About Exam 1

*There are three **types of questions** I can ask. There will be at least one question of each type.*

Type I.   Here is some code; what does it do? Typically the program will print something and I'll what to know what it prints.

Type II. Here is some buggy code and an error message (or some incorrect output).   Explain what is wrong and how to fix it.

Type III. Write a function (or a program) to do X.

Topics:

A. Basic types: integers, booleans and strings
B. Variables and variable names
C. Basic statements
- Assignment statements
- input( ) statements
- IF-statements
- WHILE-loops
- FOR-loops

D. Functions:
- Function definitions
- Arguments and Parameters
- Function calls
- Functions returning values
- NOTHING ON RECURSION

E. Other
- Random numbers

By far the most important item on this list is FUNCTIONS.   LOOPS take second and third places.

Here are some typical questions:

1. The following program is supposed to ask the user for a number and say if it is prime. Unfortunately it says that every odd number is prime. How can we fix this?

```
def isPrime(num):
        for x in range(2, num):
                if num % x = = 0:
                        return False
                else
                        return True

def main():
        x = input( "Gimme a number: " )
        if isPrime(x):
                print("%d is prime." %x)
        main()
```

2. What is wrong with the following program? When I run it I get an error message

```
print "The average is %.2f" % average
TypeError: float argument required, not NoneType
```

Explain (1 sentence is enough) what this error message means and say how to fix the problem.

```
def Average( L ):
    sum = 0.0
    for x in L:
        sum = sum + x
    average = sum/len(L)

def main():
    average = Average( [2, 6, 4, 1, 7] )
    print("The average is %.2f" % average )

    main()
```

3. What will this program print?

```
def Test( s ):
    # Variable s will be a string
    for x in s:
        if x == "b":
            return True
    return False

def Foobar( x ):
    # Variable x will be a strings
    if Test(x):
        print( "%s: yep" %x )
    else:
        print( "%s: nope" %x )

def main():
    Foobar["Marvin Krislov")
    Foobar( "Oberlin College" )
    Foobar( "B Geitz" )

main()
```

4. Write a program that asks the user for a number n, then prints n random numbers between 1 and 6 (like rolls of a dice) and ends by printing their sum. Here is a typical run:

How many rolls? 3
You rolled 5
You rolled 3
You rolled 5
The sum of your rolls is 13

5. Write a function **fewerVowels(s, t)** that takes two strings s and t and returns the one with fewer vowels. If s and t have the same number of vowels you can return either. For example, FewerVowels("bob", "marvin") returns "bob". You can take A, E, I, O, U as the only vowels, but do consider both upper – and lower- cases.

6. We could say that a list of numbers is *increasing* if each element is larger than the previous one. The list [1, 3, 4, 10] is increasing but the list [4, 2, 5] is not. Write a **program** that reads a list of numbers one at a time and prints "yep" if it is increasing and "nope" if it isn't.