CPSC 231 Midterm 2

Duration: 40 minutes

18 March 2016

- This exam has 27 questions and 9 pages.
- You may use one single-sided 8.5x11” piece of paper with whatever you want written on it. Apart from that, this exam is closed book. No notes, books, calculators or electronic devices, or other assistance may be used.
- Mark your answers on the supplied answer sheet.
- If you think there are multiple correct answers to a question, select the best answer.

Due to the number of people in the room, you must stay for the entire exam.
Part 1

1. What does this code print when run?

```python
T = (1, 2, 3, 4, 5)
print(T[3])
```

(A) 4  
(B) 3  
(C) 5  
(D) (3,)  
(E) (4,)

2. What does this code print when run?

```python
T = (3, 1, 4, 2)
print(T[-2])
```

(A) 4  
(B) 1  
(C) -1  
(D) -4  
(E) There is an error when this code is run

3. What does this code do when run?

```python
T = (7, 8, 9)
T[2] = "I'll be back"
```

(A) There is an error because a tuple is immutable  
(B) There is an error because a tuple is mutable  
(C) There is an error because strings and integers can’t be placed in a tuple together  
(D) There is no error

4. What does this code print when run?

```python
T = (1, 2, 3, 4, 5)
print(T[1] + T[-3] * T[4:][0])
```

(A) 17  
(B) 25  
(C) 13  
(D) 16  
(E) There is an error when this code is run

5. How many times would 24 be printed when this code is run?

```python
def f(n):
    return n + n
def g(n):
    return f(n * 3)
print(f(12))
print(f(12))
print(g(4))
print(g(24))
print(g(12))
```
6. What does this code print when run?

```python
n = 123
def foo(n):
    n = 42
    print(n)
foo(n)
print(n)
```

(A) 123, then 123  
(B) 123, then 42  
(C) 42, then 123  
(D) 42, then 42  
(E) There is an error when this code is run

7. What does this code print when run?

```python
n = 123
def foo():
    n = 42
    print(n)
foo()
print(n)
```

(A) 123, then 123  
(B) 123, then 42  
(C) 42, then 123  
(D) 42, then 42  
(E) There is an error when this code is run

8. What does this code print when run?

```python
n = 123
def foo():
    global n
    n = 42
    print(n)
foo()
print(n)
```

(A) 123, then 123  
(B) 123, then 42  
(C) 42, then 123  
(D) 42, then 42
9. What does this code print when run?

```python
def foo():
    for i in range(3):
        print(i)
```

(A) 1, 2, and 3, in that order
(B) 0, 1, and 2, in that order
(C) 0, 1, 2, and 3, in that order
(D) Nothing; there is an error when this code is run
(E) Nothing; there is no error when this code is run

10. What does this code print when run?

```python
def foo(n, L):
    n = 42
    L.append(n)
    L = ['x']
    n = 123
    foo(n, L)
    print(n, L)
```

(A) 123 ['x', 42]
(B) 42 ['x', 42]
(C) 123 ['x']
(D) There is an error when this code is run
(E) 42 ['x']

11. What does this code print when run?

```python
def foo():
    print('X')
    return 99
    exit()
    print('Y')
    foo()
    print('Z')
```

(A) X, Y, and Z, in that order
(B) Y, X, and Z, in that order
(C) Y and X, in that order
(D) Y and Z, in that order
(E) X only

12. What does this code print when run?

```python
def foo(x):
    return x + x
    print( int(foo(2)) + int(foo('2')) )
```

(E) There is an error when this code is run
13. What does this code print when run?

```python
L = [1, 2, 3, 4, 5]
print(L[2:4])
```

(A) [2, 3, 4]
(B) [3, 4, 5]
(C) [2, 3]
(D) [3, 4]
(E) [3]

14. What does this code print when run?

```python
L = [1, 2, 3, 4]
print(L[:2])
```

(A) [1, 2, 3]
(B) [1, 2]
(C) [2]
(D) 2
(E) 3

15. What does this code print when run?

```python
L = [ [1, 2, 3], [4, 5, 6], [7, 8, 9] ]
print(len(L))
print(L[1][2])
```

(A) 3, then 2
(B) 9, then 2
(C) 3, then 6
(D) 9, then 6
(E) 3, then 8

16. What does this code print when run?

```python
s = 'abc'
s.upper()
print(s)
```

(A) Abc
(B) ABC
(C) abc
(D) There is an error when this code is run
17. Lists have an \texttt{insert} method that takes two arguments: the first is a list index, the second is an item to insert. The item is inserted into the list immediately before the specified index. What does this code print when run?

```python
L = [4]
L.append(2)
L.insert(1, 3)
print(L)
L.sort()
```

