

Midterm 1 Review Study Guidelines

Midterm is Wednesday, Feb. 27

1. Study the programs you have written and/or the solutions that have been handed out. Could you write them from scratch?
2. Study the worksheets we have completed in class. Can you answer the questions?
3. Study with another student or students. Figuring out what is important to know for a test is difficult, and the help of classmates is vital.
4. Talk about the terminology and concepts. Write out answers. Write out code on paper. Have your study partners critique your answers and code.
5. Come in to your teacher's office and ask questions. Your teacher knows what is on the test, knows the answers, and is pretty good at teaching you stuff. Sometimes 1/2 hour with an instructor can be worth hours of studying on your own. Take advantage of your resources!
6. Read your on-line text book through chapter 9. There will be up to ten percent of the test on topics in these chapters (and not necessarily discussed in class)

Lists

How is an empty list created?

How do you add elements to an empty list?

What's wrong with the following code:

```
list=[]  
list[0]=0
```

What happens with the following code:

```
list1=list2
```

How do you copy a list?

What's the result of the following code:

```
list1=[1,2,3]
list2=list1
list2[1]=9
print list1
print list2
```

Write a function that accepts a list of integers as a parameter and returns the total of all elements.

Write a function that initializes a list so that each element is equal to its index. The function should allow the caller to specify how big the resulting list should be. Write this function in two ways: with a return value and without.

Write a function that doubles the values in a list.

How do you represent a matrix in Python code? What kind of loop is generally associated with matrix manipulation code? Write a function that totals the elements of a matrix.

Functions

What is a function signature?

What is a local variable?

What is a global variable?

What is a formal parameter? What is an actual parameter?

What is Pass-by-Value?

What is Pass-by-Reference?

In Python, which type of parameters are sent "by-value"? Which are sent "by reference"?

What is the value of x and y after the following code is executed:

```
def f(x):  
    x=x+1  
  
y=5  
x=8  
f(y)  
f(x)
```

What are the different ways a function can affect things?

Why is it considered poor programming practice to refer directly to global variables in a function? What is the better alternative to structure a program?

Bits and Bytes

Consider the following string: `s = 'cat'` What bits are actually stored in the memory cell for the string s?

Consider the following integer: `x = 45`. What bits are actually stored at the memory cell for x?

What does the term 'byte addressable' mean?

What is the largest integer than can be stored in n bits?

What is machine language? Assembly language? What does a compiler do?

Tracing a Program

Where does execution of a program begin?

When do you create a memory box?

When a function is called, what happens?

When a function ends, what happens?

Can you trace your mastermind program?

Conditions

if, elif, else

==, !=, <, >, <=, >=

and, or, not