Types of Allocation

Study types of allocation.

We'll cover the following

Introduction#

In C++, we can allocate memory in two ways:

- Static allocation
- Dynamic allocation

Static allocation#

> *In **static allocation**, a fixed amount of memory is allocated to the variables or arrays before the execution of the program (during compile-time), and we cannot request more memory while the program runs.*

In static allocation:

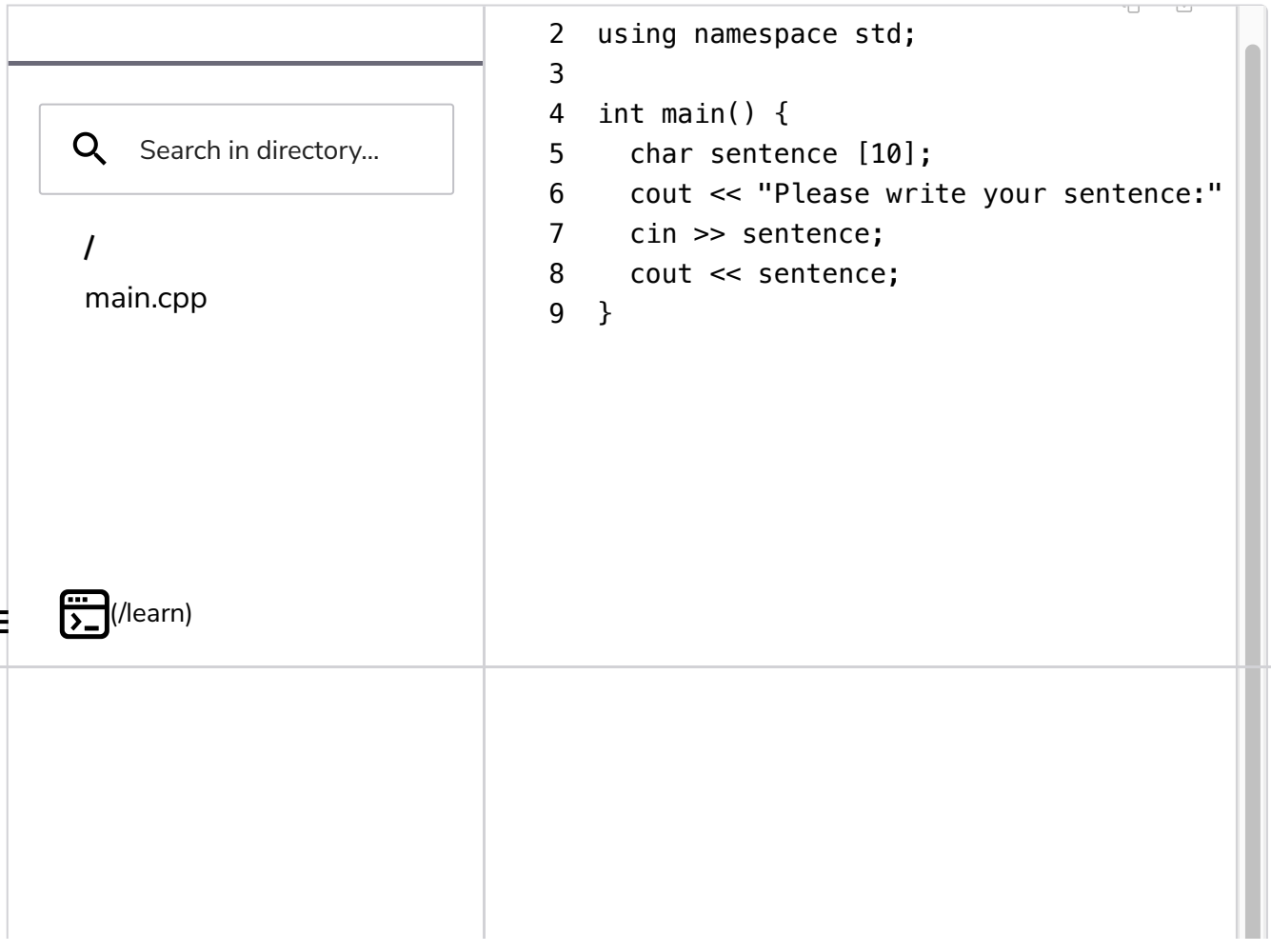
- We must know the size of an array or variable during the compile time.
- Memory is allocated and deallocated to the variables by the compiler.

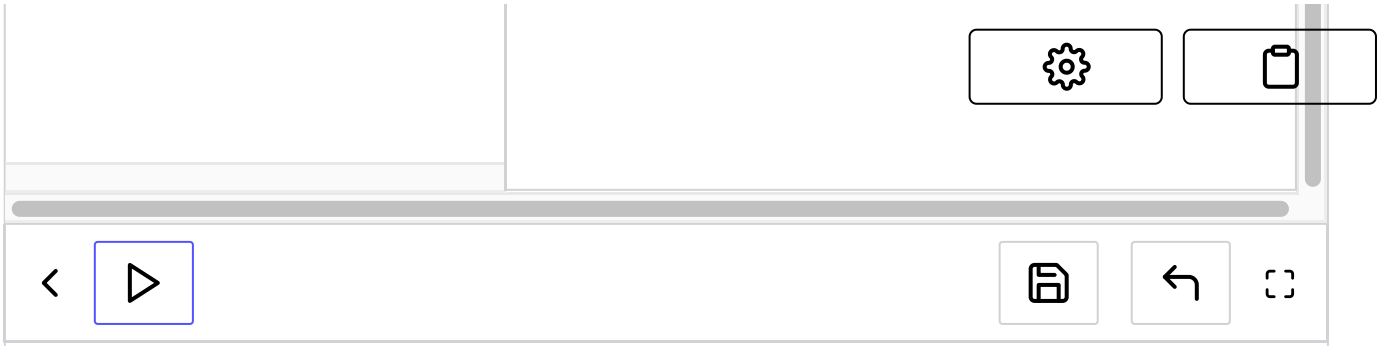
Dynamic allocation#

Sometimes you will encounter a situation where you don't know in advance how much memory is needed to store the data. Thus, dynamic allocation is needed.

Example program#

Suppose you want to input a sentence from a user, but you don't know the exact characters needed in an array.





Your app can be found at: https://8my9q8g5mklky.educative.run (https://8my9q8g5mklky.educative.run)

Explanation#

- If you initialize an array with fewer characters than the size of an input sentence, then you may get an error.
- If you initialize an array with more characters than the actual size of an input sentence, then the unused memory is wasted.

Here, dynamic allocation comes in.

Dynamic allocation#

In dynamic allocation:

- We can get as much memory as we want during the program execution;
- Memory is allocated and deallocated by the programmer during the run-time.

Let's get into the details of the allocation of dynamic memory in C++.