

**Exam 2**

1) Write the output of the following programs. (10 points each)

a.

```
a=[0,1]
for i in range(1,5):
    a=a+[a[i]+a[i-1]]
print a
```

b.

```
a=[]
for i in range(4):
    b=[]
    for x in range(3):
        b=b+[i+2*x]
    a=a+[b]
print a
```

c.

```
a=[1,3,4,2,8]
b=[]
for i in range(len(a)-1):
    b=b+[a[i+1]-a[i]]
print b
```

**2)** Write the output of the following programs. (10 points each)

- a. Write a program that prints the sum of 100 random number between 0 and 1.
- b. Write a program that prints the average value of an array "a".
- c. Write a program that builds a 10 by 10 checkerboard array of ones and zeros.

3) Draw the output of the following program. (20 points)

```
from graphics import *

win=GraphWin()
win.setCoords(-10,-10,10,10)

for i in range(1,6):
    circ=Circle(Point(i,i),(2**0.5) * i)
    rec=Rectangle(Point(-i,-i),Point(0,0))
    t = Text(Point(-5,9-i), "yo")
    circ.draw(win)
    rec.draw(win)
    t.draw(win)
```

4) Perform the following conversions. (10 points each)

- a. Convert the Base5 number 432 to Base10.
- b. Convert the binary number 1010001 to Base10.
- c. Convert the Base10 number 532 to Base5.