CS101
midterm1

- **Be sure to enter your <u>NetID</u> and <u>the code below</u> on your Scantron**.

- Do not turn this page until instructed to do so.

- There are 30 questions, worth 1 point each.

- Each question has only **one** correct answer.

- You must not communicate with other students during this test.

- No books, notes, or electronic devices are permitted.

- This is a 60-minute exam.

- There are several different versions of this exam.

1. Fill in your information:

Full Name: _____

UIN (Student Number): _____

NetID: _____

2. Fill in the following answers on the Scantron form:

92. A

93. A

94. A

95. D

96. C

1. (1 point) Consider the following program:

```
s="ECTOR"
t="GAWAIN"
x=len(str(s.isupper()))-t.find("A")
```

What is the **type** of x after this program is executed?

(A) Boolean

(B) String

(C) Integer

(D) None

(E) Float

2. (1 point) Consider the following incomplete program.

```
sum=0
for i in range(0,100):
    ???
```

The program is intended to sum all of the integers between 1 and 100 (inclusive). What should replace the three question marks to complete the program?

(A) sum=sum+1

(B) sum=sum+i+1

(C) sum+1=sum

(D) sum=sum+i

3. (1 point) For this problem, you should compose a function which accomplishes a given task using the available code blocks arranged in the correct functional order. *We ignore indentation for this problem.*

find_max should accept a list and return the value of the maximum item in the list. (None is always the lowest value in any numeric comparison, so you may use it as an initializer.)

```
def find_max(my_list):

1 max_val = i

2 max_val = None

3 for i in range(len(my_list)):

4 if i > max_val:

5 max_val = my_list[i]

6 return max_val

7 for i in range(my_list):

8 if my_list[i] > max_val:

9 print(max_val)
```

(A) 2, 3, 8, 1, 6

(B) 2, 7, 4, 5, 6

(C) 2, 3, 4, 1, 6

(D) 2, 3, 8, 5, 6

(E) 3, 2, 8, 5, 9

4. (1 point) How can the following mathematical equation be implemented as a Python expression? Assume a, b, and sin have already been defined.

$$a \sin(a^b - b)$$

(A) None of the other answers are correct.

(B) `a*sin(a^b - b)`

(C) `a sin(a**b - b)`

(D) `a*sin(a**b - b)`

(E) `a*sin(b^a - b)`

5. (1 point) Consider the following program:

```
x=3
a=5
if (a%3)==2:
    x=x**3
elif(a%3)==1:
    x=x**2
else:
    x=x**1
```

What is the **value** of x after this program is executed?

(A) 9

(B) 27

(C) None of the other answers are correct.

(D) 3

(E) 1

6. (1 point) Consider the following program:

```
x=0
for i in range(4,10):
    if i%3==0:
        x+=3
    elif i%2==0:
        x+=2
    else:
        x+=1
```

What is the **value** of x after this program is executed?

(A) 10

(B) 12

(C) 11

(D) 14

(E) 13

7. (1 point) Evaluate the following expression:

`[1,2]+[len("3")]`

What value is produced?

(A) [1,2,1]

(B) [1,2,"3"]

(C) [1,2,1,2,1,2]

(D) [1,2,3]

8. (1 point) Consider the following program.

```
kay = 2
wart = 3

def knight(kay,wart):
    wart += 2
    kay += 3
    return wart + kay

wart = knight(kay, kay) + knight(wart, wart)
```

After it is run, what is the final **value** of `wart`?

(A) 5

(B) None of the other answers are correct.

(C) 2

(D) 3

9. (1 point) Consider the following program:

```
a=3
b=4
if a==3:
     b=a
elif a==4:
     a=5
else:
     a=b
```

What is the **value** of a after this program is executed?

(A) 7

(B) None of the other answers are correct.

(C) 4

(D) 3

(E) 5

10. (1 point) Consider the following program.

```
s="ABCBA"
x=0
y=len(s)-1
while s[x]==s[y] and x<=y:
    x+=1
    y-=1
```

After it is run, what is the final **value** of x?

(A) 3

(B) 0

(C) 1

(D) 4

(E) 2

11. (1 point) Consider the following program:

```
pi="3.14159"
e="2.71828"
x=pi*len(e)+pi
```

What is the **type** of x after this program is executed?

(A) None

(B) String

(C) Integer

(D) Boolean

(E) Float

12. (1 point) Consider the following program:

```
x="KING ARTHUR-MORGANA LEFAY-SIR BEDIVERE".split("-")
y=x[:]
y.reverse()
```

What is the **value** of x after this program is executed?

(A) ['KING', 'ARTHUR-MORGANA', 'LEFAY-SIR', 'BEDIVERE']

(B) ['SIR BEDIVERE', 'MORGANA LEFAY', 'KING ARTHUR']

(C) ['KING ARTHUR', 'MORGANA LEFAY', 'SIR BEDIVERE']

(D) None

(E) ['BEDIVERE', 'LEFAY-SIR', 'ARTHUR-MORGANA', 'KING']

13. (1 point) What is the result of the following expression?

```
[ 1, 2, 3 ] * 3.0
```

(A) [1.0, 2.0, 3.0, 1.0, 2.0, 3.0, 1.0, 2.0, 3.0]

(B) [1, 2, 3, 1, 2, 3, 1, 2, 3]

(C) None of the above.

(D) [3.0, 6.0, 9.0]

(E) [3, 6, 9]

14. (1 point) Consider the following program:

```
s="-B-O-R-S-"
x=s.split("-")[2:-2]
```

What is the **value** of x after this program is executed?

 (A) 'ORS'

 (B) ''

 (C) False

 (D) None

 (E) ['O', 'R']

15. (1 point) Consider the following program.

```
def artificing(s):
    return s+"%i" % 2
    return s*2
    return s

s=artificing("MERLIN")
```

After it is run, what is the final **value** of s?

 (A) None

 (B) 0

 (C) "MERLINMERLIN"

 (D) "MERLIN2"

 (E) "MERLIN%i"

16. (1 point) Consider the following program.

```
x=[]
for j in range(0,5):
    if (j%4)==0:
        x.append("-")
    if (j%5)==0:
        x.append("*")
```

After it is run, what is the final **value** of x?

 (A) ["-","*","-"]

 (B) None of the other answers are correct.

 (C) ["-","-","*"]

 (D) ["-","*"]

 (E) ["-","*","*"]

17. (1 point) Consider the following program:

```
a=["merlin","sir agravaine","king pellinore"]
b=[ ]
for i in range(0,3):
    b.append(a[0-i].title())
```

What is the **value** of b after this program is executed?

 (A) [ ]

 (B) ['Sir Agravaine', 'King Pellinore']

 (C) ['King Pellinore', 'Sir Agravaine']

 (D) ['King Pellinore', 'Sir Agravaine', 'Merlin']

 (E) ['Merlin', 'King Pellinore', 'Sir Agravaine']

18. (1 point) Consider the following program:

```
x=[1,2,3]
def f(a):
    s=""
    a.append(4)
    for i in a:
        s+=str(i)
    return s

x.append(f(x))
```

What is the **value** of x after this program is executed?

(A) [1, 2, 3, 4, '1234']

(B) [1, 2, 3, '123']

(C) [1, 2, 3, 10]

(D) [1, 2, 3]

(E) [1, 2, 3, '1234']

19. (1 point) Consider the following program:

```
a=["S","T","U","P","E","F","Y"]
a=a[0:4]
a.sort()
x=""
for e in a:
    x=e+x
```

What is the **value** of x after this program is executed?

(A) None of the other answers are correct.

(B) "UTSP"

(C) "PSTU"

(D) "STUP"

(E) "PUST"

20. (1 point) Consider the following incomplete Python program.

```
s="".join(["2","2","0","1"])
x=0
for i in range(len(s)-1):
    x+=int(???)
```

What should replace the three question marks so the resulting value of x is 43?

(A) s[i:i-1]

(B) s[i+1:i+2]

(C) s[i:i+1]

(D) s[i:i+2]

21. (1 point)

```
x=str(3)+"str(3)"
```

What is the **value** of x after this program is executed?

 (A) `"3str(3)"`

 (B) None of the other answers are correct.

 (C) `"33"`

 (D) `33`

 (E) `"333"`

22. (1 point) Consider the following Python program.

```
e=[1,3,5,7,9,11]
d=[0,0,0]
for i in range(0,len(e)):
    d[i%3]+=e[i]
x=d[1]
```

After it is run, what is the final **value** of x?

 (A) `16`

 (B) `3`

 (C) `8`

 (D) `0`

 (E) `12`

23. (1 point) Consider the following program:

```
x=[1,2,3,4,5,6,7,8,9]
x=x[2:-2]
i=1
while i < 3:
    x[i]+=1
    i+=1
```

What is the **value** of x after this program is executed?

(A) [3, 5, 6, 6, 7]

(B) [3, 5, 6, 6, 7, 8]

(C) [2, 4, 5, 6, 6, 7]

(D) [3, 5, 6, 6]

(E) [2, 4, 5, 5, 6, 7]

24. (1 point) Consider the following program:

```
i=3
x=2
while i < 7:
    x+=i
    i+=2
```

What is the **value** of x after this program is executed?

(A) 14

(B) 13

(C) 12

(D) 10

(E) 11

25. (1 point) Consider the following program:

```python
def fix(s):
    a=list(s)
    a.sort()
    return ''.join(a)

x=["one","two","eleven","twelve"]
s1=fix(x[0]+x[-1])
s2=fix(x[1]+x[-2])

if s1<s2:
    x.sort()
elif s1==s2:
    x.reverse()
else:
    x.append("six")
```

What is the **value** of x after this program is executed?

(A) ['one', 'two', 'eleven', 'twelve']

(B) ['one', 'two', 'eleven', 'twelve', 'six']

(C) ['two', 'twelve', 'one', 'eleven', 'six']

(D) ['twelve', 'eleven', 'two', 'one']

(E) ['eleven', 'one', 'twelve', 'two']

26. (1 point) Consider the following incomplete function.

```python
def ismultiple(m,n):
    if ???:
        return False
    else:
        return True
```

The function is intended to return True if the input parameter m is a multiple of parameter n and False otherwise. For example, `ismultiple(4,2)` should return `True`, but `ismultiple(5,3)` should return `False`. What should replace the three question marks to complete the function?

(A) `(m // n) != 0`

(B) `(n % m) == 0`

(C) `(n // m) == 0`

(D) `(m % n) != 0`

27. (1 point) Consider the following program:

```
s="Hobbes"
i=0
x=-1
while i<len(s):
    if s[i]=='b':
        x=i
    i+=1
```

What is the **value** of x after this program is executed?

