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
```

[0,1,1,2,3,5]

b.

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

[[0,2,4],[1,3,5],[2,4,6],[3,5,7]]

c.

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

[2,1,-2,6]

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.

```
import random

s=0

for i in range(100):

    s=s+random.uniform(0,1)

print s
```

b. Write a program that prints the average value of an array "a".

```
a=[n,n+1,n+2,n+3,n+4,n+5......]

print sum(a)/len(a)
```

```
    OR
```

```
a=[n,n+1,n+2,n+3,n+4,n+5......]

s=0

for i in range(len(a)):

    s=s+a[i]

print float(s)/len(a)
```

c. Write a program that builds a 10 by 10 checkerboard array of ones and zeros.

```
import random

xx=[]

for i in range(10):

    r=xx+[range(10)]


r=[]

for i in range(10):

    r=r+[range(10)]



b=range(10)

t=3.0
```

```
for j in range(10):

    for i in range(10):

        if random.uniform(0,10)<t:

            r[i][j]=1

        else:

            r[i][j]=0


print r
```

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)
```