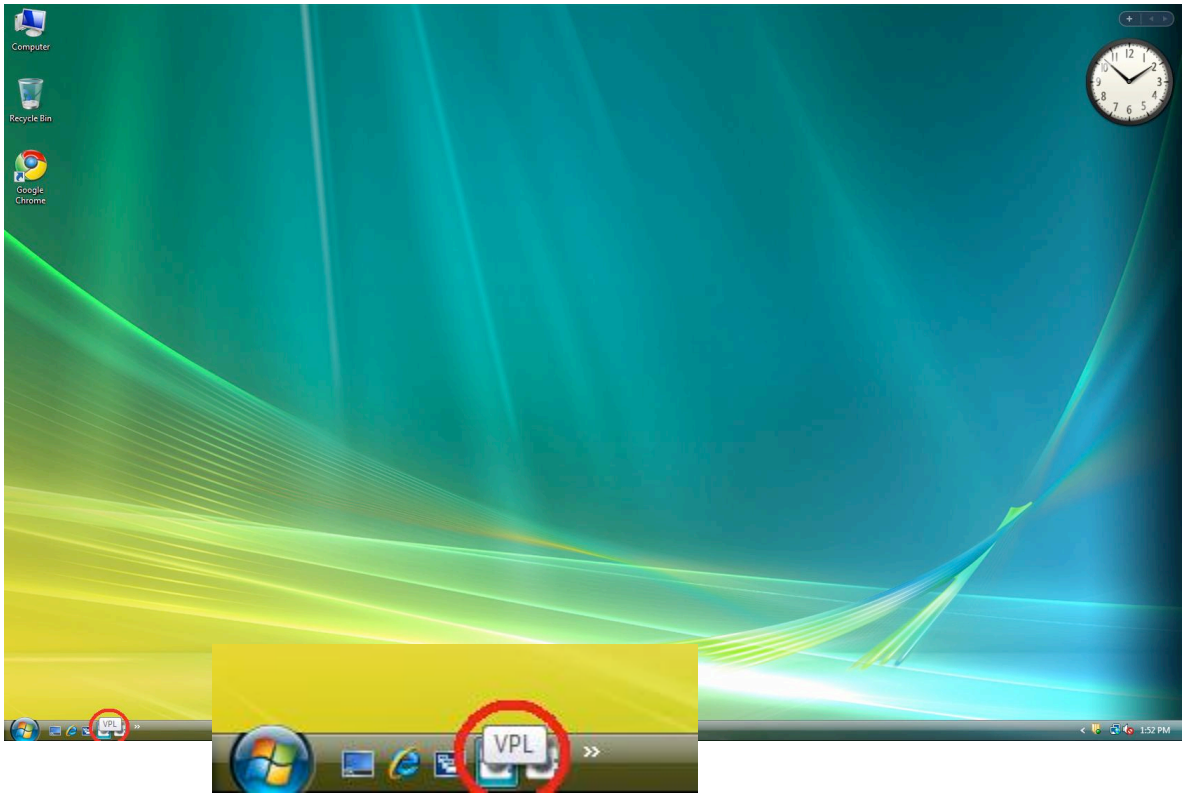
VPL Tutorial and Homework 1 Introduction

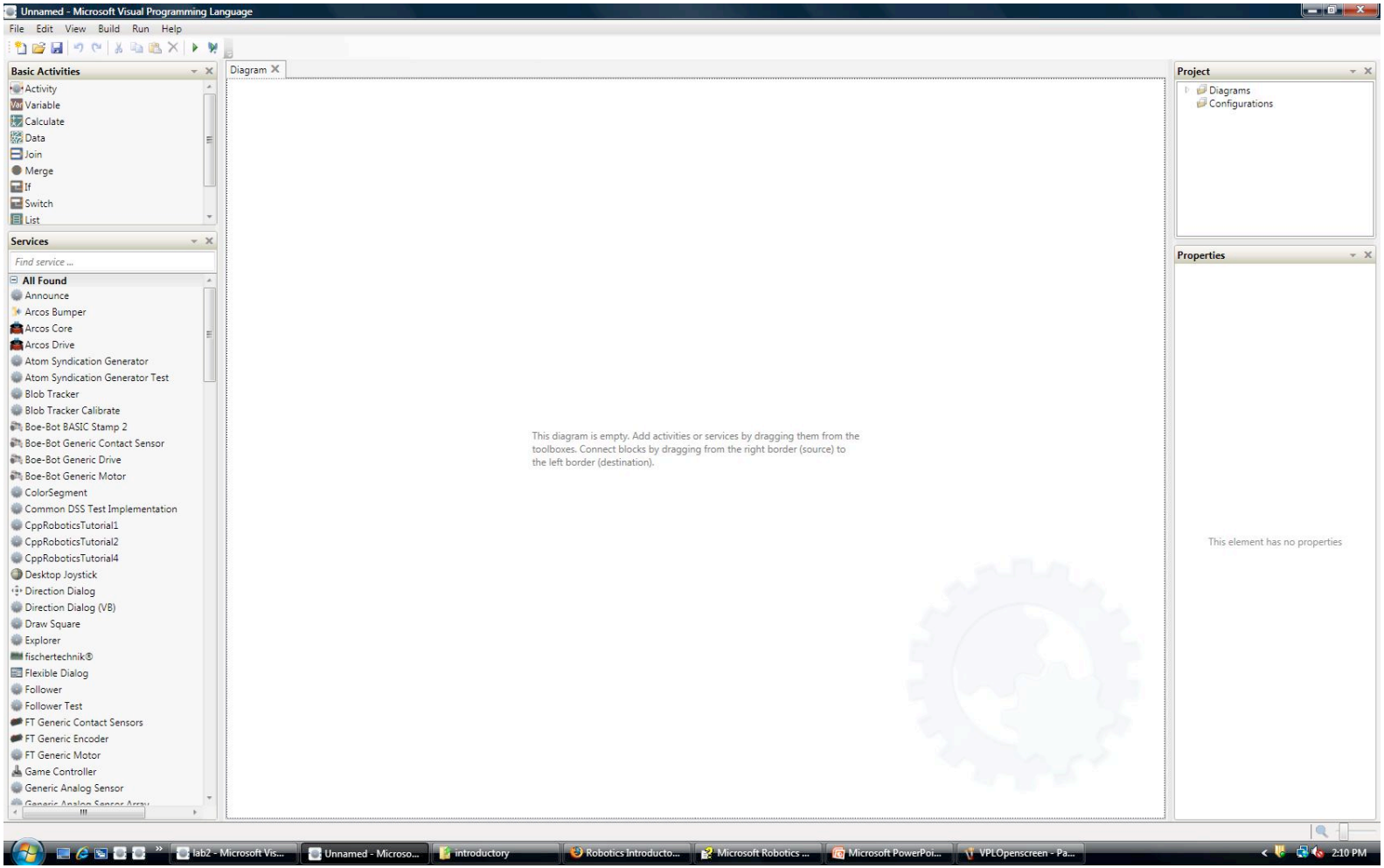
September 10, 2008

Overview

- Basic VPL explanation
  - Activities and Services
  - Making programs
  - Running on the robot
- Homework 1 (due Sept. 17)
  - Getting started