(A) 5

(B) 4

(C) 2

(D) -1

(E) 3

28. (1 point) Consider the following program.

```
x=1
i=0
while(x*x)<=9:
    i=i+(x*x)
    x=x+1
```

After it is run, what is the final **value** of x?

  (A) 4

  (B) 5

  (C) 14

  (D) 3

  (E) 30

29. (1 point) Consider the following program:

```
s="TRIS %i"
t="ISEU"
x=len(s) % len(t[2:-1])
```

What is the **type** of x after this program is executed?

  (A) Boolean

  (B) None

  (C) Float

  (D) Integer

  (E) String

30. (1 point) Evaluate the following expression:

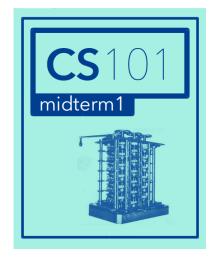`len("ABCDE"[1:4])`

What value is produced?

(A) 1

(B) 3

(C) 4

(D) 5

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1. Fill in your information:

Full Name: _____

UIN (Student Number): _____

NetID: _____

2. Fill in the following answers on the Scantron form:

92. B

93. A

94. A

95. E

96. D

1. (1 point) Consider the following incomplete program.

```
sum=0
for i in range(0,100):
    ???
```

The program is intended to sum all of the integers between 1 and 100 (inclusive). What should replace the three question marks to complete the program?

(A) `sum=sum+i+1`

(B) `sum=sum+i`

(C) `sum=sum+1`

(D) `sum+1=sum`

2. (1 point) Consider the following program.

```
x=1
i=0
while(x*x)<=9:
    i=i+(x*x)
    x=x+1
```

After it is run, what is the final **value** of x?

(A) `3`

(B) `5`

(C) `4`

(D) `14`

(E) `30`

3. (1 point) How can the following mathematical equation be implemented as a Python expression? Assume `a`, `b`, and `sin` have already been defined.

$$a \sin(a^b - b)$$

(A) `a*sin(a^b - b)`

(B) None of the other answers are correct.

(C) `a sin(a**b - b)`

(D) `a*sin(b^a - b)`

(E) `a*sin(a**b - b)`

4. (1 point) Consider the following program:

```python
def fix(s):
    a=list(s)
    a.sort()
    return ''.join(a)

x=["one","two","eleven","twelve"]
s1=fix(x[0]+x[-1])
s2=fix(x[1]+x[-2])

if s1<s2:
    x.sort()
elif s1==s2:
    x.reverse()
else:
    x.append("six")
```

What is the **value** of x after this program is executed?

(A) ['two', 'twelve', 'one', 'eleven', 'six']

(B) ['one', 'two', 'eleven', 'twelve']

(C) ['one', 'two', 'eleven', 'twelve', 'six']

(D) ['twelve', 'eleven', 'two', 'one']

(E) ['eleven', 'one', 'twelve', 'two']

5. (1 point)

```
x=str(3)+"str(3)"
```

What is the **value** of x after this program is executed?

(A) "33"

(B) 33

(C) "3str(3)"

(D) None of the other answers are correct.

(E) "333"

6. (1 point) Consider the following program:

```
a=3
b=4
if a!=b:
    a=b
elif a==4:
    a=5
else:
    b=a
```

What is the **value** of a after this program is executed?

(A) None of the other answers are correct.

(B) 7

(C) 5

(D) 3

(E) 4

7. (1 point) Consider the following program:

```
x=0
for i in range(2,7):
    if i%3==0:
        x+=3
    elif i%2==0:
        x+=2
    else:
        x+=1
```

What is the **value** of x after this program is executed?

(A) 14

(B) 11

(C) 13

(D) 12

(E) 10

8. (1 point) Consider the following program.

```
def artificing(s):
    return s*2
    return s+"%i" % 2
    return s

s=artificing("MERLIN")
```

After it is run, what is the final **value** of s?

(A) `12`

(B) `"MERLIN"`

(C) `None`

(D) `"MERLINMERLIN"`

(E) `"MERLIN2"`

9. (1 point) Consider the following program.

```
kay = 2
wart = 3

def knight(kay,wart):
    wart += 2
    kay += 3
    return wart + kay

wart = knight(kay, kay) + knight(wart, wart)
```

After it is run, what is the final **value** of wart?

(A) 3

(B) None of the other answers are correct.

(C) 5

(D) 2

10. (1 point) Consider the following incomplete function.

```
def isdivisible(m,n):
    if ???:
        return False
    else:
        return True
```

The function is intended to return True if the input parameter m is evenly divisible by the parameter n and False otherwise. For example, `isdivisible(4,2)` should return `True`, but `isdivisible(5,3)` should return `False`. What should replace the three question marks to complete the function?

(A) `(n // m) == 0`

(B) `(m // n) != 0`

(C) `(m % n) != 0`

(D) `(n % m) == 0`

11. (1 point) Consider the following program:

```
s="TRIS %i"
t="ISEU"
x=len(s) % len(t[2:-1])
```

What is the **type** of x after this program is executed?

(A) `Integer`

(B) `None`

(C) `Float`

(D) `Boolean`

(E) `String`

12. (1 point) Consider the following Python program.

```
e=[1,3,5,7,9,11]
d=[0,0,0]
for i in range(0,len(e)):
    d[i%3]+=e[i]
x=d[2]
```

After it is run, what is the final **value** of x?

(A) 8

(B) 16

(C) 12

(D) 0

(E) 7

13. (1 point) What is the result of the following expression?

```
[ 1, 2, 3 ] * 3
```

(A) [1, 2, 3, 1, 2, 3, 1, 2, 3]

(B) [3, 6, 9]

(C) (3, 6, 9)

(D) [1.0, 2.0, 3.0, 1.0, 2.0, 3.0, 1.0, 2.0, 3.0]

(E) [3.0, 6.0, 9.0]

14. (1 point) Consider the following program:

```
x=3
a=5
if (a%3)==2:
    x=x**3
elif(a%3)==1:
    x=x**2
else:
    x=x**1
```

What is the **value** of x after this program is executed?

(A) None of the other answers are correct.

(B) 1

(C) 3

(D) 27

(E) 9

15. (1 point) Consider the following program:

```
a=["merlin","sir agravaine","king pellinore"]
b=[ ]
for i in range(0,3):
    b.append(a[0-i].title())
```

What is the **value** of b after this program is executed?

(A) ['King Pellinore', 'Sir Agravaine', 'Merlin']

(B) [ ]

(C) ['King Pellinore', 'Sir Agravaine']

(D) ['Merlin', 'King Pellinore', 'Sir Agravaine']

(E) ['Sir Agravaine', 'King Pellinore']

16. (1 point) Consider the following incomplete Python program.

```
s="".join(["2","2","0","1"])
x=0
for i in range(len(s)-1):
    x+=int(???)
```

What should replace the three question marks so the resulting value of x is 43?

(A) s[i+1:i+2]

(B) s[i:i+1]

(C) s[i:i+2]

(D) s[i:i-1]

17. (1 point) Consider the following program.

```
x=[]
for j in range(0,5):
    if (j%3)==0:
        x.append("-")
    if (j%4)==0:
        x.append("*")
```

After it is run, what is the final **value** of x?

(A) ["-","*"]

(B) None of the other answers are correct.

(C) ["-","*","-","*"]

(D) ["*","-","*"]

(E) ["*","-","*"]

18. (1 point) Consider the following program:

```
x=[1,2,3,4,5,6,7,8,9]
x=x[2:-2]
i=1
while i < 3:
    x[i]+=1
    i+=1
```

What is the **value** of x after this program is executed?

(A) [3, 5, 6, 6]

(B) [3, 5, 6, 6, 7]

(C) [3, 5, 6, 6, 7, 8]

(D) [2, 4, 5, 6, 6, 7]

(E) [2, 4, 5, 5, 6, 7]

19. (1 point) Evaluate the following expression:

```
len("ABCD"[0:3])
```

What value is produced?

(A) 4

(B) 1

(C) 2

(D) 3

20. (1 point) For this problem, you should compose a function which accomplishes a given task using the available code blocks arranged in the correct functional order. *We ignore indentation for this problem.*

`find_max` should accept a `list` and return the value of the maximum item in the `list`. (`None` is always the lowest value in any numeric comparison, so you may use it as an initializer.)

```
def find_max(my_list):

1 max_val = i

2 max_val = None

3 for i in range(len(my_list)):

4 if i > max_val:

5 max_val = my_list[i]

6 return max_val

7 for i in range(my_list):

8 if my_list[i] > max_val:

9 print(max_val)
```

(A) 2, 7, 4, 5, 6

(B) 2, 3, 4, 1, 6

(C) 2, 3, 8, 5, 6

(D) 2, 3, 8, 1, 6

(E) 3, 2, 8, 5, 9

21. (1 point) Evaluate the following expression:

`[1,2]*len("3")`

What value is produced?

(A) `[1,2,1,2,1,2]`

(B) `[1,2,3]`

(C) `[1,2]`

(D) `[1,2,1]`

22. (1 point) Consider the following program.

```
s="BBCAA"
x=0
y=len(s)-1
while s[x]!=s[y] and x<len(s):
    x+=1
    y-=1
```

After it is run, what is the final **value** of x?

(A) `0`

(B) `1`

(C) `3`

(D) `4`

(E) `2`

23. (1 point) Consider the following program:

```
s="G+R+A+I+L"
x=s.split("+")[1:-2]
```

What is the **value** of x after this program is executed?

(A) ['R','A']

(B) None

(C) 'RAI'

(D) 3

(E) False

24. (1 point) Consider the following program:

```
a=["A","C","C","I","O"]
a.sort()
a[0]=a[-1]
x=""
for e in a:
    x=x+e
```

What is the **value** of x after this program is executed?

(A) "ACCIA"

(B) None of the other answers are correct.

(C) "OCCIO"

(D) "ICCOI"

(E) "ACCOA"

25. (1 point) Consider the following program:

```
pi="3.14159"
e="2.71828"
x=pi*len(e)+pi
```

What is the **type** of x after this program is executed?

(A) Boolean

(B) None

(C) Integer

(D) Float

(E) String

26. (1 point) Consider the following program:

```
s="Hobbes"
i=0
x=-1
while i<len(s):
    if s[i]=='b':
        x=i
    i+=1
```

What is the **value** of x after this program is executed?

(A) 5

(B) 3

(C) 2

(D) -1

(E) 4

27. (1 point) Consider the following program:

```
s="ECTOR"
t="GAWAIN"
x=(len(s)/(len(t)-1))+1
```

What is the **type** of x after this program is executed?

