Please fill in your Student Number and Name.

Student Number : _____

Name:

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Student Number:

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University of Cape Town ~ Department of Computer Science

Computer Science 1015F ~ 2011

Supplementary Class Test 2

Solutions *

Question	Max	Internal	External
1	22		
2	8		
TOTAL	**30**		

Marks : 30

Time : 40 minutes

Instructions:

a) Answer all questions.

b) Write your answers in pen in the spaces provided.

c) Show all calculations where applicable.

Question 1 [22]

Examine the module, **test2B.py**, that is listed below:

```
# test2B.py
def surprise(a,b):
     i=a+1
     while(i<b):
          print(i*i,end=' ')
          i=i+1
     print()

def secret(a,b,c):
   if(a<b):
        if(b<c):
             return b
        elif(a<c):
             return c
        else:
             return a
   elif(a<c):
        return a
   elif(b<c):
        return c
   else: return b

def mystery(a,b):
     print(a)
     print(b)
     while b > 0:
        for j in a:
            print(j*b,end='')
        print()
        b=b-1
     c = b or "Hello"
     print(c)

def enigma():
     x=eval(input("type in a number:"))
     tmp=x
     while (True):
          x=input("type in a number, nothing to quit:")
          if not x: break
          x=eval(x)
          if x>tmp: tmp =x
     print(tmp)
a,b,c=1,2,3
print(a)
a=secret(a,b,c)
print(a)
b=secret("bat", "man","can")
print(b)
mystery(b,a)
```

(a) **From the module** `test2Bpy,` give an example of:

i. a logical operator [1]

not

ii. a parameter [1]

a or b

iii. a function that returns a value [1]

secret

iv. a sentinel loop [1]

the one in enigma - while(True)

(b) The `surprise` function uses an indefinite ('while') loop. Rewrite this function so that it produces exactly the same output, but now uses an definite ('for') loop. [4]

```
def surprise(a,b):
```

for i in range(a+1,b): #[2 marks, only 1 if range(a,b)]

*print(i*i,end=' ') [1]*

print() [1]

(c) Now rewrite the surprise function again so that it will print "surprise" in an infinite loop. [2]

```
def surprise(a,b):
```

while(True):

print("surprise!") #or any valid infinite loop [2]

(d) Write down the **exact output** of the `test2B.py` module when it is run in the Python interpreter (i.e. when you press "Run" in the Wing IDE). [8]

1

2

can

can

2

ccaann

can

Hello

[1 mark for each line]

(e) Write down a clear, concise description of what the `secret` function does. [2]

The secret function returns [0.5] the median of 3 numbers [1] passed as parameters[0.5]

(f) Now write down a clear, concise description of what the `enigma` function does. [2]

Prints out the maximum of a list of numbers typed in by the users, terminated by the empty string.

Question 2 [8]

Answer the following questions based on the code below that replaces one word with another in a list.

```
def search (find, replace):
   the_list = [ 'i', 'hate', 'computer', 'science' ]
   position = len(the_list)
   while position>=0:
      if the_list[position] == find:
         the_list[position] = replace
      position = position + 1
```

(a) What is a **list/array**? [1]

ordered/linear sequence of values associated with a single variable [1]

(b) Provide a minimal set of test values to support **path testing** of this function. [1]

any string contained in the list for find – any string for replace (there must be 2 values) [1]

(c) If we use an exhaustive testing method, we will find that there are 2 errors in this program. Explain what they are; whether each is a syntax error or logic error; and how to fix each error. [6]

position starts at len(list) instead of len(the_list)-1 [1], logic error [1], make position=len(the_list)-1 in line 3 [1]

position is incremented instead of decremented [1]; logic error [1]; change + to - [1]