

## Finding copy/paste lines

A useful detection of possible copy/paste error can require a lot of work, thus splitting it up into smaller parts and slowly build something usefull is a good idea.

As a starting point, the initial idea is to check every line of the program against the rest of the program, to see if it is identical, similar or not at all.

The LLVM framework provides two methods that can assist with this; `isIdenticalTo` and `isSimilarTo`. The first one checks if the instruction is 100% identical, where as the latter checks if the method call is the same. The `isSimilarTo` part would then have to be checked further in order to see if its a possible error. It's also the method we have to use in order for us to check for if a method has been pasted wrongly and should be identical to another instruction.

## Implementation

My initial version of the detection infrastructure is implemented with as a `FunctionPass` and thus can not check across functions. It could be ported to a `ModulePass` to support this.

As previously described, my implementation checks each line within a function against the rest of the function body and tests whether or two lines are identical, similar or not at all the same. If it's either of the two first possibilities, it's being output via `err()`.

Ive chosen to use a `FunctionPass` as I've based my initial implementation on the `SkeletonPass` and thought to start solve the problem at a function level before expanding to a whole file / project.

## Example file

```
#include <stdio.h>

int main( )
{
    printf("Hello World!\n");
    printf("Hello World!\n");
    if (1) {
        printf("Hello World 2!\n");
        printf("Hello World!\n");
    }
}
```

### **Example output for that file**

Identical method found. Possbile copy/paste

Original call: printf @ ../../test3.c:4, col 3

Possible paste error: printf @ ../../test3.c:5, col 3

Same operation found. Needs deeper check

Possible paste error: printf @ ../../test3.c:7, col 4

Possible paste error: printf @ ../../test3.c:8, col 4