Returning std::optional

Let's learn the different ways to return an optional.

If you return an optional from a function, then it's very convenient to return just `std::nullopt` or the computed value.

```
std::optional<std::string> TryParse(Input input) {
    if (input.valid())
        return input.asString();

    return std::nullopt;
}

// use:
auto oStr = TryParse(Input{...});
```

In the above example you can see that the function returns `std::string` computed from `input.asString()` and it's wrapped in optional. If the value is unavailable, then you can return `std::nullopt`.

> Due to mandatory copy elision the optional object - `oStr` will be created at the caller site

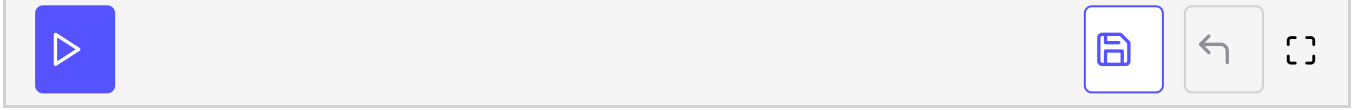
Alternatively, you can also try with non-standardised Named Returned Value Optimisation. This happens when you create an object at the beginning of a function and then return it.

```
std::optional<std::string> TryParseNrvo(Input input) {
    std::optional<std::string> oOut; // empty

    if (input.valid())
        oOut = input.asString();

    return oOut;
}

// use:
auto oStr = TryParseNrvo(Input{...});
```

In the second example, the `oStr` object should also be created at the caller side.

Play with the sample, which includes extra logging to check the addresses of the optional variable.

```
#include <iostream>
#include <string>
#include <optional>

std::optional<std::string> TryParse(std::string input) {
    if (!input.empty())
        return input;

    return std::nullopt;
}

std::optional<std::string> TryParseNrvo(std::string input) {
    std::optional<std::string> oOut; // empty

    std::cout << &oOut << '\n';

    if (!input.empty())
        oOut = input;

    return oOut;
}

int main()
{
    auto oOut = TryParse("Hello");
    std::cout << &oOut << '\n';

    auto oOutNrvo = TryParseNrvo("Hello");
    std::cout << &oOutNrvo << '\n';
}
```



Another thing to note is that returning an optional inside `{}` braces isn't always a good idea. We'll learn shortly why that is the case.