

COS 116
The Computational Universe
Study Guide for Final

The final will be a 3-hour, in class exam. It will be a closed-book exam. It will contain questions similar to what you saw on the homeworks and the lab handouts. There will be two types of questions: (a) those that test a specific skill, and (b) those that test knowledge.

Questions of type (b)

These will tend to be short and will test conceptual understanding of basic concepts covered in the lecture, labs, or readings. Simple examples: “What is the difference between a virus and worm?”, “What is the difference between the WWW and the internet?”, “Explain in a couple of lines how the current internet deals with congestion issues.”, “What is virtual memory?”

What is a *basic concept*? Some clues: (i) It was in the title of some lecture or lab, or constituted a good part of a lecture/lab. (ii) It was in some assigned reading that was discussed in class.

In other words, in order to answer questions of type (b), it will generally suffice to if have attended the relevant lecture or lab. The exam will contain many different short questions of this type, so that you will not be unduly penalized for having missed an occasional lecture or reading.

Questions of type (a)

These will test a specific skill you should have learnt during the semester. Again, problems from homeworks and labs are good examples. Here is a list of specific skills you should have. (If we think of more examples we will post an updated version during reading period.)

1. Understand/write pseudocode (including for the Scribbler). Minor syntax errors will not be penalized unless they change the meaning of the pseudocode.
2. Understand Turing-Post programs.
3. Translate between different ways of expressing Boolean expressions.
 - (a) English description (“Matt, Sue, Party, etc.”)
 - (b) Truth table.
 - (c) Boolean expressions
 - (d) Boolean circuit (including breadboard realization).

Please Turn Over

4. Understand sequential circuits and notion of timing diagram.
5. Translate between various ways of describing clocked circuits and/or Finite State Machines:
 - (a) English description.
 - (b) Sequential circuit
 - (c) Transition diagram
6. Do simple calculations related to topics introduced in class, such as exponential growth, caching, multitasking, Moore's law, virus propagation, digital sound.