CIS 122 Midterm Exam Two
Spring 2017
(25 questions; each question is worth 1 pt.)

(1-5) Given the following Python code:

```python
def payday(hours, wage):
    '''(number) -> number
    Midterm function.'''
    if hours <= 40:
        pay = hours * wage
    elif hours <= 60:
        hours = hours - 40
        pay = 40 * wage
        pay += hours * wage * 1.5
    else:
        hours = hours - 60
        pay = (40 * wage)
        pay += (20 * wage * 1.5)
        pay += (hours * wage * 2)
    return pay
```

(1) Function parameters are
a) hours, wage  b) 40, 10  c) pay  d) payday  e) number, number

(2) When the following expression is entered in the Python Shell
```python
>>> payday(40, 10)
```

(2) The arguments are
a) hours, wage  b) 40, 10  c) pay  d) payday  e) None

(3) the expression on line 6 evaluates to
a) True  b) true  c) False  d) false  
e) this line of code is not executed

(4) The expression on the right hand side of the assignment operator on line 9 evaluates to
a) 40  b) 30  c) 0  d) False  
e) this line of code is not executed

(5) At line 18 the value of pay is
a) 400  b) 400.0  c) 550.0  d) True  e) None
(6-7) Given the following Python code:

def mars_explore_main():
    '''() -> None

    Midterm function

    >>> mars_explore_main()
    '''
    # label print output
    print('xpos', '\t',
         'ypos', '\t',
         'water', '\t',
         'temp')

    reset(); speed('fastest')
title('Mars Rover')
display_color = 'blue'
color(display_color)

dot(10, display_color)

    for ctr in range(20):
        mars_explore()

    return None

(6) When mars_explore_main is executed, how many times will function mars_explore be called?

   a) 0    b) 19    c) 20    d) 21    e) None

(7) To vary the number of times mars_explore can be called each time mars_explore_main is executed:

   a) add a parameter to the definition of mars_explore_main, e.g.,
      def mars_explore_main(trips):

   b) add a parameter to the definition of mars_explore_main and change the for statement

c) define a local variable, e.g., trips = 10

d) define a local variable and change the for statement

e) change the name of the variable in the for statement, e.g.,
   for trips in range(20)
Given the following Python code:

```python
1  def q8(lead, ball, time):
2      '''(int, ??, float) -> ??
3      Midterm function.
4      '''
5      calclead = lead - 3
6      if ball:
7          calclead += .5
8      else:
9          calclead -= .5
10     calclead = calclead ** 2
11     return calclead > time
```

(8) At line 14, calclead refers to an object of type

a) int        b) float        c) string        d) Boolean        e) function

(9) At line 8, ball refers to an object of type

a) int        b) float        c) string        d) Boolean        e) function

(10) The value returned at line 15 is of type

a) int        b) float        c) string        d) Boolean        e) function

(11) Which lines of code are executed when q8(5, True, 1) is entered in the Python Shell?

a) 6, 8, 9, 13, 15    b) 6, 10, 11, 13, 15    c) 6, 8, 9, 10, 11, 13, 15    d) 6, 8, 13, 15
(12-16) Given the following Python code:

```python
def gendigit(n):
    '''(str) -> str
    Midterm function.
    >>> gendigit('321')
    ??
    '''
    CHECK = 5
    CHECKL = 3
    nstr = n
    check_sum = 0
    for i in range(2, CHECKL+2):
        next = int(nstr[-1])
        check_sum += next * i
        nstr = nstr[:-1]
    adjust = check_sum % CHECK
    checkdigit = CHECK - adjust
    if checkdigit == 5:
        checkdigit = 0
    return n + str(checkdigit)
```

When `>> gendigit('321')` is entered into the Python Shell

(12) The value of `n` at line 9 is

a) `n` is not defined  b) 321  c) `'321'`  d) 5  e) True

(13) When the for statement executes, the value of `i` is

a) 2  b) 5  c) `2 then 3 then 4`  d) `2 then 3 then 4 then 5`  e) `i` is not defined

