

# NOI 2020 C++ Basics Course Content

## Note5

### Arrays

Let's say you have to store some data that are related and of the same type. (eg: marks of students in a class for a subject). Instead of creating a variable for each student, you can create an array with the size of the amount of students.

An array can store multiple values of the same data type and you can access those stored data separately.

#### Array declaration syntax

<data type> <variable name> [ <size of array> ];

Eg:

- `int marks[40];` //this declares an array capable of storing 40 integers
- `string names[40];` //this declares an array capable of storing 40 strings.

#### Array initialization syntax

Declaration and initialization in the same line.

<data type> <variable name> [ <size of array(N)> ] = {  
<item1>,<item2>,...<itemN>}

Eg:

- `int marks[3] = {10, 89, 95};`

#### Access values of the array

Arrays store values in an ordered list of memory locations. The index of the first location is 0, the second is 1 and so on. You can use this index to access and modify values of the array.

Let's consider the following array

`int values[5] = {1, 2, 3, 4, 5};`

Accessing values.

`int firstValue = values[0];` //firstValue = 1

`int secondValue = values[1];` //secondValue = 2

Updating values

values[0] = 10; // this changes the first element of the array to 10

values[4] = 99; // this changes the 5th element of the array to 99

Extra resources:

- Arrays

Video:

- <https://www.youtube.com/watch?v=odTejLbwbnc>

Reading:

- [https://www.tutorialspoint.com/cplusplus/cpp\\_arrays.htm](https://www.tutorialspoint.com/cplusplus/cpp_arrays.htm)
- [https://www.w3schools.com/cpp/cpp\\_arrays.asp](https://www.w3schools.com/cpp/cpp_arrays.asp)