Open VPL




Unnamed - Microsoft Visual Programming Language
File Edit View Build Run Help
Basic Activities
Activity
Variable
Calculate
Data
Join
Merge
If
Switch
List
Services
Find service ...
All Found
Announce
Arcos Bumper
Arcos Core
Arcos Drive
Atom Syndication Generator
Atom Syndication Generator Test
Blob Tracker
Blob Tracker Calibrate
Boe-Bot BASIC Stamp 2
Boe-Bot Generic Contact Sensor
Boe-Bot Generic Drive
Boe-Bot Generic Motor
ColorSegment
Common DSS Test Implementation
CppRoboticsTutorial1
CppRoboticsTutorial2
CppRoboticsTutorial4
Desktop Joystick
Direction Dialog
Direction Dialog (VB)
Draw Square
Explorer
fischertechnik®
Flexible Dialog
Follower
Follower Test
FT Generic Contact Sensors
FT Generic Encoder
FT Generic Motor
Game Controller
Generic Analog Sensor
Diagram
This diagram is empty. Add activities or services by dragging them from the toolboxes. Connect blocks by dragging from the right border (source) to the left border (destination).
Project
Diagrams
Configurations
Properties
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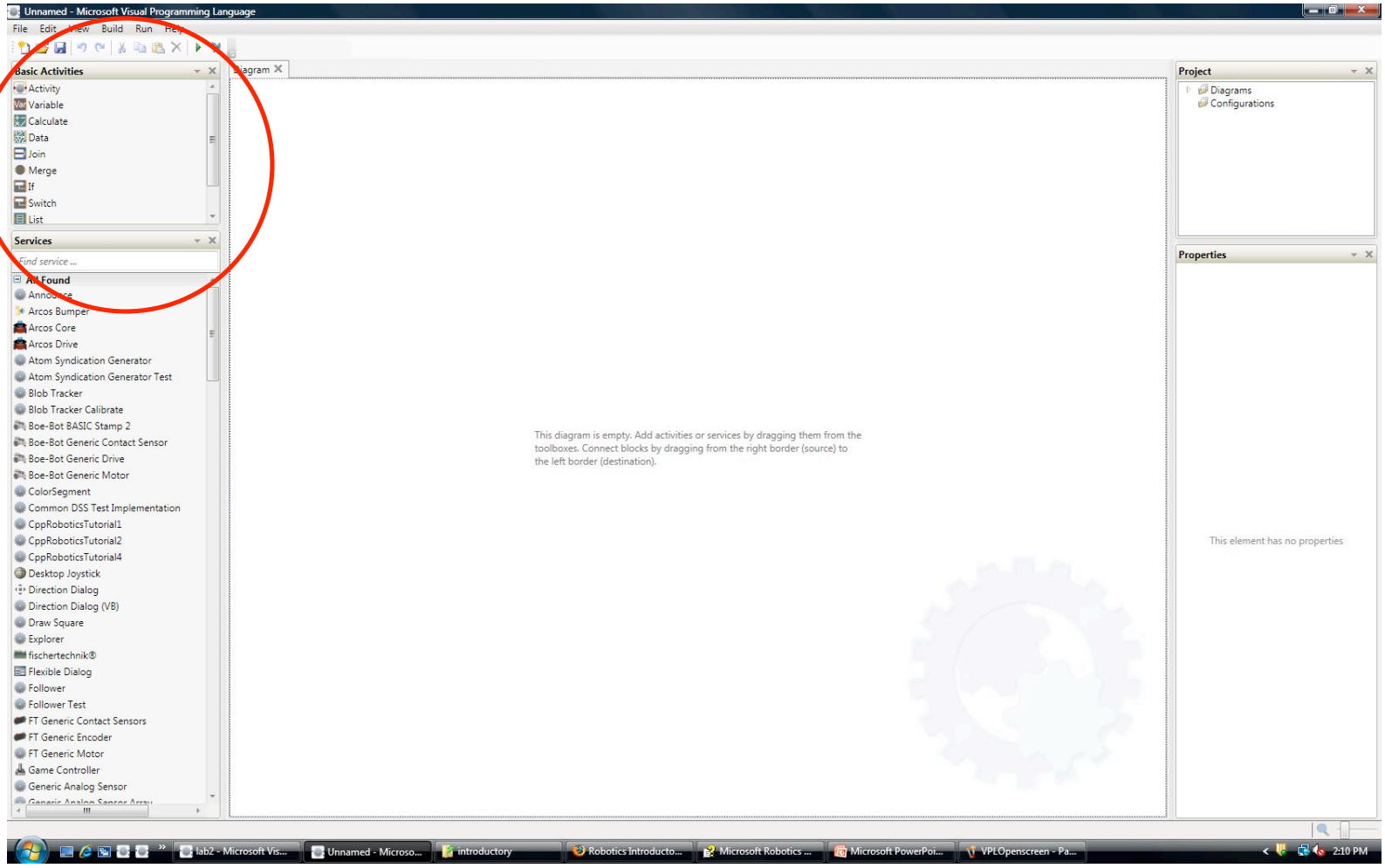
Activities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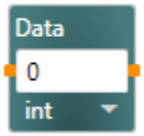
Data and Variables

