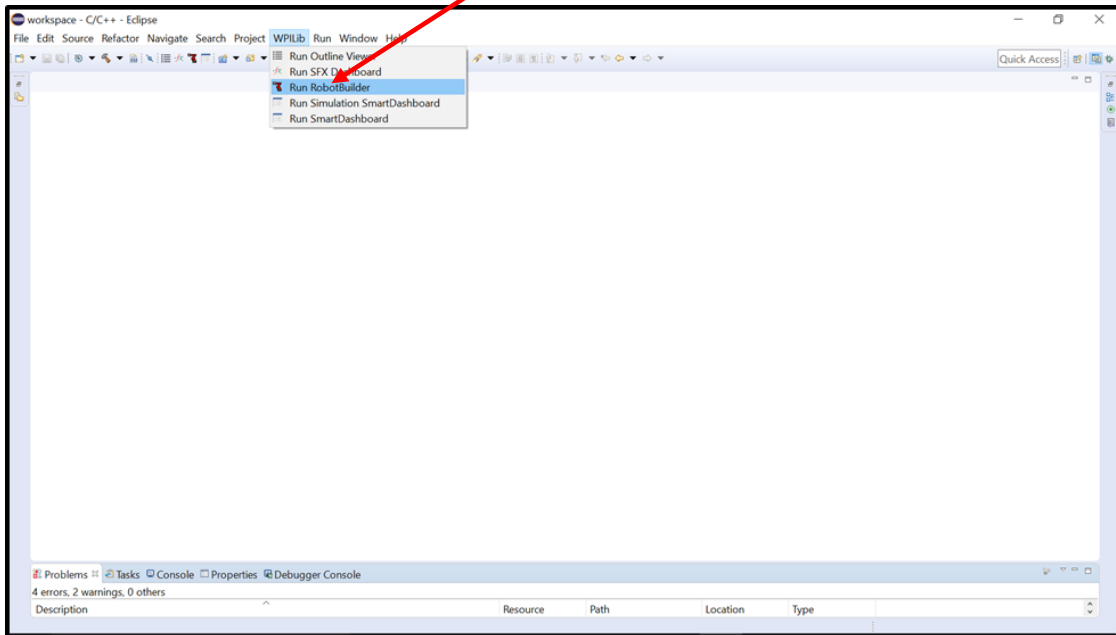
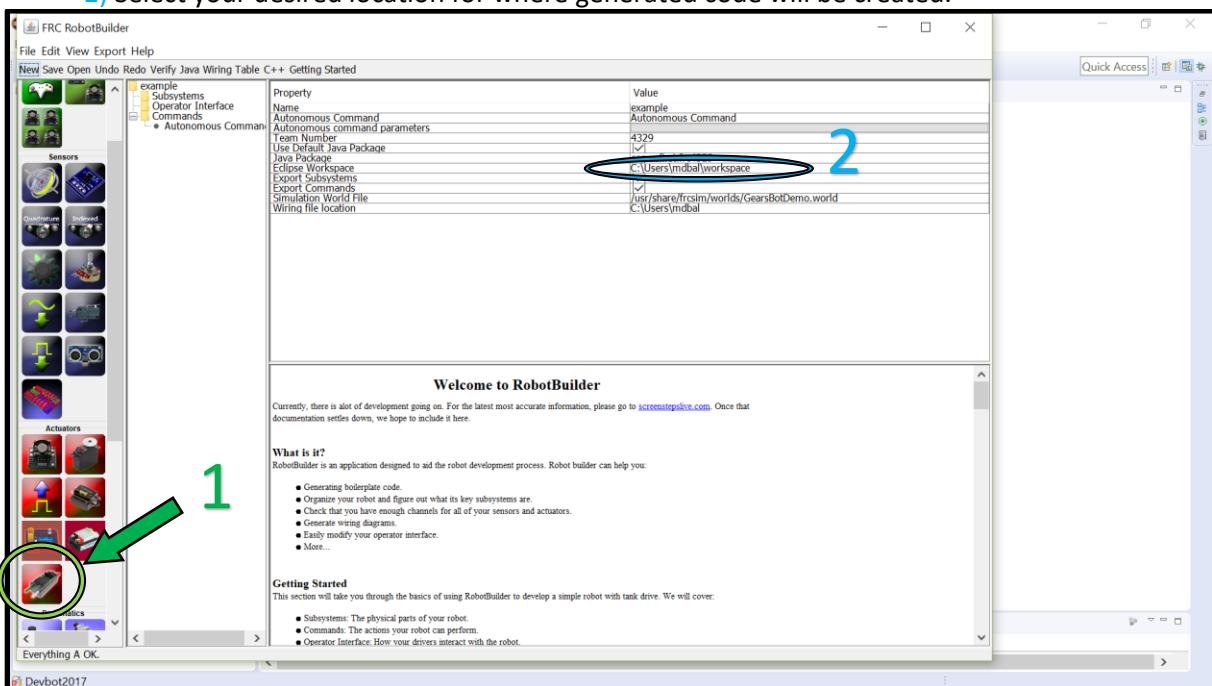


Assignment 1: “In the beginning”

- 1) Open RobotBuilder from within Eclipse. Click on the WPILib menu and select Run RobotBuilder from the drop down menu.



