In this course, you will learn the fundamentals of computer programming using the Java programming language and by doing well on the AP exam you may earn college credit. This course will prepare you for further study in computer programming, and is the next step in preparing for a career in software engineering, or computer science. AP Computer Science A is also the capstone class for the CTE Software Development Pathway. You have the opportunity to complete this pathway in this class providing you took the first course, AP Principles of Computer Science.

For those of you who have not taken the AP Principles of Computer Science introductory course, it is highly recommended that you take that first unless you already have a lot of previous programming experience. If you do choose to take this class and believe you can handle it without the introductory course, make sure you are very comfortable with computers and are at least enrolled in Algebra 2. You can still be successful because I teach this class as if it were a standalone course with no prior programming knowledge required in alignment with the College board.

You will be learning the Java language, one of the most popular languages in the world, and you will be programming using object-oriented design methodology. Your work will mostly be on a computer and you will be assigned a classroom laptop for the year. You may also bring your own computer to use for the class and/or use a home computer for working on assignments at home. Learning a computer programming language is much like learning any language in that you must learn proper spelling, syntax, and structure. As such, writing a computer program is much like writing an essay in that plagiarism is taken very seriously. Copies of online programs or duplicates of other’s programs submitted as student work will receive a grade of 0.

The summer assignment is designed to give you a simple ‘feel’ for putting together a computer program. This assignment provides you with two options, depending on your programming experience and your initiative (they will all be graded on an equal scale regardless of difficulty). The assignment is to use free programming environments to create a project to present during the first week of class. These projects can be VERY SIMPLE, so don’t panic! The programming environments provide the software, documentation, tutorials, videos, and lots of examples. What you create from all of this is up to you. Here are the two options:

OPTION 1. If you have only done very simple programming before, or never did any programming at all, you should choose the programming environment Scratch (www.scratch.org). Scratch is designed as a learning tool and is completely visual - no actual coding required. The tool allows you to use your creativity while also learning simple logic. This tool was created by MIT and is quite popular at all age levels. For those of you coming out of AP Principles of Computer Science, it will look a lot like Alice, however there is no “Do Together” block which can be annoying when you are used to having it.

Your assignment is to:

a) Go to https://scratch.mit.edu/ from your web browser
b) Create an account for yourself
c) Click on “Learn how to make a project in Scratch”
d) Follow the steps on the right labeled “Getting Started with Scratch”
e) CREATE YOUR OWN Scratch project that tells a story of some sort.
f) Use the “Print Sern” key to take a screen shot of the scratch window with your code showing. Paste that screenshot into a Google doc to upload along with a reflection on what you learned from this activity. Write the reflection at the top before pasting the code.
OPTION 2. If you DO have programming experience, you may want to choose the following (instead of Scratch):

Android Studio (https://developer.android.com/studio/) is the Google designed environment for making Android Apps. Install the software as well as the Android emulator it comes with. Design a basic app. You may design something that interests you or you may make it do the following example idea:

Make an app that lets you select what mood you are in and display a graphic to match it. Have at least 3 selectable moods and the image may be made from lines of displayed text.

A tutorial for using android studio to make an app can be found here: https://developer.android.com/training/basics/firstapp/creating-project

AGAIN - do #1 if you have little or no programming experience. If you have done a lot of text based programming code before, you may not find much challenge with Scratch, so choose the Android Studio option. What you create is up to you - it does NOT HAVE TO BE ELABORATE. This is a learning exercise and you should not spend more than 10 hours over the summer on this assignment. Just make sure you have something to show to the class the first week -- level of difficulty is NOT part of your grade for this assignment.

Your programming code MUST be uploaded by August 6 for seniors, August 7 for juniors and sophomores or you will automatically be dropped from the class. You need to upload it to Google Classroom with the following join code: bshgpgu

You will be sharing your project starting on the first full day of class. You will be asked to show your program in action and, in the scratch case, the story it tells. You will also be asked to talk about how it works. Your work MUST be original - you may get ideas from the many examples on these websites, but your work must be your own! (Again, plagiarism means a failing grade!) You may email me at alexdavis@ccusd.org during the summer if you have any questions.

Have fun and see you in August.