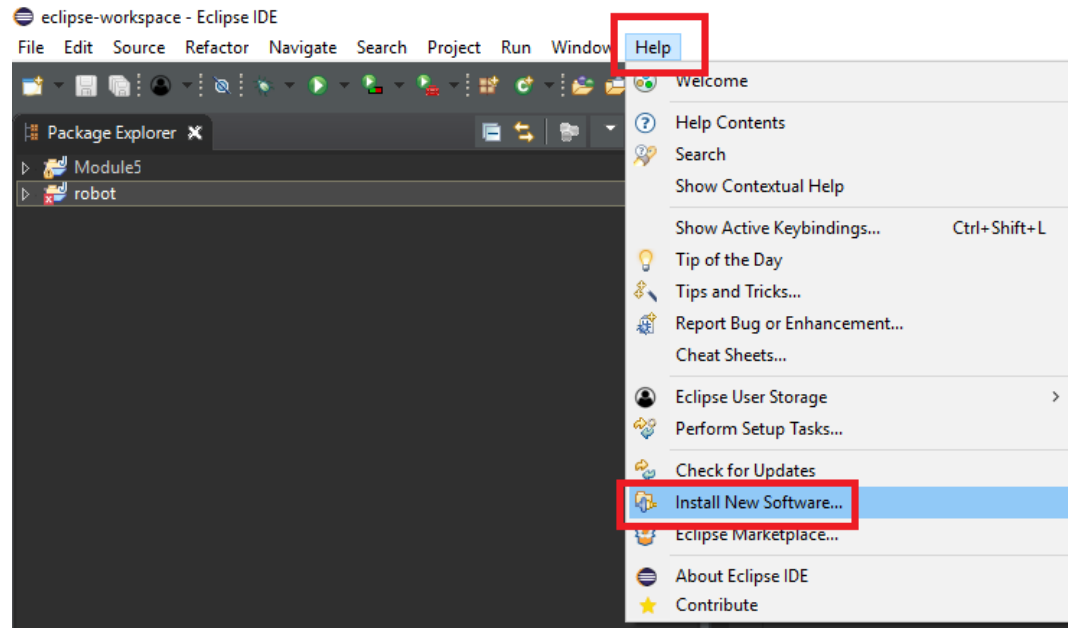
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Prepare the robot: Flash leJOS



Preparing for Robot Programming

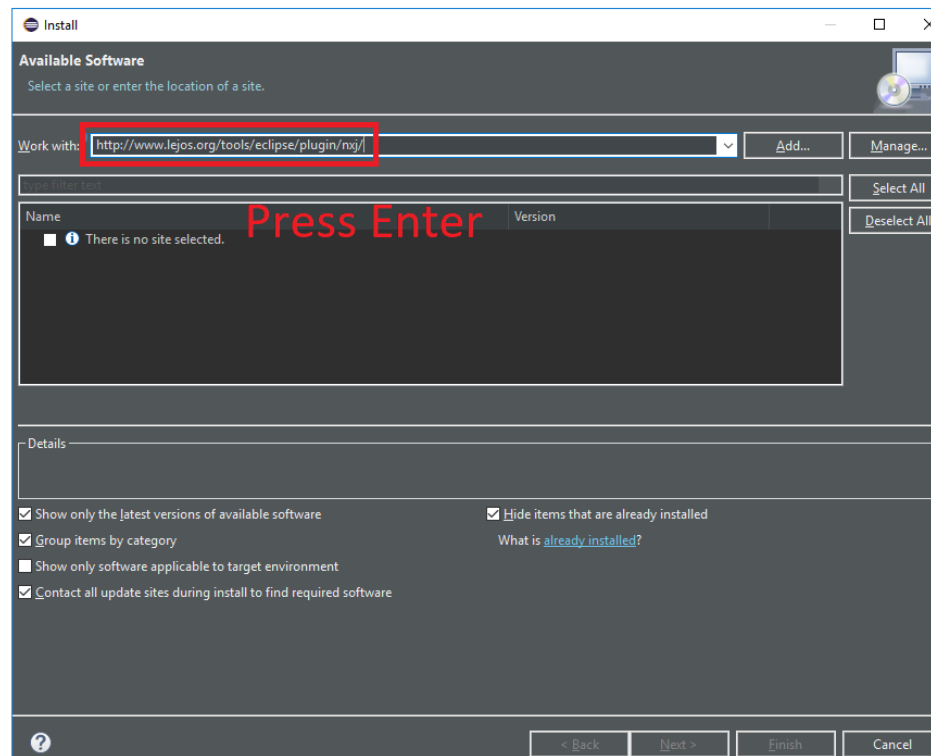
Install robot software in Eclipse



Preparing for Robot Programming

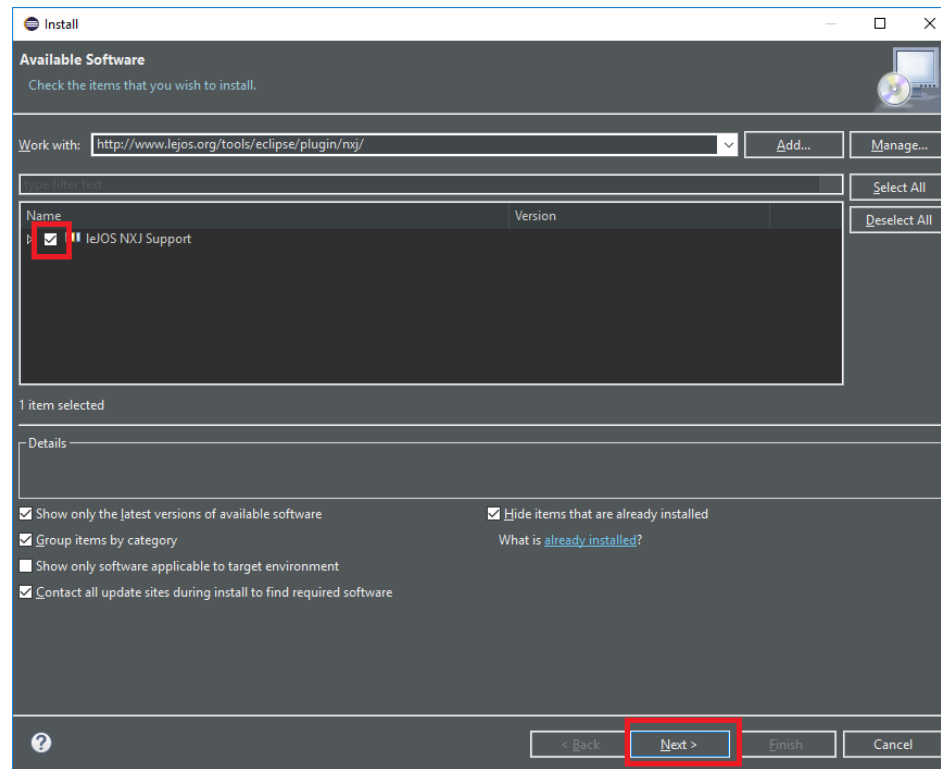
Install robot software in Eclipse

<http://www.lejos.org/tools/eclipse/plugin/nxj/>
(Copy this link from our website)



