Exam #3, Form 3 A  CSE 231  Fall 2015

Name: ______________________________________________________

Section: _________________  Date: _________________

INSTRUCTIONS:

(1) DO NOT OPEN YOUR EXAM BOOKLET UNTIL YOU HAVE BEEN TOLD TO BEGIN.

(2) Please fill in the requested information at the top of this exam booklet.

(3) Use a #2 pencil to encode answers on the OMR form (bubble sheet).

(4) Please encode the following on the OMR form:
   – Last name and first initial
   – MSU PID
   – Section number (007, 008, 009, 010, 011, or 012)
   – Exam form (3 A)

(5) Please sign the OMR form.

(6) Only answers recorded on your OMR form will be counted for credit. Completely erase any responses on the OMR form that you wish to delete.

(7) You may not ask questions once the examination has begun.
   
   If there is a structural problem with your exam booklet (e.g., a missing or poorly printed page), please raise your hand; a proctor will take care of it.

   If a question is ambiguous or contains a typographic error, write your interpretation of the question on the same page as the question; then put a note on the cover sheet of your exam booklet.

(8) Choose the single best alternative for each question, even if you believe the question is ambiguous or contains an error. If a question has more than one best answer, credit will be given for any of the correct answers provided that you marked only one answer.

(9) This exam booklet contains 40 questions, each of which will be weighted equally. The total points for the exam is 200 points (20% of your course grade).

(10) You may use one 8.5” x 11” note sheet and a paper dictionary during the exam. No other reference materials, calculating devices, or electronic devices may be used during the examination.

(11) The exam ends at 2:45 pm. You must turn in this exam booklet, the OMR form, your note sheet, and your scrap paper before leaving. Put your name on anything that you would like to have returned. When leaving, please be courteous to those still taking the exam.
Form A

1  2  3  4  5  6  7  8  9  10
D  C  D  B  B  A  C  A  A  B

11 12 13 14 15 16 17 18 19 20
B  D  C  D  C  E  A  B  B  B

21 22 23 24 25 26 27 28 29 30
B  C  A  C  A  D  C  D  C  B

31 32 33 34 35 36 37 38 39 40
B  C  C  A  A  C  C  C  D  B
Exam #3, Form 3 A  
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**Figure 1**

(1) In Fig. 1, what is displayed by the line labelled Line 1?
   (a) 'ab12'                        (b) ['a1', 'b1', 'a2', 'b2']
   (c) [['a1', 'a2'], ['b1', 'b2']]  (d) ['a1', 'a2', 'b1', 'b2']
   (e) A TypeError

(2) In Fig. 1, what is displayed by the line labelled Line 2?
   (a) ab                        (b) b
   (c) 0                          (d) A NameError
   (e) A ValueError

(3) In Fig. 1, what is displayed by the line labelled Line 3?
   (a) 0                        (b) 2
   (c) 12
   (d) A NameError
   (e) A ValueError

**Figure 2**

(4) In Fig. 2, what is displayed by the line labelled Line 1?
   (a) ['a']                    (b) b
   (d) An AttributeError
   (c) A NameError
   (e) None of (a)–(d)

(5) In Fig. 2, what is displayed by the line labelled Line 2?
   (a) [['a', 'b'], 'c']      (b) [['a'], 'c']
   (c) ['a', 'c']       (d) ['a', 'b', 'c']
   (e) None of (a)–(d)

```
x = 0
L = [ x + y for x in 'ab' for y in '12' ]
print( L )  # Line 1
print( x )  # Line 2
print( y )  # Line 3
```

```
X = ['a', 'b']
Y = [X, 'c']
print( X.pop() )  # Line 1
print( Y )        # Line 2
```
(6) Which of the following is not present in the line labelled Line 1 in Fig. 3?

(a) qualified name  (b) unqualified name  (c) mutable argument
(d) immutable argument  (e) All of (a)–(d) are present

(7) In Fig. 3, what is displayed by the line labelled Line 2?

(a) 4 0  (b) 6 3  (c) 4 1
(d) 8 1  (e) None of (a)–(d)

(8) In Fig. 3, what is displayed by the line labelled Line 3?

(a) 6 3  (b) 6 2  (c) 8 3
(d) 8 2  (e) None of (a)–(d)

(9) In Fig. 3, what is displayed by the line labelled Line 4?

(a) 13  (b) 9  (c) 20
(d) 14  (e) None of (a)–(d)

(10) In Fig. 3, what is displayed by the line labelled Line 5?

