CS177 Fall 2015
Midterm 1
Wed 10/07 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 17 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: 001, 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.

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<tr>
<th>Recitation</th>
<th>Time</th>
<th>TA</th>
<th>Recitation Section Number</th>
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<tr>
<td>R01</td>
<td>Friday, 8:30-9:20am</td>
<td>Mohamed Zahran</td>
<td>0001</td>
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<td>R02</td>
<td>Friday, 3:30-4:20pm</td>
<td>Di Jin</td>
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<td>R03</td>
<td>Thursday, 7:30-8:20am</td>
<td>Miguel Villarreal-Vasquez</td>
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<td>R04</td>
<td>Thursday, 3:30-4:20pm</td>
<td>Sait Celebi</td>
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<td>R05</td>
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<td>Ruby Tahboub</td>
<td>0005</td>
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<td>R06</td>
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<td>Ajay M S</td>
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Recitation Section Number:  
Student Last Name:  
Student First Name:  
1. Which is the most appropriate data type to store the value of pi in Python?
   A. int
   B. float
   C. string
   D. boolean
   E. irrational

2. What is the output of the following Python program?
   ```python
def goldBlack(n):
    for x in range(n):
        print('All Hail Our Own Purdue')
    return

repeat = 3
goldBlack(repeat)
```
   A. All Hail Our Own Purdue
   B. All Hail Our Own Purdue
      All Hail Our Own Purdue
      All Hail Our Own Purdue
   C. All Hail Our Own Purdue
      All Hail Our Own Purdue
      All Hail Our Own Purdue
      All Hail Our Own Purdue
      All Hail Our Own Purdue
   D. 3
   E. Error
3. Given the contents of the text file "data.txt" as:

```
a, b
5 10
20 15
```

What is the output of the following Python program?

```python
def main() :
    myFile = open('data.txt', 'r')
    x = myFile.readline()
    x = x.split(',')
    y = myFile.readlines()
    for i in range(len(y)):
        t = y[i].split(' ')
        m = list(range(int(t[0]), int(t[1])))
        m.append(x[i])
    print(m)
main()
```

A. [5, 6, 7, 8, 9, 'a']
B. [5, 6, 7, 8, 9, 'a']
   [20, 19, 18, 17, 16, 'b\n']
C. [5, 10, 'a']
   [20, 10, 'b\n']
D. ['a', 5, 6, 7, 8, 9]
   ['b\n']
E. [5, 6, 7, 8, 9, 'a']
   ['b\n']
4. Which of the following Python programs is the correct way of printing the value of mathematical expression $5!$?
   
   A. `print(fact(5))`
   
   B. `print(sys.factorial(5))`
   
   C. `print(factorial(5))`
   
   D. `import math
      print(math.factorial(5))`
   
   E. `from math import *
p      print(math.factorial(5))`

5. What is the output of the following Python program?
   
   ```python
   def fun(n, m):
       return m - n

   x = fun(fun(1, 2), 3)
p      print(x)
   ```
   
   A. -1
   B. 0
   C. 1
   D. 2
   E. 3
6. The following Python program prints 1000 on the screen.

```python
import math
print(math.pow(10, 3))
```

Which of the following Python program is the correct implementation of `power(a, b)` function using simple loops? (Assume `a` and `b` are positive integers.)

A. ```python
def power(a, b):
    a = 0
    for i in range(b):
        a = a * b
    return a
```  

B. ```python
def power(a, b):
    result = 1
    for i in range(1, a):
        result = result * b
    return result
```  

C. ```python
def power(a, b):
    result = 1
    for i in range(a):
        result = result * b
    return result
```  

D. ```python
def power(a, b):
    result = 1
    for i in range(1, b):
        result = result * a
    return result
```  

E. ```python
def power(a, b):
    result = 1
    for i in range(b):
        result = result * a
    return result
```
7. What is the output of the following Python program?

```python
from graphics import *

win = GraphWin('My window', 500, 500)
for i in range(100, 200):
    win.plot(i, 150)
for i in range(100, 200):
    win.plot(150, i)

win.getMouse()
win.close()
```

A. 

```
+   
```

B. 

```
+   
```

C. 

```
+   
```

D. 

```
+   
```

E. 

```
+   
```
8. We have the following Python program,

```python
from graphics import *

win = GraphWin('My window', 300, 300)

circle = ?
line1 = ?
line2 = Line(Point(90,230), Point(150,150))
line3 = Line(Point(210,230), Point(150,150))

circle.draw(win)
line1.draw(win)
line2.draw(win)
line3.draw(win)

win.getMouse()
win.close()
```

The output of the above Python program is:

![Image of a peace symbol](image)

(See the next page...)
What should be circle and line1 to have the above output?

A. `circle = Circle( Point(150,150), 300 )
line1 = Line( Point(150,150), Point(150,150) )`

B. `circle = Circle( Point(150,150), 150 )
line1 = Line( Point(150,100), Point(150,200) )`

C. `circle = Circle( Point(200,200), 100 )
line1 = Line( Point(200,50), Point(200,250) )`

D. `circle = Circle( Point(150,150), 100 )
line1 = Line( Point(150,50), Point(150,250) )`

E. `circle = Circle( Point(150,150), 100 )
line1 = Line( Point(200,50), Point(200,250) )`
9. Which line in the following Python program will cause an error? (Assume graphics library is installed properly.)