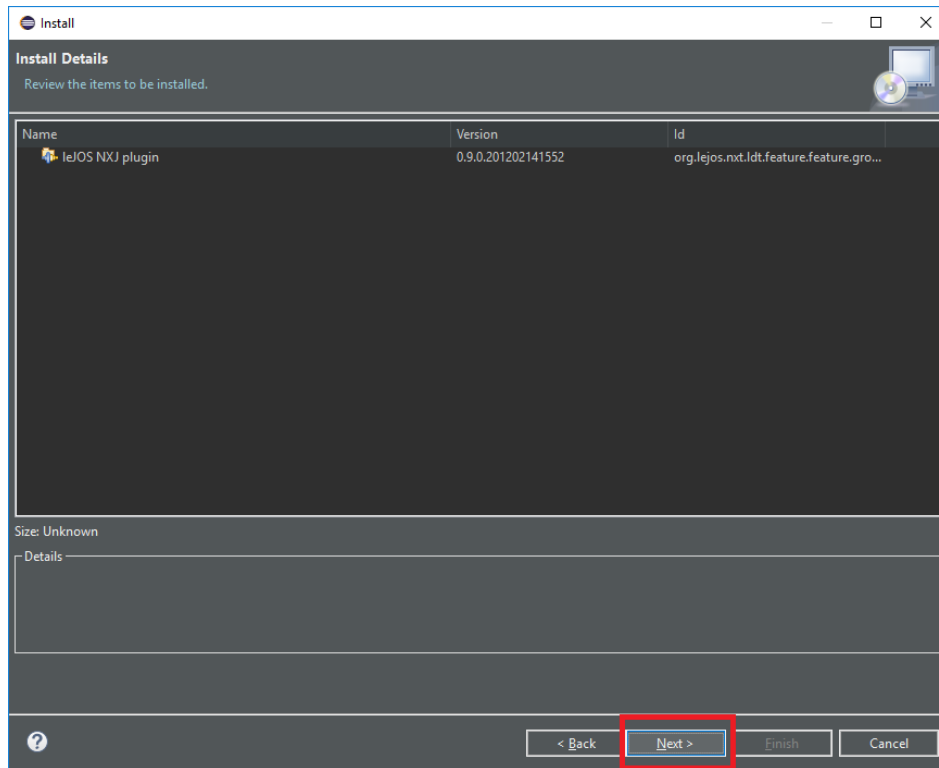
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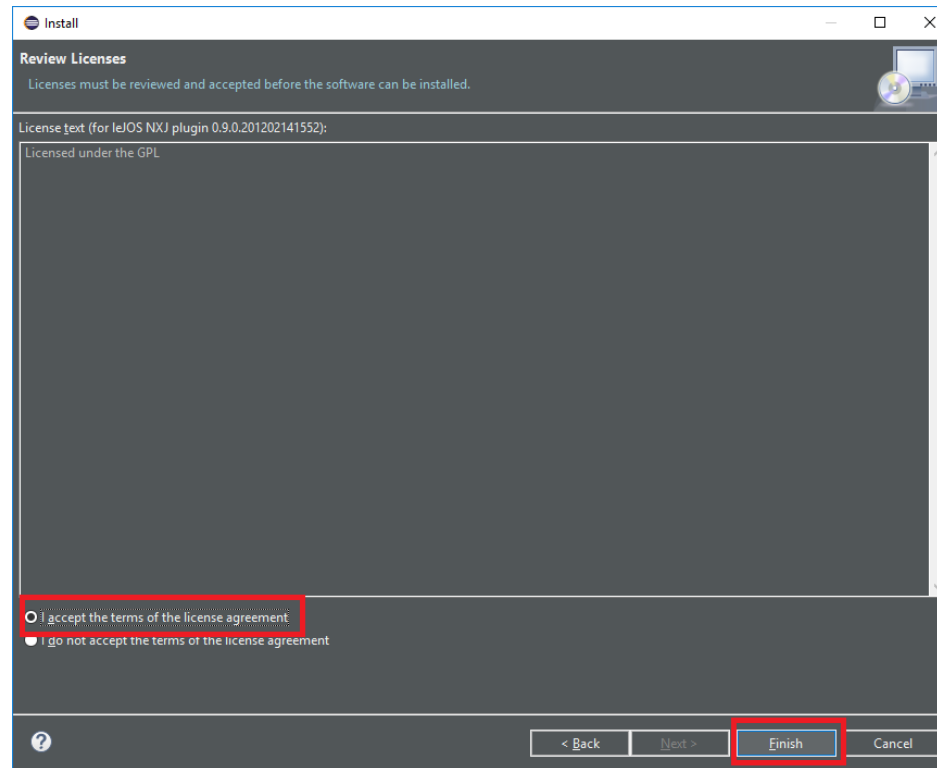
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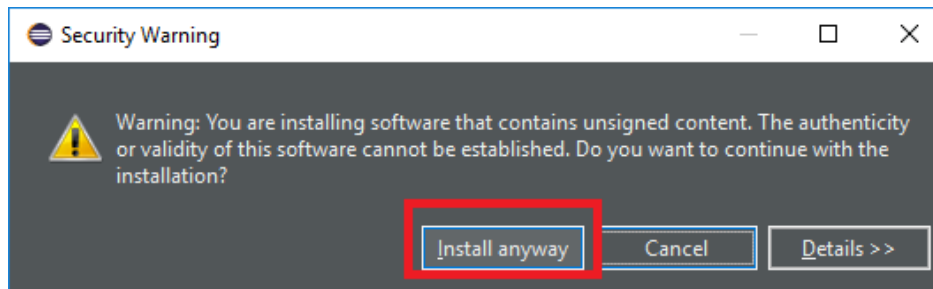
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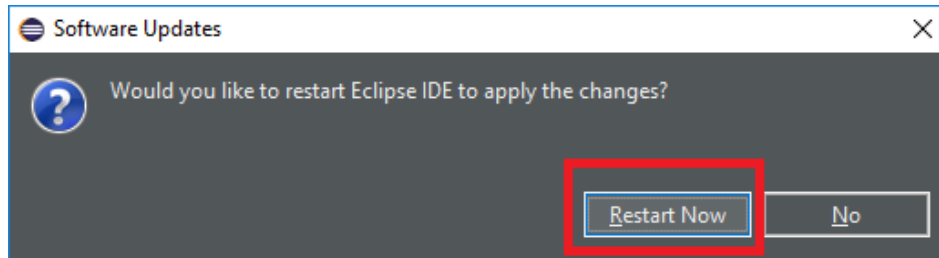
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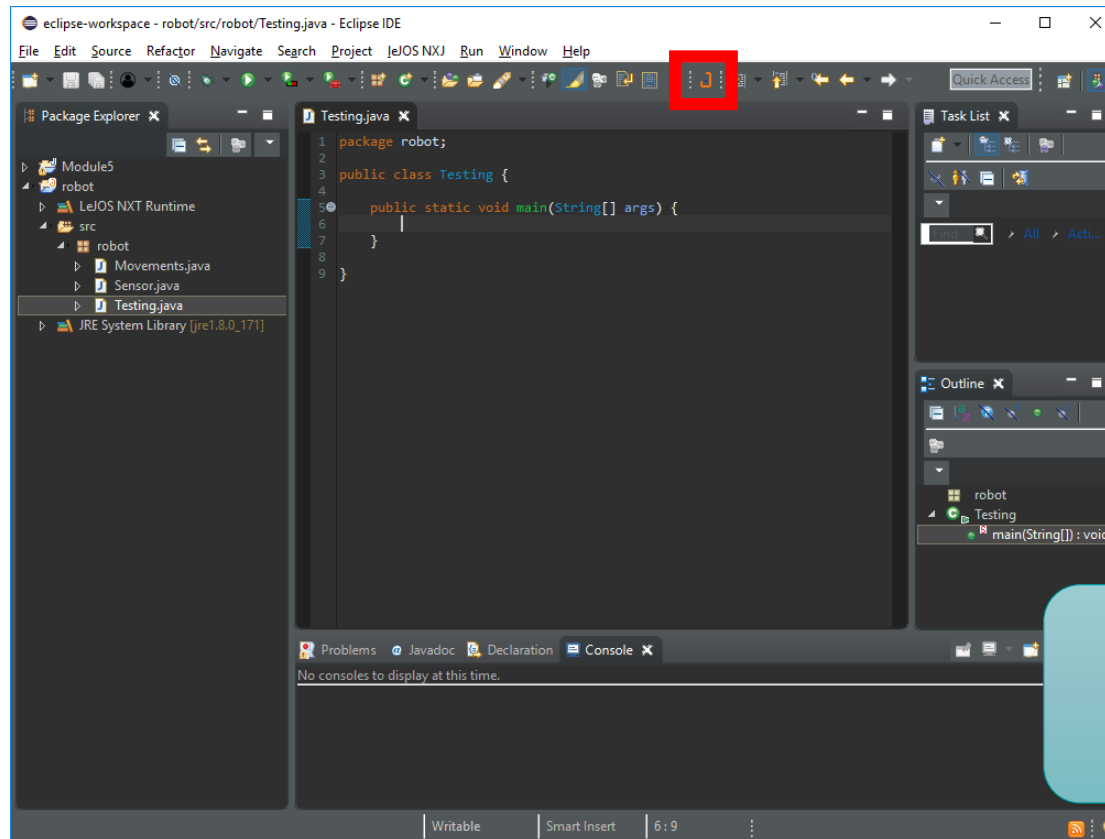
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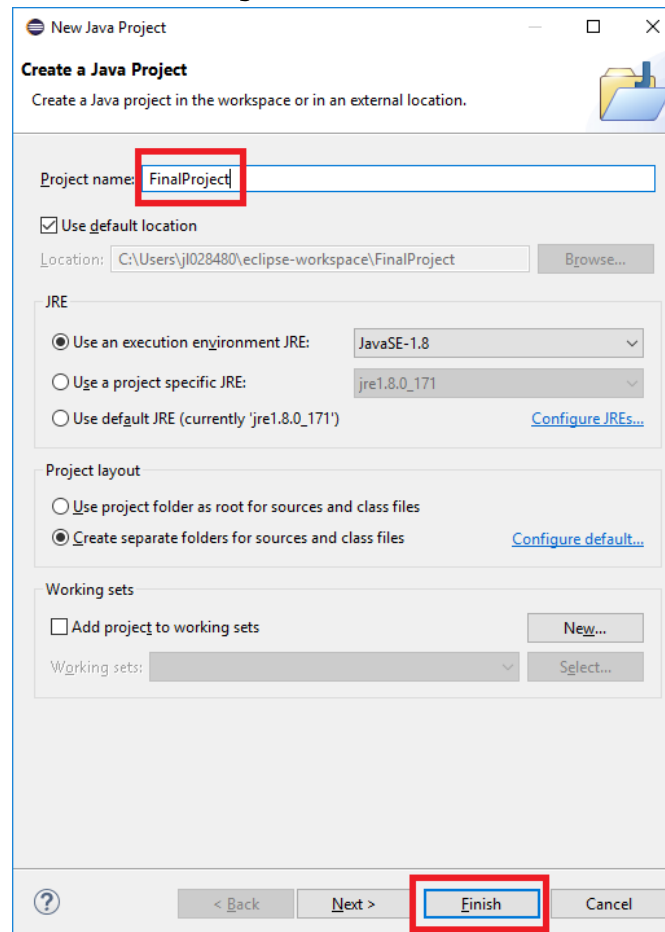
Preparing for Robot Programming

