C++ Pointers

Creating Pointers

You learned from the previous chapter, that we can get the **memory address** of a variable by using the & operator:

Example

```cpp
string food = "Pizza"; // A food variable of type string

cout << food;  // Outputs the value of food (Pizza)
cout << &food; // Outputs the memory address of food (0x6dfed4)
```

A **pointer** however, is a variable that **stores the memory address as its value**.

A pointer variable points to a data type (like int or string) of the same type, and is created with the * operator. The address of the variable you're working with is assigned to the pointer:

Example

```cpp
string food = "Pizza";  // A food variable of type string
string* ptr = &food;    // A pointer variable, with the name ptr, that stores the address of food

// Output the value of food (Pizza)
cout << food << "\n";

// Output the memory address of food (0x6dfed4)
cout << &food << "\n";

// Output the memory address of food with the pointer (0x6dfed4)
cout << ptr << "\n";
```

Example explained

Create a pointer variable with the name `ptr`, that **points to** a `string` variable, by using the asterisk sign `*` (`string* ptr`). Note that the type of the pointer has to match the type of the variable you're working with.

Use the `&` operator to store the memory address of the variable called `food`, and assign it to the pointer.

Now, `ptr` holds the value of `food`'s memory address.