

Exam 1 Review Practice Problems

1) Write a program that prompts the user for two integers and then prints out all the numbers between them, inclusive. Make sure to have an exception case for malformed input.

2) What type of data structure is the stack?

3a) Use while loops to print the multiplication table from lab1.

3b) Use for loops to print the multiplication table from lab1.

4a) Write a function that prompts the user for a string and a character and tests to see if that character exists in the string. Return True or False.

4b) Write a function that calculates the volume of a cylinder based on the radius and the height. Allow the radius and height to be floats. Test this with radius = 2, height = 4. Your answer should be 16π , or about 50.265

5) Write a basic calculator

- Your calculator should have a running total
- A command to clear the total
- Be able to do addition, subtraction, multiplication, and float division
- Raise numbers to powers
- Work with both positives and negatives, floats and ints
- Use Try/Except to handle errors such as dividing by 0 and malformed input.

For the following questions, trace the code in your head before testing it on the computer to see if you were right.

6) What would the following code do if I inputted the following sequence term by term:

-1, 2, 5, "beans", 6

```
def addNumbers():
    sum = 0
    while (True):
        number = raw_input("number> ")

        try:
            sum = sum + int(number)
        except:
            break

    return sum

print addNumbers()
```

How many 'ticks' and 'tocks' are printed before 'BOOM!!!'???

```
def loopy():
    x = 10
    flag = True
    while (x != 0):
        x %= 7
        print "tick"
        if (x > 1):
            while (x != 7):
                print "tock"
                x += 1
                x %= 6
        else:
            if flag:
                print "tick" * x
                flag = False
            else:
                print "tock"
                x = 0
    print "BOOM!!!"

loopy()
```

What values of x and y will ensure we dont go "BOOM!"???

```
def boom(x, y):
    if (x < y < 0):
        print "BOOM!"
    elif (x + y != 8):
        print "BOOM!"
    elif ((x / y) != ((x % y) - 1)):
        print "BOOM!"
    else:
        print "Nice Job!"
```

Things to know for the exam:

- Everything we've gone over in lecture
 - `#!/usr/bin/python`
 - working with ints/floats/strings
 - How to type-cast variables
 - for/while loops
 - ifs, elifs, elses
 - know how to define and call a function
 - know how the stack works
 - making exceptions
 - basic recursion (see pow example from class)
- It is always good to go through lecture notes and redo assignments before the test
- Try practicing writing code out by hand as you have to on the test, it is a different experience from typing it on the computer
- Check Your Work! I cannot stress this enough, especially on written tests!