Install robot software in Eclipse



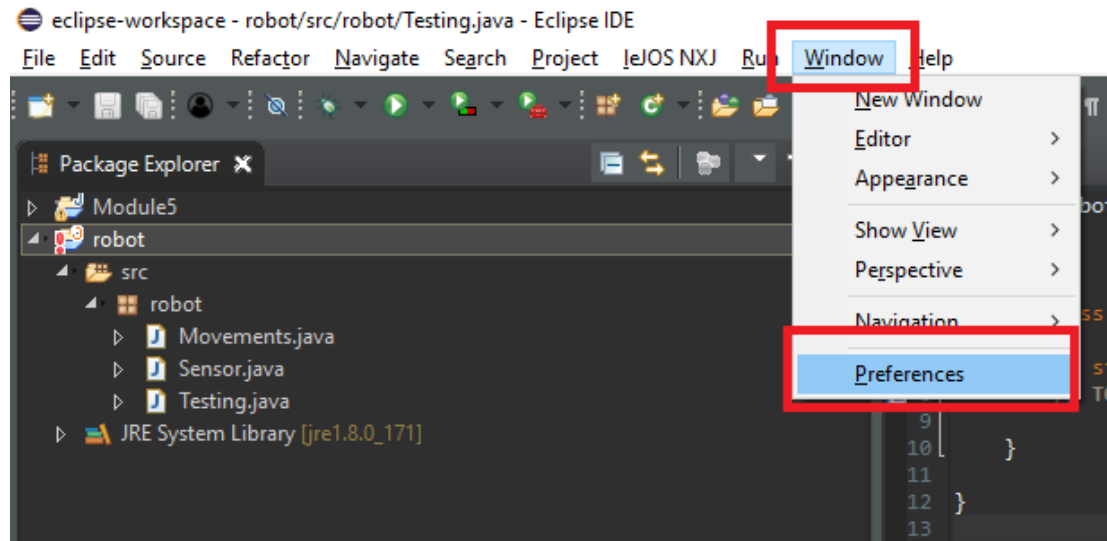
Preparing for Robot Programming

Create a Java project “FinalProject”