(A) Boolean

(B) Float

(C) None

(D) Integer

(E) String

28. (1 point) Consider the following program:

```
x=[1,2,3]
def f(a):
    s=""
    a.reverse()
    for i in a:
        s+=str(i)
    return s

x.append(f(x))
```

What is the **value** of x after this program is executed?

(A) [1, 2, 3, '321']

(B) [3, 2, 1, '321']

(C) [3, 2, 1]

(D) [1, 2, 3]

(E) [1, 2, 3, 6]

29. (1 point) Consider the following program:

```
i=3
x=2
while i < 7:
    x+=i
    i+=2
```

What is the **value** of x after this program is executed?

(A) 10

(B) 13

(C) 12

(D) 11

(E) 14

30. (1 point) Consider the following program:

```
x="KING ARTHUR-MORGANA LEFAY-SIR BEDIVERE".split("-")
y=x
x=y.reverse()
```

What is the **value** of x after this program is executed?

(A) ['SIR BEDIVERE', 'MORGANA LEFAY', 'KING ARTHUR']

(B) ['KING', 'ARTHUR-MORGANA', 'LEFAY-SIR', 'BEDIVERE']

(C) None

(D) ['KING ARTHUR', 'MORGANA LEFAY', 'SIR BEDIVERE']

(E) ['BEDIVERE', 'LEFAY-SIR', 'ARTHUR-MORGANA', 'KING']

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CS101
midterm1

- **Be sure to enter your <u>NetID</u> and <u>the code below</u> on your Scantron.**

- Do not turn this page until instructed to do so.

- There are 30 questions, worth 1 point each.

- Each question has only **one** correct answer.

- You must not communicate with other students during this test.

- No books, notes, or electronic devices are permitted.

- This is a 60-minute exam.

- There are several different versions of this exam.

1. Fill in your information:

Full Name: _____

UIN (Student Number): _____

NetID: _____

2. Fill in the following answers on the Scantron form:

92. C

93. A

94. A

95. A

96. E

1. (1 point) Evaluate the following expression:

```
len("ABCDE"[1:4])
```

What value is produced?

  (A) 3

  (B) 1

  (C) 4

  (D) 5

2. (1 point) Consider the following program.

```
s="ABCBA"
x=0
y=len(s)-1
while s[x]==s[y] and x<=y:
    x+=1
    y-=1
```

After it is run, what is the final **value** of x?

  (A) 2

  (B) 3

  (C) 0

  (D) 4

  (E) 1

3. (1 point) Consider the following program:

```
a=3
b=4
if a==3:
    a=b
elif a==4:
    a=5
else:
    b=a
```

What is the **value** of a after this program is executed?

(A) 5

(B) 3

(C) 7

(D) 4

(E) None of the other answers are correct.

4. (1 point) Consider the following program:

```
a=["S","T","U","P","E","F","Y"]
a=a[0:4]
a.sort()
x=""
for e in a:
    x=e+x
```

What is the **value** of x after this program is executed?

(A) `"UTSP"`

(B) None of the other answers are correct.

(C) `"PUST"`

(D) `"STUP"`

(E) `"PSTU"`

5. (1 point) Consider the following program:

```
x=[1,2,3,4,5,6,7,8,9]
x=x[2:-2]
i=1
while i <= 3:
    x[i]+=1
    i+=1
```

What is the **value** of x after this program is executed?

(A) [2, 4, 5, 6, 7, 7]

(B) [3, 5, 7, 7]

(C) [3, 5, 6, 7, 7]

(D) [3, 5, 6, 7, 7, 8]

(E) [2, 4, 5, 5, 7, 7]

6. (1 point) Consider the following Python program.

```
e=[1,3,5,7,9,11]
d=[0,0,0]
for i in range(0,len(e)):
    d[i%3]+=e[i]
x=d[1]
```

After it is run, what is the final **value** of x?

(A) 0

(B) 12

(C) 8

(D) 16

(E) 3

7. (1 point) Consider the following program.

```
x=0
i=1
while(i*i)<=9:
    x=x+(i*i)
    i=i+1
```

After it is run, what is the final **value** of x?

(A) 5

(B) 14

(C) 3

(D) 4

(E) 30

8. (1 point) Consider the following program:

```
a=["merlin","sir agravaine","king pellinore"]
b=[ ]
for i in range(0,3):
    b.append(a[0-i].title())
```

What is the **value** of b after this program is executed?

(A) ['Sir Agravaine', 'King Pellinore']

(B) ['King Pellinore', 'Sir Agravaine']

(C) ['Merlin', 'King Pellinore', 'Sir Agravaine']

(D) [ ]

(E) ['King Pellinore', 'Sir Agravaine', 'Merlin']

9. (1 point) Consider the following program:

```
x="KING ARTHUR-MORGANA LEFAY-SIR BEDIVERE".split("-")
y=x
x=y.reverse()
```

What is the **value** of x after this program is executed?

(A) ['SIR BEDIVERE', 'MORGANA LEFAY', 'KING ARTHUR']

(B) ['KING', 'ARTHUR-MORGANA', 'LEFAY-SIR', 'BEDIVERE']

(C) ['KING ARTHUR', 'MORGANA LEFAY', 'SIR BEDIVERE']

(D) ['BEDIVERE', 'LEFAY-SIR', 'ARTHUR-MORGANA', 'KING']

(E) None

10. (1 point) Consider the following program:

```python
x=[1,2,3]
def f(a):
    s=""
    a.reverse()
    for i in a:
        s+=str(i)
    return s

x.append(f(x))
```

What is the **value** of x after this program is executed?

(A) [1, 2, 3, 6]

(B) [1, 2, 3, '321']

(C) [1, 2, 3]

(D) [3, 2, 1]

(E) [3, 2, 1, '321']

11. (1 point) Consider the following program.

```
kay = 2
wart = 3

def knight(kay,wart):
    wart += 2
    kay += 3
    return wart + kay

wart = knight(kay, kay) + knight(wart, wart)
```

After it is run, what is the final **value** of `wart`?

  (A) 2

  (B) 3

  (C) 5

  (D) None of the other answers are correct.

12. (1 point) Consider the following program:

```
s="TRIS %i"
t="ISEU"
x=len(s) % len(t[2:-1])
```

What is the **type** of `x` after this program is executed?

  (A) Integer

  (B) Float

  (C) None

  (D) String

  (E) Boolean

13. (1 point) Consider the following program:

```
x=str("1"*3)
```

What is the **value** of x after this program is executed?

(A) "3"

(B) None of the other answers are correct.

(C) 111

(D) "111"

(E) 3

14. (1 point) Consider the following incomplete function.

```
def ismultiple(m,n):
    if ???:
        return False
    else:
        return True
```

The function is intended to return True if the input parameter m is a multiple of parameter n and False otherwise. For example, `ismultiple(4,2)` should return `True`, but `ismultiple(5,3)` should return `False`. What should replace the three question marks to complete the function?

(A) (m % n) != 0

(B) (m // n) != 0

(C) (n % m) == 0

(D) (n // m) == 0

15. (1 point) Consider the following incomplete program.

```
sum=0
for i in range(0,100):
    ???
```

The program is intended to sum all of the integers between 1 and 100 (inclusive). What should replace the three question marks to complete the program?

(A) `sum=sum+1`

(B) `sum=sum+i+1`

(C) `sum=sum+i`

(D) `sum+1=sum`

16. (1 point) What is the result of the following expression?

`[ 1, 2, 3 ] * 3.0`

(A) `None of the above.`

(B) `[3.0, 6.0, 9.0]`

(C) `[1.0, 2.0, 3.0, 1.0, 2.0, 3.0, 1.0, 2.0, 3.0]`

(D) `[1, 2, 3, 1, 2, 3, 1, 2, 3]`

(E) `[3, 6, 9]`

17. (1 point) Consider the following program.

```
x=[]
for j in range(0,5):
    if (j%4)==0:
        x.append("-")
    if (j%5)==0:
        x.append("*")
```

After it is run, what is the final **value** of x?

(A) ["-","*","*"]

(B) ["-","-","*"]

(C) ["-","*"]

(D) None of the other answers are correct.

(E) ["-","*","-"]

18. (1 point) Consider the following program:

```
s="Calvin"
i=0
x=-1
while i<len(s):
    if s[i]=='b':
        x=i
    i+=1
```

What is the **value** of x after this program is executed?

(A) 6

(B) -1

(C) 5

(D) 3

(E) 0

19. (1 point) Consider the following program:

```
i=3
x=2
while i < 7:
    x+=i
    i+=2
```

What is the **value** of x after this program is executed?

(A) 13

(B) 10

(C) 11

(D) 12

(E) 14

20. (1 point) Consider the following program:

```
x=3
a=7
if (a%3)==2:
    x=x**2
elif(a%3)==1:
    x=x**1
else:
    x=x**0
```

What is the **value** of x after this program is executed?

(A) 3

(B) 9

(C) None of the other answers are correct.

(D) 1

(E) 7

21. (1 point) Consider the following program:

```python
def fix(s):
    a=list(s)
    a.sort()
    return ''.join(a)

x=["one","two","eleven","twelve"]
s1=fix(x[0]+x[-1])
s2=fix(x[1]+x[-2])

if s1==s2:
    x.sort()
elif s1<s2:
    x.reverse()
else:
    x.append("six")
```

What is the **value** of x after this program is executed?

(A) ['eleven', 'one', 'twelve', 'two']

(B) ['one', 'two', 'eleven', 'twelve']

(C) ['one', 'two', 'eleven', 'twelve', 'six']

(D) ['two', 'twelve', 'one', 'eleven', 'six']

(E) ['twelve', 'eleven', 'two', 'one']

22. (1 point) Evaluate the following expression:

`[1,2]*len("3")`

What value is produced?

(A) `[1,2,3]`

(B) `[1,2,1]`

(C) `[1,2]`

(D) `[1,2,1,2,1,2]`

23. (1 point) Consider the following incomplete Python program.

```
s="".join(["0","1","2","1"])
x=0
for i in range(len(s)-1):
    x+=int(???)
```

What should replace the three question marks so the resulting value of x is 34?

(A) `s[i:i-1]`

(B) `s[i+1:i+2]`

(C) `s[i:i+2]`

(D) `s[i:i+1]`

24. (1 point) Consider the following program:

```
s="ECTOR"
t="GAWAIN"
x=(len(s)+len(t)) < 4 and s in t
```

What is the **type** of x after this program is executed?

(A) Integer

(B) Float

(C) None

(D) Boolean

(E) String

25. (1 point) Consider the following program:

```
pi="3.14159"
e="2.71828"
x=(float(e)**float(pi)-float(pi)) == 20
```

What is the **type** of x after this program is executed?

