



**Script** generated by TTT

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## Programming Languages

Multiple Inheritance

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## Excursion: Brief introduction to LLVM IR



Low Level Virtual Machine as reference semantics:

```
;(recursive) struct definitions
%struct.A = type { i32, %struct.B, i32(i32)* }
%struct.B = type { i64, [10 x [20 x i32]], i8 }

;allocation of objects
@a = alloca %struct.A
;adress adjustments for selection in structures:
%1 = getelementptr %struct.A* @a, i64 2
;load from memory
%2 = load i32(i32)* %1
;indirect call
%retval = call i32 (i32)* %2(i32 42)
```

Retrieve the memory layout of a compilation unit with:

```
clang -cc1 -x c++ -v -fdump-record-layouts -emit-llvm source.cpp
```

Retrieve the IR Code of a compilation unit with:

```
clang -O1 -S -emit-llvm source.cpp -o IR.llvm
```