(14) The value of `check_sum` after line 16 is executed the first time is

a) 0  b) 2  c) -2  d) `'1'`  e) `'11'`

(15) The value of `n` at line 25 is

a) `n` is not defined  b) 321  c) `'321'`  d) `'3210'`  e) `'3215'`

(16) The value returned at line 25 is

a) None  b) 321  c) `'321'`  d) `'3210'`  e) `'3215'`
(17-19) Given the following Python code:

```python
1  def transcribe(dna):
2      '''(str) -> ??
3      Midterm function
4      '''
5      rna = ''
6      ctr = 0
7
8      while ctr < len(dna):
9          if dna[ctr] == 'A':
10              rna += 'U'
11          elif dna[ctr] == 'C':
12              rna += 'G'
13          elif dna[ctr] == 'G':
14              rna += 'C'
15          elif dna[ctr] == 'T':
16              rna += 'A'
17              ctr += 1
18
19      return rna
```

(17) In function transcribe, line 8 through 17 could be replaced with

a)  

```python
for chr in dna:
    if chr == 'A':
        rna += 'U'
    elif chr == 'C':
        rna += 'G'
    elif chr == 'G':
        rna += 'C'
    elif chr == 'T':
        rna += 'A'
    ctr += 1
```

b)  

```python
ctr = 0
for chr in dna:
    if chr == 'A':
        rna += 'U'
    elif chr == 'C':
        rna += 'G'
    elif chr == 'G':
        rna += 'C'
    elif chr == 'T':
        rna += 'A'
```

c)  

```python
for chr in dna:
    if chr == 'A':
        rna += 'U'
    elif chr == 'C':
        rna += 'G'
    elif chr == 'G':
        rna += 'C'
    elif chr == 'T':
        rna += 'A'
```

d) none of these

(18) What is the result of executing the following code

```python
>>> transcribe('TTt ACT')
```

a) 'AAUGA'    b) 'AAT UGA'    c) 'TTtACT'    d) 'AAT UGA'

d) none of these

(19) Complete the type contract:

a) int    b) float    c) string    d) Boolean    e) None
(20-21) Given:

def q20(astring):
    """(str) -> Boolean
    Midterm function.
    """
    ctr = 0
    for nextch in astring:
        if nextch.isdigit():
            ctr += 1
    return ctr >= 2

What will be the result when the following code is executed:

(20) >>> q20('Lillis 182')

a) 3 b) 'true' c) 'false' d) True e) False

(21) >>> q20('Lillis Atrium')

a) 3 b) 'true' c) 'false' d) True e) False

(22) Given:

def q22(astring):
    """(str) -> Boolean
    Midterm function.
    """
    ctr = 0
    for nextch in astring:
        if nextch.isdigit():
            ctr += 1
    return ctr >= 2

What will be the result when the following code is executed:

>>> q22('Lillis 282')

a) 3 b) 'true' c) 'false' d) True e) False
(23) Given:

def q23(greeting, name):
    '''(str, str) -> str
    Midterm function.
    '''
    greeting = greeting.capitalize()
    name = name.capitalize()
    hi = greeting + ', ' + name
    return hi

What will be the result when the following code is executed:

>>> q23('ciao', 'ducks')

a) None    b) 'CIAO'    c) 'Ciao, Ducks'    d) 'hi'
    e) 'CIAO, Ducks'

24) Given:

def q24(s1, s2):
    '''(str, str) -> ??
    Midterm function.
    '''
    q24str = ''
    for i in s1:
        if i in s2:
            q24str += i
    return len(q24str)

What will be the result when the following code is executed:

>>> q24('yellow', 'green')

a) 1    b) 5    c) 6    d) 'yellowgreen'    e) NameError
(25) Given:

def q25(x):
    '''(str) -> number
        Midterm function.
    '''
    x = 2 * len(x)
    return x

What is the value of $y$ after the following Python code is executed:

```python
>>> y = 'The end.'
>>> y = q25(y) + q25(y)
```

a) None  b) 2  c) 8  d) 16  e) 32