(A) [3, 2, 4]  
(B) [4, 3, 2]  
(C) [4, 2, 3]  
(D) [2, 3, 4]  
(E) [3, 4, 2]

18. What does this code print when run?

```python
s = 'foo bar	baz'
L1 = s.split()  
L2 = s.split('	')
print( L1[0] + L2[0] )
```

(A) foofoo  
(B) foofoo bar  
(C) foo barfoo  
(D) foo barfoo bar  
(E) No answer shown here

19. What does this code print when run?

```python
s = 'foo bar	baz'
L1 = s.split('	')
L2 = L1[0].split()  
print(L2)
```

(A) ['foo']  
(B) ['foo', 'bar']  
(C) ['foo', 'bar', 'baz']  
(D) There is an error when this code is run

20. What does this code print when run?

```python
D = { 1: 2, 3: 4, 5: 3, 6: 7 }
print(len(D))  
print(D[3])
```

(A) 4, then 4  
(B) 8, then 5  
(C) 4, then 5  
(D) 8, then 4  
(E) 4, then 7
21. What does this code print when run?

```python
D = { 1: 2, 3: 4, 5: 6 }
for k in D:
    print(k)
```

(A) 1, 3, and 5, in some order
(B) 1, 3, and 5, in that order
(C) 2, 4, and 6, in some order
(D) 2, 4, and 6, in that order
(E) 1, 2, 3, 4, 5, and 6, in some order

22. What does this code print when run?

```python
D = { 3: -1, 7: 1, 1: 12, 6: 2 }
L = [ 9, 6, 3 ]
```

(A) 17
(B) 18
(C) 19
(D) 24
(E) There is an error when this code is run

23. Slice notation can take a third parameter. In particular, the slice [:::-1] applied to a sequence will result in the reverse sequence. How many of the following functions will return True if the string argument is a palindrome (i.e., reads the same forwards and backwards), and will return False if the argument is not a palindrome?

```python
def ispalin(s):
    t = s[:::-1]
    if s == t:
        return True
    return False
```

```python
def ispalin(s):
    t = s[:::-1]
    if s != t:
        return True
    return False
```

```python
def ispalin(s):
    for i in range(len(s)):
        if s[i] == s[len(s) - 1 - i]:
            return False
    return True
```

```python
def ispalin(s):
    for i in range(len(s)):
        if s[i] != s[len(s) - i]:
            return False
    return True
```

(A) 1
(B) 0
(C) 2
(D) 3
(E) 4

24. What happens when this code is run?

```python
D = { }
L = [1, 2]
D[L] = L
```
(A) There is no error
(B) There is an error because a dictionary key and value cannot be the same
(C) There is an error because a dictionary key must be immutable
(D) There is an error because a dictionary key must be mutable
(E) There is an error because a dictionary value cannot be immutable

25. Below is the code from two files: m1.py and m2.py.

```python
# m1.py
import m2
print('A')
if __name__ == '__main__':
    print('C')

# m2.py
print('B')
if __name__ == '__main__':
    print('D')
```

What is printed when this code is run as

```
python3 m1.py
```

(A) A, C, and B, in that order
(B) A, C, B, and D, in that order
(C) A, B, C, and D, in that order
(D) B, D, A, and C, in that order
(E) B, A, and C, in that order

26. Below is the code from two files: m1.py and m2.py.

```python
# m1.py
import m2
print('A')
if __name__ == '__main__':
    print('C')

# m2.py
print('B')
if __name__ == '__main__':
    print('D')
```

What is printed when this code is run as

```
python3 m2.py
```

(A) B only
(B) D only
(C) B, then D
(D) There is an error because m2.py is a module, not a program
(E) There is an error because the __name__ variable is not defined

27. Below is the code from two files: m1.py and program.py.

```python
# m1.py
x = 42

# program.py
x = 123
import m1
print(x, m1.x)
```
What is printed when this code is run as

    python3 program.py

(A) 123 123
(B) 123 42
(C) 42 42
(D) 42 123
(E) There is an error when this code is run

Answer Key

Q1: A; Q2: A; Q3: A; Q4: A; Q5: C; Q6: A; Q7: A; Q8: B; Q9: E; Q10: A; Q11: B; Q12: C; Q13: D; Q14: B; Q15: C; Q16: C; Q17: B; Q18: B; Q19: B; Q20: A; Q21: A; Q22: A; Q23: A; Q24: C; Q25: E; Q26: C; Q27: B.

End of questions. Remember that you must stay for the entire exam.