

FIRST Robotics Intro to Programming

Team #5871

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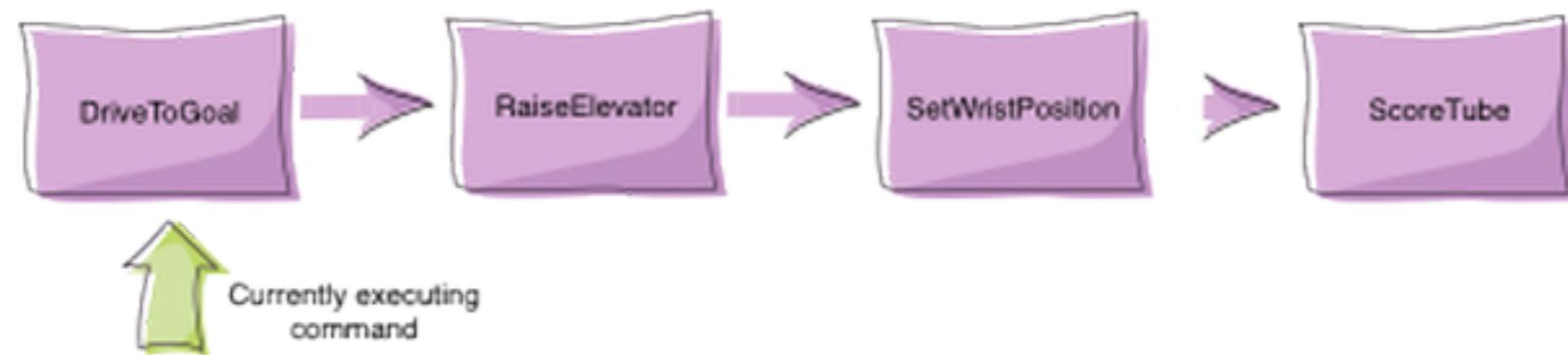
Why Programming?

Tell your Robot what to do!



Robot, throw the ball into the hoop!

How?



Your first program

```
public class HelloWorld
{
    public static void main(String[] args)
    {
        System.out.println("Hello, World");
    }
}
```

Variables

```
int teamID = 5871;
```

```
String myName = "Marianna";
```

```
System.out.println(teamID);
```

```
System.out.println(myName);
```

```
System.out.println(myName + " is on Team " +  
teamID + "!!!";
```

Variable types

- Integer
 - How many wheels does my robot have?
 - `int wheels = 4;`
- String
 - What is the name of my robot?
 - `String robotName = "Silly Robot";`

Variable Types

- Double
 - How many feet is the robot's arm above the ground?
 - double armHeight = 4.5;
- Boolean
 - Is my robot's arm raised?
 - bool robotArmRised = true;
 - bool robotArmRised = false;

if Statement

```
bool robotShouldTurn = true;  
if (robotShouldTurn)  
{  
    System.out.println("Robot is turning!")  
}  
System.out.println("Done!");
```

if else Statement

```
bool robotShouldTurn = true;  
if (robotShouldTurn)  
{  
    System.out.println("Robot is turning!");  
}  
else  
{  
    System.out.println("Robot is staying still!");  
}  
System.out.println("Done!");
```

Let's Develop it with RoboCode!