- 1) Double check that you have the icon circled below which is for the Talon SRX.
- 2) Select your desired location for where generated code will be created.



2) Create a robot model (named as your Lastname_Robot.yaml, Example: "Ballard_Robot.yaml") using the following configuration:

- A DriveTrain subsystem with:
 - A 4 motor controller for the Drive.
 - Two CAN Talon Actuators for the left-hand side of the Drive.
 - One will be a Master and should have a CAN ID of 1.
 - The other will be a Slave and should have a CAN ID of 2.
 - Both should be set as inverted.
 - Two CAN Talon Actuators for the right-hand side of the Drive.
 - One will be a Master and should have a CAN ID of 3.
 - The other will be a Slave and should have a CAN ID of 4.
 - Safety should be disabled.
- A Transmission subsystem with:
 - A Pneumatic double solenoid for the Shift:
 - Forward PCM should be 0, Forward Channel should be 0.
 - Reverse PCM should be 0, Reverse Channel should be 1.
- A Climber subsystem with:
 - A CAN Talon Actuator with CAN ID of 10 as the master.
 - A CAN Talon Actuator with CAN ID of 6 as the slave.
- A StationGear subsystem with:
 - A Pneumatic solenoid for the Extender with PCM of 0 and Channel of 3.
 - A Pneumatic solenoid for the Vent with PCM of 0 and Channel of 4.
 - A Pneumatic solenoid for the Gear Flap with PCM of 0 and Channel of 7.
- A FloorGear subsystem with:
 - A Pneumatic solenoid for the Pickup with PCM of 0 and Channel of 5.
- For the Operator Interface:
 - One joystick for the Driver.
 - One joystick for the Operator.
- Commands:
 - Instant Commands
 - Transmission_Up_Shift - Requires Transmission.
 - Transmission_Down_Shift - Requires Transmission.
 - Transmission_Toggle_Shift - Requires Transmission.
 - StationGear_Open_Vent – Requires StationGear.
 - StationGear_Close_Vent – Requires StationGear.
 - StationGear_Deploy_GearHolder – Requires StationGear.
 - StationGear_Retract_GearHolder – Requires StationGear.
 - StationGear_Open_Flap – Requires StationGear.
 - StationGear_Close_Flap – Requires StationGear.
 - StationGear_Toggle_Flap – Requires StationGear.
 - FloorGear_Deploy_Pickup – Requires FloorGear.
 - FloorGear_Retract_Pickup – Requires FloorGear.
 - FloorGear_Toggle_Pickup – Requires FloorGear.
 - Commands

- Climber_Climb – Requires Climber.
 - DriveTrain_ManualControl – Requires DriveTrain.
 - Timed Commands
 - DriveTrain_Pause – Requires DriveTrain.
 - DriveTrain_Timed_Move_Forward – Requires DriveTrain.
 - DriveTrain_Timed_Move_Backward – Requires DriveTrain.
 - Climber_Pause – Requires Climber.
 - Climber_Timed_Climb – Requires Climber.
 - StationGear_Pause – Requires StationGear.
 - FloorGear_Pause – Requires FloorGear.
 - CommandGroup
 - Climber_Climb_Sequence
 - StationGear_Deploy_GearHolder - Add Sequential
 - StationGear_Pause (1 second) – Add Sequential
 - StationGear_Open_Vent – Add Sequential
 - StationGear_Retract_GearHolder – Add Sequential
 - Climber_Climb – Add in Parallel
- 3) Save your Model file and email it to me. (Due by the Tuesday 11/14 Meeting).
 - 4) Generate the C++ skeleton code from the model by clicking the C++ menu item.
 - 5) Open your newly created project in Eclipse and look at the code that was created.
 - 6) Send to me, in email, your answers for the following questions (Due by the Thursday 11/16 Meeting):
 - a. How do the classes defined in the different command header files (.h) differ? Why?
 - b. How do commands interact with subsystems?
 - c. In what file are the Talon CAN Ids being set?
 - d. In what file are all the Subsystems created in? (Look for the word new and the subsystem name together).

If you should need to ask questions or need to contact me:

Email: matthew.ballard@stem2u.org

Cell Phone: (636) 627-9141 (Text me and include your name in your first sentence. I will not return texts that I cannot confirm the sender's identity. I do not have access to my phone during normal work hours 8 – 5/6, but I will reply as soon as possible.)

Important Resources:

Setting up your development environment:

<https://wpilib.screenstepslive.com/s/currentCS/m/cpp/I/145002-installing-eclipse-c-java>

RobotBuilder (Online Documentation) - <https://wpilib.screenstepslive.com/s/4485/m/26402>

Command Based Programming - <https://wpilib.screenstepslive.com/s/4485/m/13810/c/88685>

Driver Station Input - <https://wpilib.screenstepslive.com/s/4485/m/13810/c/88683>

WPILib C++ API Documentation - <http://first.wpi.edu/FRC/roborio/release/docs/cpp/>