

CS177 Fall 2015
Midterm 2
Tue 11/17 - 6:30p - 7:30p

- There are 25 multiple choice questions. Each one is worth 4 points.
- Answer the questions on the bubble sheet given to you. Only the answers on the bubble sheet will be graded.
- No questions in the exam.
- Programmable calculators cannot be used.
- This exam contains 21 pages (including this cover page)

Remember to fill in the following bubble card fields:

- Student ID: Use the 10 digit ID number on your student ID card. Do not use your social security number.
- Last Name and First Name
- Test/Quiz: 002, Course: 177
- Instructor: Your recitation TA's last name. Find it in the table below.
- Section number: Your "Recitation Section Number". Find it in the table below.

Recitation	Time	TA	Recitation Section Number
R01	Friday, 8:30-9:20am	Mohamed Zahran	0001
R02	Friday, 3:30-4:20pm	Di Jin	0002
R03	Thursday, 7:30-8:20am	Miguel Villarreal-Vasquez	0003
R04	Thursday, 3:30-4:20pm	Sait Celebi	0004
R05	Friday, 4:30-5:20pm	Ruby Tahboub	0005
R06	Friday, 11:30-12:20pm	Ajay M S	0006

Recitation Section Number: _____

Student Last Name: _____

Student First Name: _____

1. What is the output of the following Python program?

```
list1 = [ 3, 4, 4, 5, 5, 5, 6, 6, 6, 6 ] * 3
list2 = list1[0:17]
```

```
list3 = [ list2.count(3), list2.count(4), list2.count(5), list2
        .count(6) ]
print(list3)
```

- A. [2, 4, 5, 6]
- B. [2, 4, 6, 5]**
- C. [2, 4, 6, 7]
- D. [2, 4, 8, 6]
- E. [2, 4, 6, 10]

2. What is the output of the following Python program?

```
a = {1,2,3,4}
b = a
a.add(5)
```

```
c = list(a) + list(b)
```

```
counter = 0
for item in c:
    counter = counter + 1
```

```
print(counter)
```

- A. 8
- B. 9
- C. 10**
- D. 11
- E. 12

3. What is the type of bug in the following Python program?

```
def myBug():  
    myBuggyList = [ 'bug1 ', 'bug2 ', 'bug3 ' ]  
    for bug in range(myBuggyList):  
        print(bug)
```

myBug()

- A. ImportError
- B. SyntaxError
- C. IndexError
- D. TypeError**
- E. Name Error

4. What is the output of the following Python program?

```
mylist1 = list(range(9))
mylist2 = list(range(4,9,2))
mySet = set(mylist1) - set(mylist2)
print(mySet)
```

- A. {0, 1, 2}
- B. {0, 1, 2, 3, 4}
- C. {0, 1, 2, 3, 5}
- D. {0, 1, 2, 3, 5, 7}**
- E. [0, 1, 2, 3, 4]

5. What is the output of the following Python program?

```
mylist = list(range(7)) + list(range(3,5)) + list(range(1,5))

mylist = mylist[2:-2]
mylist = mylist[3:-3]

mylist.reverse()

print(mylist)
```

- A. [3, 4, 5]
- B. [3, 4, 5, 6]
- C. [3, 6, 5]**
- D. [3, 7, 5]
- E. [3, 7, 4]

6. What is the output of the following Python program?

```
mySet = {5, 2, 7, -2, 5}
print (10 in mySet, {2,-2}.issubset(mySet), len(mySet))
```

- A. **False True 4**
- B. False True 5
- C. True True 4
- D. False False 4
- E. True True 5

7. What is the output of the following Python program?

```
myList = [x**2 for x in range(10)]
i = 0
while (i < len(myList)):
    if (myList[i] == 8):
        break
    print(str(myList[i]) + " ", end = "")
    i = i + 1
```

- A. 0 1 2 3 4 5 6 7 8 9
- B. 0 1 4 9 16 25 36 49
- C. 0 1 4 9 16 25 36 49 64
- D. **0 1 4 9 16 25 36 49 64 81**
- E. 0 1 2 3 4 5 6 7

8. What is the output of the following Python program?

```
myList1 = [x for x in range(5)]
myList2 = [x for x in range(5)]
i = 0
j = 0
while (i < len(myList1)):
    while (j < len(myList2)):
        if (myList2[j] > 2):
            j = j + 1
            continue
        print(str(myList2[j]) + " ", end = "")
        j = j + 1
    i = j + 1
```

