Homework

Homeworks can be used to solidify your knowledge of the material in each of the chapters. Most homeworks are based on running little simulators, which mimic some aspect of an operating system. For example, a disk scheduling simulator could be useful in understanding how different disk scheduling algorithms work. Some homeworks are just short programming exercises, allowing you to explore how real systems work.

For the simulators, the basic idea is simple: each of the simulators below let you both generate problems and obtain solutions for an infinite number of problems. Different random seeds can usually be used to generate different problems; using the `-c` flag computes the answers for you (presumably after you have tried to compute them yourself!).

Note: All of these scripts are available individually here. Each single script is available as a gzip'd tar file; for example, type `tar xvzf HW-Scheduler.tgz` to unpack the `scheduler.py` script and an associated README.

Each simulator now has a README file that explains how to run the simulator. Previously, this material had been included in the chapters themselves, but that was making the book too long. Now, all that is left in the book are the questions you might want to answer with the simulator; the details on how to run the simulator are all in the README.

NEW: Video. Each simulation will soon have a short video with one of the authors introducing the basic concepts of how to use the simulator to generate homework problems. Exciting, because you have to read less! Not exciting, because you have to hear us speak.

A single tar file containing all scripts is also available; type

```
tar xvzf all.tgz
```

to unpack all the scripts once you've downloaded the tar file.

Virtualization

Topic of Interest	Chapter	Video	What To Do
Process Intro	PDF	Video	Run process-run.py
Process API	PDF	Video	Write some code
Direct Execution	PDF	Video	Write some code
Scheduling Basics	PDF	Video	Run scheduler.py
MLFQ Scheduling	PDF	Video	Run mlfq.py
Lottery Scheduling	PDF	Video	Run lottery.py
VM Intro	PDF	Video	Write some code
VM API	PDF	Video	Write some code
Relocation	PDF	Video	Run relocation.py
Segmentation	PDF	Video	Run segmentation.py
Free Space	PDF	Video	Run freespace.py
Paging	PDF	Video	Run paging-linear-translate.py
TLBs	PDF	Video	Write some code
Multi-level Paging	PDF	Video	Run paging-multilevel-translate.py
Paging Mechanism	PDF	Video	Run mem.c

Paging Policy	PDF	Video	Run paging-policy.py

Concurrency

Topic of Interest	Chapter	Video	What To Do
Threads (Intro)	PDF	Video	Run x86.py
Threads (API)	PDF	Video	Run main-*.c
Threads (Locks)	PDF	Video	Run x86.py
Threads (Locks Usage)	PDF	Video	Write some code
Threads (CVs)	PDF	Video	Run main-*.c
Threads (Bugs)	PDF	Video	Run vector-*.c

Persistence

Topic of Interest	Chapter	Video	What To Do
Disks	PDF	Video	Run disk.py
RAID	PDF	Video	Run raid.py
FS Intro	PDF	Video	Write some code
FS Implement	PDF	Video	Run vsfs.py
FFS	PDF	Video	Run ffs.py
AFS	PDF	Video	Run afs.py