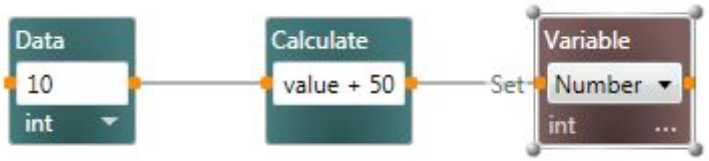


Constants

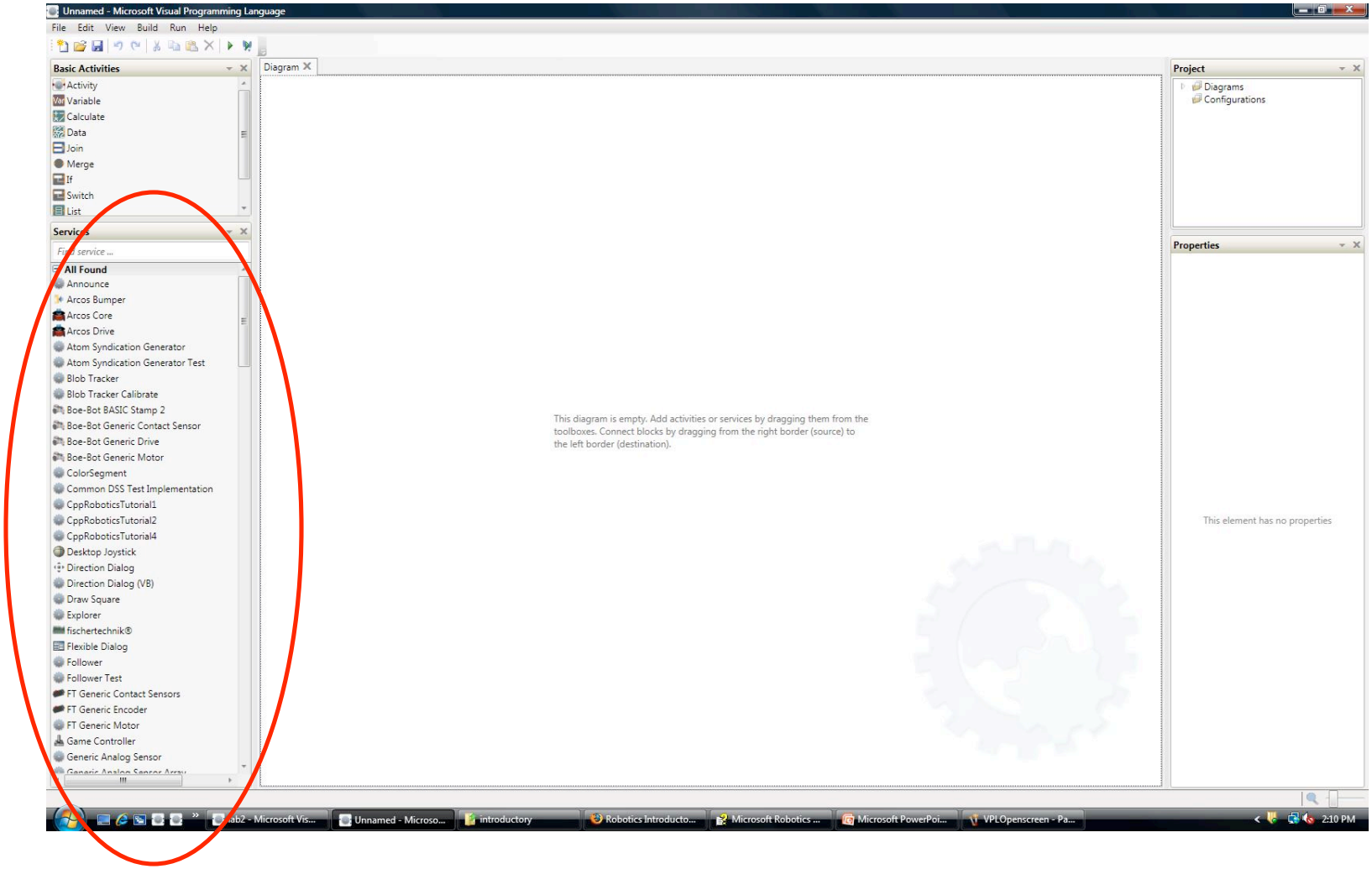
Formulas

Assigns values to Variables to be used elsewhere

Connecting them…



Services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Services

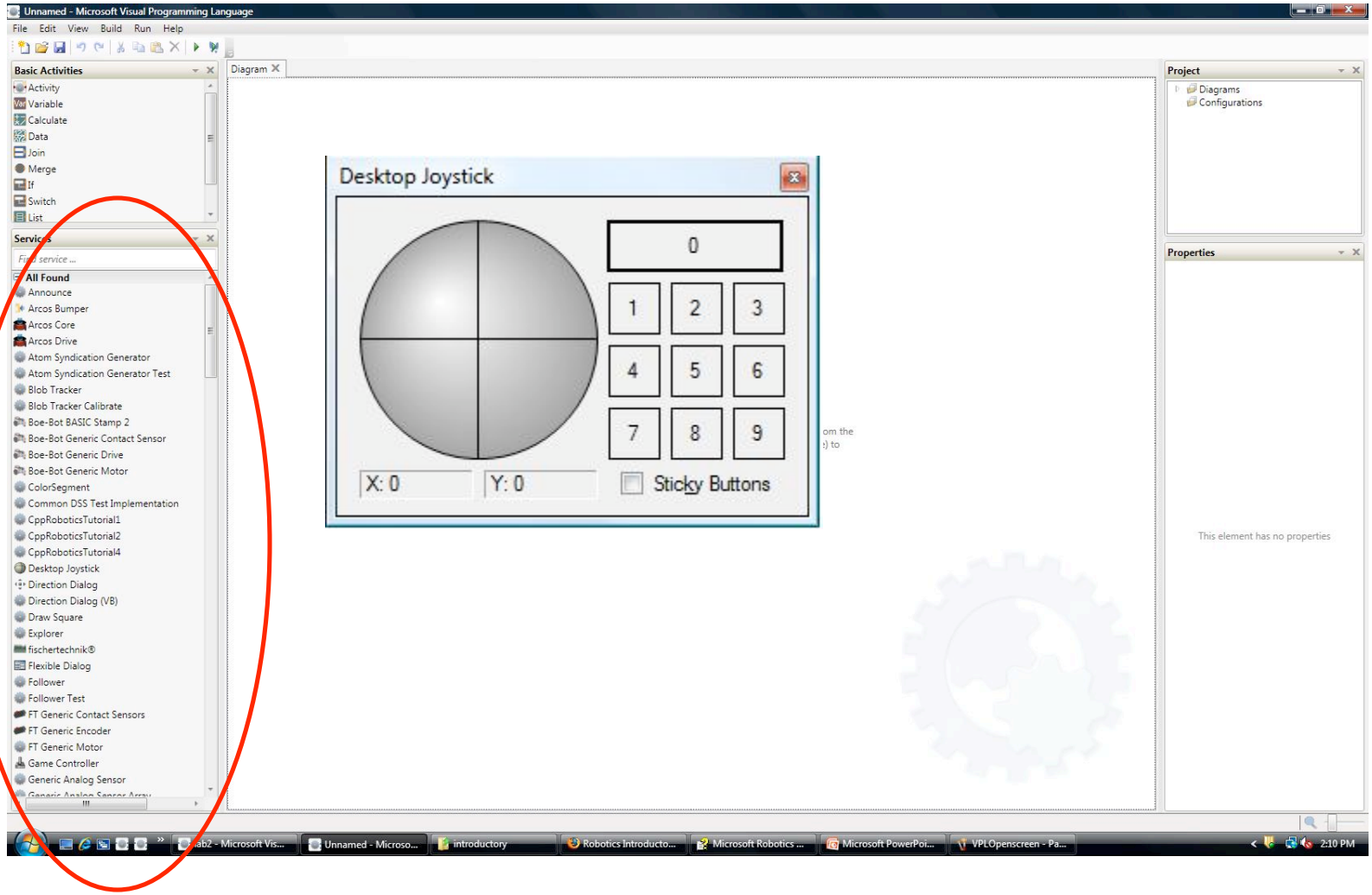
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Diagram
Desktop Joystick
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X: 0
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Sticky Buttons
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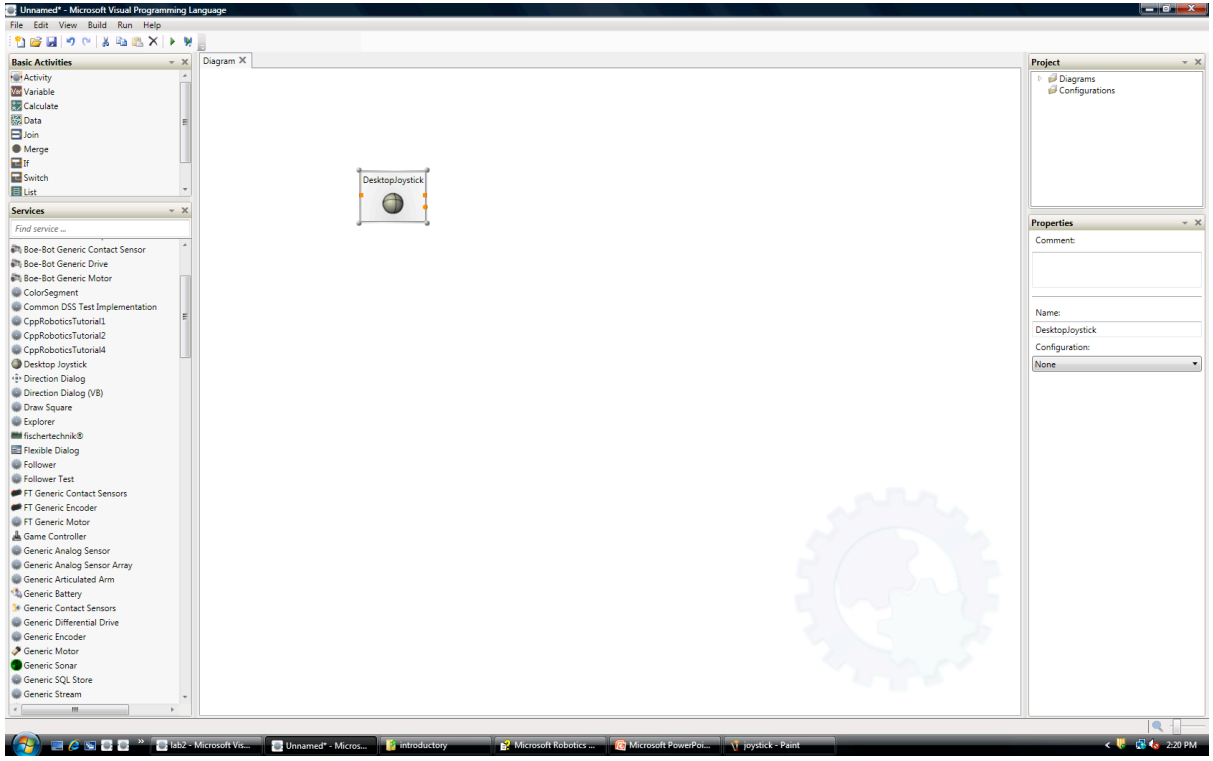
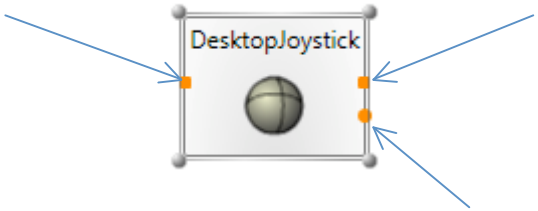
Drag Services to the Workspace