```python
from graphics import *
win = GraphWin("My Window", 200, 200)
rect = Rectangle(Point(50, 50), Point(150, 150))
Rectangle.draw(win)

win.getMouse()
```

A. `from graphics import *`
B. `win = GraphWin("My Window", 200, 200)`
C. `rect = Rectangle(Point(50, 50), Point(150, 150))`
D. `Rectangle.draw(win)`
E. `win.getMouse()`

10. What is the result of evaluating the following expression $20/2^5 - 2^*4/2$?

   A. -6.0
   B. -2.0
   C. 42.0
   D. 46.0
   E. 90.0
11. What is the output of the following Python program?

```python
def funnyFunction(a):
    if not(a > 10):
        return a**3, a**2
    elif (not(a<9 or False)):
        return -1, -1
    else:
        print(a)
    return a, a**.5

print(funnyFunction(3))
```

A. 27
B. (27, 9)
C. 9
D. (-1, -1)
E. (3, 1.73)

12. For what values of x, and y does the following statement evaluate to True?

```python
not((not x>1) or (not y<50))
```

A. x = 0, y = 49
B. x = 1, y = 49
C. x = 2, y = 50
D. x = 0, y = 51
E. x = 2, y = 49
13. What is the output of the following Python program?

```python
def fun(v1, v2):
    if (v1 > v2):
        return 1
    else:
        return -9

def main():
    x = 1
    y = 2
    if (fun(x, y)):
        print("The return value is", fun(x, y))
    else:
        print("Nothing is printed")

main()
```

A. The return value is 1
B. The return value is -9
C. Nothing is printed
D. The return value is 1
   Nothing is printed
E. The return value is -9
   Nothing is printed
14. What is the output of the following Python program?

```python
def main():
    z = []
    for i in range(0, 5, 2):
        x = list(range(i))
        z.append(x)
    print(z)
main()
```

A. `[[], [0, 1], [0, 1, 2, 3]]`
B. `[0], [0, 1], [0, 1, 2, 3]]`
C. `[0], [1], [2]]`
D. `[0], [0, 1, 2], [0, 1, 2, 3, 4]]`
E. None of the above

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

```python
def main():
x1 = range(5, 20, 2)
x2 = range(x1[-1], x1[0], -3)
print(list(x2))
main()
```

A. `[20, 17, 14, 11, 8]]`
B. `[20, 17, 14, 11, 8, 5]]`
C. `[19, 16, 13, 10, 7]]`
D. `[19, 17, 15, 13, 11, 9, 7]]`
E. `[19, 16, 13, 10, 7, 4]]`
16. What is the output of the following Python program?

```python
def main():
    s = 'abcdefg'
    i = s.find('d')
    p = s[i:i+3]
    str = s.split(p)
    result = str[0] + p.upper() + str[1]
    print(result)

main()
```

A. abcDEFg
B. ABCdefG
C. abCDEfg
D. abcdefDEFg
E. abcDEFdefg

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

```python
def main():
a = 'Hello'
x = []
for i in range(0, len(a)):
s = a[0:i]
x.append(s)
print(x)

main()
```

A. ['", 'H', 'He', 'Hel', 'Hell']
B. ['H', 'He', 'Hel', 'Hell', 'Hello']
C. ['Hell', 'Hel', 'He', 'H', ']'
D. ['Hello', 'Hell', 'Hel', 'He', 'H']
E. None of the above
18. What is the output of the following Python program?

```python
def main():
s='2,4,6,8,10'
c=s[0:len(s):2]
print(c)
main()
```

A. 246810
B. 2,4,6,8,
C. 2,4,6,8,1
D. 24681
E. None of the above

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

```python
def roots(d):
    return d**0.5
def addEmUp(nums):
tot=0
for n in nums:
tot=tot+roots(n)
return tot
squares=[9, 16, 25, 36]
result=addEmUp(squares)
print(result)
```

A. 16
B. 18.0
C. 20.0
D. 36.0
E. Error
20. What is the output of the following Python program?

```python
x = list(range(9, 1, -2))
print(x)
```

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

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

```python
i = 9
outcome = 0
while i >= 3:
    outcome = outcome + i
    i = i - 3

print(outcome)
```

A. 0
B. 9
C. 15
D. 18
E. the loop does not stop
22. What is the output of the following Python program?

```python
def test():
    x = 5
    if 10 < x:
        return 'a'
    else:
        return 'b'
    if 20 > x:
        return 'c'
    return 'd'

print(test())
```

A. 'a'
B. 'b'
C. 'c'
D. 'd'
E. 'e'

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

```python
def myConditions(x, y):
    if x<20 and y<45:
        print(x+y)
    elif x<20 and y==45:
        print(y-x)
    elif y>=45:
        print(y)
    else:
        print(x)

myConditions(18, 45)
```

A. 63
B. 27
C. 27
D. 45
E. 18
24. What is the output of the following Python program

```python
import math
x = abs(math.floor(-3.65))
print(x)
```

A. -4  
B. -3  
C. 3  
D. 3.5  
E. 4

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

```python
def test(x, y, z):
    if (x < y):
        z = x + y
    elif (y < z):
        x = y + z
    else:
        y = x + z

result = test(1, 2, 3)
print(result)
```

A. 3  
B. 5  
C. 4  
D. None  
E. This code produces an error