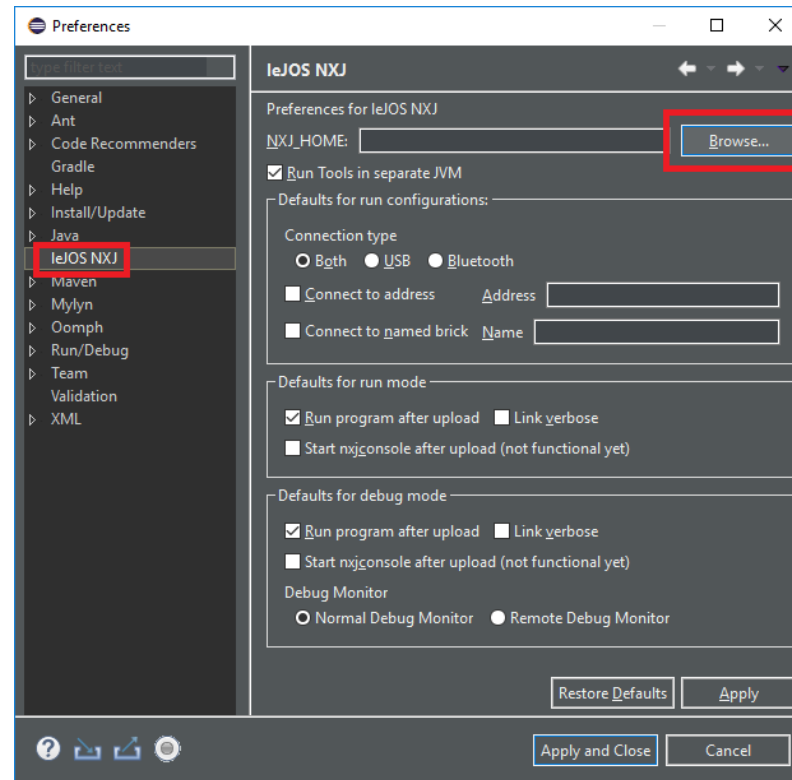
Preparing for Robot Programming

Eclipse settings



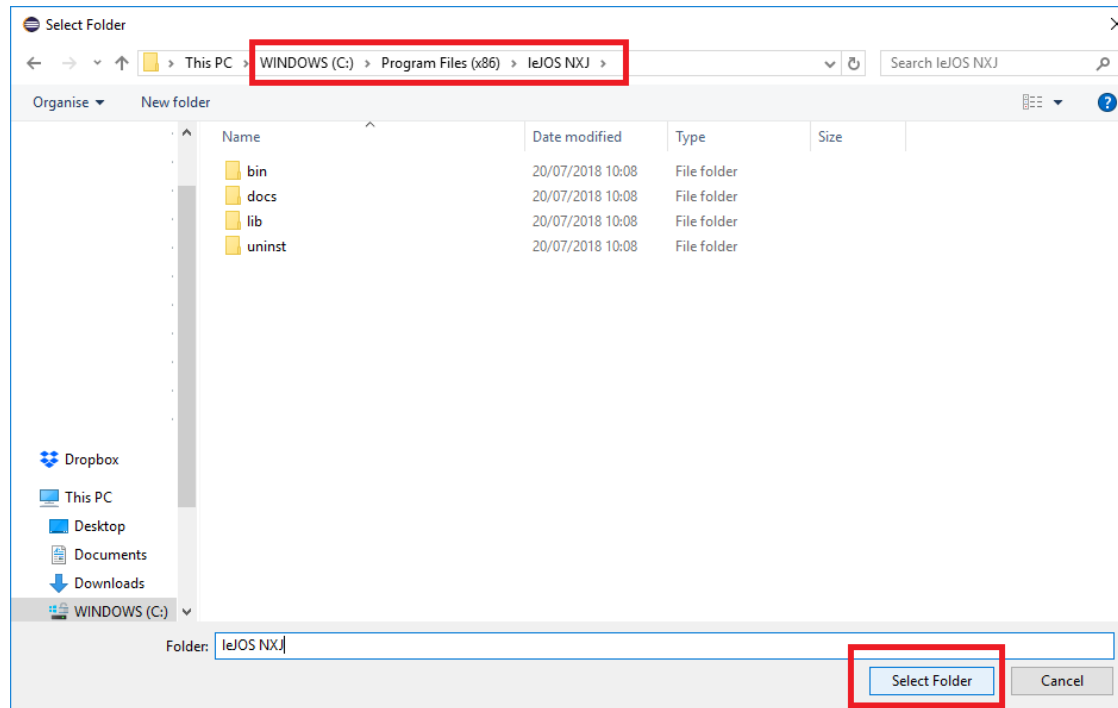
Preparing for Robot Programming

Eclipse settings



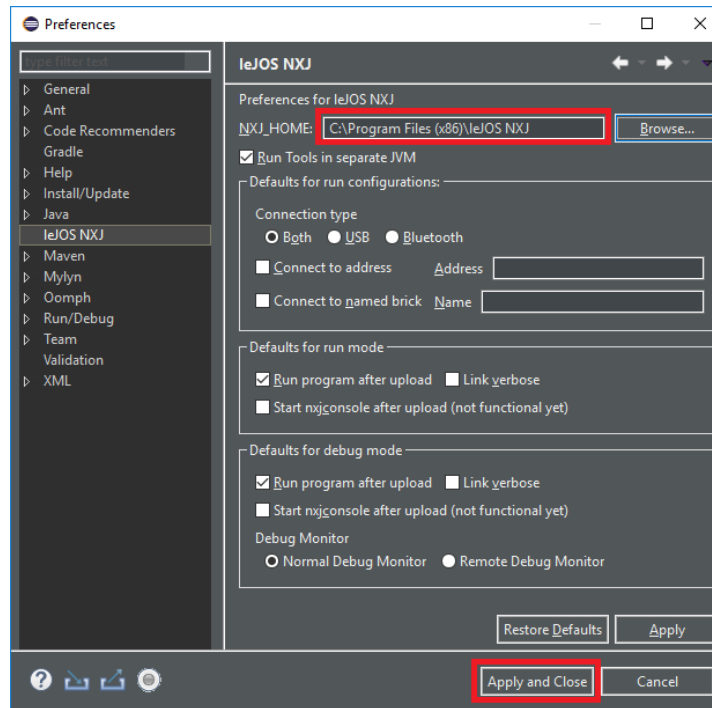
Preparing for Robot Programming

Eclipse settings



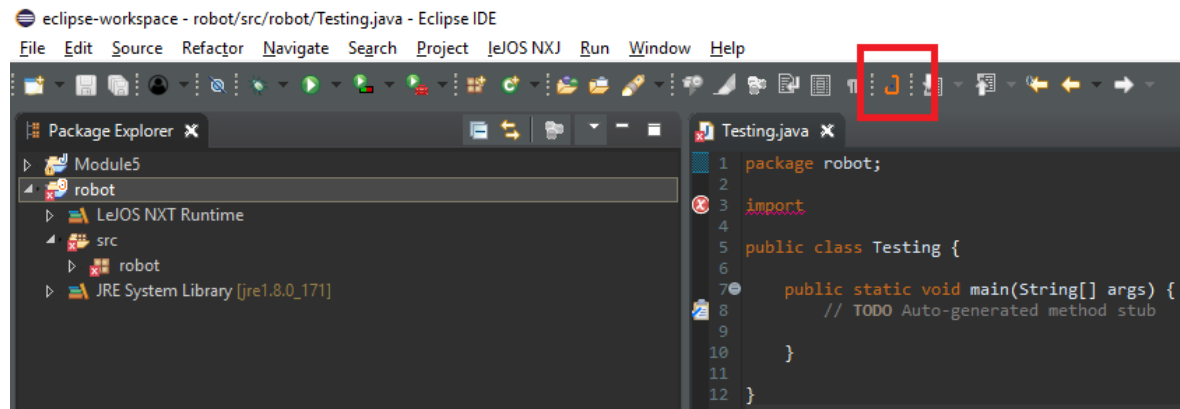