(A) None

(B) Integer

(C) Float

(D) Boolean

(E) String

26. (1 point) Consider the following program.

```
def artificing(s):
    return s*2
    return s+"%i" % 2
    return s
```

```
s=artificing("MERLIN")
```

After it is run, what is the final **value** of s?

(A) 12

(B) "MERLIN2"

(C) "MERLIN"

(D) None

(E) "MERLINMERLIN"

27. (1 point) Consider the following program:

```
s="-B-O-R-S-"
x=s.split("-")[2:-2]
```

What is the **value** of x after this program is executed?

(A) None

(B) ['O', 'R']

(C) False

(D) 'ORS'

(E) ''

28. (1 point) Consider the following program:

```
x=0
for i in range(2,8):
    if i%3==0:
        x+=3
    elif i%2==0:
        x+=2
    else:
        x+=1
```

What is the **value** of x after this program is executed?

(A) 12

(B) 14

(C) 10

(D) 13

(E) 11

29. (1 point) For this problem, you should compose a function which accomplishes a given task using the available code blocks arranged in the correct functional order. *We ignore indentation for this problem.*

`find_max` should accept a `list` and return the value of the maximum item in the `list`. (`None` is always the lowest value in any numeric comparison, so you may use it as an initializer.)

```
def find_max(my_list):

1 max_val = i

2 max_val = None

3 for i in range(len(my_list)):

4 if i > max_val:

5 max_val = my_list[i]

6 return max_val

7 for i in range(my_list):

8 if my_list[i] > max_val:

9 print(max_val)
```

(A) 2, 3, 8, 5, 6

(B) 3, 2, 8, 5, 9

(C) 2, 3, 4, 1, 6

(D) 2, 3, 8, 1, 6

(E) 2, 7, 4, 5, 6

30. (1 point) How can the following mathematical equation be implemented as a Python expression? Assume `a`, `b`, and `sin` have already been defined.

$$a \sin(a^b - b)$$

(A) `a*sin(a^b - b)`

(B) `a*sin(b^a - b)`

(C) `a sin(a**b - b)`

(D) `a*sin(a**b - b)`

(E) None of the other answers are correct.

CS101
midterm1

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- There are several different versions of this exam.

1. Fill in your information:

Full Name: _____

UIN (Student Number): _____

NetID: _____

2. Fill in the following answers on the Scantron form:

92. D

93. A

94. A

95. B

96. A

1. (1 point) What is the result of the following expression?

```
[ 1, 2, 3 ] * 3
```

 (A) [3, 6, 9]

 (B) [1, 2, 3, 1, 2, 3, 1, 2, 3]

 (C) [3.0, 6.0, 9.0]

 (D) [1.0, 2.0, 3.0, 1.0, 2.0, 3.0, 1.0, 2.0, 3.0]

 (E) (3, 6, 9)

2. (1 point) Consider the following program:

```
x=3
a=5
if (a%3)==2:
    x=x**3
elif(a%3)==1:
    x=x**2
else:
    x=x**1
```

What is the **value** of x after this program is executed?

 (A) 3

 (B) 27

 (C) None of the other answers are correct.

 (D) 9

 (E) 1

3. (1 point) Consider the following program:

```
s="TRIS %i"
t="ISEU"
x=len(s) % len(t[2:-1])
```

What is the **type** of x after this program is executed?

(A) None

(B) Integer

(C) Boolean

(D) String

(E) Float

4. (1 point) Consider the following program:

```
s="-B-O-R-S-"
x=s.split("-")[2:-2]
```

What is the **value** of x after this program is executed?

(A) False

(B) 'ORS'

(C) ['O', 'R']

(D) None

(E) ''

5. (1 point) Consider the following program:

```
a=["merlin","sir agravaine","king pellinore"]
b=[ ]
for i in range(0,4):
    b.append(a[0-i].title())
```

What is the **value** of b after this program is executed?

(A) ['Merlin', 'King Pellinore', 'Sir Agravaine', 'Merlin']

(B) ['Merlin', 'Sir Agravaine', 'King Pellinore', 'Merlin']

(C) [ ]

(D) ['Merlin', 'King Pellinore', 'Sir Agravaine']

(E) ['King Pellinore', 'Sir Agravaine', 'Merlin']

6. (1 point) Consider the following program.

```
def artificing(s):
    return s*2
    return s+"%i" % 2
    return s

s=artificing("MERLIN")
```

After it is run, what is the final **value** of s?

(A) "MERLIN"

(B) 12

(C) "MERLIN2"

(D) "MERLINMERLIN"

(E) None

7. (1 point) Consider the following Python program.

```
e=[1,3,5,7,9,11]
d=[0,0,0]
for i in range(0,len(e)):
    d[i%3]+=e[i]
x=d[1]
```

After it is run, what is the final **value** of x?

(A) 0

(B) 16

(C) 8

(D) 12

(E) 3

8. (1 point) Consider the following program:

```
s="Calvin"
i=0
x=-1
while i<len(s):
    if s[i]=='b':
        x=i
    i+=1
```

What is the **value** of x after this program is executed?

(A) 3

(B) -1

(C) 6

(D) 0

(E) 5

9. (1 point) Consider the following program:

```
x=[2,3,4,5,6,7,8,9]
x=x[2:-2]
i=1
while i <= 3:
    x[i]+=1
    i+=1
```

What is the **value** of x after this program is executed?

(A) [4, 6, 7]

(B) [2, 4, 6, 6]

(C) [4, 6, 7, 7]

(D) [3, 4, 6, 7, 8]

(E) [4, 6, 7, 8]

10. (1 point) Evaluate the following expression:

```
[1,2]*len("3")
```

What value is produced?

(A) [1,2,1]

(B) [1,2]

(C) [1,2,1,2,1,2]

(D) [1,2,3]

11. (1 point) Consider the following program:

```
x=[1,2,3]
def f(a):
    s=""
    a.reverse()
    for i in a:
        s+=str(i)
    return s

x.append(f(x))
```

What is the **value** of x after this program is executed?

(A) [3, 2, 1, '321']

(B) [3, 2, 1]

(C) [1, 2, 3]

(D) [1, 2, 3, 6]

(E) [1, 2, 3, '321']

12. (1 point) How can the following mathematical equation be implemented as a Python expression? Assume a, b, and cos have already been defined.

$$a^b \cos(a - b)$$

(A) None of the other answers are correct.

(B) (b^a)cos(a-b)

(C) (a**b)*cos(a-b)

(D) (a**b)cos(a-b)

(E) (a^b)*cos(a-b)

13. (1 point) Consider the following program.

```
kay = 2
wart = 3

def knight(kay,wart):
    wart += 2
    kay += 3
    return wart + kay

kay = knight(wart, kay) + knight(kay, wart)
```

After it is run, what is the final **value** of kay?

(A) 3

(B) 5

(C) None of the other answers are correct.

(D) 2

14. (1 point) Consider the following program:

```
pi="3.14159"
e="2.71828"
x=pi*len(e)+pi
```

What is the **type** of x after this program is executed?

(A) None

(B) String

(C) Integer

(D) Float

(E) Boolean

15. (1 point) Consider the following program:

```
x="KING ARTHUR-MORGANA LEFAY-SIR BEDIVERE".split("-")
y=x
y.reverse()
```

What is the **value** of x after this program is executed?

(A) None

(B) ['KING', 'ARTHUR-MORGANA', 'LEFAY-SIR', 'BEDIVERE']

(C) ['BEDIVERE', 'LEFAY-SIR', 'ARTHUR-MORGANA', 'KING']

(D) ['SIR BEDIVERE', 'MORGANA LEFAY', 'KING ARTHUR']

(E) ['KING ARTHUR', 'MORGANA LEFAY', 'SIR BEDIVERE']

16. (1 point)

```
x=str(3)+"str(3)"
```

What is the **value** of x after this program is executed?

(A) None of the other answers are correct.

(B) "33"

(C) "333"

(D) 33

(E) "3str(3)"

17. (1 point) Consider the following program:

```
def fix(s):
    a=list(s)
    a.sort()
    return ''.join(a)

x=["one","two","eleven","twelve"]
s1=fix(x[0]+x[-1])
s2=fix(x[1]+x[-2])

if s1==s2:
    x.sort()
elif s1<s2:
    x.reverse()
else:
    x.append("six")
```

What is the **value** of x after this program is executed?

(A) ['one', 'two', 'eleven', 'twelve']

(B) ['eleven', 'one', 'twelve', 'two']

(C) ['two', 'twelve', 'one', 'eleven', 'six']

(D) ['one', 'two', 'eleven', 'twelve', 'six']

(E) ['twelve', 'eleven', 'two', 'one']

18. (1 point) Consider the following program.

```
x=[]
for j in range(0,5):
    if (j%3)==0:
        x.append("-")
    if (j%4)==0:
        x.append("*")
```

After it is run, what is the final **value** of x?

(A) ["*","-","*"]

(B) ["-","*"]

(C) None of the other answers are correct.

(D) ["-","*","-","*"]

(E) ["*","-","*"]

19. (1 point) Consider the following program:

```
i=3
x=2
while i < 7:
    x+=i
    i+=2
```

What is the **value** of x after this program is executed?

(A) 14

(B) 12

(C) 10

(D) 13

(E) 11

20. (1 point) Consider the following program:

```
s="ECTOR"
t="GAWAIN"
x=len(str(s.isupper()))-t.find("A")
```

What is the **type** of x after this program is executed?

(A) String

(B) Boolean

(C) Integer

(D) Float

(E) None

21. (1 point) Consider the following incomplete program.

```
sum=0
for i in range(0,100):
    ???
```

The program is intended to sum all of the integers between 1 and 100 (inclusive). What should replace the three question marks to complete the program?

(A) sum+1=sum

(B) sum=sum+i

(C) sum=sum+i+1

(D) sum=sum+1

22. (1 point) Consider the following incomplete Python program.

```python
s="".join(["1","0","2","1"])
x=0
for i in range(len(s)-1):
    x+=int(???)
```

What should replace the three question marks so the resulting value of x is 33?

(A) s[i:i-1]

(B) s[i:i+1]

(C) s[i:i+2]

(D) s[i+1:i+2]

23. (1 point) Consider the following program:

```python
x=0
for i in range(4,10):
    if i%3==0:
        x+=3
    elif i%2==0:
        x+=2
    else:
        x+=1
```

What is the **value** of x after this program is executed?

