Notes #8

Functions

Revisited!

Chapter 9

CMPT 130

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Topics

1) Does modifying a parameter inside a function affect the calling code?
2) Where can we put functions in our code?

Pass-by-value

Pass by value

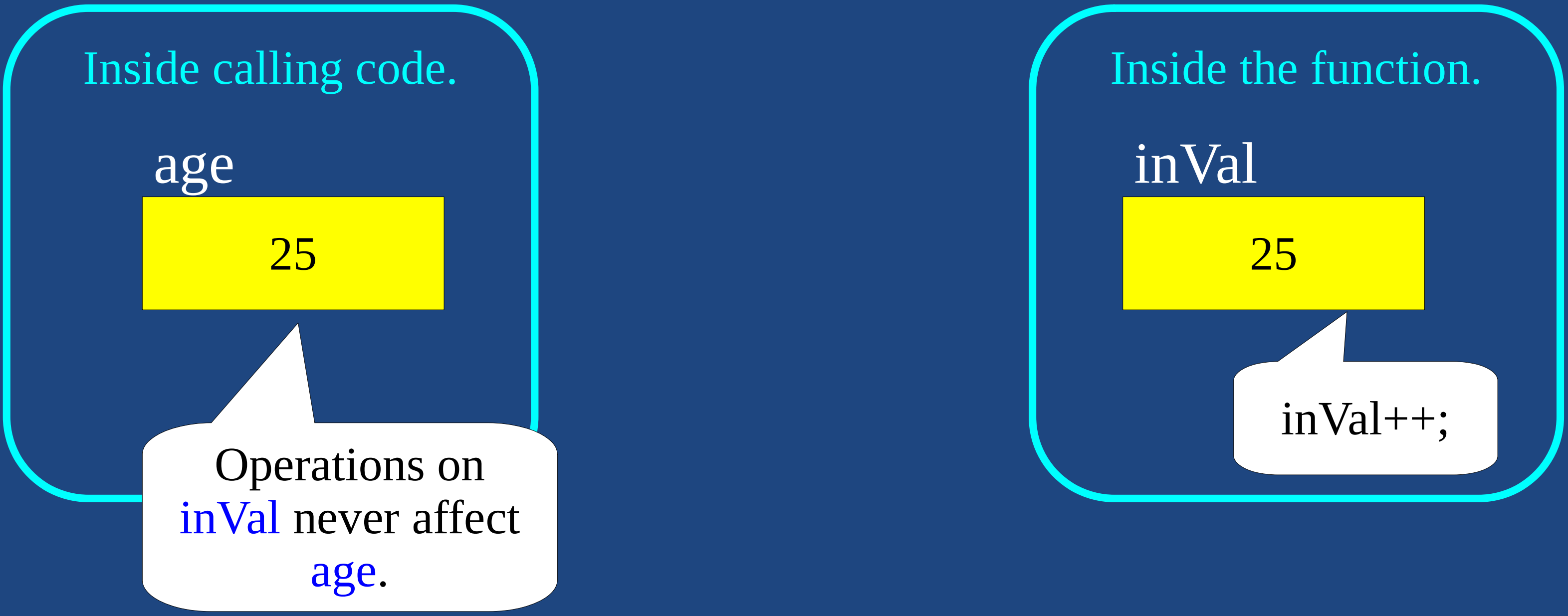
- Only the value of an argument is passed into the function's parameter.

```
void growOlder(int inVal) {
	inVal++;
}

int main () {
	int age = 25;
	growOlder(age);
	cout << "Age is: " << age << endl;
	return 0;
}
```

- Changing the parameter's value in a function...