Ports

Input Port
- Incoming information is assigned to the variable “value” for each service

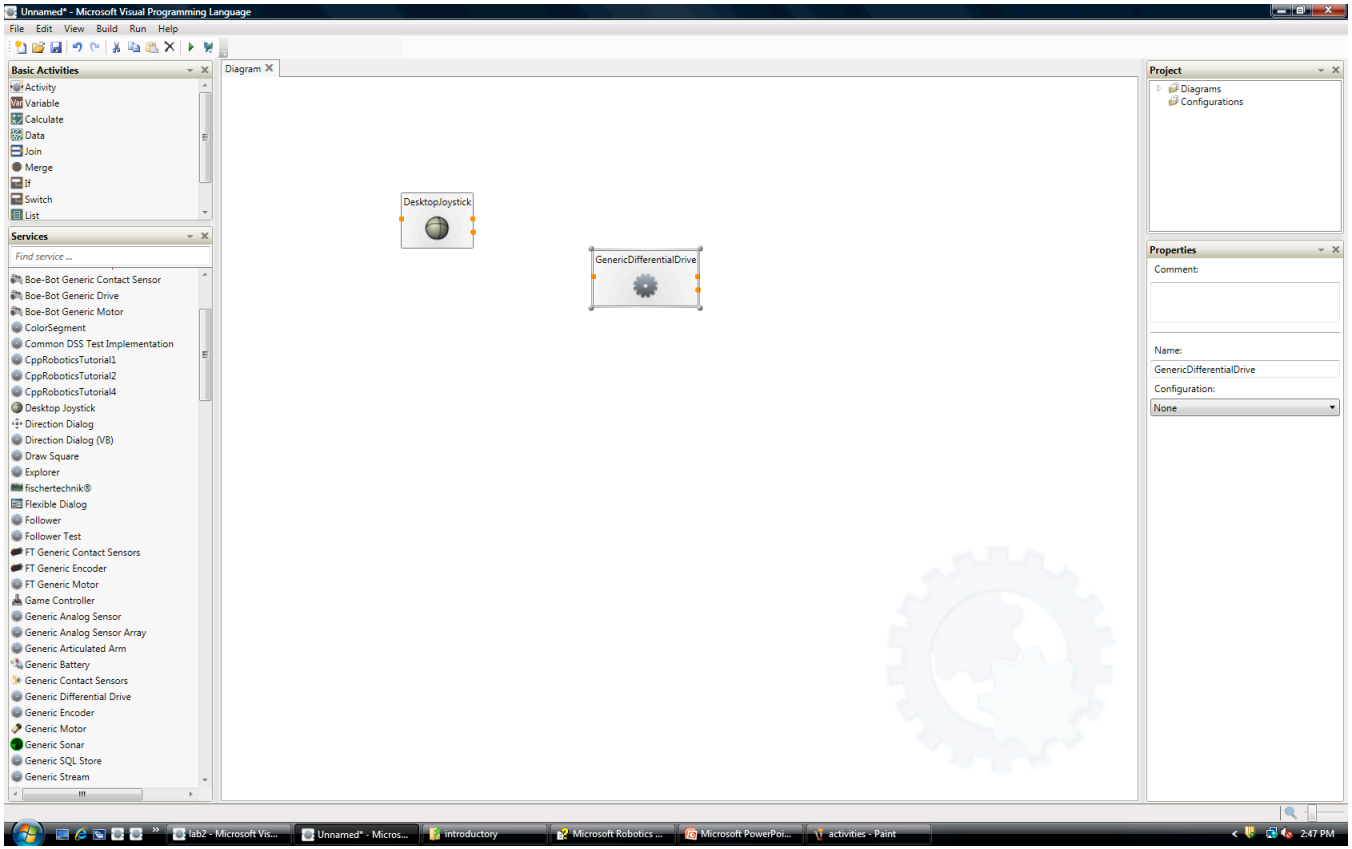


Result/Response Port
- Another service can receive the result of some input if it connects here (like “return” in a function)

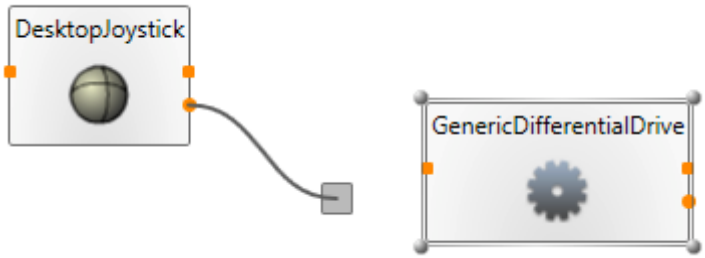
Notification Port
- Another service can receive updated information about the state of this joystick as it changes if it connects here

