

# Introduction to Computer Science (CS10) (2024)

Understand the components of computers and computer programming.

- 1.01 Describe the function of common physical components of computing systems (hardware) with appropriate terminology.
- 1.02 Utilize the design thinking process to develop an understanding of a problem or user need in order to design an optimal solution.
- 1.03 Recall the variety of inputs that a computer takes in and the outputs a computer sends to the user.
- 1.04 Understand the importance of documenting, commenting, and debugging code to make the program easier to read.

Understand ethics in computer science.

- 2.01 Evaluate the social and economic implications of privacy in the context of safety, law, and ethics.
- 2.02 Utilize public domain or creative commons media to avoid copying or using material created by others without permission.

Understand algorithms.

- 3.01 Define an algorithm as a sequence of instructions that can be processed by a computer.
- 3.02 Implement flowcharts and pseudocode to address complex problems as algorithms.

Understand what variables are and how to use them in a program.

- 4.01 Declare, initialize, and assign values to constants and variables using meaningful names.
- 4.02 Apply basic mathematical operators for variable values.
- 4.03 Create programs that use variables to store and modify data.

Understand what conditional statements are and how to implement them in a program.

- 5.01 Utilize `if-then` and `if-then-else` statements to yield specified outcomes.
- 5.02 Create a program that correctly and effectively implements conditionals.

**Understand the iteration in programming.**

**6.01** Analyze when to implement loops as a form of iteration.

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**6.02** Create a program that uses iteration and looping, including nested loops.

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**6.03** Construct programs that include events.

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**Understand coordinate grid system.**

**7.01** Evaluate how a sprite or game character moves across the output screen using a coordinate system.

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**7.02** Create a program that uses coordinates.

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**Understand what Booleans and Boolean operators are and why and when to use them.**

**8.01** Apply Boolean expressions inside conditional (If/then and loops).

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**8.02** Create a program that uses Booleans and Boolean operators.

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**Understand what bits and bytes are and how they relate to computers.**

**9.01** Analyze the base-2 (binary) number system.

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**9.02** Convert numbers from base-10 (decimal) to binary and decimal.

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**Utilize lists to simplify solutions, generalizing computational problems instead of repeatedly using simple variables.**

**10.01** Understand common list operations.

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**10.02** Practice creating, storing and retrieving list values.

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**Understand functions.**

**11.01** Recognize functions in programs as a form of abstraction.

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**11.02** Explain why and how functions can make code easier to read and maintain.

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**11.03** Define and call simple functions.