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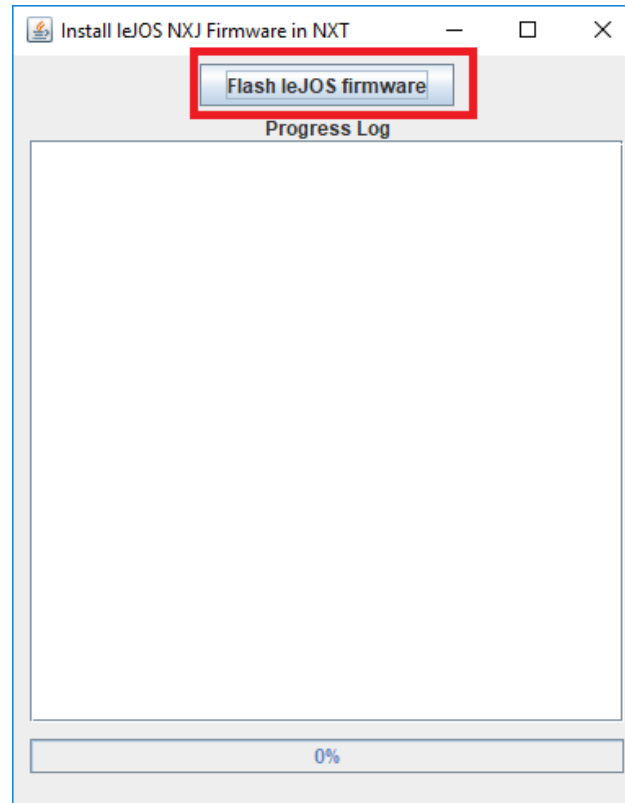
Preparing for Robot Programming

Use leJOS to access the robot!



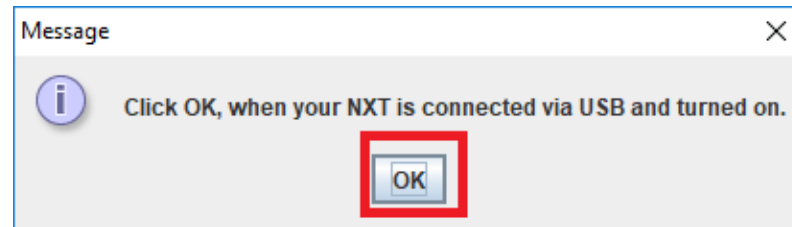
Preparing for Robot Programming

Use leJOS to access the robot!



Preparing for Robot Programming

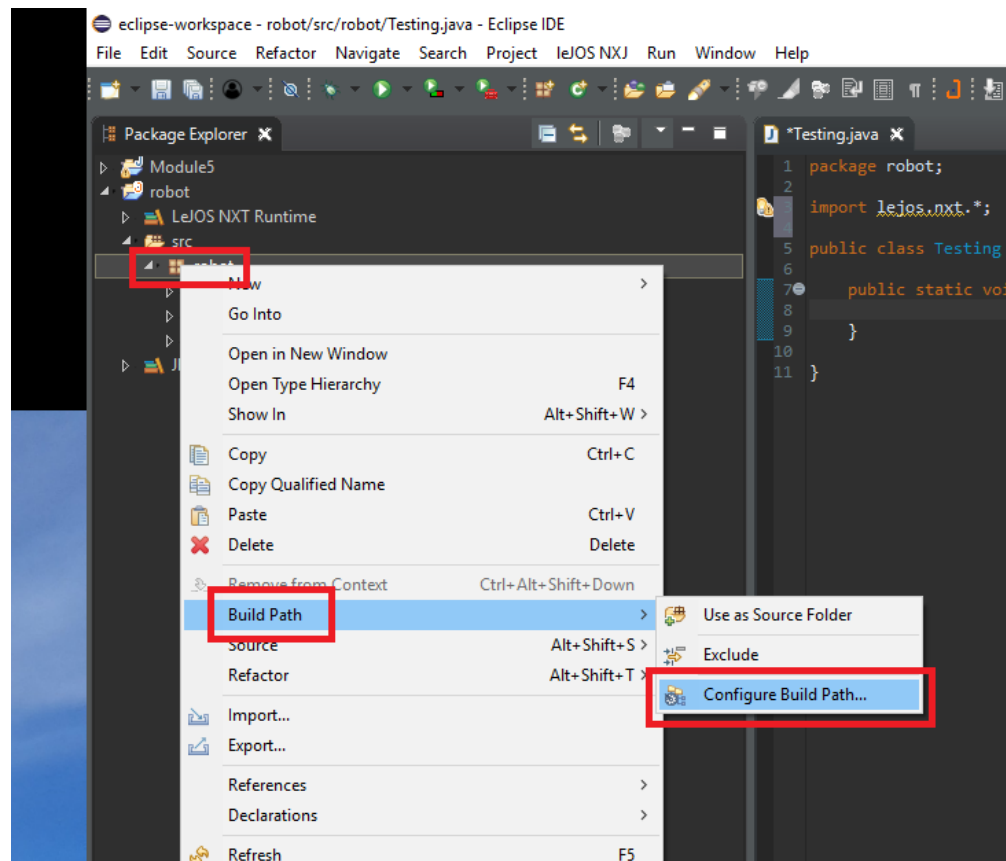
Use leJOS to access the robot!