(A) 13

(B) 10

(C) 14

(D) 12

(E) 11

24. (1 point) For this problem, you should compose a function which accomplishes a given task using the available code blocks arranged in the correct functional order. *We ignore indentation for this problem.*

`find_max` should accept a `list` and return the value of the maximum item in the `list`. (`None` is always the lowest value in any numeric comparison, so you may use it as an initializer.)

```
def find_max(my_list):

1 max_val = i

2 max_val = None

3 for i in range(len(my_list)):

4 if i > max_val:

5 max_val = my_list[i]

6 return max_val

7 for i in range(my_list):

8 if my_list[i] > max_val:

9 print(max_val)
```

(A) 3, 2, 8, 5, 9

(B) 2, 3, 8, 1, 6

(C) 2, 3, 8, 5, 6

(D) 2, 7, 4, 5, 6

(E) 2, 3, 4, 1, 6

25. (1 point) Consider the following program.

```
x=0
i=1
while(i*i)<=9:
    x=x+(i*i)
    i=i+1
```

After it is run, what is the final **value** of x?

(A) 5

(B) 14

(C) 30

(D) 3

(E) 4

26. (1 point) Consider the following program.

```
s="ABCBA"
x=0
y=len(s)-1
while s[x]==s[y] and x<y:
    x+=1
    y-=1
```

After it is run, what is the final **value** of x?

(A) 0

(B) 1

(C) 3

(D) 4

(E) 2

27. (1 point) Evaluate the following expression:

`len("ABCDE"[1:4])`

What value is produced?

(A) 1

(B) 4

(C) 5

(D) 3

28. (1 point) Consider the following program:

```
a=["A","C","C","I","O"]
a.sort()
a[0]=a[-1]
x=""
for e in a:
    x=x+e
```

What is the **value** of x after this program is executed?

(A) `"OCCIO"`

(B) `"ACCOA"`

(C) `"ACCIA"`

(D) None of the other answers are correct.

(E) `"ICCOI"`

29. (1 point) Consider the following incomplete function.

```
def isdivisible(m,n):
    if ???:
        return False
    else:
        return True
```

The function is intended to return True if the input parameter m is evenly divisible by the parameter n and False otherwise. For example, `isdivisible(4,2)` should return `True`, but `isdivisible(5,3)` should return `False`. What should replace the three question marks to complete the function?

(A) `(n // m) == 0`

(B) `(m % n) != 0`

(C) `(m // n) != 0`

(D) `(n % m) == 0`

30. (1 point) Consider the following program:

```
a=3
b=4
if a!=b:
    a=b
elif a==4:
    a=5
else:
    b=a
```

What is the **value** of a after this program is executed?

(A) 5

(B) 4

(C) 3

(D) None of the other answers are correct.

(E) 7

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CS101
midterm1

- **Be sure to enter your <u>NetID</u> and <u>the code below</u> on your Scantron**.

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- There are 30 questions, worth 1 point each.

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- No books, notes, or electronic devices are permitted.

- This is a 60-minute exam.

- There are several different versions of this exam.

1. Fill in your information:

Full Name: _____

UIN (Student Number): _____

NetID: _____

2. Fill in the following answers on the Scantron form:

92. E

93. A

94. A

95. C

96. B

1. (1 point) Consider the following program:

```
s="Hobbes"
i=0
x=-1
while i<len(s):
    if s[i]=='b':
        x=i
    i+=1
```

What is the **value** of x after this program is executed?

(A) 4

(B) 2

(C) -1

(D) 3

(E) 5

2. (1 point) Consider the following program:

```
s="G+R+A+I+L"
x=s.split("+")[1:-2]
```

What is the **value** of x after this program is executed?

(A) ['R','A']

(B) None

(C) False

(D) 'RAI'

(E) 3

3. (1 point) Consider the following program.

```
def artificing(s):
    return s*2
    return s+"%i" % 2
    return s
```

```
s=artificing("MERLIN")
```

After it is run, what is the final **value** of s?

(A) `12`

(B) `"MERLIN"`

(C) `"MERLINMERLIN"`

(D) `"MERLIN2"`

(E) `None`

4. (1 point) Consider the following program:

```
x=str(1.2)*2
```

What is the **value** of x after this program is executed?

(A) None of the other answers are correct.

(B) `"1.21.2"`

(C) `2.4`

(D) `"2.4"`

(E) `"1.2*2"`

5. (1 point) Consider the following Python program.

```
e=[1,3,5,7,9,11]
d=[0,0,0]
for i in range(0,len(e)):
    d[i%3]+=e[i]
x=d[2]
```

After it is run, what is the final **value** of x?

(A) 7

(B) 16

(C) 12

(D) 0

(E) 8

6. (1 point) Consider the following program:

```
pi="3.14159"
e="2.71828"
x=pi in pi*len(e)
```

What is the **type** of x after this program is executed?

(A) Float

(B) String

(C) None

(D) Boolean

(E) Integer

4

7. (1 point) Consider the following program.

```
x=[]
for j in range(0,5):
    if (j%3)==0:
        x.append("-")
    if (j%4)==0:
        x.append("*")
```

After it is run, what is the final **value** of x?

(A) ["*","-","*"]

(B) ["*","-","*"]

(C) ["-","*"]

(D) None of the other answers are correct.

(E) ["-","*","-","*"]

8. (1 point) Consider the following program:

```
a=["S","T","U","P","E","F","Y"]
a=a[0:4]
a.sort()
x=""
for e in a:
    x=e+x
```

What is the **value** of x after this program is executed?

(A) "PUST"

(B) None of the other answers are correct.

(C) "STUP"

(D) "UTSP"

(E) "PSTU"

9. (1 point) Consider the following program:

```
x=[1,2,3]
def f(a):
    s=""
    a.reverse()
    for i in a:
        s+=str(i)
    return s

x.append(f(x))
```

What is the **value** of x after this program is executed?

(A) [1, 2, 3, '321']

(B) [3, 2, 1]

(C) [1, 2, 3]

(D) [3, 2, 1, '321']

(E) [1, 2, 3, 6]

10. (1 point) Evaluate the following expression:

```
[1,2]+[len("3")]
```

What value is produced?

(A) [1,2,3]

(B) [1,2,"3"]

(C) [1,2,1,2,1,2]

(D) [1,2,1]

11. (1 point) Consider the following program:

```
a=3
b=4
if a==3:
    a=b
elif a==4:
    a=5
else:
    b=a
```

What is the **value** of a after this program is executed?

(A) 3

(B) 4

(C) 7

(D) None of the other answers are correct.

(E) 5

12. (1 point) Consider the following program:

```
s="TRIS %i"
t="ISEU"
x=len(s) % len(t[2:-1])
```

What is the **type** of x after this program is executed?

(A) Boolean

(B) Integer

(C) None

(D) Float

(E) String

13. (1 point) Consider the following program:

```python
def fix(s):
    a=list(s)
    a.sort()
    return ''.join(a)

x=["one","two","eleven","twelve"]
s1=fix(x[0]+x[-1])
s2=fix(x[1]+x[-2])

if s1<s2:
    x.sort()
elif s1>s2:
    x.reverse()
else:
    x.append("six")
```

What is the **value** of x after this program is executed?

(A) ['twelve', 'eleven', 'two', 'one']

(B) ['eleven', 'one', 'twelve', 'two']

(C) ['one', 'two', 'eleven', 'twelve', 'six']

(D) ['two', 'twelve', 'one', 'eleven', 'six']

(E) ['one', 'two', 'eleven', 'twelve']

14. (1 point) For this problem, you should compose a function which accomplishes a given task using the available code blocks arranged in the correct functional order. *We ignore indentation for this problem.*

find_max should accept a list and return the value of the maximum item in the list. (None is always the lowest value in any numeric comparison, so you may use it as an initializer.)

```
def find_max(my_list):

1 max_val = i

2 max_val = None

3 for i in range(len(my_list)):

4 if i > max_val:

5 max_val = my_list[i]

6 return max_val

7 for i in range(my_list):

8 if my_list[i] > max_val:

9 print(max_val)
```

(A) 2, 3, 8, 5, 6

(B) 2, 7, 4, 5, 6

(C) 3, 2, 8, 5, 9

(D) 2, 3, 4, 1, 6

(E) 2, 3, 8, 1, 6

15. (1 point) Consider the following program:

```
x=0
for i in range(2,7):
    if i%3==0:
        x+=3
    elif i%2==0:
        x+=2
    else:
        x+=1
```

What is the **value** of x after this program is executed?

(A) 11

(B) 10

(C) 12

(D) 13

(E) 14

16. (1 point) Consider the following program.

```
s="ABCBA"
x=0
y=len(s)-1
while s[x]==s[y] and x<=y:
    x+=1
    y-=1
```

After it is run, what is the final **value** of x?

(A) 1

(B) 0

(C) 3

(D) 2

(E) 4

17. (1 point) Consider the following program:

```
x=3
a=7
if (a%3)==2:
    x=x**2
elif(a%3)==1:
    x=x**1
else:
    x=x**0
```

What is the **value** of x after this program is executed?

(A) None of the other answers are correct.

(B) 9

(C) 7

(D) 3

(E) 1

18. (1 point) Consider the following program:

```
a=["merlin","sir agravaine","king pellinore"]
b=[ ]
for i in range(1,3):
    b.append(a[0-i].title())
```

What is the **value** of b after this program is executed?

(A) ['Merlin', 'King Pellinore', 'Sir Agravaine']

(B) [ ]

(C) ['King Pellinore', 'Sir Agravaine']

(D) ['Sir Agravaine', 'King Pellinore']

(E) ['King Pellinore', 'Sir Agravaine', 'Merlin']

19. (1 point) Consider the following program:

```
x=[1,2,3,4,5,6,7,8,9]
x=x[2:-2]
i=1
while i <= 3:
    x[i]+=1
    i+=1
```

What is the **value** of x after this program is executed?

(A) [2, 4, 5, 6, 7, 7]

(B) [3, 5, 6, 7, 7]

(C) [3, 5, 7, 7]

(D) [2, 4, 5, 5, 7, 7]

(E) [3, 5, 6, 7, 7, 8]

20. (1 point) Consider the following program:

```
x="KING ARTHUR-MORGANA LEFAY-SIR BEDIVERE".split("-")
y=x
y.reverse()
```

What is the **value** of x after this program is executed?

(A) `['KING ARTHUR', 'MORGANA LEFAY', 'SIR BEDIVERE']`

(B) `None`

(C) `['BEDIVERE', 'LEFAY-SIR', 'ARTHUR-MORGANA', 'KING']`

(D) `['KING', 'ARTHUR-MORGANA', 'LEFAY-SIR', 'BEDIVERE']`

(E) `['SIR BEDIVERE', 'MORGANA LEFAY', 'KING ARTHUR']`

21. (1 point) Consider the following program.

```
x=0
i=1
while(i*i)<=9:
    x=x+(i*i)
    i=i+1
```

After it is run, what is the final **value** of x?

