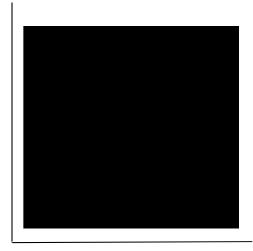
Please fill in your Student Number and Name.					
Student Number	:				



# University of Cape Town ~ Department of Computer Science Computer Science 1018F ~ 2008

## Test 1

Question	Max	Mark	Internal	External
1	8			
2	4			
3	18			
TOTAL	30			

Marks: 30

Time : 40 minutes

#### **Instructions:**

a) Answer all questions.

b) Write your answers in the space provided.

c) Show all calculations where applicable.

## Question 1 [8]

a)	Python is said to have strong and dynamic typing. What does this mean in practice?				
b)	In what fundamental way does a tuple differ from a list?	[2]			
c)	Write a Python statement that will print out <i>Hello World!</i>	[1]			
d)	Why is whitespace considered significant in the Python programming language?	[2]			

### Question 2 [4]

def dosomething():

Consider the following program and answer the questions that follow.

a = raw\_input()
ai = int(a)
b = raw\_input()
bi = int(b)
c = raw\_input()
ci = int(c)

x = (ai+bi+ci)/3;
print x

a) What does this program do? [2]
b) What is the output if the input is the numbers 3, 5 and 5? [1]

c) How would you fix the calculation of the variable x so that the answer is not rounded off?[1]

#### Question 3 [18]

Assume that an image composed of pixels in the range 0 (black) to 255 (white) is represented as a list of lists of integers, with each sublist representing a row of pixels. a) Show how you would allocate an image with the above format to the variable img. The image has a 3x3 resolution and contains the following pixel data: [3] 255 0 255 255 255 255 0 0 b) Write a function adjust(img, shift) that will add the integer shift to the pixels of the image img and return the results as a new image. Your function should have a doc string and use for loops [7] c) Add a check to make sure that shifted pixel values do not go outside the bounds [0, 255]. [4]

d) Now rewrite the function Adjust (in part (b)) so that it uses list comprehension. Do not worry

[4]

about including a doc string or the bounds check this time.