GenericDifferentialDrive

controls two motors at once

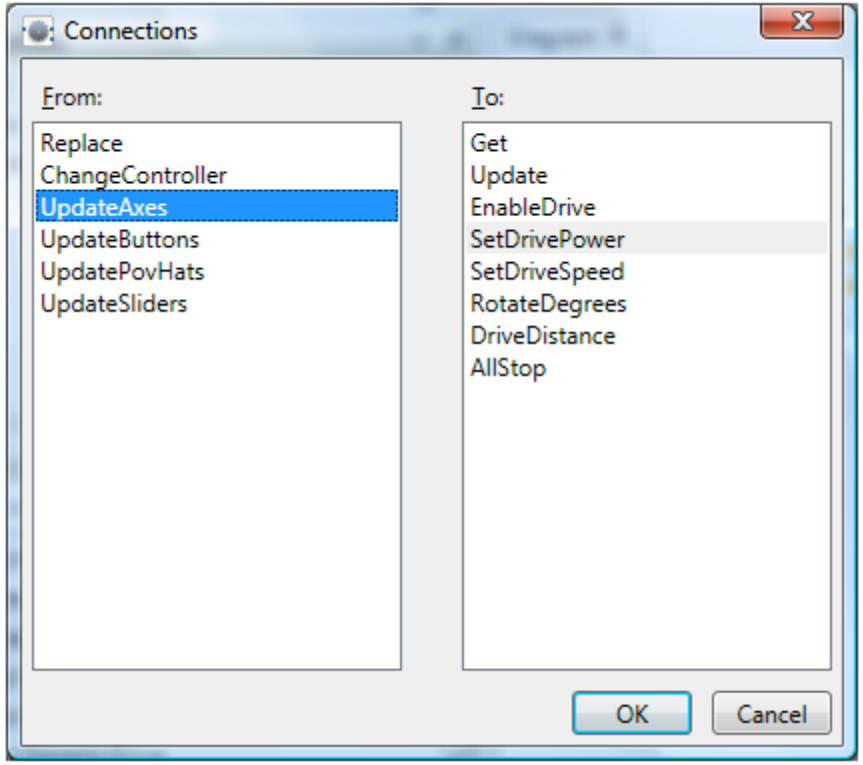


Connect Joystick to the GenericDifferentialDrive

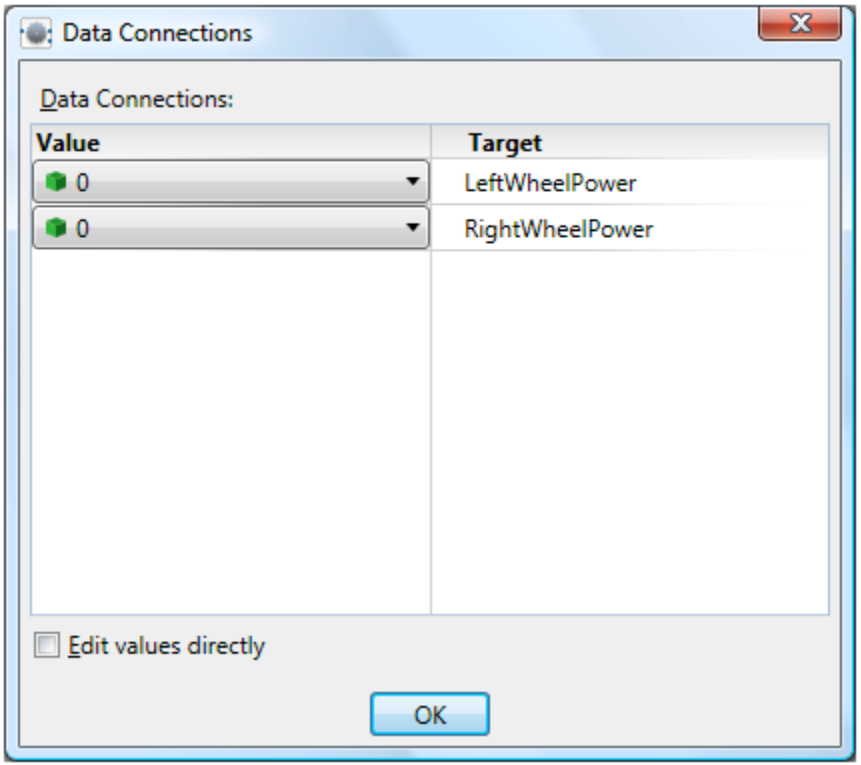


Notification port of the joystick because the value can continue changing and updating

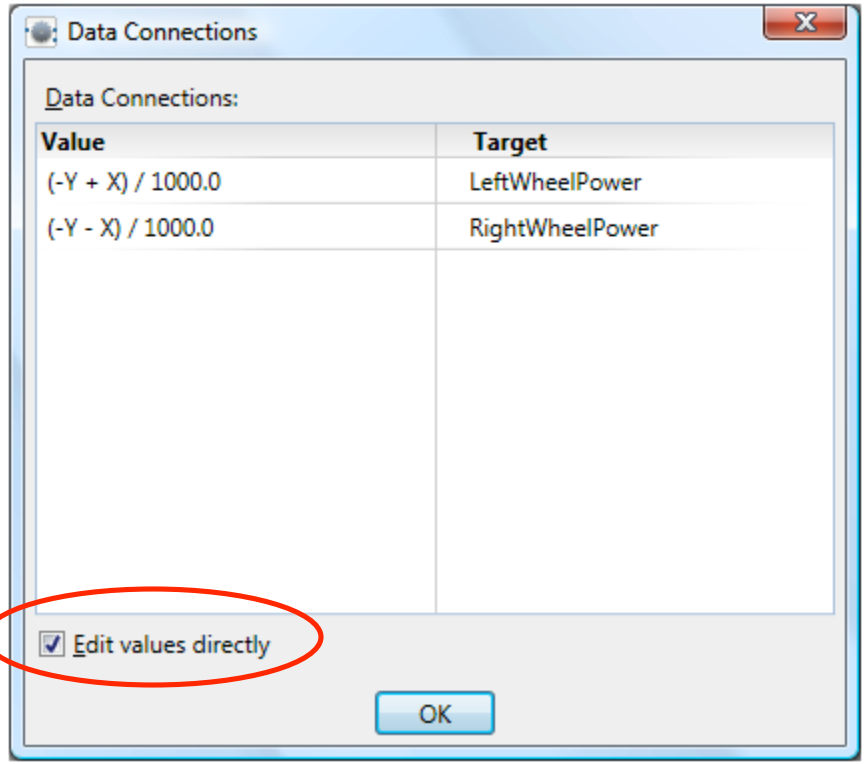
What are we going to use to update the motors?



