UCSD Student**TECH** 2020
Computer Science for High School Students
Sponsored by the San Diego Supercomputer Center, University of California, San Diego

Introduction to Object Oriented Programming Using Java

Monday- Friday, June 22 - 26, 2020

Class meets at the University of California, San Diego from 8:30am - 3:00pm.

Introduction to Object Oriented Programming using Java

Course Overview

This workshop introduces object oriented programming development and design using Java. Students will learn basic programming language concepts including Java syntax, input/output, memory allocation and control structures. Object oriented concepts will be introduced including Java classes that contain variables and methods. Students will focus on problem solving skills by algorithm design and development using sound software engineering practices.

This course will start with the very basics, assuming that students do not have any previous Java programming experience. It does not require any other programming experience. This course will introduce basic programming concepts using the Java programming language.

Java is a programming language originally developed by James Gosling at Sun Microsystems. The language derives much of its syntax from C and C++. Java applications are typically compiled to byte code (class file) that can run on any Java Virtual Machine (JVM) regardless of computer architecture. Java is a general-purpose, concurrent, class-based, object-oriented language that is specifically designed to have as few implementation dependencies as possible. It is intended to let application developers "write once, run anywhere." Java is currently one of the most popular programming languages in use, and is widely used in application software and web applications.

Course Goals and Learning Outcomes

- Develop Java programs that contain sequence, selection and iteration control structures.
- Develop Java programs that contain methods that may have parameters and a return type.
- Understand the concepts of Java Classes and Objects.

Structure

This course is taught using classroom and lab instruction employing lecture/demonstration, in-class exercises, student participation, and class activities leading to a final project. Classes will include introductory concept presentations, followed by in-class exercises. While students are invited to bring their own laptops to class, the UCSD lab will have all necessary hardware and software installed for their use each day. Java is cross platform and may be run under Windows, Mac OS X or Linux.

Topics to be covered during the week

Module 1:	**-**Introduction to Java
	-Introduction to the IDE environment
	-Java keywords
	-Primitive data types
	-Input/Output
Module 2:	-Conditional Control Structures
	-Methods
	-Algorithm Development
Module 3:	-Iterative Control Structures
	-Class Design and Method Development
Module 4:	-String Class
	-Java Swing Introduction (JOptionPane input and output windows)
	-GUI Development
Module 5:	-Final Projects: Putting the pieces together.

Prerequisites:
- Must be a current high school student in grade 9-12.
- Successful completion of Algebra 2 or Integrated III. **Please provide transcripts**.
- A basic understanding of computers.