University of Cape Town Department of Computer Science

Computer Science CSC1010H

Class Test 2

Marks: 35

Wednesday, 20 August 2014

• Approximate marks per question are

Internal Examiner:			External Examiner:				
					and Total inal Mark		
Total			Total				
4	7						
3	6						
2	7			6	6		
1	5			5	4		
Question	Marks	Internal	External	Question	Marks	Internal	External
Mark Allocation							
This paper consists of 6 questions and 6 pages (including this cover page).							
STUDENT NO:		GM&MNOW COURSE CODE:			CSC 1010H		
NAME:	Gumed						ML
	Surname						Initials
Time: 40 1	minutes			• The	use of calcu	lators is per	rmitted
				shown in brackets			

Question 1. [5 marks]

Consider the following problem. Answer it appropriately.

The Petersens have recently moved to a new town and are arranging a surprise birthday party for their son Andre, and have invited three families from the neighbourhood, the Smiths, the Januarys and the Hectors. They plan to make up party packets for the kids to take home after the party, blue for boys and pink for girls.

Being super organised, Mrs Petersen with the help of Mr Petersen wants to determine how many of each colour party packet she needs to buy, and also how many of each colour she needs to put aside for each family.

They sit down and come up with the following information. Mrs Petersen remembers that the Hectors have a "pigeon pair", i.e. a boy and a girl. Mr Petersen recalls that the Januarys only have a set of identical twin boys. Mrs Petersen notes that she's only ever noticed two girls from these local families to come over to play. Mr Petersen notes that the Smiths have three children, since the family fits nicely into their family sedan when they go out.

You happen to be visiting the Petersens at this point, and want to impress them with the problem solving skills you've learnt at university. Using the information they've provided, determine how many of each colour party packet they need to buy and how many of each colour they need to allocate to each family and what the total number of party packets are.

Use a diagram to show how you solve the problem.							
(n i	Wanuarys	e) Heckons	·			
boys (a).	2	2	*	19=2			
Gainle Ly)	(common of the common of the c	O	1	2			
-				Simth = 3			
				Hector = 2			
				Jan = 7			
ey = a + b + c							
2 = q + 0 + 1 $Smith = x + y = 3$							
= 19/1/+ 2/boys=3							
Similths have one girl & 2loops X=5							
The Potersons have to buy 7 party packets, 5 blee and							
2 pink. I pink & I blue packets for the Smiths I the packets							
for the Januarys and I blue and I pink for the Hectors.							
\checkmark							

Question 2. [7 marks]

Answer the following questions:

a) When using debugging features in an IDE, what should the user typically do once execution has reached the breakpoint?	
Step Over your code, try to find (locate,	
Step over your cods, try to find locate, the error and devise a solution having a	_
trace of your variables and once the error is detected.	- [2]
b) When a new module has been defined, how do you ensure that it is accessible and can imported into a program with no problems, i.e. "import newmodule" works?	be
It must be saved in the python Lib folder or in the same folder as the programme.	[1]
same folder as the programme.	
c) Explain what happens in memory when Python makes successive recursive function can the Memory of	ılls.
The Memory stacks/saves expires of the function during recursive evokes/ealls.	- [1]
Indicate whether the following statements are True or False.	
d) The accepted Python coding convention for module names is long descriptive names is uppercase.	1
False	[1]
e) Curly brackets {} are used to enclose parameters to a function.	
False	[1]
f) The print() function can be used to write to a file.	
True	[1]

Question 3. [6 marks]

Write a Python function called draw_line() which draws a horizontal line of characters. The draw_line() function should take two parameters, with the first being the size of the line (i.e. the number of characters) and the second parameter being the character with which to draw the line. This character parameter should have a default value of an asterisk ('*').

Calling the draw_line() function with the following parameters should produce the corresponding output:

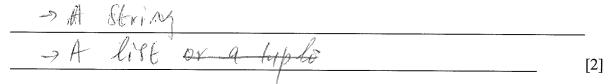
	w_line(5) w_line(6,'\$')	produces	**** \$\$\$\$\$\$
def	draw_line(n	, char=1*");; our)*(n))	
	print (lah	our)*(n))	
			[6]

Question 4. [7 marks]

Consider the following recursive function definition:

def do_this(stuff):
 if len(stuff) == 0:
 return ""
 else:
 return str(stuff[0] * 2) + do this(stuff[1:])

a) What datatype can the parameter to this function be?



b) What is the base case for this function?

i.print(do this([1,2,3])) 2+4+6 = 12 [2] ii. print (do_this("123")) " 1/42+ "2"+2+ 3"+2 = "112233" [2] Question 5. [4 marks] Consider the following Python program and answer the questions below: def main(): f = open('to do list.txt', 'a') while True: thing to do = input('Enter thing to do:') if thing to do == \'done': break else: f.write(thing_to_do + '\n') f.close() main() a) What is the name of the file created? to_do_list (textfile) [1] b) What mode is the file created in? append Mode [1] c) Looking at the code, how does the user terminate the program? The user terminates the pregramus by entering [1] d) How will the information that the user enters be written in the file? Kach piece of information entered will be written on a new line [1]

c) Based on the do this () function definition, what will the following statements display?

Question 6. [6 marks]

Consider the following definition of the *classify_weight()* function. Specify test cases which thoroughly test the function, using equivalence classes and boundary value. For each test case specify whether it is an equivalence class value or a boundary value.

```
# classifies weight in kgs

def classify_weight (w):

if 0 < w <= 60:

return "light"

elif 60 < w <= 120:

return "heavy"

else:

return "error"

Equivalence classes

> Category Values = 50, 100

> Evroneous values = 160, -1

Boundary values = 50, 100

> Below boundary values = 50, -1, 100

> Above boundary values = 50, -1, 100

| Above boundary values = 70,50, -1, 100
```