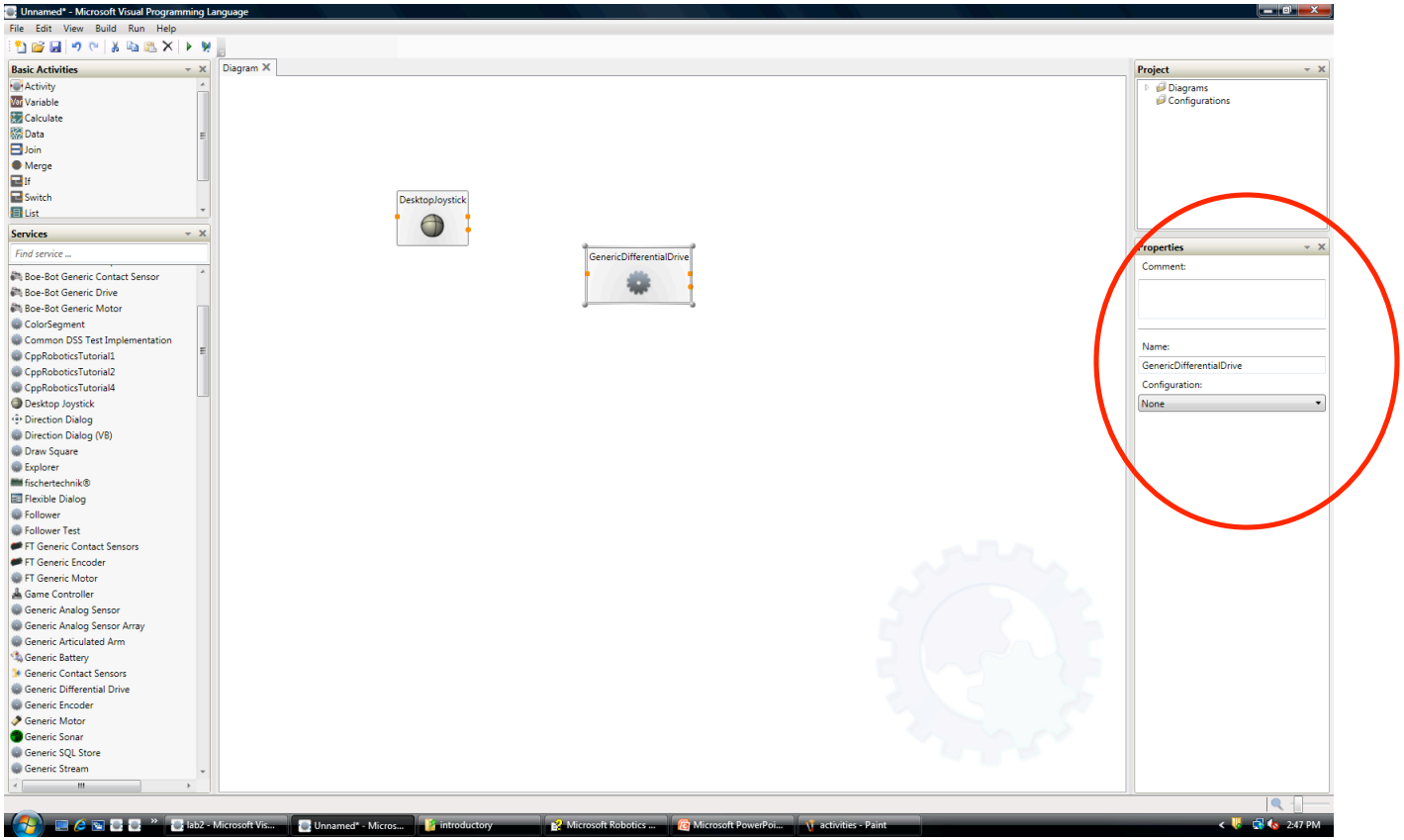
What formula should we use?