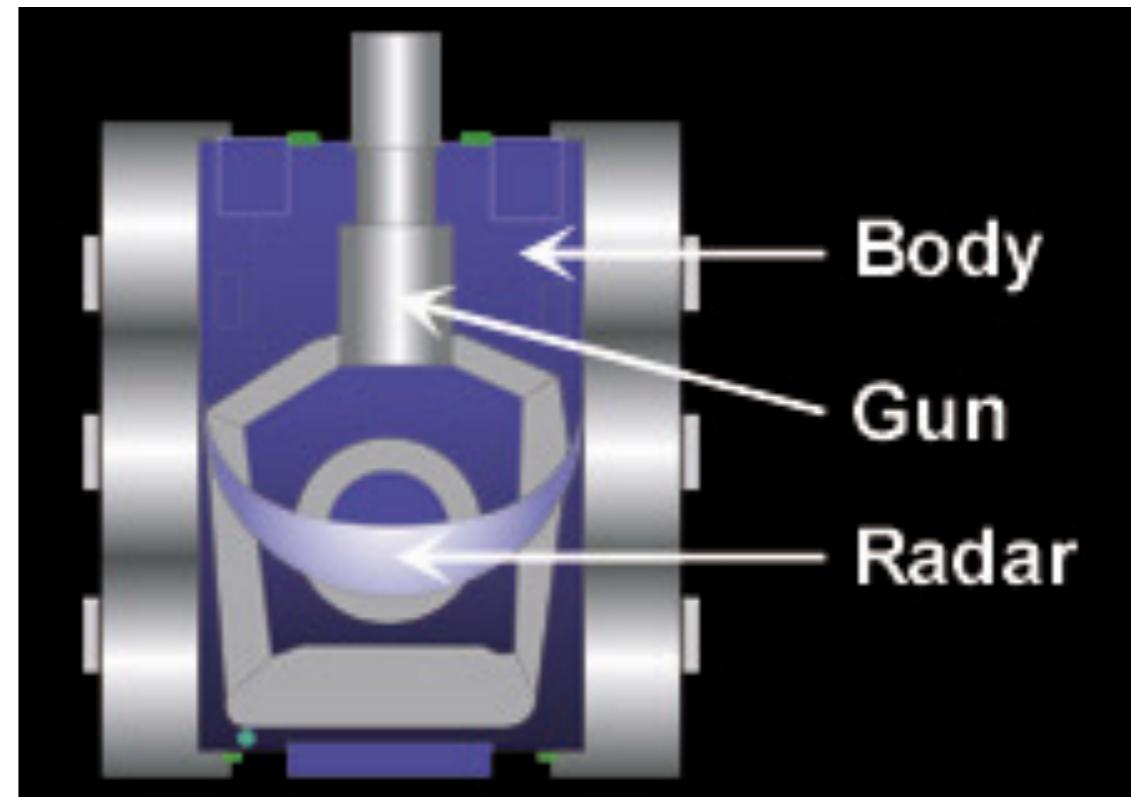


RoboCode

- Let's run our first robot!
- Start RoboCode
- Robot -> Source Editor
- Open MyFirstRobot.java

RoboCode Robot Anatomy

- Body
- Gun
- Radar



Classes, Objects and Methods

```
public class MyFirstRobot extends Robot {  
    public void run() {  
        while (true) {  
            ahead(100); // Move ahead 100  
            turnGunRight(360); // Spin gun around  
            back(100); // Move back 100  
            turnGunRight(360); // Spin gun around  
        }  
    }  
}
```

Comments and Silly Robots!

- Let's comment out firing the bullets!
- Everything after “//“ is considered a comment and is ignored by the compiler

```
public void onScannedRobot(ScannedRobotEvent e)
{
    //fire(1);
}
```

Why do robots live forever?

- Let's comment out the while statement and the ending brace

```
//while (true) {  
    ahead(100); // Move ahead 100  
    turnGunRight(360); // Spin gun around  
    back(100); // Move back 100  
    turnGunRight(360); // Spin gun around  
}  
//}
```

Let's develop it!

- Let's get your robot to go around in a circle!

Let's develop it!

- Let's get your robot to go around in a circle **three times**

Dessert Item

Let's Color our Robot!

```
import java.awt.*;  
/**  
 * MyFirstRobot - a sample robot by Mathew Nelson.  
 * <p/>  
....  
public void run() {  
    setBodyColor(Color.black);  
    setGunColor(Color.black);  
    setRadarColor(Color.orange);  
    setBulletColor(Color.cyan);  
    setScanColor(Color.cyan);
```

Java API Color

- Java API
 - <http://docs.oracle.com/javase/7/docs/api/>
- Search for Color (Ctrl+F)

More RoboCode Resources

- Create RoboCode project in Eclipse:
 - [http://robowiki.net/wiki/Robocode/Eclipse/
Create a Project](http://robowiki.net/wiki/Robocode/Eclipse/Create_a_Project)
- Add a RoboCode project
 - [http://robowiki.net/wiki/Robocode/
Add a Robot Project](http://robowiki.net/wiki/Robocode/Add_a_Robot_Project)

Learn Programming Between today and January

- Code Academy
 - <https://www.codecademy.com>



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Questions?