List of Topics

This list is meant as a guide and is not an exhaustive list of everything that could appear on the midterm. Any topics we covered in lecture or relevant to homework could be on the exam.

1. Static Linking
   (a) The stages of compilation - preprocessor, compiler, assembler, linker
   (b) relocatable object files - various sections
   (c) interpreting the output of `readelf` - symbol table
   (d) symbol resolution and relocation
2. Executables
   (a) loading, program header table, process memory image
   (b) shared libraries and dynamic linking
   (c) position independent code, global offset table
3. Process Management - fork, exec, waitpid
4. Unix I/O
   (a) file abstraction
   (b) file descriptors, descriptor table, file table, what happens on open()
   (c) redirection, dup2, pipelines
   (d) directories
5. Exceptional Control Flow
   (a) what is the kernel, how does it run
   (b) exceptions
   (c) system calls, traps, user mode vs kernel mode
6. Signals
7. Dynamic Memory Allocation
   (a) explicit vs implicit
   (b) malloc, free, sbrk
   (c) design considerations for explicit allocators
   (d) internal and external fragmentation
8. Virtual Memory - page hit/miss, address translation