(a) 4 13  (b) 4 9  (c) 6 14
(d) 6 20  (e) None of (a)–(d)
(11) Given the assignment \( n = \text{input('Input a float: ')} \) and that the user enters 3.14 at the prompt (and then presses the enter/return key). What is the type of \( n \)?

(a) float  
(b) str  
(c) string  
(d) flt  
(e) None of (a)–(d)

(12) Given the assignment \( x = 5 \). What is displayed by \( \text{print( not 0 <= x < 100 )} \)?

(a) 100  
(b) 0  
(c) True  
(d) False  
(e) None of (a)–(d)

(13) Given the assignment \( x = 5 \). What is displayed by \( \text{print( x == 3 or 2 )} \)?

(a) True  
(b) False  
(c) 2  
(d) 0  
(e) 3

```
L = 'ab cde f'
M = L.split()

print( len(L), len(M) )  # Line 1
for i in range(3):      # Line 2
    out = ''
    for l in M:
        if len(l) > i:
            out += l[i].ljust(2)
        else:
            out += 2*' '  # there is one space in ''
    print( out )
```

**Figure 4**

(14) In Fig. 4, what is displayed by the line labelled Line 1?

(a) 15 4  
(b) 6 3  
(c) 8 1  
(d) 8 3  
(e) None of (a)–(d)

(15) In Fig. 4, what is displayed by execution of the outermost loop (i.e., the loop that starts at the line labelled Line 2)?

(a) a c f  
(b) a b  
(c) a c f  
(d) b d  
(d) e

(b) c d e  
(c) b d  
(e) None of (a)–(d)  
(e) f  
(e) None of (a)–(d)

(d) e

(e) None of (a)–(d)
(16) Which of the following programming concepts is not present in the program in Fig. 5?
   (a) iteration  (b) function arguments
   (c) method calls  (d) introspection
   (e) All of (a)–(d) are present

(17) In Fig. 5, what is displayed by the line labelled Line 1?
   (a) 2  (b) 2.5  (c) 2.25
   (d) An error  (e) None of (a)–(d)

(18) In Fig. 5, what is displayed by the line labelled Line 2?
   (a) True False  (b) True True  (c) False True
   (d) False False  (e) None of (a)–(d)

(19) In Fig. 5, what is displayed by the line labelled Line 3?
   (a) [0, 1, 2, 3, 4]
   (b) [0, 4]
   (c) [0, 0, 1, 1, 2, 2, 3, 4, 4, 4]
   (d) An error
   (e) None of (a)–(d)
class MyClass ( object ):
    def __init__( self, N ):
        if type( N ) == str:
            self.n, self.c = N, 0
        else:
            raise ValueError
    def __str__( self ):
        return '{n}$c'\'.format( self.n, self.c )
    def __repr__( self ):
        return 'n: {}, c: {}'.\'.format( self.n, self.c )
    def __add__( self, other ):
        if type( other ) == int:
            result = MyClass( self.n )
            result.c = self.c + other
            return result
        else:
            raise TypeError
    def __radd__( self, other ):
        return self.__add__( other )
    def __eq__( self, other ):
        if type( other ) == str:
            other = MyClass( other )
        if type( other ) != MyClass:
            return False
        else:
            return self.c == other.c
    def __lt__( self, other ):
        if type( other ) == str:
            other = MyClass( other )
        if type( other ) == MyClass:
            return self.c < other.c
        else:
            raise TypeError
A, B = MyClass( 'a' ), MyClass( 'b' )
print( 'A: {}\'.format( A ) ) # Line 1
print( A + 1 ) # Line 2
print( A == B, A + 1 == 'a$1' ) # Line 3
C = 2 + B # Line 4
print( B < A, B < C ) # Line 5
# REPLACE

Figure 6

(20) In Fig. 6, the MyClass string conversion method (__str__) is called implicitly during execution of which line(s)?

(a) Line 5  (b) Line 2  (c) Line 4
(d) Line 3  (e) All of (a)-(d).
(21) In executing Line 4 of Fig. 6, the expression $2 + B$ is mapped to which of the following expressions?

(a) $2._radd_$(B)  
(b) $B._radd_$(2)  
(c) $self._add_$(2)  
(d) $sum(B, 2)$  
(e) None of (a)–(d).

(22) In executing Line 5 of Fig. 6, the expression $B < A$ is mapped to which of the following expressions?

(a) $self._lt_$(A)  
(b) $A._gt_$(B)  
(c) $B._lt_$(A)  
(d) $_lt_$(B, A)  
(e) None of (a)–(d).

