Big Ideas in AP Computer Science Principles

The AP Computer Science Principles course covers five big ideas:

- **Creative Development**
  - Collaboration
  - Software development process
- **Data**
  - Binary
  - Compression
  - Spreadsheets
  - Data analysis
- **Algorithms and Programming**
  - Procedural programming
  - Binary search
  - Abstraction
  - Time complexity
- **Computer Systems and Networks**
  - Hardware
  - Software
  - The internet
  - Security
- **Impact of Computing**
  - Digital divide
  - Bias
  - Crowdsourcing
  - Copyright
  - Information security

Each big idea is covered in more detail in the following sections.

Creative Development

- Collaboration: Working with others to design, develop, and test software.
- Software development process: The process of creating and delivering software.

Data

- Binary: The base-2 number system that computers use to represent data.
- Compression: The process of reducing the size of data without losing any information.
- Spreadsheets: Electronic documents that are used to store and manipulate data.
- Data analysis: The process of extracting meaning from data.

Algorithms and Programming

- Procedural programming: A programming paradigm that uses procedures to solve problems.
- Binary search: An algorithm for finding a specific value in a sorted list.
- Abstraction: The process of hiding the details of a system from the user.
- Time complexity: A measure of how long an algorithm takes to run.

Computer Systems and Networks

- Hardware: The physical components of a computer system.
- Software: The instructions that tell the hardware what to do.
- The internet: A global network of computers that allows people to communicate and share information.
- Security: The protection of computer systems from unauthorized access, use, disclosure, disruption, modification, or destruction.

Impact of Computing

- Digital divide: The gap between people who have access to computers and the internet, and those who do not.
- Bias: The tendency to favor one group of people over another.
- Crowdsourcing: The practice of obtaining information or services from a large group of people.
- Copyright: The legal right to control the use of creative works.
- Information security: The protection of information from unauthorized access, use, disclosure, disruption, modification, or destruction.

References

- AP Computer Science Principles Curriculum Framework
- AP Computer Science Principles Textbook