Module One

Learning Objectives

By the end of this module, you will meet these learning objectives:

- Analyze the application of algorithms in relation to the field of computer science and daily life
- Apply the appropriate strategy to break a given problem into components
- Determine how to represent an algorithm with pseudocode

Module Overview

Welcome to Module One! This first module is focused on understanding what an algorithm is. Simply put, an algorithm is the sequence of steps used to solve a problem. You will apply what you have already learned in previous courses about creating a flowchart, converting it to pseudocode, and then writing code from there. As you start writing longer programs, designing your programs first will become more important. The more time you spend designing your program and writing pseudocode, the less time you will spend programming and debugging.

As you learn about different data structures (which are simply logical ways of storing data in a program), you will also be learning about the algorithms that are used for inserting data, removing data, finding data, sorting data, and so on in each data structure.

Although all data structures will be able to perform all those tasks, they can be differentiated by how long they take to perform the tasks and how much memory is required to do so.

This module will focus on arrays and vectors, which are common data structures that are used in nearly every program. Data structures are used for storing data in a specific manner and contain functions for performing different operations on the data. Consider storing a set of plates in the cabinet:

- How do you arrange them?
- Which ones are you able to access?

Think about how data structures relate to situations in life as you learn about each one in this class.

Module at a Glance

This is the recommended plan for completing the reading assignments and activities within the module. Additional information can be found in the module Resources section and on the module table of contents page.

1. Review the tutorials and set up your accounts.
2. Review the Module One resources.
3. Post your initial response to this week's discussion.
4. Complete the Module One activities in zyBooks.
5. Review the course projects.
6. Post peer responses to the discussion.