AP Computer Science A
Summer Assignment 2025

Future AP Computer Science A Student,

Welcome to AP CSA! I am eagerly anticipating a great year of Computer Science A. In order to ensure the best start for everyone next year, you will have to complete work this summer.

Computer science is all about solving real-world problems. It's been around for years, but it's becoming more important than ever in today's world where technology is ubiquitous. Roller coasters, elevators, traffic signals, and even refrigerators: technology is everywhere. Now more than ever, we now need a basic knowledge of computer science just to understand the world around us.

But what is computer science? Is it simply being able to use a computer? Or write code?

In this course, we use the definition, "Computer science is the study of how we use computers to solve human problems." This definition focuses on the problem solving aspect of computer science. One major theme of AP Computer Science, and really CS in general, is problem solving. It's about developing solutions that can scale up from simple problems to complex problems. On the AP CSA exam, you will be using the programming language Java to solve problems, design strategies, debug, and analyze potential solutions.

Any AP course is challenging and AP Computer Science is no exception. Even if you have programming experience or like to code for fun, you will still be challenged in AP Computer Science. We will begin with the basic building blocks of programming in Java. By the end of the course, you will use Java to solve some pretty complex problems!

On the following page, you will find an outline of your summer assignments and what is to be completed prior to <u>The Second Day School</u>.

I <u>HIGHLY</u> recommend that you spread out the assignments over the summer.
Please do not try to complete it all in the final week of August.

Have a great summer!

Ms. Mannerberg
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In order to complete your summer assignment, you must join our CodeHS classroom.

1. Please go to https://codehs.com
2. Sign up with Google (jefftwp email ONLY)
3. You will be synced with Google Classroom to join the class.

You are to complete three sections for your summer assignment:

1. **Java Pretest**

   There are two activities that are a part of your course pretest. This pretest will help measure how much you learn and grow in this course.

2. **Using Objects and Methods (Lessons 1-4)**

   You will be completing 4 lessons based on an introduction to Java and coding concepts. Every lesson has a video to watch, examples, and exercises to complete.

   All Lessons have <u>blocked</u> checking for understanding questions.
   These will be made available on the 2nd day of school for a <u>SUMMATIVE GRADE</u>.

   - Lesson 1: Introduction to Algorithms, and Compilers
     - Watch the instructional video *Introduction to Algorithms*.
     - Complete the *Real World Algorithms* free response activity.
     - Watch the video *Basic Java Program Structure*
     - Complete the *Exploration: Hello World* activity.
     - Complete the *Welcome Program* exercise.
     - Complete the *ASCII Art* exercise
     - Watch the video *Compilation, Execution, and Errors*.
     - Complete the *Debugging: Quotes* exercise.
     - Analyze the *Compiling and Running Java* simulation activity
     - Analyze the *Explore the Exception Error* simulation activity
     - Complete the *Compilation and Execution: In Your Words* free response activity

   - Lesson 2: Variables and Data Types
     - Watch the *Variables and Primitive Data Types* videos.
     - Analyze the *Voyager Mission in Variables* example.
     - Complete the *Exploration: Social Media Variables* exercise.
     - Complete the *Signature* exercise.
     - Watch the *Reference Data Types and Strings* video.
     - Analyze the *Voyager Mission with Strings* example.
     - Complete the *Signature with Strings* exercise.
     - Complete the *Variables About You* exercise.
     - Complete the *Exploration: Swapping Two Values* exercise.
     - Complete the *Team Rankings* exercise.

AP Computer Science A
Summer Assignment 2025

- Lesson 3: Expressions and Output
    - Watch *Literals and Escape Sequences* video and take notes.
    - Analyze the *println and print* example and discuss formatting behavior.
    - Complete *Improved Signature*.
    - Complete *Debugging: Escape Sequences*.
    - Complete *Strong Passwords Formatting*.
    - Watch *Arithmetic Expressions* video.
    - Analyze the *How Many Gigs?* example.
    - Analyze the *Tricky Integer Division* example.
    - Complete *Weight of a Pyramid*.
    - Complete *Tip Calculator*.
    - Complete *Exploration: Temperature Conversion*.

- Lesson 4: Assignment Statements and Inputs
    - Watch the *Assignment Statements* video and take notes.
    - Explore the *Pet Supplies Calculator* example.
    - Complete the *Beauty Product Checkout* exercise.
    - Complete the *Freely Falling Bodies* exercise.
    - Watch the *User Input* video and take notes.
    - Explore the *Years to Graduate* example.
    - Read the *Scanner Buffer Problem* notes page.
    - Complete the *Exploration: Going to the Movies* debugging exercise.
    - Complete the *Ice Cream Shop* exercise.
    - Complete the *MLA Citation Generator* exercise.

Assessments on All Material will be given after the Second Day of School.