Beep-beep on the robot
➔ Success!

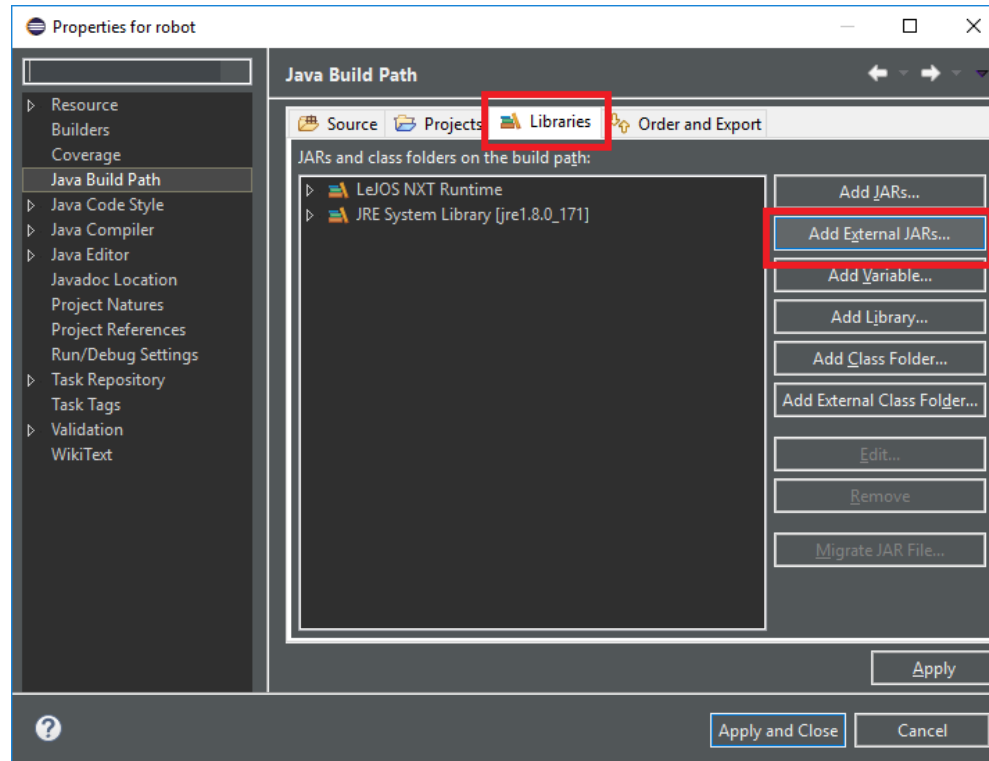
Preparing for Robot Programming

Final step: Settings



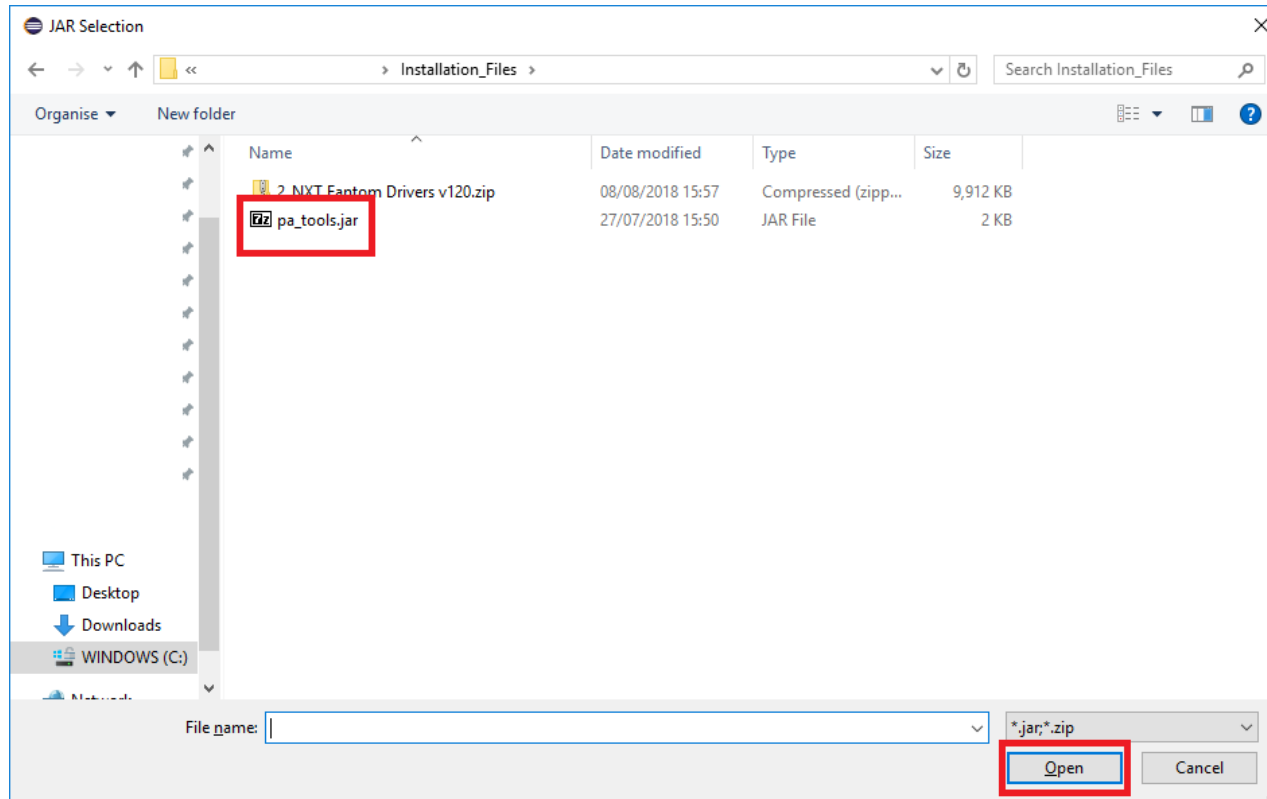
Preparing for Robot Programming

Final step: Settings



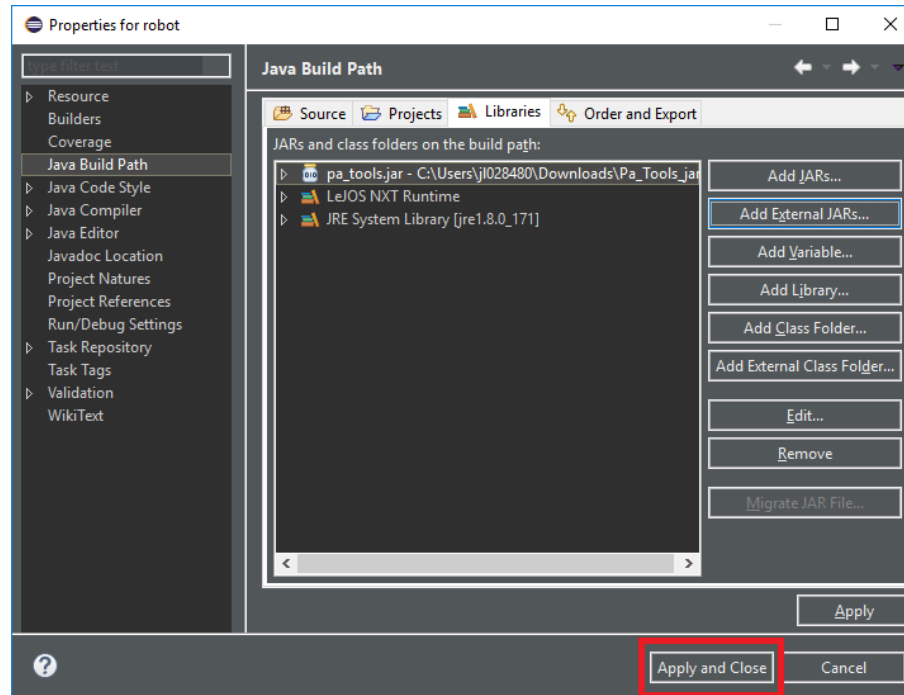
Preparing for Robot Programming

