Robot Programming

L1 and L2 standards for robot programming

- L1 Standards - Robot Programming
- L2 Standards - Robot Programming

L1 Standards - Robot Programming

Overview

L1 programming is about foundational Java competency. An L1 programming member can read and write basic Java code—variables, conditionals, loops, classes—and apply those concepts in an FRC robot codebase. They can explain core OOP concepts if asked and contribute to the team codebase without needing constant support. During the build season, L1 programmers work to reprogram a previous season's robot, putting their skills into practice. L1 is the standard every active / full-time programming member is expected to reach on YETI.

Benchmarks

#	Benchmark	Description
1	Primitive Types & Variables	Identify and explain all Java primitive types (boolean, int, double/float, char, String). Choose the correct type for a given real-world scenario without prompting.
2	Variable Assignment & Operators	Declare and assign variables, create variables from other variables.
3	Classes & OOP Concepts	Identify a constructor in a given class, explain what it does, and determine a method's return type. Articulate the difference between a class and an object, and explain what `static` means.
4	Calling Methods (Static & Non-Static)	Given a class definition, instantiate an object and correctly call a non-static method on it. Separately, call a static method using the class name without creating an instance.
5	Conditionals & Control Flow	Complete a method skeleton by writing a correct if/else if/else block that returns the intended value. Use comparison operators accurately. Code handles all branches.
6	Loops	Explain the difference between a for and while loop. Given a loop snippet, describe what it does, when it terminates, and how many times it executes. Write a simple loop that produces the correct output.

#	Benchmark	Description
7	Inheritance & Access Modifiers	Explain what it means for a class to extend another. Given a superclass and a stub subclass, implement a method using the parent's accessible methods while correctly respecting private access.
8	Code Literacy	Read unfamiliar Java code and explain what it does in plain English. Catch common beginner mistakes (off-by-one errors, wrong operator, wrong return type) when shown a broken snippet.

Assessment Process

1. Written Quiz

You will complete a short quiz on the topics below. Questions are randomized across 10 variations per topic. The quiz is closed-reference: no IDE, no internet, no notes.

- Primitive data types
- Variable assignment & operators
- Classes & constructors
- Static vs. non-static methods
- Conditionals (if / else)
- Loops (for / while)
- Inheritance & access modifiers

Resources

- Codecademy — Learn Java
- CodingBat — Java Practice Problems

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