(A) 14

(B) 4

(C) 3

(D) 30

(E) 5

15

22. (1 point) What is the result of the following expression?

```
[ 1, 2, 3 ] * 3
```

(A) (3, 6, 9)

(B) [1.0, 2.0, 3.0, 1.0, 2.0, 3.0, 1.0, 2.0, 3.0]

(C) [3.0, 6.0, 9.0]

(D) [1, 2, 3, 1, 2, 3, 1, 2, 3]

(E) [3, 6, 9]

23. (1 point) Consider the following program:

```
i=2
x=3
while i < 7:
    x+=i
    i+=2
```

What is the **value** of x after this program is executed?

(A) 11

(B) 13

(C) 14

(D) 12

(E) 15

24. (1 point) Evaluate the following expression:

```
len("ABCDE"[1:4])
```

What value is produced?

  (A) 1

  (B) 5

  (C) 3

  (D) 4

25. (1 point) Consider the following incomplete function.

```
def ismultiple(m,n):
    if ???:
        return False
    else:
        return True
```

The function is intended to return True if the input parameter m is a multiple of parameter n and False otherwise. For example, `ismultiple(4,2)` should return `True`, but `ismultiple(5,3)` should return `False`. What should replace the three question marks to complete the function?

  (A) `(m % n) != 0`

  (B) `(n // m) == 0`

  (C) `(n % m) == 0`

  (D) `(m // n) != 0`

26. (1 point) Consider the following incomplete Python program.

```
s="".join(["2","2","0","1"])
x=0
for i in range(len(s)-1):
    x+=int(???)
```

What should replace the three question marks so the resulting value of x is 43?

(A) `s[i:i-1]`

(B) `s[i:i+2]`

(C) `s[i+1:i+2]`

(D) `s[i:i+1]`

27. (1 point) Consider the following incomplete program.

```
sum=0
???:
    sum=sum+i
```

The program is intended to sum all of the integers between 1 and 100 (inclusive). What should replace the three question marks to complete the program?

(A) `while i<=100`

(B) `while i in range(100)`

(C) `for i in range(0,100)`

(D) `for i in range(1,101)`

28. (1 point) How can the following mathematical equation be implemented as a Python expression? Assume a, b, and cos have already been defined.

$$a^b \cos(a - b)$$

(A) (a**b)*cos(a-b)

(B) (a^b)*cos(a-b)

(C) (a**b)cos(a-b)

(D) (b^a)cos(a-b)

(E) None of the other answers are correct.

29. (1 point) Consider the following program:

```
s="ECTOR"
t="GAWAIN"
x=len(str(s.isupper()))-t.find("A")
```

What is the **type** of x after this program is executed?

(A) Integer

(B) String

(C) Float

(D) Boolean

(E) None

30. (1 point) Consider the following program.

```
kay = 2
wart = 3

def knight(kay,wart):
    wart += 2
    kay += 3
    return wart + kay

wart = knight(kay, kay) + knight(wart, wart)
```

After it is run, what is the final **value** of `wart`?

(A) 5

(B) 2

(C) None of the other answers are correct.

(D) 3

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CS101 midterm1

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1. Fill in your information:

Full Name: _____

UIN (Student Number): _____

NetID: _____

2. Fill in the following answers on the Scantron form:

92. A

93. B

94. A

95. E

96. E

1. (1 point) Consider the following program.

```
s="ABCBA"
x=0
y=len(s)-1
while s[x]==s[y] and x<y:
    x+=1
    y-=1
```

After it is run, what is the final **value** of x?

(A) 3

(B) 4

(C) 0

(D) 2

(E) 1

2. (1 point) Consider the following program:

```
s="TRIS %i"
t="ISEU"
x=s % len(t)
```

What is the **type** of x after this program is executed?

(A) String

(B) Boolean

(C) None

(D) Integer

(E) Float

3. (1 point) Consider the following program:

```
s="Calvin"
i=0
x=-1
while i<len(s):
    if s[i]=='b':
        x=i
    i+=1
```

What is the **value** of x after this program is executed?

(A) 3

(B) 0

(C) -1

(D) 5

(E) 6

4. (1 point) Consider the following program:

```
a=3
b=4
if a==3:
    a=b
elif a==4:
    a=5
else:
    b=a
```

What is the **value** of a after this program is executed?

(A) 5

(B) 7

(C) 4

(D) None of the other answers are correct.

(E) 3

5. (1 point) Consider the following program.

```
kay = 2
wart = 3

def knight(kay,wart):
    wart += 2
    kay += 3
    return wart + kay

kay = knight(wart, kay) + knight(kay, wart)
```

After it is run, what is the final **value** of kay?

(A) 2

(B) None of the other answers are correct.

(C) 5

(D) 3

6. (1 point) Consider the following program:

```
s="ECTOR"
t="GAWAIN"
x=(len(s)/(len(t)-1))+1
```

What is the **type** of x after this program is executed?

(A) Boolean

(B) String

(C) None

(D) Float

(E) Integer

7. (1 point) Evaluate the following expression:

```
len("ABCD"[0:3])
```

What value is produced?

(A) 2

(B) 1

(C) 4

(D) 3

8. (1 point) Consider the following program:

```
a=["merlin","sir agravaine","king pellinore"]
b=[ ]
for i in range(0,3):
    b.append(a[0-i].title())
```

What is the **value** of b after this program is executed?

(A) ['King Pellinore', 'Sir Agravaine', 'Merlin']

(B) ['King Pellinore', 'Sir Agravaine']

(C) ['Sir Agravaine', 'King Pellinore']

(D) ['Merlin', 'King Pellinore', 'Sir Agravaine']

(E) [ ]

9. (1 point) How can the following mathematical equation be implemented as a Python expression? Assume a, b, and cos have already been defined.

$$a^b \cos(a - b)$$

(A) (a^b)*cos(a-b)

(B) (b^a)cos(a-b)

(C) None of the other answers are correct.

(D) (a**b)cos(a-b)

(E) (a**b)*cos(a-b)

10. (1 point) Consider the following program:

```
x=0
for i in range(2,7):
    if i%3==0:
        x+=3
    elif i%2==0:
        x+=2
    else:
        x+=1
```

What is the **value** of x after this program is executed?

(A) 13

(B) 12

(C) 11

(D) 14

(E) 10

11. (1 point) Consider the following incomplete function.

```
def isdivisible(m,n):
    if ???:
        return False
    else:
        return True
```

The function is intended to return True if the input parameter m is evenly divisible by the parameter n and False otherwise. For example, `isdivisible(4,2)` should return `True`, but `isdivisible(5,3)` should return `False`. What should replace the three question marks to complete the function?

(A) `(m % n) != 0`

(B) `(n // m) == 0`

(C) `(m // n) != 0`

(D) `(n % m) == 0`

12. (1 point) Consider the following program:

```
i=2
x=3
while i < 7:
    x+=i
    i+=2
```

What is the **value** of `x` after this program is executed?

(A) 14

(B) 13

(C) 15

(D) 11

(E) 12

13. (1 point) Consider the following incomplete Python program.

```python
s="".join(["1","0","2","1"])
x=0
for i in range(len(s)-1):
    x+=int(???)
```

What should replace the three question marks so the resulting value of x is 33?

(A) `s[i:i-1]`

(B) `s[i:i+2]`

(C) `s[i:i+1]`

(D) `s[i+1:i+2]`

14. (1 point) Evaluate the following expression:

```python
[1,2]*len("3")
```

What value is produced?

(A) `[1,2]`

(B) `[1,2,1,2,1,2]`

(C) `[1,2,1]`

(D) `[1,2,3]`

15. (1 point) Consider the following program.

```
x=[]
for j in range(0,5):
    if (j%3)==0:
        x.append("-")
    if (j%4)==0:
        x.append("*")
```

After it is run, what is the final **value** of x?

(A) ["*","-","*"]

(B) ["-","*"]

(C) None of the other answers are correct.

(D) ["-","*","-","*"]

(E) ["*","-","*"]

16. (1 point) Consider the following program:

```
x="KING ARTHUR-MORGANA LEFAY-SIR BEDIVERE".split("-")
y=x[:]
y.reverse()
```

What is the **value** of x after this program is executed?

(A) ['KING ARTHUR', 'MORGANA LEFAY', 'SIR BEDIVERE']

(B) ['SIR BEDIVERE', 'MORGANA LEFAY', 'KING ARTHUR']

(C) ['BEDIVERE', 'LEFAY-SIR', 'ARTHUR-MORGANA', 'KING']

(D) None

(E) ['KING', 'ARTHUR-MORGANA', 'LEFAY-SIR', 'BEDIVERE']

17. (1 point) Consider the following program:

```
x=[1,2,3]
def f(a):
    s=""
    a.reverse()
    for i in a:
        s+=str(i)
    return s

x.append(f(x))
```

What is the **value** of x after this program is executed?

(A) [1, 2, 3, 6]

(B) [3, 2, 1]

(C) [3, 2, 1, '321']

(D) [1, 2, 3, '321']

(E) [1, 2, 3]

18. (1 point) Consider the following Python program.

```python
e=[1,3,5,7,9,11]
d=[0,0,0]
for i in range(0,len(e)):
    d[i%3]+=e[i]
x=d[2]
```

After it is run, what is the final **value** of x?

(A) 12

(B) 8

(C) 0

(D) 16

(E) 7

19. (1 point) Consider the following incomplete program.

```python
sum=0
???:
    sum=sum+i
```

The program is intended to sum all of the integers between 1 and 100 (inclusive). What should replace the three question marks to complete the program?

(A) `while i<=100`

(B) `while i in range(100)`

(C) `for i in range(1,101)`

(D) `for i in range(0,100)`

12

20. (1 point) Consider the following program.

```
def artificing(s):
    return s*2
    return s+"%i" % 2
    return s
```

```
s=artificing("MERLIN")
```

After it is run, what is the final **value** of s?

(A) "MERLIN"

(B) "MERLIN2"

(C) 12

(D) None

(E) "MERLINMERLIN"

21. (1 point) Consider the following program:

```
s="-B-O-R-S-"
x=s.split("-")[2:-2]
```

What is the **value** of x after this program is executed?

(A) None

(B) 'ORS'

(C) ['O', 'R']

(D) False

(E) ''

22. (1 point) Consider the following program:

```
pi="3.14159"
e="2.71828"
x=pi*len(e)+pi
```

What is the **type** of x after this program is executed?