Explaining pass by value

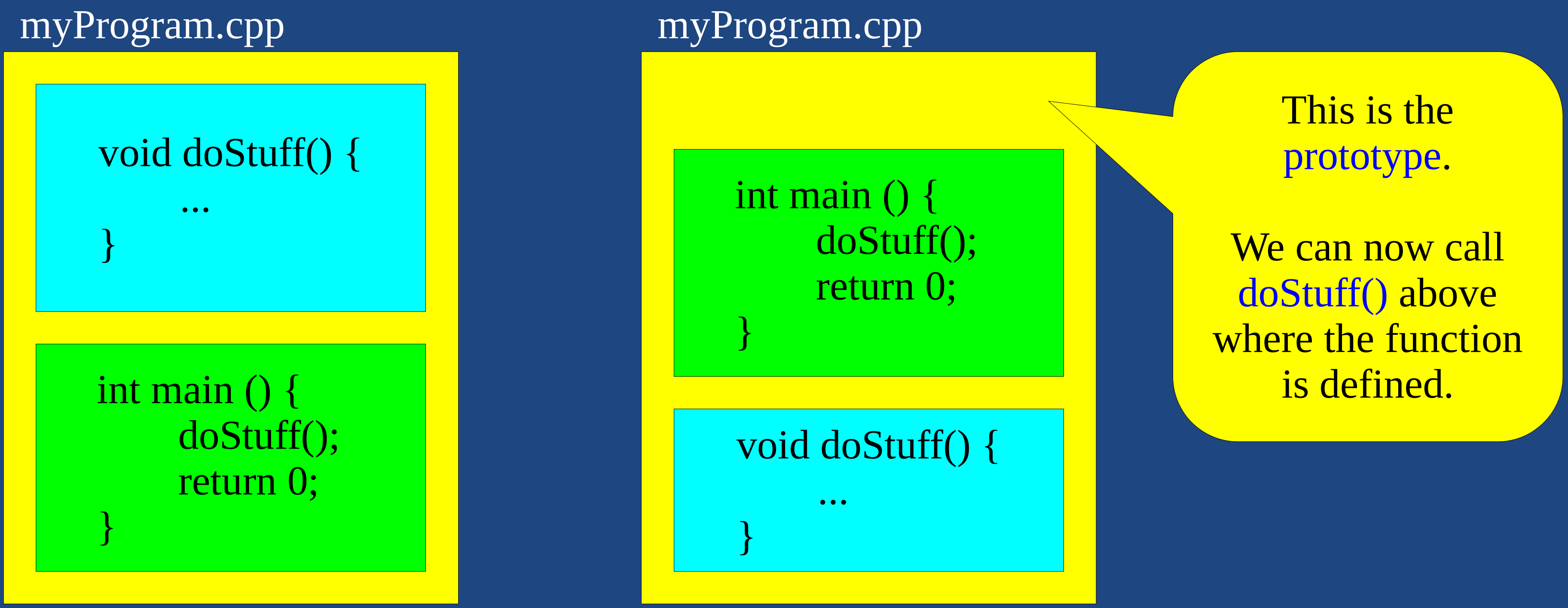
- Pass by value:
  function's parameter is set to a copy of argument.
  - Changing the copy does not affect the original.



Prototypes

Prototypes

- Must know some things about a function to call it.
  - Function prototypes eliminates the need to put..



myProgram.cpp

```
void doStuff() {
        ...
}

int main () {
        doStuff();
        return 0;
}
```

myProgram.cpp

```
int main () {
        doStuff();
        return 0;
}

void doStuff() {
        ...
}
```

This is the prototype.

We can now call doStuff() above where the function is defined.

Needed information to call

- To call a function we need to know:
  -
  - number, type, and order of parameters,
  - return type of function.
- Function prototype idea:
  - Rather than defining the whole function at the top, tell the compile at the top of the .cpp file..

Using prototypes

- Function prototype is similar to a function definition except:
  - (place a ';' instead of {...})

