Beyond Compilation

Awanish Pandey
Senior Engineer
QIPL

What is Compilation

Is the following is compilation?

- C file to binary
- CPP to binary
- Binary to C
- Hindi to English

So what is the meaning of compilation

Life of a C Program

What happens when we do "*[gcc/clang] a.c*"?

- Preprocessing
- Intermediate Code Generation
- Assembly
- Object File
- Binary

What is difference between object file and binary?

Let's dive into assembly

- Why we need allocframe?
- How do we pass arguments?
- How do we return?
- Importance of stack and frame pointer.
- What is variadic function?
- How printf is handled?

FP	Arg1
	Arg2
	var1
SP	var2

Object file

How to read a object file

- Header: *readelf -h a.out*
- Content: *objdump -D a.out*
- Specific Section: *objdump --section=.data a.out -s*
- Attribute: readelf -S a.o -W

Linker

Create object file by linking

- Multiple object files
- Dynamic libraries
- Static libraries

readelf -s b.o

Questions?