

SECTION 1: INTRODUCTION TO SIMICS

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CS152 - Spring 2009

Familiarity survey

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- C
- Python
- gdb
- Unix/Linux/Solaris

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What are we doing in labs?

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- Giving you an environment to:
 - ▣ Run code on a variety of platforms
 - Not all of which are actually available to us
 - ▣ Benchmark and experiment
 - ▣ Change things about the hardware
 - Access to multiple abstraction layers
 - ▣ See how architectural mechanisms work in practice on real software

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What is Simics?

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- Efficient, instrumented, system level instruction set simulator
 - ▣ Run as fast, or faster than, target machine
 - ▣ Gather detailed information at run time
 - ▣ Model target at level at which OS acts
 - ▣ ISA-aware, simulates each instruction
 - ▣ Runs unmodified OSes and workloads

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Why are we using Simics?

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- Scripting capabilities
- Academic licensing
- Can run real software, quickly
- Intro to functional/timing simulators
- Outside relevance
 - ▣ Program analysis, computer architecture research, and kernel debugging

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Terminology

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- Host machine
 - ▣ Machine/OS on which Simics is running
- Target machine
 - ▣ Machine/OS which Simics is simulating
- Neither the architecture nor the OS of either machine need be the same
- Steps vs. cycles vs. instructions

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Environment

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- Similar to gdb, command line interface
- Simics CLI has built in scripting
 - ▣ Can also write scripts in Python
- Checkpointing
- Different modes of execution
 - ▣ Fast, stalls, MAI
 - ▣ Speed vs. accuracy

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Major Components

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- Functional
 - ▣ Modules
 - Written in C, Python, DML
 - Devices, components, boards, machines...
 - ▣ Attached by Simics or Python scripts
- Timing
 - ▣ Memory, caches, Simics MAI
 - ▣ Declare or calculate delay of modules

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Demo!

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Gritty details

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- Might compile code in separate environment
 - ▣ E.g. compile on Solaris/SPARC, run on Linux
- Need X11 at client machine
 - ▣ <http://inst.eecs.berkeley.edu/connecting.html#xwindows>
- Instructional servers
 - ▣ <http://inst.eecs.berkeley.edu/cgi-bin/clients.cgi?choice=servers>

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Administrivia

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- Still in 320 Soda, but we are trying to get a larger room
- No section tomorrow
- Newsgroup
 - `ucb.class.cs152`
 - **`news.csua.berkeley.edu` (changed)**
 - Remember posts from Google groups aren't visible outside Google
 - Can use EECS web UI:
 - <http://inst.eecs.berkeley.edu/webnews>

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Office Hours?

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- Monday 10:30 - 11:30
- Monday 4:00 – 5:00

- Wednesday 1:00-2:00
- Wednesday 4:00-5:00

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