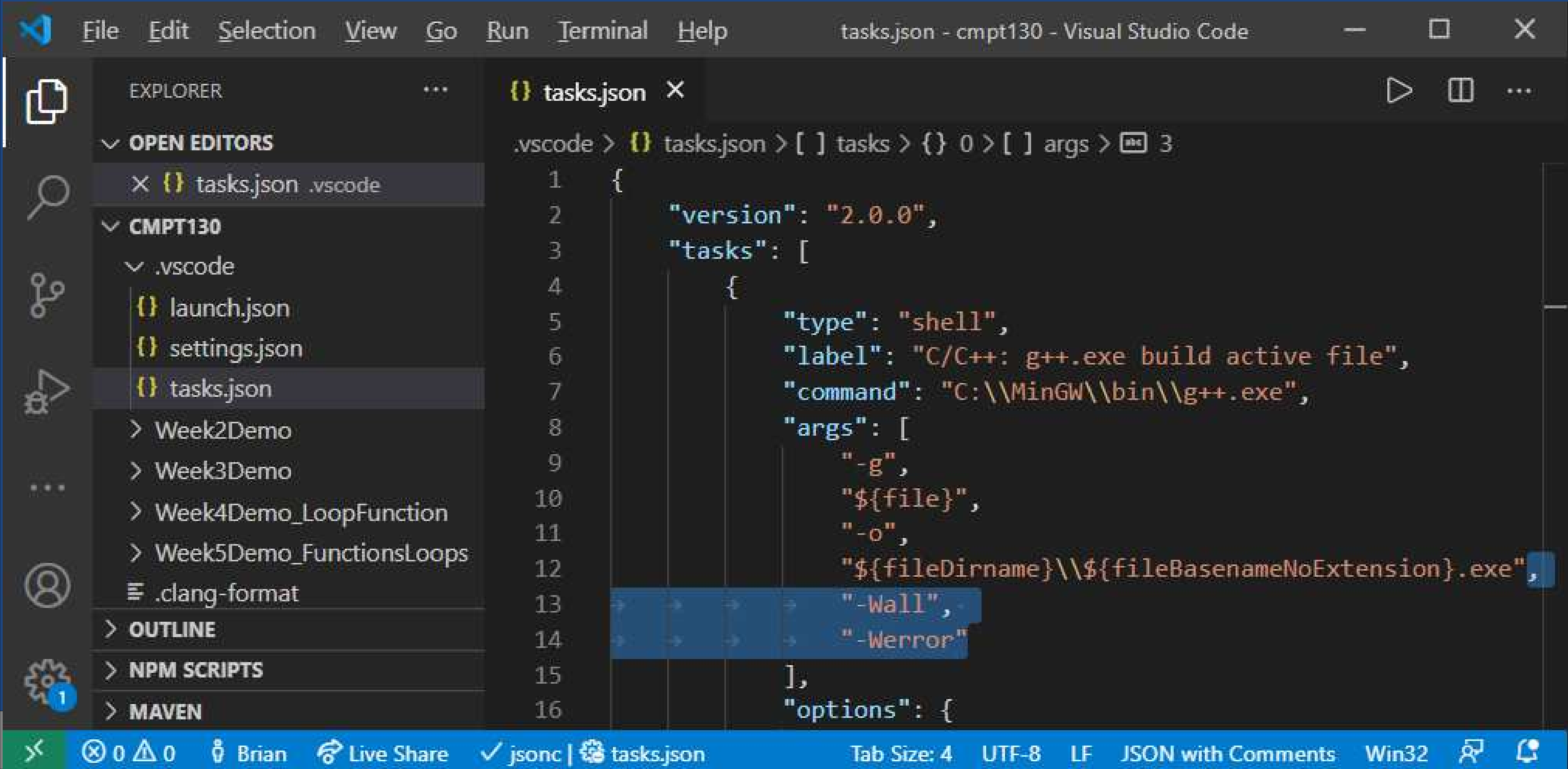
```
// Prototype
void printSum(int x, int y);

int main ()
{
      printSum(1,2);
      return 0;
}

// Display the sum of the two values.
void printSum(int x, int y)
{
      cout << x << " + " << y << " = " << (x + y) << endl;
}
```

Compiler Warnings

- The compiler generates:
  - Errors if it cannot create a program.
  - Warnings if it finds a likely mistake.
    Example: forgetting () on a function call.
- Warnings should not be ignored.
  - They can help you find logic errors!
  - Turn on.. : -Wall
  - Make warnings.. : -Werror
    Good so that you can't just run the program and miss critical warnings to help fix your code.

Warnings in VS Code

– In task.json add to compiler's "args":
, "-Wall", "-Werror"



```
{
    "version": "2.0.0",
    "tasks": [
        {
            "type": "shell",
            "label": "C/C++: g++.exe build active file",
            "command": "C:\\MinGW\\bin\\g++.exe",
            "args": [
                "-g",
                "${file}",
                "-o",
                "${fileDirname}\\${fileBasenameNoExtension}.exe",
                "-Wall",
                "-Werror"
            ],
            "options": {
```

Summary

- Pass-by-value: pass in just a copy.
- Use prototypes to define function below a call to it.
- Heed the compiler’s warnings!