- A. 3 4 3 4 3 4 3 4
- B. 0 1 2 0 1 2 0 1 2 0 1 2 0 1 2
- C. 0 1 2 3 4 5
- D. 0 1 2 3 4 5 0 1 2 3 4 5
- E. **0 1 2**

9. What is the output of the following Python program?

```
myList = [5,10,15,20,25,-1]
total = 0

for i in range(2):
    accumulator = 0
    count = 0
    j = 0
    while(True):
        if(myList[j] < 0):
            break

        accumulator = accumulator + myList[j]
        count = count + 1
        j = j + 1
    total = total + (accumulator//count)

print(total, end = "")
```

- A. 30
- B. 60
- C. 45
- D. 15
- E. 20

10. What is the output of the following Python program?

```
accumulator = 0
for x in range(0,6, 2):
    for y in range(3, 0, -1):
        accumulator = accumulator + (x * y)
print(accumulator, end = "")
```

- A. 72
- B. 36**
- C. 30
- D. 24
- E. 40

11. What is the output of the following Python program?

```
def foo(z):  
    if(z):  
        return 1.0/z  
    return z*-1  
  
def fn(x,y):  
    if(x*y):  
        return 1  
    return 0  
  
def main():  
    x = 2  
    y = 0  
    while(x>y):  
        if(fn(x,y)):  
            print (foo(x))  
        else:  
            print (foo(y))  
        y = y + 1  
        x = fn(x,y) + 1
```

main()

A. 0.5
0.333

B. -1
0.5

C. 0
0.5

D. The loop will never terminate.

E. None of the above.

12. What is the range of values that `random.random()` can return?
- A. `[0.0, 1.0]`
 - B. `(0.0, 1.0]`
 - C. `(0.0, 1.0)`
 - D. `[0.0, 1.0)`**
 - E. None of all above.
13. Which of the following command gives **0** with **0.75** probability and **1** with **0.25** probability?
- A. `math.floor(random() * 3) / 4`
 - B. `math.floor(random() * 0.75)`
 - C. `math.floor(random() / 3) * 4`
 - D. `math.floor(random() / 0.75)`**
 - E. None of all above.

14. What is the output of the following Python program?

```
class MyClass:
    def __init__(self, value):
        self.value = value

x = MyClass(10)
y = MyClass(10)

if x==y:
    t = MyClass(x.value + y.value)
else:
    t = MyClass(x.value - y.value)

print(t.value)
```

- A. 0
- B. 10
- C. 20
- D. 30
- E. Error in the code

15. The term applied to hiding details inside class definitions is?

- A. Obscuring
- B. Subclassing
- C. Documentation
- D. Encapsulation**
- E. Wrapper

16. Consider the following dictionary definition in Python:

```
gradesDic = { 'Kate':80, 'Brittany':90, 'Alice': 85 }
```

Which of the following statements prints the grade of Alice?

- A. `print(gradesDic)`
- B. `print(gradesDic['Alice'])`**
- C. `print(gradesDic[85])`
- D. `print(gradesDic[2])`
- E. All of the above

17. What is the output of the following python program?

```
print([3*[i] for i in range(3)][1][2])
```

- A. 0
- B. 1**
- C. 2
- D. 3
- E. IndexError: list index out of range

18. What is the output of the following Python program?

```
matrix = [[1, 2, 3, 4],  
          [4, 5, 6, 7],  
          [8, 9, 10, 11],  
          [12, 13, 14, 15]]
```

```
for i in range(0, 4):  
    print(matrix[i][3], " ", end = " ")
```

- A. 1 2 3 4
- B. 2 5 9 13
- C. 1 4 8 12
- D. 4 7 11 15**
- E. 3 6 10 14

19. What is the output of the following Python program?

```
def is_prime(x):
    for i in range(2,x):
        if x % i == 0:
            return False
    return True

temp = 0

for i in range(3,11):
    if is_prime(i):
        temp = temp + (i ** 2)
    else:
        temp = temp - (i * 2)

print(temp)
```

- A. -31
- B. -21
- C. -3
- D. 9**
- E. 21

20. What is the output of the following Python program?

```
matrix = [[1, 2, 3], [4, 5, 6], [7, 8, 9]]

for i in range(3):
    for j in range(3):
        if i == j:
            matrix[i][j] = 0

print (matrix)
```

