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## Module [202]

### Pointers

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#### **Module Overview**

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This module discusses a fundamental concept of the C language; pointers. how arrays are declared, initialized and used in the C language. We will then explore how arrays interact with the previously introduced elements of the C language (control structures, functions, stack...).

As usual, our learning activities will be divided in two groups. The “discovery week” will focus on the reading assignments and understanding the main Concepts. The “apply week” will help you put this newly acquired knowledge into practice and evaluate your understanding of the entire module through graded assessments. Refer to the Syllabus for more details.

## Learning Outcomes

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By the end of this module, you will gain the following knowledge:

### Programming Concepts

- Pointers on data and explicit memory addresses manipulation
- Operations on pointers (get address of, dereference pointer, pointer arithmetics)
- Pointers on functions

### Designing Programs

- Iterating over arrays with pointer arithmetic
- Leveraging pointers on functions to write generic functions (e.g. compare in bubblesort)

### Implementing Programs (in C)

- Declaring, initializing pointers in C
- Pointers operators (&, \*)
- Pointers arithmetic
- By-reference parameters handling using pointers
- Implementing arrays and strings with pointers
- Declaring, initializing, using arrays of strings

### Troubleshooting

- Common pointer-related errors
- Understanding string-related errors from the pointers perspective
- Understanding the “forgetting & in scanf” error