Final step: Settings



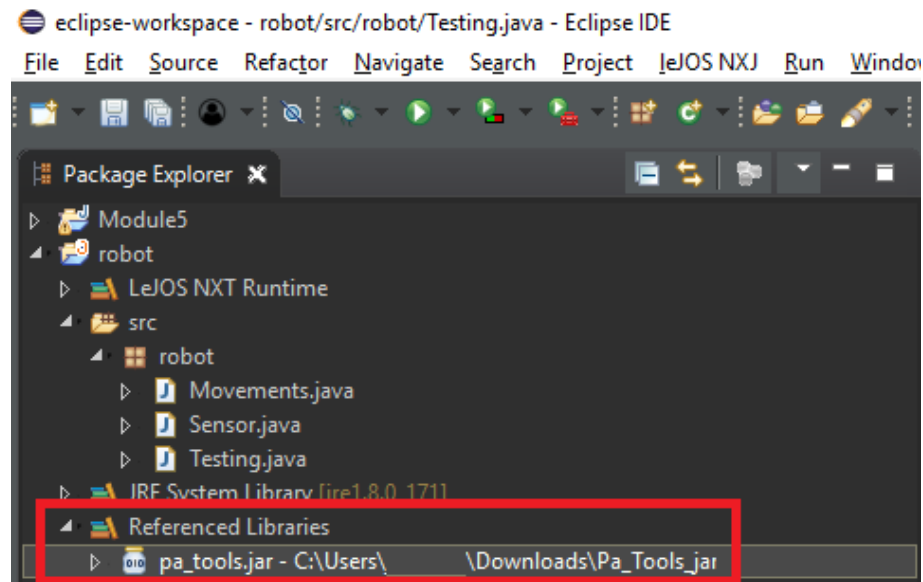
Preparing for Robot Programming

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Preparing for Robot Programming

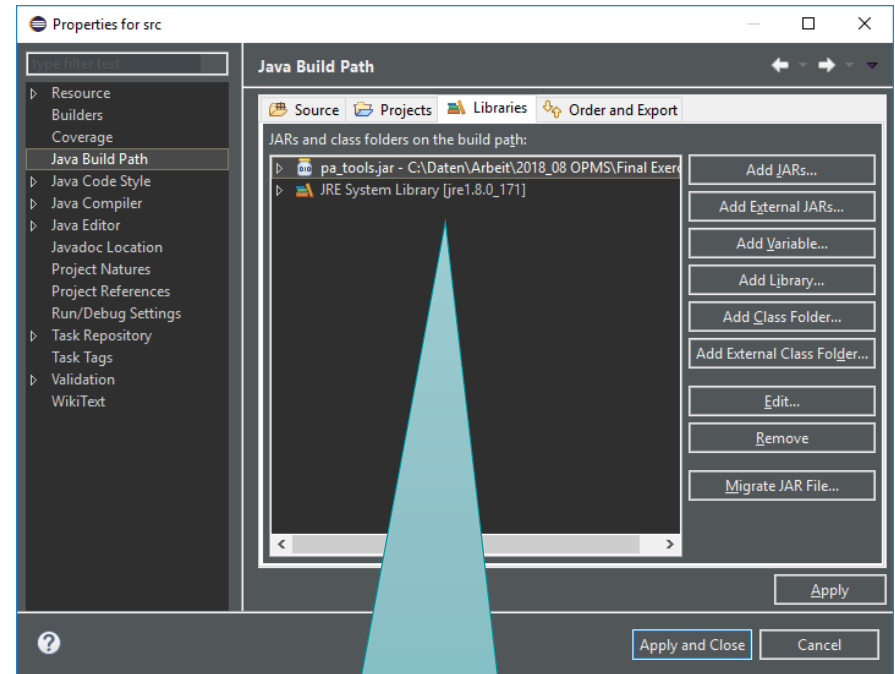
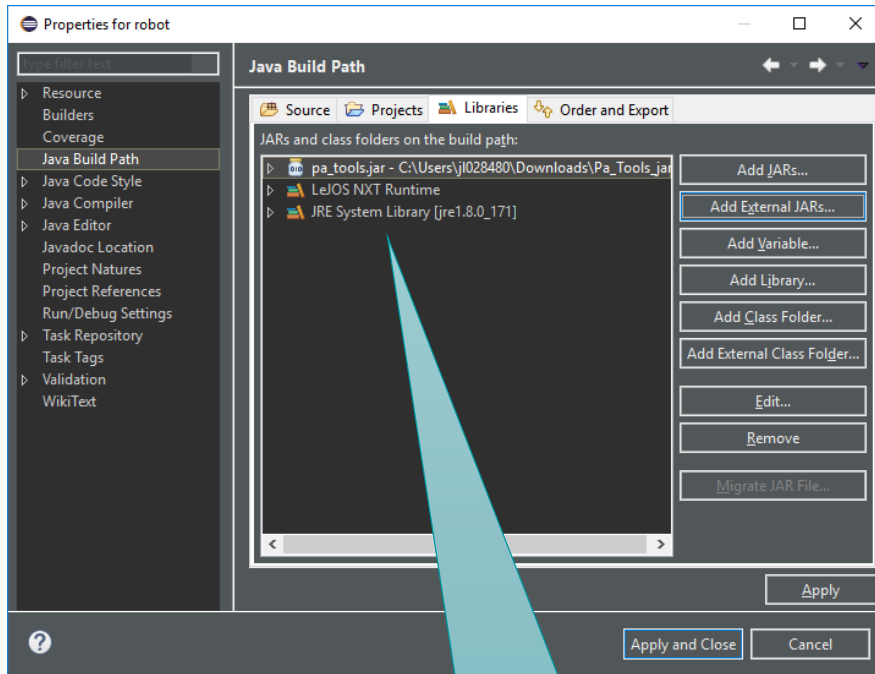
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Success!

