Introduction to **Java**

Tim Magoun and Aravind Koneru

compiled on May 30, 2016

This test will evaluate the familiarity of basic programming concepts as well as the knowledge of the Java programming language, which is used as the programming language of numerous FIRST®robotics competitions.

The following topics will be on this test:

- Primitive Types and Operations (*int, byte, boolean, etc.*)
- Modifiers (*final, public, static, etc.*)*
- Comparison Operators (*==, !=, >=,etc.*)
- Assignment operators (*+=, *=, =, etc*)
- Flow Control (*if, for, break, etc*)
- Methods and Parameters*
- Single- and Multi-Dimensional Arrays
- Object Oriented Programming*
- Inheritance and Polymorphism*
- Programming Habits and Conventions

* Starred items are extremely important in programming a robot

DO NOT BEGIN UNTIL INSTRUCTED TO DO SO

PART ONE: Multiple Choice

Instructions: Choose the correct solution to the problem, there is only one correct answer for each problem.

1. Example Question One
    (a) Answer One
    (b) Answer Two
    (c) Answer Three
    (d) Answer Four
2. Example Question Two
    (a) Answer One
    (b) Answer Two
    (c) Answer Three
    (d) Answer Four

CONTINUE TO THE NEXT PAGE

PART TWO: Open Ended Response

Instructions: Write the most efficient solution to the following methods. You will ***not*** *be given any extra paper.*

1. Write a method that will return an array of n length, filled with the decimal approximations of the sequence $\left[\frac{1}{1}, \frac{1}{2}, \frac{1}{3}, \frac{1}{4}, \cdots, \frac{1}{n}\right]$ where n is the integer parameter of the method.

DO NOT CONTINUE UNTIL INSTRUCTED TO DO SO

2. Write a method that will recursively determine if a word *str* is a palindrome, where *str* is a string parameter of the method.

END OF EXAM