University of Cape Town ~~ Department of Computer Science

Computer Science 1015F ~~ 2018

Class Test 1

***** Solutions *****

Marks : 32

Time : 45 minutes

Instructions:

a) Answer all questions.

b) Write your answers in PEN by shading in the appropriate block on the answer sheet.

c) Each question is worth 2 marks.

d) All questions refer to version 3 of the Python programming language.

1. An algorithm is:

a. always written in a programming language like Python.

b. the best method for calculating a value.

c. the only correct answer to a puzzle or problem.

d. a set of instructions to be followed to solve a problem.

e. a mathematical formula used in programming.

d

2. What is an example of an identifier?

a. two

b. 2

c. [ ]

d. “two”

e. :

a

Examine the Q1.py module listed on the last sheet of the test and answer the following four questions.

3. From the Q1.py module, give an example of a variable?

a. “`Enter a whole number:`”

b. `sep`

c. `print`

d. `y`

e. `else`

d

4. From the Q1.py module, give an example of a numerical operator.

a. `eval`

b. `%`

c. `y == 0`

d. `x`

e. `if`

b

5. Why it is necessary to use the `eval()` function in the `Q1.py` module?

a. To read in an integer from the user.

b. To read in a string number from the user.

c. To allow `x` to store the numeric representation of the number entered by the user.

d. To evaluate the number in it's string representation.

e. Because input does not work without `eval()`.

c

6. What is the output of the `Q1.py` module if the user runs the module in Python and types in the value 5.

a. 5kinda strange parents!!!

b. 5... not wonky

c. !!!5!!!kinda strange parents!!!

d. 5...not...wonky

e. 5!!!kinda strange parents

e

7. What is the output of the following program?

```
x = 2
if x ** 3 > 7.3:
   print ("True")
else:
   print (x / 2)
```

a. True

b. "True"

c. 1

d. 3.0

e. 1.0

a

8. What is the value of the following boolean expression?

```
21<=20 or not -11<=-10 and 31>1 or True and not False
```

a. False

b. 0

c. True

d. 1

e. (Error: invalid expression)

c

9. The following program has a logic error. How will you fix it so it prints out the correct assessment of the temperature?

```
if age <= 0:
    print ("Error")
elif age > 20:
    print ("Blue")
if age > 10:
    print ("Red")
else:
    print ("White")
```

a. change "age < 30" to "age > 30"

b. change the "else" to "elif age<10:"

c. change the second "if" to "elif"

d. change the "elif" to "if"

e. use parentheses to ensure correct precedence in expressions

c

10. Suppose that a, b and c are set to specific values before this program is executed. Which combinations of values for a, b and c will result in the output value for d that is specified?

```
if a>b:
     if b>c:
          d=b
     else:
          d=c
else:
     if c>a:
          d=c
     else:
          d=a
```

a. a = 13, b = 12, c = 17 | d = 12

b. a = 17, b = 13, c = 12 | d = 17

c. a = 18, b = 19, c = 21 | d = 19

d. a = 9, b = 10, c = 11 | d = 11

e. a = 11, b = 12, c = 17 | d = 11

d

11. What values for `user` and `password` would give the specified output?

```
real_password = "password"
real_name = "brian"
if password==real_password:
    if name!=real_name:
        print ("one", end="!\n")
    else:
        print ("two", end="!\n")
else:
    print ("three", end="!\n")
```

a. Input: user='brian' password='password' | Output: one!

b. Input: user='admin' password='password123' | Output: two!

c. Input: user='brian' password='password123' | Output: one!

d. Input: user='admin' password='password' | Output: two!

e. Input: user='brian' password='password123' | Output: three!

e

12. What values are generated by this range function?

```
Range (-9, -1, 2)
```

a. -9, -7, -5, -3, -1

b. -9, -7, -5, -3

c. -3, -5, -7, -9

d. -1, -3, -5, -7

e. -1, -3, -5, -7, -9

b

13. What does the following program compute?

```
i=0
j=eval(input("Enter the first number: "))
k=eval(input("Enter the second number: "))
for x in range(j,k):
    if x % 2 != 0:
```

```
            i += 1
```

a. count of even numbers from j to k

b. count of odd numbers from j to k

c. sum of numbers from j to k

d. list of numbers from i to k

e. list of even numbers from i to j

b

14. What is the output of the following program? Note: abs(-3)=3 and abs(3)=3.

```
    for i in range (5):
        for j in range (abs(i-3)):
            print (" ",end="")
        for k in range (i+1):
            print ("*",end="")
        print ()
```

a.
```
   *****
    *****
   *****
  *****
*****
```

b.
```
*
**
***
****
*****
```

c.
```
*******
 *****
  ***
   *
```

d.
```
   *
  **
 ***
```

```
 ****
  *****
```

e.
```
*****
 ****
  ***
   **
    *
```

d

Examine the Q2.py module listed on the last sheet of the test and answer the following three questions.

15. What is the exact output of the `Q2a.py` module?

a.
```
^^^
$$$
###
$$$
```

b.
```
$$$
^^^
$$$
###
$$$
```

c.
```
^^^
###
$$$
$$$
```

d.
```
^^^###$$$$$$
```

e.
```
^^^
$$$
###
```

$$$

c

16. If the 5th line were changed to

```
if i > 0:
```

how would the output of the Q2a.py module change?

a. It would not change the output.

b. It will result in an error.

c. Would print ^^^ and ### when i is 1, 2 and 3

d. Would print $$$ and ^^^ when i is 1, 2 and 3

e. Would print $$$ and ### when i is 1, 2 and 3

e

Code examples for the test – you may detach this sheet.

Question 1

```
#Q1.py

x = eval(input("Enter a whole number:"))
y = x % 2
if y == 0:
 print(y,"not wonky",sep="...")
else:
 print(y,"kinda strange parents",sep="!!!")
```

Question 2

```
#Q2.py

for i in range(4):
 for j in range(3):
   if i >= 2:
      print("$",end="")
    elif i > 0:
```

```
      print("#",end="")
   else:
      print("^",end="")
print()
```