Unit 01: Computer Systems

Content Area: **Mathematics**
Course(s): **AP Comp Sci A**
Time Period: **Semester 1**
Length: **2 weeks**
Status: **Published**

Standards

MA.K-12.2	Reason abstractly and quantitatively.
TECH.K-12.1.1.d	understand the fundamental concepts of technology operations, demonstrate the ability to choose, use and troubleshoot current technologies and are able to transfer their knowledge to explore emerging technologies.
TECH.K-12.1.3.a	plan and employ effective research strategies to locate information and other resources for their intellectual or creative pursuits.
TECH.K-12.1.4.a	know and use a deliberate design process for generating ideas, testing theories, creating innovative artifacts or solving authentic problems.
TECH.K-12.1.5.a	formulate problem definitions suited for technology-assisted methods such as data analysis, abstract models and algorithmic thinking in exploring and finding solutions.

Enduring Understanding

Computer systems have evolved and become an intrinsic part of everyday life, both personal and in the workplace.

Hardware and software work together to accomplish complex tasks.

The basic purpose of a Java program is to store data and manipulate that data.

Essential Questions

How have computer systems evolved over time?

How does hardware and software work together?

How is data represented internal to the computer?

Knowledge and Skills

- Describe the relationship between hardware and software
- Define various types of software and how they are used
- Identify basic computer hardware and explain what it does
- Explain how the hardware components execute programs and manage data
- Describe how computers are connected together into networks to share information

- Explain the importance of the Internet and the World Wide Web
- Convert base 10 numbers to base 2 and base 16.
- Convert base 2 and base 16 numbers to decimal.
- Introduce the Java programming language
- Describe the steps involved in program compilation and execution
- Introduce graphics and their representations (optional - include if time permits)

Transfer Goals

Students will be able to explain how computer systems work together to accomplish complex tasks.

Students will understand that information can be stored different ways.

Resources

AP CS A Java Course — AP CSAwesome

Overview (Java SE 11 & JDK 11)

Albert.io

AP Classroom

Repl.it IDE