(A) Integer

(B) None

(C) Boolean

(D) Float

(E) String

23. (1 point) What is the result of the following expression?

```
[ 1, 2, 3 ] * 3
```

(A) [1.0, 2.0, 3.0, 1.0, 2.0, 3.0, 1.0, 2.0, 3.0]

(B) [1, 2, 3, 1, 2, 3, 1, 2, 3]

(C) (3, 6, 9)

(D) [3, 6, 9]

(E) [3.0, 6.0, 9.0]

24. (1 point) Consider the following program:

```
a=["A","C","C","I","O"]
a.sort()
a[0]=a[-1]
x=""
for e in a:
    x=x+e
```

What is the **value** of x after this program is executed?

(A) "ICCOI"

(B) None of the other answers are correct.

(C) "ACCIA"

(D) "ACCOA"

(E) "OCCIO"

25. (1 point) For this problem, you should compose a function which accomplishes a given task using the available code blocks arranged in the correct functional order. *We ignore indentation for this problem.*

`find_max` should accept a `list` and return the value of the maximum item in the `list`. (`None` is always the lowest value in any numeric comparison, so you may use it as an initializer.)

```
def find_max(my_list):

1 max_val = i

2 max_val = None

3 for i in range(len(my_list)):

4 if i > max_val:

5 max_val = my_list[i]

6 return max_val

7 for i in range(my_list):

8 if my_list[i] > max_val:

9 print(max_val)
```

 (A) 2, 3, 8, 5, 6

 (B) 2, 3, 8, 1, 6

 (C) 2, 7, 4, 5, 6

 (D) 3, 2, 8, 5, 9

 (E) 2, 3, 4, 1, 6

26. (1 point) Consider the following program:

```
x=[2,3,4,5,6,7,8,9]
x=x[2:-2]
i=1
while i <= 3:
    x[i]+=1
    i+=1
```

What is the **value** of x after this program is executed?

(A) [4, 6, 7]

(B) [4, 6, 7, 8]

(C) [3, 4, 6, 7, 8]

(D) [4, 6, 7, 7]

(E) [2, 4, 6, 6]

27. (1 point) Consider the following program.

```
x=0
i=1
while(i*i)<=9:
    x=x+(i*i)
    i=i+1
```

After it is run, what is the final **value** of x?

(A) 5

(B) 4

(C) 14

(D) 3

(E) 30

28. (1 point) Consider the following program:

```
x=str("1"*3)
```

What is the **value** of x after this program is executed?

(A) 3

(B) "111"

(C) "3"

(D) None of the other answers are correct.

(E) 111

29. (1 point) Consider the following program:

```python
def fix(s):
    a=list(s)
    a.sort()
    return ''.join(a)

x=["one","two","eleven","twelve"]
s1=fix(x[0]+x[-1])
s2=fix(x[1]+x[-2])

if s1==s2:
    x.sort()
elif s1<s2:
    x.reverse()
else:
    x.append("six")
```

What is the **value** of x after this program is executed?

(A) ['one', 'two', 'eleven', 'twelve']

(B) ['one', 'two', 'eleven', 'twelve', 'six']

(C) ['twelve', 'eleven', 'two', 'one']

(D) ['two', 'twelve', 'one', 'eleven', 'six']

(E) ['eleven', 'one', 'twelve', 'two']

30. (1 point) Consider the following program:

```
x=3
a=7
if (a%3)==2:
    x=x**2
elif(a%3)==1:
    x=x**1
else:
    x=x**0
```

What is the **value** of x after this program is executed?

(A) 3

(B) 9

(C) 1

(D) None of the other answers are correct.

(E) 7

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- Do not turn this page until instructed to do so.

- There are 30 questions, worth 1 point each.

- Each question has only **one** correct answer.

- You must not communicate with other students during this test.

- No books, notes, or electronic devices are permitted.

- This is a 60-minute exam.

- There are several different versions of this exam.

1. Fill in your information:

Full Name: _____

UIN (Student Number): _____

NetID: _____

2. Fill in the following answers on the Scantron form:

92. B

93. B

94. A

95. A

96. A

1. (1 point) How can the following mathematical equation be implemented as a Python expression? Assume `a`, `b`, and `sin` have already been defined.

$$a \sin(a^b - b)$$

(A) `a sin(a**b - b)`

(B) `a*sin(b^a - b)`

(C) `a*sin(a**b - b)`

(D) `a*sin(a^b - b)`

(E) None of the other answers are correct.

2. (1 point) Consider the following program:

```
x=str("1"*3)
```

What is the **value** of `x` after this program is executed?

(A) `"3"`

(B) None of the other answers are correct.

(C) `3`

(D) `111`

(E) `"111"`

3. (1 point) Consider the following program:

```python
x=[1,2,3]
def f(a):
    s=""
    a.reverse()
    for i in a:
        s+=str(i)
    return s

x.append(f(x))
```

What is the **value** of x after this program is executed?

(A) [1, 2, 3]

(B) [1, 2, 3, '321']

(C) [3, 2, 1]

(D) [3, 2, 1, '321']

(E) [1, 2, 3, 6]

4. (1 point) Consider the following incomplete function.

```
def isdivisible(m,n):
    if ???:
        return False
    else:
        return True
```

The function is intended to return True if the input parameter m is evenly divisible by the parameter n and False otherwise. For example, `isdivisible(4,2)` should return `True`, but `isdivisible(5,3)` should return `False`. What should replace the three question marks to complete the function?

(A) `(n % m) == 0`

(B) `(n // m) == 0`

(C) `(m // n) != 0`

(D) `(m % n) != 0`

5. (1 point) Consider the following program.

```
x=0
i=1
while(i*i)<=9:
    x=x+(i*i)
    i=i+1
```

After it is run, what is the final **value** of x?

(A) 30

(B) 4

(C) 3

(D) 14

(E) 5

6. (1 point) Consider the following program:

```
s="Hobbes"
i=0
x=-1
while i<len(s):
    if s[i]=='b':
        x=i
    i+=1
```

What is the **value** of x after this program is executed?

(A) 3

(B) 2

(C) 4

(D) -1

(E) 5

7. (1 point) Consider the following incomplete program.

```
sum=0
for i in range(0,100):
    ???
```

The program is intended to sum all of the integers between 1 and 100 (inclusive). What should replace the three question marks to complete the program?

(A) `sum=sum+i`

(B) `sum+1=sum`

(C) `sum=sum+i+1`

(D) `sum=sum+1`

8. (1 point) Consider the following program:

```
a=["S","T","U","P","E","F","Y"]
a=a[0:4]
a.sort()
x=""
for e in a:
    x=e+x
```

What is the **value** of x after this program is executed?

(A) None of the other answers are correct.

(B) `"STUP"`

(C) `"UTSP"`

(D) `"PUST"`

(E) `"PSTU"`

9. (1 point) Consider the following program:

```
x=2
a=6
if (a%3)==2:
    x=x**3
elif(a%3)==1:
    x=x**2
else:
    x=x**1
```

What is the **value** of x after this program is executed?

(A) 2

(B) 4

(C) 8

(D) 16

(E) None of the other answers are correct.

10. (1 point) Consider the following Python program.

```python
e=[1,3,5,7,9,11]
d=[0,0,0]
for i in range(0,len(e)):
    d[i%3]+=e[i]
x=d[1]
```

After it is run, what is the final **value** of x?

  (A) 12

  (B) 3

  (C) 0

  (D) 16

  (E) 8

11. (1 point) Consider the following program.

```python
s="ABCBA"
x=0
y=len(s)-1
while s[x]==s[y] and x<=y:
    x+=1
    y-=1
```

After it is run, what is the final **value** of x?

  (A) 2

  (B) 3

  (C) 4

  (D) 1

  (E) 0

12. (1 point) Consider the following program:

```
x=[2,3,4,5,6,7,8,9]
x=x[2:-2]
i=1
while i <= 3:
    x[i]+=1
    i+=1
```

What is the **value** of x after this program is executed?

(A) [4, 6, 7, 7]

(B) [4, 6, 7]

(C) [4, 6, 7, 8]

(D) [2, 4, 6, 6]

(E) [3, 4, 6, 7, 8]

13. (1 point) Consider the following program:

```
s="-B-O-R-S-"
x=s.split("-")[2:-2]
```

What is the **value** of x after this program is executed?

(A) False

(B) 'ORS'

(C) ''

(D) ['O', 'R']

(E) None

14. (1 point) Consider the following program:

```python
def fix(s):
    a=list(s)
    a.sort()
    return ''.join(a)

x=["one","two","eleven","twelve"]
s1=fix(x[0]+x[-1])
s2=fix(x[1]+x[-2])

if s1<s2:
    x.sort()
elif s1==s2:
    x.reverse()
else:
    x.append("six")
```

What is the **value** of x after this program is executed?

(A) ['twelve', 'eleven', 'two', 'one']

(B) ['eleven', 'one', 'twelve', 'two']

(C) ['one', 'two', 'eleven', 'twelve', 'six']

(D) ['one', 'two', 'eleven', 'twelve']

(E) ['two', 'twelve', 'one', 'eleven', 'six']

15. (1 point) Consider the following program:

```
x="KING ARTHUR-MORGANA LEFAY-SIR BEDIVERE".split("-")
y=x
x=y.reverse()
```

What is the **value** of x after this program is executed?

(A) ['SIR BEDIVERE', 'MORGANA LEFAY', 'KING ARTHUR']

(B) ['KING', 'ARTHUR-MORGANA', 'LEFAY-SIR', 'BEDIVERE']

(C) ['BEDIVERE', 'LEFAY-SIR', 'ARTHUR-MORGANA', 'KING']

(D) None

(E) ['KING ARTHUR', 'MORGANA LEFAY', 'SIR BEDIVERE']

16. (1 point) Evaluate the following expression:

```
len("ABCD"[0:3])
```

What value is produced?

(A) 2

(B) 1

(C) 3

(D) 4

17. (1 point) Consider the following program:

```
pi="3.14159"
e="2.71828"
x=pi in pi*len(e)
```

What is the **type** of x after this program is executed?

(A) None

(B) Float

(C) Integer

(D) String

(E) Boolean

18. (1 point) Consider the following program:

```
x=0
for i in range(2,8):
    if i%3==0:
        x+=3
    elif i%2==0:
        x+=2
    else:
        x+=1
```

What is the **value** of x after this program is executed?

(A) 11

(B) 12

(C) 10

(D) 13

(E) 14

19. (1 point) Consider the following program:

```
s="TRIS %i"
t="ISEU"
x=len(s) % len(t[2:-1])
```

What is the **type** of x after this program is executed?

