Unit 04: Iteration

Content Area: **Computer Science**
Course(s):
Time Period: **Marking Period 2**
Length: **4-5 Weeks**
Status: **Published**

Summary

This unit focuses on iteration using while and for loops. As you saw in Unit 3, Boolean expressions are useful when a program needs to perform different operations under different conditions. Boolean expressions are also one of the main components in iteration. This unit introduces several standard algorithms that use iteration. Knowledge of standard algorithms makes solving similar problems easier, as algorithms can be modified or combined to suit new situations.

Revision Date: July 2026

L.SS.11–12.1	Demonstrate command of the system and structure of the English language when writing or speaking.
9.4.12.CI.1	Demonstrate the ability to reflect, analyze, and use creative skills and ideas (e.g., 1.1.12prof.CR3a).
2	Reason abstractly and quantitatively
P.5	Utilize critical thinking to make sense of problems and persevere in solving them.
L.KL.11–12.2	Apply knowledge of language to understand how language functions in different contexts, to make effective choices for meaning or style, and to comprehend more fully when reading or listening.
9.4.12.CT	Critical Thinking and Problem-solving
9.4.12.IML.3	Analyze data using tools and models to make valid and reliable claims, or to determine optimal design solutions (e.g., S-ID.B.6a., 8.1.12.DA.5, 7.1.IH.IPRET.8).
9.4.12.IML.4	Assess and critique the appropriateness and impact of existing data visualizations for an intended audience (e.g., S-ID.B.6b, HS-LS2-4).
9.4.12.TL	Technology Literacy

Essential Questions & Essential Understanding

- How can blocks of code be repeated?
- What are "off by one" errors and how does one prevent them?
- What are nested loops?
- When are "while" loops better than "for" loops? Can either be used?

Learning Plan

Lecture and demonstration on each type of iteration method (for loops, while loops, do/while loops).

Pair programming exercises on output from different loops, and checking for errors.

Lecture and demonstrate nested loops.

Lab assignments on loops and nested loops.

Assessment

Assessments

- Formative: Daily assessments using examples from class notes and CodeHS.com, AP Classroom/Albert Checks for Understanding
- Summative: Teacher-created assessments/projects and CodeHS Computer Science Projects, AP Classroom/Albert Unit Assessments
- Benchmark: Check for understanding benchmark assessments on CodeHS, AP Classroom/Albert/Khan Academy Diagnostics
- Alternative Assessments: Student-centered activities such as a doorbell coding project, game design projects, and other activities involving real world applications

complete performance tasks:

- Students will be able to design programs using appropriate iterations within their code.
- Students will be able to write programs using appropriate iterations in order to solve given problems.

complete quizzes/tests:

- for loops
- while loops
- do/while loops
- nested loops
- errors within iteration code

complete sample AP multiple choice questions.

complete sample AP open ended questions.

Materials

Core instructional materials: Computing Concepts with Java

Supplemental instructional materials:

Java Concepts for AP Computer Science Study Guide
CollegeBoard AP Classroom Website
CollegeBoard AP Computer Science A Website

Integrated Accommodations & Modifications

Possible accommodations/modification for AP Computer Science A