This is a list of topics that may be included in Exam 3. This list is not exhaustive and is only intended to help you review.

**Instructions:**

1. You are allowed to bring two index cards of notes (3in x 5in)

2. This is a closed book exam. Do not confer with any other person. Do not use any computer.

3. Show your work. Partial credit will be given. Grading will be based on correctness, clarity and neatness.

4. I suggest that you read the whole exam before beginning to work any problem. Budget your time wisely.

**Preparing for the exam:**

1. *Study examples, quizzes, and activities.* Make sure you understand every examples, quizzes, and in-class activities.

2. *Read Python programs.* Try the programs from the lectures slides. For each program, go through each instruction and find the expected output. Next, run the same program on your computer and compare the output to your expected output. If there is a match, then you understand the program.

3. *Writing Python programs.* Pick some of the programs that we discussed during the lecture. Write a different solution for the problem. Remember, there is no one way to solve a problem.

4. *Study the lab problems.* Make sure you understand the lab problems and your solutions to the problem.
1 Topics

1. Randomness

2. Functions
   a) Built-in functions, methods, and user-defined functions
   b) Variables scope: local vs global variables

3. Simulation
   a) Probability of events

4. Files
   a) Files modes
   b) Files I/O methods
   c) Exception handling

5. Binary numbers
   a) Decimal to binary conversion
   b) Binary to decimal conversion
   c) Conversion using Python functions
   d) Bitwise operations

6. Visualization
   a) Plotting charts

7. Introduction to Object Oriented Programming
   a) Object-Oriented Programming: principles

8. Algorithms and Recursion