

Week 1 Demos

In the lecture demos, we explored some basic skills with GNU debugger and object dump utility in Linux. You should check the lecture demos at the end of lecture videos for how to perform the following tasks.

You should use the code on the lecture website to become comfortable with the following tasks.

Objectives

- Understand the two types of binary formats and how to generate them.
- Understand how to generate assembly and object code and executable code using `gcc`.
- Understand how to disassemble binary code using `gdb` and `objdump`.
- Become familiar with `gdb`.
- Understand the reason for linking and its impact on object code.

Tasks

- Generate object code with the `gcc -c` command.
- Generate an executable binary with `gcc`.
- Generate assembly code using the `gcc -S` command.
- Be able to disassemble a binary file and generate and inspect x86 assembly with the `objdump -d` command.
- Be able to run the executable with `gdb` and disassemble a specific function with the `disassemble function_name` command.
- Inspect the object code by compiling `mstore.c` and then link it with `main.c` and observe the sizes and contents of resulting object code and executable, respectively.
- Check the disassembly of `sum.c` and match the registers in assembly used by `gcc` to the C types in the source code.
- Using the `ls -l` command on Linux machine, observe the size of object code `mstore.o` and `prog` binary.