



4.1.1 Stack Frames

What is a Stack Frame?

A **stack frame** is a block of memory stored on the **call stack** whenever a **subroutine** is called.

It contains all the information the program needs while that subroutine is running and is removed from the stack when the subroutine finishes.

A stack frame stores:

- A return address
- Parameters
- Local variables
- Register values

Return Address

The **return address** tells the computer **where to continue execution** after the subroutine has finished.

Without it, the program would not know where to return.

Parameters

Parameters are values passed into a subroutine.

They are stored in the stack frame so the subroutine can use them.

Local Variables

Any variables created inside the subroutine are stored in its stack frame.

They only exist while the subroutine is running.

Register Values

This allows the calling function to continue exactly as it was before the subroutine call.