- A. **[[0, 2, 3], [4, 0, 6], [7, 8, 0]]**
- B. [[1, 2, 3], [4, 5, 6], [7, 8, 9]]
- C. [[0, 0, 0], [4, 5, 6], [0, 0, 0]]
- D. [[0, 2, 3], [4, 0, 6], [0, 8, 9]]
- E. [[1, 2, 3], [0, 0, 0], [7, 8, 9]]

21. Which of the following collections is immutable, ordered, and can only contain character elements?

- A. List
- B. String**
- C. Dictionary
- D. Set
- E. Tuple

22. What is the output of the following Python program?

```
class Matrix:
    def __init__(self, m, n, character):
        self.m = m
        self.n = n
        self.character = character

    def printMatrix(self):
        for i in range(self.m):
            for j in range(self.n):
                print(self.character, end=' ')
            print()

def main():
    m = Matrix(3, 2, 'a')
    m.printMatrix()
```

main()

A. a a a
a a a

B. a a
a a
a a

C. 3 3
3 3
3 3

D. 2 2 2
2 2 2

E. None of the above

23. Which of the following Python program(s) will count the number of unique words in a sentence?

Example input: 'hello purdue university purdue hello world hello world'

Example output: 4

- I. **def** count(sentence):
 mylist = []
 words = sentence.split()
 for word **in** words:
 mylist.append(word)
 return len(mylist)
- II. **def** count(sentence):
 mylist = []
 words = sentence.split()
 for word **in** words:
 if not word **in** mylist:
 mylist.append(word)
 return len(mylist)
- III. **def** count(sentence):
 my_set = **set**()
 words = sentence.split()
 for word **in** words:
 my_set.add(word)
 return len(my_set) - 1
- IV. **def** count(sentence):
 my_set = **set**()
 words = sentence.split()
 for word **in** words:
 my_set.add(word)
 return len(my_set)
- V. **def** count(sentence):
 words = **set**(sentence.split())
 return len(words)

- A. Only I
B. Only II
C. I and II
D. II and IV
E. II, IV and V

24. Assuming in a shooting game, the chance of hit is described by :

$$\text{chance_of_hit} = \begin{cases} 0.6, & \text{if first hit or previous one is a hit} \\ 0.4, & \text{if previous one is a miss} \end{cases}$$

The following code simulates 10 shots and counts total number of hits.

```
p = True;
for i in range(10):
    p = simulation_one_shot(p)
    if p:
        total_hits = total_hits + 1
print(total_hits)
```

Which of the following correctly implements `simulation_one_shot(p)`?

I.

```
def simulation_one_shot(p):
    chance = 0.0;
    if p:
        chance = 0.6
    else:
        chance = 0.4
    if random() < chance:
        return True
    return False
```

II.

```
def simulation_one_shot(p):
    if p:
        if random() < 0.6:
            return True
    else:
        if random() < 0.4:
            return True
    return False
```

III.

```
def simulation_one_shot(p):
    if p:
        if random() < 0.4:
            return True
    else:
        if random() < 0.6:
            return True
    return False
```

(Please see the next page...)

A. I

B. II

C. III

D. I and II

E. I and III

25. Write a program that prints the numbers from 1 to 100. (Both inclusive) But for multiples of three print "Fizz" instead of the number and for the multiples of five print "Buzz". For numbers which are multiples of both three and five print "FizzBuzz".

A.

```
for i in range(1,101):
    print(i)
    if i % 15 == 0:
        print('FizzBuzz')
    if i % 3 == 0:
        print('Fizz')
    if i % 5 == 0:
        print('Buzz')
```

B.

```
for i in range(1,101):
    print(i)
    if i % 15 == 0:
        print('FizzBuzz')
    elif i % 3 == 0:
        print('Fizz')
    if i % 5 == 0:
        print('Buzz')
```

C.

```
for i in range(1,101):
    if i % 15 == 0:
        print('FizzBuzz')
    if i % 3 == 0:
        print('Fizz')
    if i % 5 == 0:
        print('Buzz')
    else:
        print(i)
```

(Please see the next page...)

```
D. for i in range(1,101):
    if i % 15 == 0:
        print('FizzBuzz')
    elif i % 3 == 0:
        print('Fizz')
    elif i % 5 == 0:
        print('Buzz')
    else:
        print(i)
```

```
E. for i in range(1,101):
    if i % 15 == 0:
        print('FizzBuzz')
    elif i % 3 == 0:
        print('Fizz')
    if i % 5 == 0:
        print('Buzz')
    else:
        print(i)
```