AP Computer Science Principles Summer Packet

Welcome to AP Computer Science Principles! This course is equivalent to a college-level “Computer Science for non-Computer Science Majors", so no prior computer science knowledge or coding experience is expected. However, the course will move quickly as college classes tend to do. I am excited to work with you this year and to watch you grow as Computer Scientists.

The aim for the course is two-fold: 1) to introduce students to some of the exciting and interesting sub-fields of computer science and 2) to prepare students for the College Board AP CSP assessments. Where these two goals are in conflict, goal 2 will take precedence. To that end, the majority of our work will focus on learning how to write computer code, since it is the most heavily assessed “Big Idea” of the course (see below). However, I hope you take any and every opportunity to explore other areas of computer science. It is a field rich in experiences and careers that can appeal to students with diverse interests and skills.

Please complete the assignments in this summer packet so we can “hit the ground running” when the school year begins. These assignments will help orient students to the content and objectives of the Computer Science Principles course and give insight into how College Board does its assessments (hint: it’s a bit different than other AP courses). The assignments will also help me organize our time together to give students the best opportunity for success on the assessments.

The information in the packet is high-level and not “content-heavy”, but please take these assignments seriously. We have a lot to cover during the school year and therefore will spend a very short amount of time on the summer packet information on the first day of class. Please also remember this is my first impression of your work, so put your best foot forward to start off the year well.

Assignments

Part 1: Course Exploration

Visit the AP Computer Science Principles Website at https://apcentral.collegeboard.org/courses/ap-computer-science-principles/course and answer the following:

- What are the AP computer science courses offered by College Board? What is the difference between these courses?

- What are the 5 big Ideas in this course?

- Describe each of the big ideas in your own words.

- In your own words describe the two parts of the AP test for this course.

Part 2: Install Visual Studio Code and Python

(If you run into trouble setting up your environment, I will help on the first day. Please bring specific questions or screenshots of any errors!)

This guide will walk you through installing Visual Studio Code (VS Code) and Python so you can write and run code directly on your personal computer.

Windows Setup:

1. **Install Python:** Go to the official Python download page at python.org/downloads and click the yellow download button for Windows.
2. **Run the Installer:** Open the downloaded .exe file. **CRITICAL STEP:** Before clicking "Install Now", make sure to check the box at the bottom of the window that says **"Add python.exe to PATH"**. Once checked, proceed with the installation.
3. **Install VS Code:** Go to code.visualstudio.com and download the Windows installer. Run it and follow the standard installation prompts.
4. **Install the Python Extension:** Open VS Code. Click the "Extensions" icon on the far-left sidebar (it looks like four blocks). Search for "Python" and install the official extension provided by Microsoft.

Mac Setup:

1. **Install Python:** Go to python.org/downloads and click the download button for macOS. Run the downloaded .pkg file and follow the standard installation steps.
2. **Install VS Code:** Go to code.visualstudio.com and download the Mac version. Open the downloaded .zip file, then drag the extracted Visual Studio Code application into your Mac's "Applications" folder.
3. **Install the Python Extension:** Open VS Code. Click the "Extensions" icon on the left sidebar (the four blocks). Search for "Python" and install the official Microsoft extension.

Chromebook Setup:

1. **Enable Linux:** Go to your Chromebook Settings > Advanced > Developers. Turn on the "Linux development environment" (Crostini). Follow the prompts to allocate disk space and install it.
2. **Install Python:** Open your newly installed "Terminal" app (under Linux apps). Type sudo apt update and hit Enter. Next, type sudo apt install python3 python3-pip and hit Enter (press 'Y' if it asks to confirm).
3. **Install VS Code:** Go to code.visualstudio.com and download the .deb file (for Debian/Ubuntu). Open your "Files" app, find the .deb file in your Downloads folder, right-click it, and select "Install with Linux".
4. **Install the Python Extension:** Launch VS Code from your Linux apps folder. Click the Extensions icon on the left, search for "Python", and install the Microsoft extension.

Creating Your "Hello World" Program:

1. Open VS Code. Go to **File > New File**.
2. Save the file immediately by going to **File > Save As...** and name it helloworld.py. (The .py extension tells VS Code that it is a Python script).
3. Type the following exact code into your file:
   print(“Hello World”!)
4. **Run it:** In the top right corner of the VS Code window, click the "Play" button (a small triangle) to execute your code. You should see "Hello, World!" printed in the terminal window at the bottom of your screen.

Part 3: freeCodeCamp Python Course

To ensure we hit the ground running with programming fundamentals, you will complete the introductory steps of the freeCodeCamp Python curriculum.

1. Navigate to the freeCodeCamp Python course using this link: https://www.freecodecamp.org/learn/python-v9/
2. Click "Sign In" at the top right to create a free account. You can use your school email or a personal Google account.
3. Start the first module and successfully complete the **first 10 steps** of the Python course. Make sure your progress is saving to your account as you go!