Write in your own formula



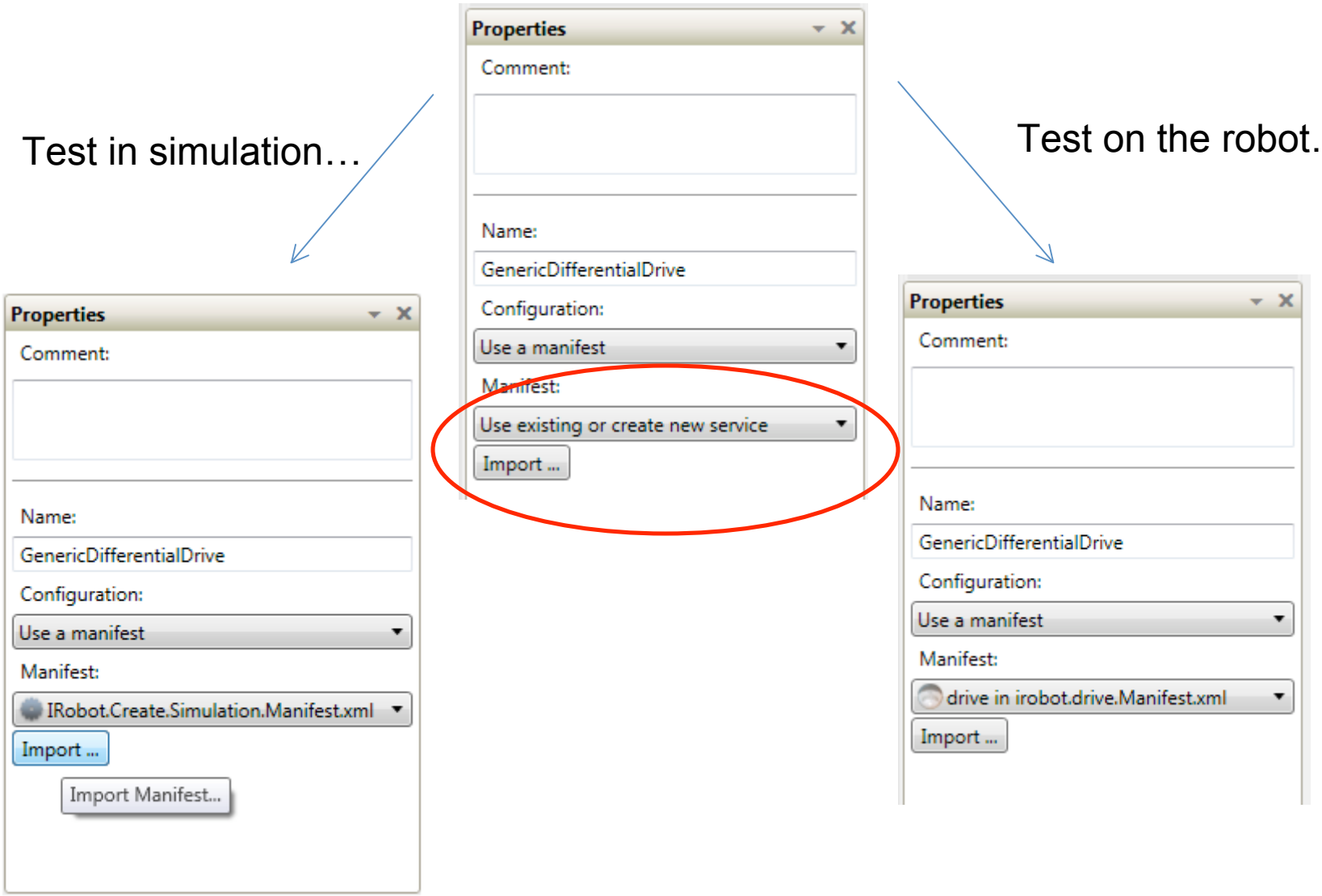
Let’s configure it to run on a robot…



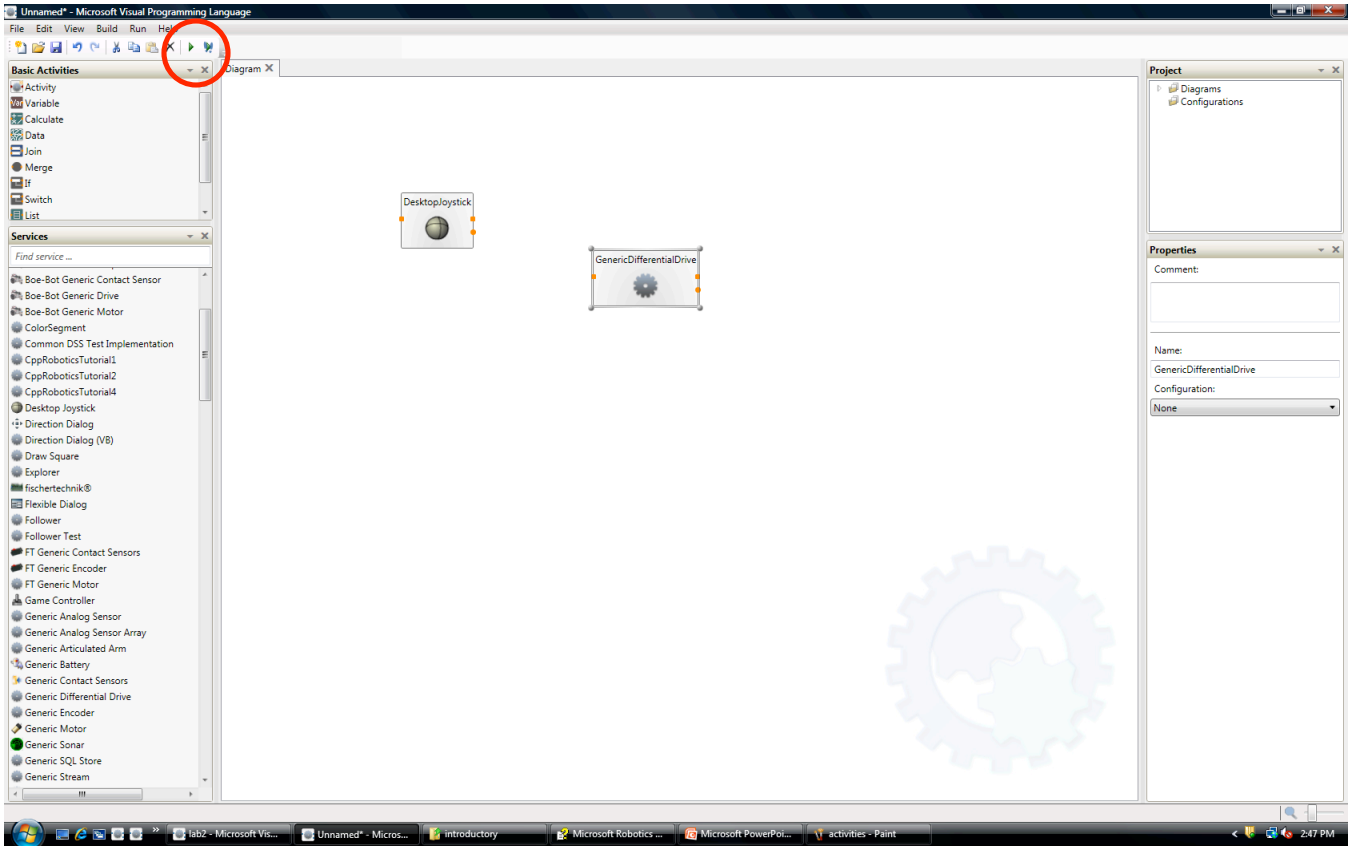
Set the Properties of the GDD

Test in simulation…

Test on the robot…



Run it…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Generic Analog Sensor Array
Generic Articulated Arm
Generic Battery
Generic Contact Sensors
Generic Differential Drive
Generic Encoder
Generic Motor
Generic Sonar
Generic SQL Store
Generic Stream
Diagram
DesktopJoystick
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Project
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GenericDifferentialDrive
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lab2 - Microsoft Vis...
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introductory
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activities - Paint
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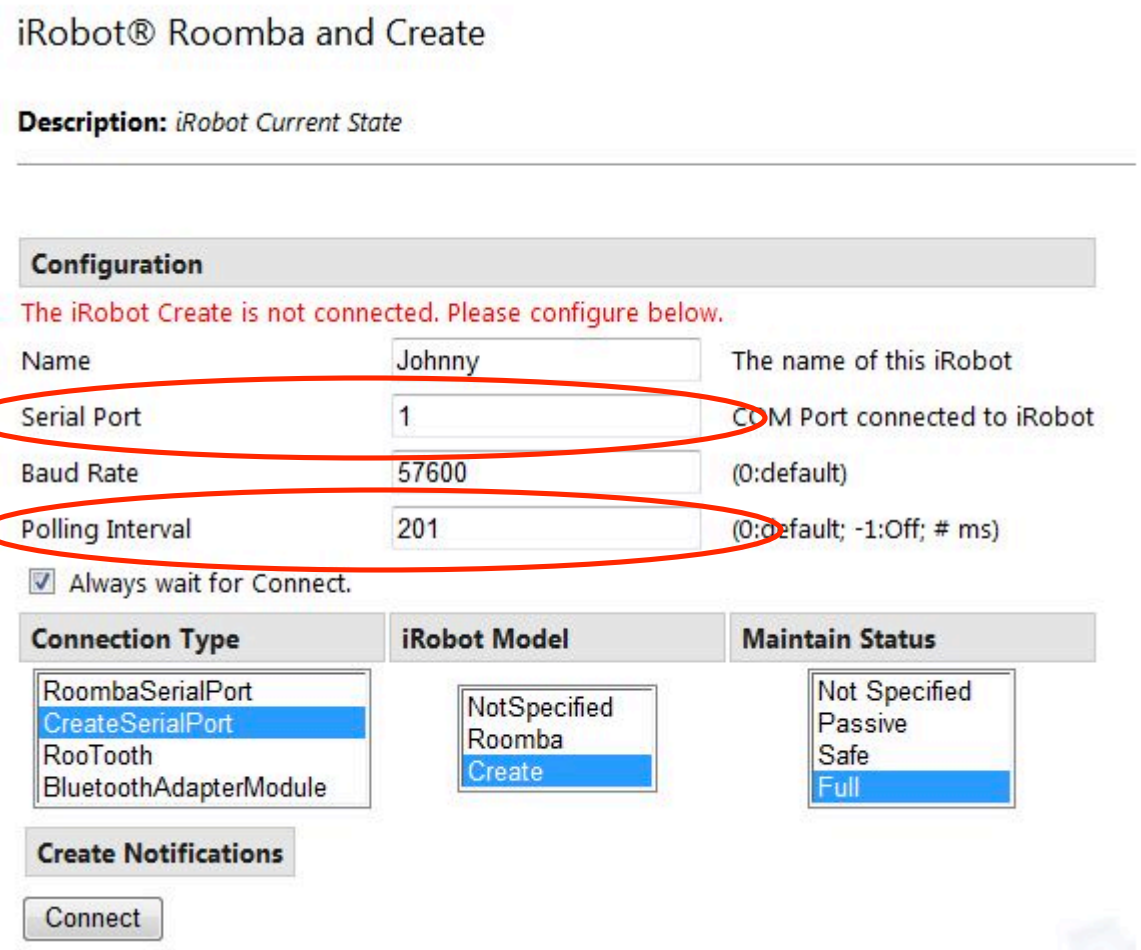
Connect to the Robot

Serial Port is usually 4, BUT CHECK!!!