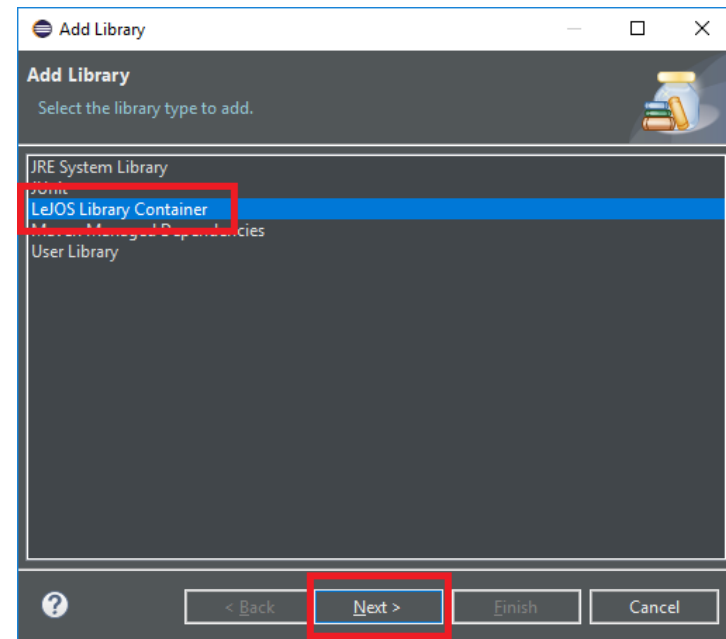
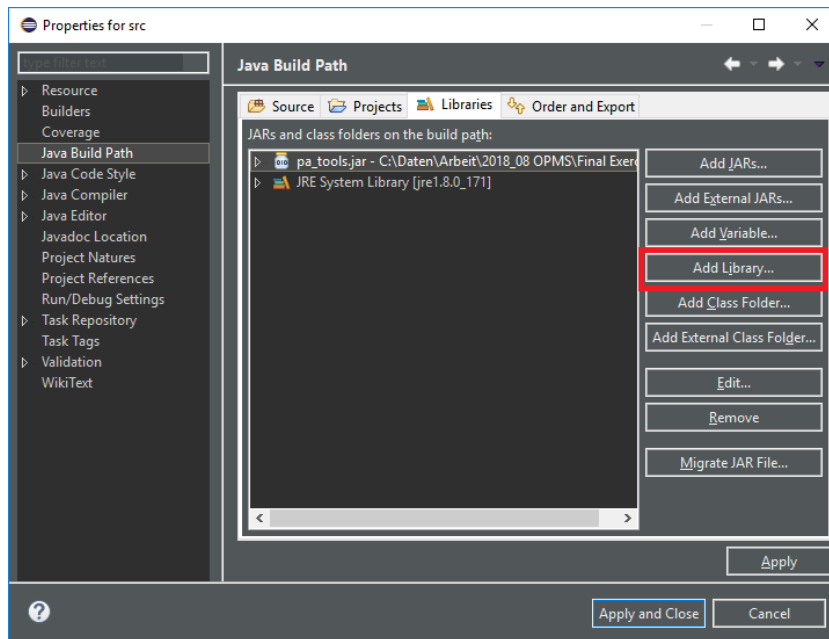
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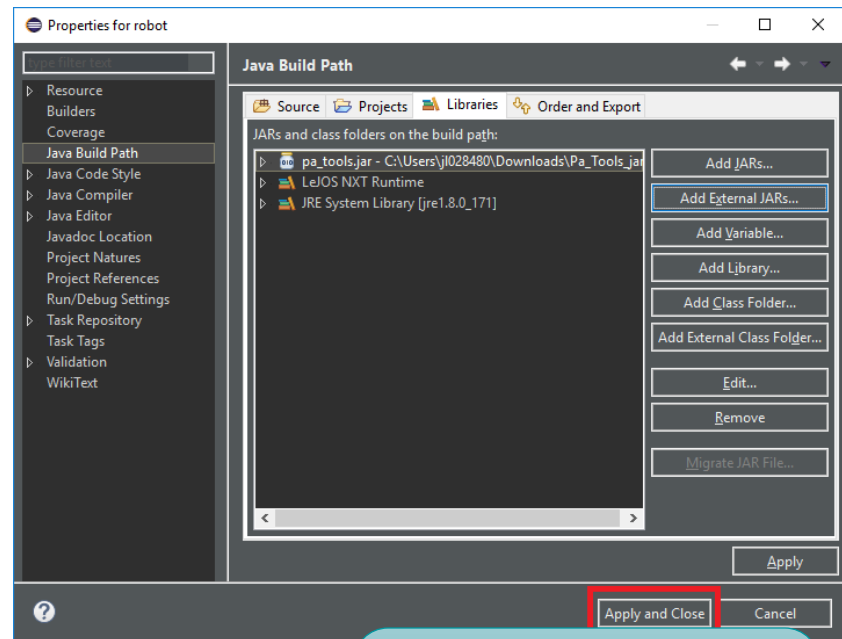
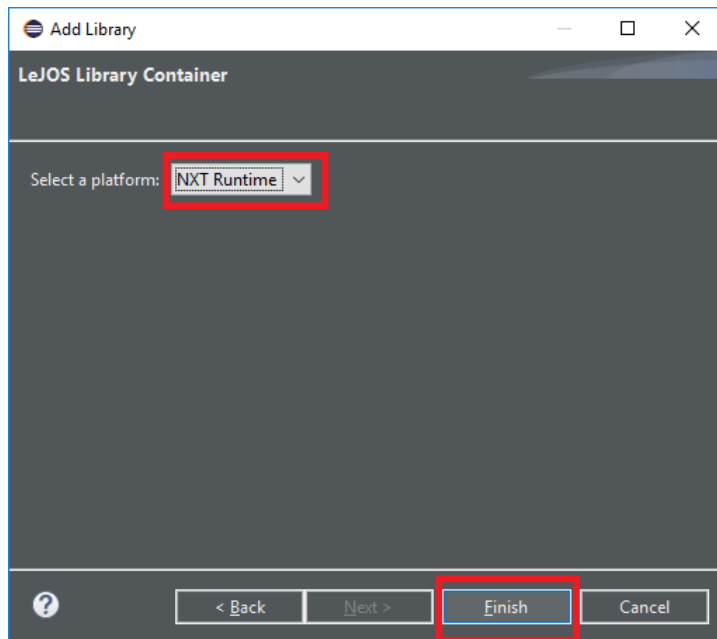
Preparing for Robot Programming

Final step: Settings



Preparing for Robot Programming

Final step: Settings



Success!



Thank you very much!