



The College Board

AP Computer Science: Principles

Computational Thinking Practices

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AP Computer Science: Principles is a pilot course under development. It is not an official Advanced Placement course currently being offered by the College Board.

This document is based upon work supported by the National Science Foundation, grant CNS-0938336. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.

- 1. Analyzing effects of computation**
 - a. Identification of existing and potential innovations enabled by computation.
 - b. Identification of ethical implications and positive and negative impacts of computation.
 - c. Analysis of implications of design decisions.
 - d. Characterization of connections between human needs and computational functionality.

- 2. Creating computational artifacts**
 - a. Creation of an artifact with a practical, personal, or societal intent.
 - b. Selection of appropriate techniques to develop a computational artifact.
 - c. Use of appropriate algorithms and data structures.
 - d. Location and correction of errors.

- 3. Using abstractions and models**
 - a. Explanation of how data, information, and knowledge are represented for computational use.
 - b. Use of simulation and randomness.
 - c. Explanation of how abstractions are used in computation and modeling.
 - d. Collection or generation of data appropriate to a model.

- 4. Analyzing problems and artifacts**
 - a. Evaluation of a proposed solution to a problem using multiple criteria.
 - b. Analysis of tradeoffs of multiple solutions to a problem.
 - c. Analysis of the results of running a program or using an artifact.
 - d. Evaluation of characteristics of problems and artifacts.

- 5. Communicating processes and results**
 - a. Explanation of how a process or result scales.
 - b. Summarization of the behavior of a computational artifact or process.
 - c. Description using appropriate words and visualizations.
 - d. Justification of appropriateness and correctness.

- 6. Working effectively in teams**
 - a. Application of effective teamwork practices.
 - b. Collaboration of participants.
 - c. Production of artifacts that depend on active contribution from multiple participants.
 - d. Documentation describing the use, functionality, and implementation of an artifact.