Change the polling interval to something > 0



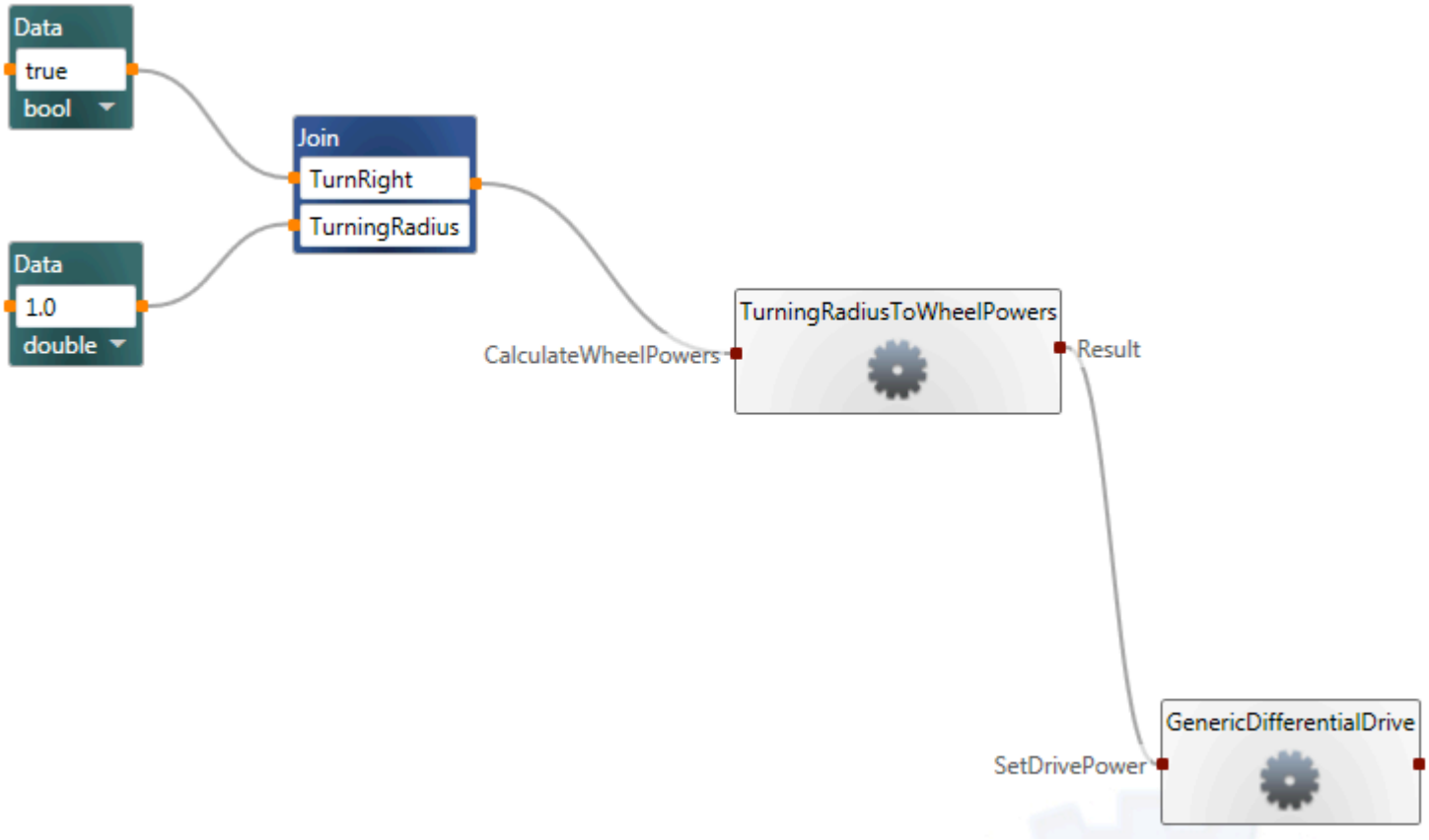
You did all of this and its not working…

- Common Problems
  - Bluetooth is not connected to a COM port
    - Near the clock on the Windows toolbar, click the bluetooth icon and run through the menus
  - Check the bluetooth COM/Serial port number is correctly on your web interface
  - Click Connect?
  - Robot on?

Homework 1

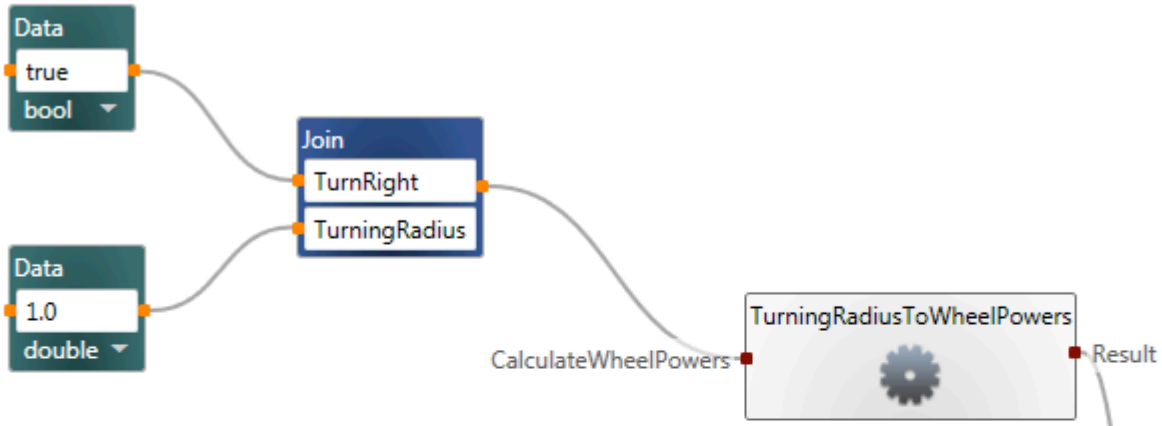
- Understanding how your robot's turning radius varies
  - Testing, Graphs
- Write a variable-degree, variable-speed turn control program based on your results

Courseware Lab 2



C:\Microsoft Robotics Studio (1.5)\samples\courseware\introductory
Open the readme.htm and click on the MsrsCourseware.chm for instructions

Getting Started



Input expects two values:
TurnRight: bool to turn right or left
TurningRadius:double for radius

Use a Join Activity to connect the two values

Connect the Result of TRWP to GDD SetDrivePower

Wrap Up

- Find a partner to work with
- Start Early!
- COMMENT YOUR CODE!!!
- Save your files to AFS not locally
  - Turn in directory /afs/andrew.cmu.edu/course/15/491/students/{yourandrewid}/dropbox/lab01/
- Email us if you have questions
  - Stephanie: srosenth@cs.cmu.edu
  - Richard: rtc1@andrew.cmu.edu
- Office Hours as needed