(23) In Fig. 6, what is displayed by Line 1?

(a) $A: a$  
(b) $a$  
(c) $A: a$  
(d) $n: a, c: 0$  
(e) None of (a)–(d).

(24) In Fig. 6, what is displayed by Line 2?

(a) $n: a, c: 0$  
(b) $a$  
(c) $a$  
(d) $n: a, c: 1$  
(e) None of (a)–(d).

(25) In Fig. 6, what is displayed by Line 3?

(a) True False  
(b) False True  
(c) False False  
(d) True True  
(e) None of (a)–(d).

(26) In Fig. 6, what is displayed by Line 5?

(a) False False  
(b) True True  
(c) True False  
(d) False True  
(e) None of (a)–(d).

(27) Suppose the program in Fig. 6 has been run in the IPython Console and that you then type the expression $C + 1$ at the input prompt and press the enter/return key. What will the IPython Console show as the result of evaluating the expression?

(a) $n: c, c: 1$  
(b) $n: b, c: 1$  
(c) $n: b, c: 3$  
(d) $c:3$  
(e) None of (a)–(d).

(28) In Fig. 6, which of the following replacements for the comment # REPLACE produces a TypeError?

(a) $A < 'hi'$  
(b) $A == 5$  
(c) $MyClass(5)$  
(d) $D = A + B$  
(e) None of (a)–(d).
(29) Which of the following is *not* present in the program in Fig. 7?
   (a) Inheritance  (b) A super class  (c) An exception handler
   (d) Function overloading  (e) All of (a)–(d) are present

(30) Which of the following statements about the classes defined in Fig. 7 is *incorrect*?
   (a) Class A is the parent of classes B and D.
   (b) Class D is a subclass of class C.
   (c) Class C is a subclass of class A.
   (d) Class B is a child of class A.
   (e) All of (a)–(d) are correct statements.
(31) Which of the methods in Fig. 7 mutates (i.e., modifies) the target instance which it is applied to?
   (a) get   (b) add   (c) __str__
   (d) None of (a)-(c)   (e) All of (a)-(c)

(32) In Fig. 7, what is printed by the line labelled Line 1?
   (a) False False   (b) False True   (c) True False
   (d) True True   (e) None of (a)-(d).

(33) In Fig. 7, what is printed by the line labelled Line 5?
   (a) 0   (b) 1
   (c) 5   (d) An error
   (e) None of (a)-(d)

(34) In Fig. 7, what is printed by the line labelled Line 6?
   (a) b: 6.1   (b) b: 2.1   (c) b: 2.5
   (d) b: 6.5   (e) None of (a)-(d)

(35) In Fig. 7, what is printed by the line labelled Line 7?
   (a) c: 0.6   (b) c: 3.3   (c) c: 3.6
   (d) c: 0.3   (e) None of (a)-(d)

(36) In Fig. 7, which of the following replacements for the comment # REPLACE produces an AttributeError?
   (a) repr(a)   (b) str(d)   (c) b.get()
   (d) None of (a)-(c)   (e) All of (a)-(c)
def work(A, B):
    try:
        return A // B
    except ZeroDivisionError:
        return 5
    except:
        return 2

def calc(X, Y):
    C, D = (0, 0):
        try:
            C = work(X, Y - 1)
            D += 3
        except TypeError:
            D += 2
        except ZeroDivisionError:
            D += 4
    D += 1
    return (C, D)

print(calc(6, 3))  # Line 1
print(calc(4, 1))  # Line 2
print(calc('a', 3))  # Line 3
print(calc(3, 'a'))  # Line 4

(37) In Fig. 8, what is displayed by the line labelled Line 1?
   (a) (0, 4)   (b) (3, 1)   (c) (3, 4)
   (d) (0, 1)   (e) None of (a)–(d)

(38) In Fig. 8, what is displayed by the line labelled Line 2?
   (a) (0, 4)   (b) (5, 8)   (c) (5, 4)
   (d) (0, 8)   (e) None of (a)–(d)

(39) In Fig. 8, what is printed by the line labelled Line 3?
   (a) (0, 1)   (b) (0, 3)   (c) (2, 1)
   (d) (2, 4)   (e) None of (a)–(d)

(40) In Fig. 8, what is printed by the line labelled Line 4?
   (a) (2, 4)   (b) (0, 3)   (c) (2, 1)
   (d) (0, 1)   (e) None of (a)–(d)
Scratch