

# Computational Thinking using Python

---

## Introduction

---

Computational thinking is a problem-solving method that involves expressing problems and their solutions in ways that a computer could execute. It involves the mental skills and practices for designing computations and algorithms, organizing data, understanding computer systems, and other computational concepts. Computational thinking is a fundamental skill for everyone, not just for computer scientists. To reading more about computational thinking, click [here](#).

## Problem Solving

---

Problem-solving is a mental process that involves discovering, analyzing, and solving problems. The ultimate goal of problem-solving is to overcome obstacles and find a solution that best resolves the issue. The best strategy for solving a problem depends largely on the unique situation. In some cases, people are better off learning everything they can about the problem, in others, it is better to understand the problem by breaking it down into smaller pieces.

## Algorithms

---

An algorithm is a set of instructions designed to perform a specific task. This can be a simple process, such as multiplying two numbers, or a complex operation, such as playing a compressed video file. Search engines use proprietary algorithms to display the most relevant results from their search index for specific queries. In computer programming, algorithms are often created as functions. These functions serve as small programs that can be referenced by a larger program.

Algorithms are precise, step-by-step instructions for solving a problem. They are essential for computer applications to perform tasks effectively. Algorithms are used in many branches of science (and everyday life for that matter).

Here is a YouTube video that explains how computers use algorithms to solve problems:



## Data Structures

---

Data structures are a way of organizing and storing data so that it can be accessed and modified efficiently. More precisely, a data structure is a collection of data values, the relationships among them, and the functions or operations that can be applied to the data. Data structures are implemented using algorithms.

There are different types of data structures, such as arrays, linked lists, stacks, queues, trees, and graphs. Each type of data structure represents a different way of organizing the data. For example, an array is a data structure that stores a collection of elements, each identified by at least one array index or key. The simplest type of data structure is a linear array, also called a one-dimensional array.

## Python Programming

---

Python is a high-level, interpreted, and general-purpose programming language. Python's design philosophy emphasizes code readability with its notable use of significant whitespace. Its language constructs and object-oriented approach aim to help programmers write clear, logical code for small and large-scale projects

Python is dynamically typed and garbage-collected. It supports multiple programming paradigms, including structured (particularly, procedural), object-oriented, and functional programming. Python is often described as a "batteries included" language due to its comprehensive standard library.

## Conclusion

---

Computational thinking is a problem-solving method that involves expressing problems and their solutions in ways that a computer could execute. It involves the mental skills and practices

for designing computations and algorithms, organizing data, understanding computer systems, and other computational concepts. Computational thinking is a fundamental skill for everyone, not just for computer scientists. To reading more about computational thinking, click [here](#).