(A) None

(B) Boolean

(C) String

(D) Float

(E) Integer

20. (1 point) Consider the following program.

```
kay = 2
wart = 3

def knight(kay,wart):
    wart += 2
    kay += 3
    return wart + kay

wart = knight(kay, kay) + knight(wart, wart)
```

After it is run, what is the final **value** of wart?

(A) 3

(B) 5

(C) None of the other answers are correct.

(D) 2

21. (1 point) Consider the following program:

```
a=3
b=4
if a!=b:
    a=b
elif a==4:
    a=5
else:
    b=a
```

What is the **value** of a after this program is executed?

(A) 5

(B) 7

(C) 4

(D) None of the other answers are correct.

(E) 3

22. (1 point) Consider the following program:

```
s="ECTOR"
t="GAWAIN"
x=(len(s)/(len(t)-1))+1
```

What is the **type** of x after this program is executed?

(A) Integer

(B) None

(C) Boolean

(D) Float

(E) String

23. (1 point) Consider the following program.

```
x=[]
for j in range(0,5):
    if (j%2)==0:
        x.append("-")
    if (j%5)==0:
        x.append("*")
```

After it is run, what is the final **value** of x?

(A) None of the other answers are correct.

(B) ["-","-","*"]

(C) ["-","*","-"]

(D) ["-","*","-","-"]

(E) ["*","-","*","*"]

24. (1 point) What is the result of the following expression?

```
[ 1, 2, 3 ] * 3
```

(A) [1, 2, 3, 1, 2, 3, 1, 2, 3]

(B) (3, 6, 9)

(C) [1.0, 2.0, 3.0, 1.0, 2.0, 3.0, 1.0, 2.0, 3.0]

(D) [3, 6, 9]

(E) [3.0, 6.0, 9.0]

25. (1 point) Consider the following program:

```
a=["merlin","sir agravaine","king pellinore"]
b=[ ]
for i in range(0,4):
    b.append(a[0-i].title())
```

What is the **value** of b after this program is executed?

 (A) ['Merlin', 'King Pellinore', 'Sir Agravaine']

 (B) ['Merlin', 'King Pellinore', 'Sir Agravaine', 'Merlin']

 (C) [ ]

 (D) ['Merlin', 'Sir Agravaine', 'King Pellinore', 'Merlin']

 (E) ['King Pellinore', 'Sir Agravaine', 'Merlin']

26. (1 point) Consider the following incomplete Python program.

```
s="".join(["1","0","2","1"])
x=0
for i in range(len(s)-1):
    x+=int(???)
```

What should replace the three question marks so the resulting value of x is 33?

 (A) s[i:i-1]

 (B) s[i+1:i+2]

 (C) s[i:i+2]

 (D) s[i:i+1]

27. (1 point) Consider the following program.

```
def artificing(s):
    return s*2
    return s+"%i" % 2
    return s

s=artificing("MERLIN")
```

After it is run, what is the final **value** of s?

(A) `"MERLIN"`

(B) `"MERLINMERLIN"`

(C) `12`

(D) `"MERLIN2"`

(E) `None`

28. (1 point) For this problem, you should compose a function which accomplishes a given task using the available code blocks arranged in the correct functional order. *We ignore indentation for this problem.*

`find_max` should accept a `list` and return the value of the maximum item in the `list`. (`None` is always the lowest value in any numeric comparison, so you may use it as an initializer.)

```
def find_max(my_list):

1 max_val = i

2 max_val = None

3 for i in range(len(my_list)):

4 if i > max_val:

5 max_val = my_list[i]

6 return max_val

7 for i in range(my_list):

8 if my_list[i] > max_val:

9 print(max_val)
```

  (A) 2, 3, 8, 1, 6

  (B) 2, 7, 4, 5, 6

  (C) 2, 3, 8, 5, 6

  (D) 3, 2, 8, 5, 9

  (E) 2, 3, 4, 1, 6

29. (1 point) Evaluate the following expression:

`[1,2]*len("3")`

What value is produced?

(A) `[1,2]`

(B) `[1,2,1]`

(C) `[1,2,1,2,1,2]`

(D) `[1,2,3]`

30. (1 point) Consider the following program:

```
i=2
x=3
while i < 7:
    x+=i
    i+=2
```

What is the **value** of x after this program is executed?

(A) `12`

(B) `11`

(C) `13`

(D) `15`

(E) `14`

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CS101

midterm1

- **Be sure to enter your <u>NetID</u> and <u>the code below</u> on your Scantron**.

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1. Fill in your information:

Full Name: _____

UIN (Student Number): _____

NetID: _____

2. Fill in the following answers on the Scantron form:

92. C

93. B

94. A

95. B

96. B

1. (1 point) Consider the following incomplete program.

```
sum=0
???:
    sum=sum+i
```

The program is intended to sum all of the integers between 1 and 100 (inclusive). What should replace the three question marks to complete the program?

(A) `while i<=100`

(B) `for i in range(1,101)`

(C) `while i in range(100)`

(D) `for i in range(0,100)`

2. (1 point) Evaluate the following expression:

`len("ABCDE"[1:4])`

What value is produced?

(A) 1

(B) 5

(C) 4

(D) 3

3. (1 point) Consider the following program:

```
x=0
for i in range(2,8):
    if i%3==0:
        x+=3
    elif i%2==0:
        x+=2
    else:
        x+=1
```

What is the **value** of x after this program is executed?

(A) 11

(B) 12

(C) 13

(D) 14

(E) 10

4. (1 point) Evaluate the following expression:

`[1,2]*len("3")`

What value is produced?

(A) [1,2,1,2,1,2]

(B) [1,2]

(C) [1,2,3]

(D) [1,2,1]

5. (1 point) Consider the following Python program.

```
e=[1,3,5,7,9,11]
d=[0,0,0]
for i in range(0,len(e)):
    d[i%3]+=e[i]
x=d[2]
```

After it is run, what is the final **value** of x?

(A) 16

(B) 7

(C) 8

(D) 0

(E) 12

6. (1 point) Consider the following program.

```
kay = 2
wart = 3

def knight(kay,wart):
    wart += 2
    kay += 3
    return wart + kay

kay = knight(wart, kay) + knight(kay, wart)
```

After it is run, what is the final **value** of kay?

(A) 2

(B) None of the other answers are correct.

(C) 5

(D) 3

7. (1 point) Consider the following program.

```
x=0
i=1
while(i*i)<=9:
    x=x+(i*i)
    i=i+1
```

After it is run, what is the final **value** of x?

   (A) 4

   (B) 14

   (C) 30

   (D) 3

   (E) 5

8. (1 point) Consider the following program:

```
s="G+R+A+I+L"
x=s.split("+")[1:-2]
```

What is the **value** of x after this program is executed?

   (A) ['R','A']

   (B) 3

   (C) 'RAI'

   (D) None

   (E) False

9. (1 point) Consider the following program.

```
s="ABCBA"
x=0
y=len(s)-1
while s[x]==s[y] and x<=y:
    x+=1
    y-=1
```

After it is run, what is the final **value** of x?

(A) 3

(B) 2

(C) 4

(D) 0

(E) 1

10. (1 point) Consider the following program:

```
s="ECTOR"
t="GAWAIN"
x=(len(s)/(len(t)-1))+1
```

What is the **type** of x after this program is executed?

(A) String

(B) Integer

(C) None

(D) Boolean

(E) Float

7

11. (1 point) Consider the following program:

```python
def fix(s):
    a=list(s)
    a.sort()
    return ''.join(a)

x=["one","two","eleven","twelve"]
s1=fix(x[0]+x[-1])
s2=fix(x[1]+x[-2])

if s1==s2:
    x.sort()
elif s1<s2:
    x.reverse()
else:
    x.append("six")
```

What is the **value** of x after this program is executed?

(A) ['two', 'twelve', 'one', 'eleven', 'six']

(B) ['eleven', 'one', 'twelve', 'two']

(C) ['twelve', 'eleven', 'two', 'one']

(D) ['one', 'two', 'eleven', 'twelve']

(E) ['one', 'two', 'eleven', 'twelve', 'six']

12. (1 point) Consider the following program.

```
x=[]
for j in range(0,5):
    if (j%4)==0:
        x.append("-")
    if (j%5)==0:
        x.append("*")
```

After it is run, what is the final **value** of x?

(A) None of the other answers are correct.

(B) ["-","*","*"]

(C) ["-","-","*"]

(D) ["-","*","-"]

(E) ["-","*"]

13. (1 point) Consider the following program:

```
s="TRIS %i"
t="ISEU"
x=len(s) % len(t[2:-1])
```

What is the **type** of x after this program is executed?

(A) Boolean

(B) None

(C) Float

(D) String

(E) Integer

14. (1 point) Consider the following program:

```
a=["merlin","sir agravaine","king pellinore"]
b=[ ]
for i in range(0,4):
    b.append(a[0-i].title())
```

What is the **value** of b after this program is executed?

 (A) ['Merlin', 'King Pellinore', 'Sir Agravaine', 'Merlin']

 (B) [ ]

 (C) ['Merlin', 'Sir Agravaine', 'King Pellinore', 'Merlin']

 (D) ['Merlin', 'King Pellinore', 'Sir Agravaine']

 (E) ['King Pellinore', 'Sir Agravaine', 'Merlin']

15. (1 point) Consider the following program.

```
def artificing(s):
    return s+"%i" % 2
    return s*2
    return s
```

```
s=artificing("MERLIN")
```

After it is run, what is the final **value** of s?

 (A) "MERLIN%i"

 (B) None

 (C) "MERLIN2"

 (D) 0

 (E) "MERLINMERLIN"

16. (1 point) Consider the following program:

```
x="KING ARTHUR-MORGANA LEFAY-SIR BEDIVERE".split("-")
y=x
x=y.reverse()
```

What is the **value** of x after this program is executed?

(A) ['BEDIVERE', 'LEFAY-SIR', 'ARTHUR-MORGANA', 'KING']

(B) ['SIR BEDIVERE', 'MORGANA LEFAY', 'KING ARTHUR']

(C) ['KING ARTHUR', 'MORGANA LEFAY', 'SIR BEDIVERE']

(D) None

(E) ['KING', 'ARTHUR-MORGANA', 'LEFAY-SIR', 'BEDIVERE']

17. (1 point) Consider the following program:

```
x=[2,3,4,5,6,7,8,9]
x=x[2:-2]
i=1
while i <= 3:
    x[i]+=1
    i+=1
```

What is the **value** of x after this program is executed?

(A) [2, 4, 6, 6]

(B) [4, 6, 7, 7]

(C) [4, 6, 7, 8]

(D) [3, 4, 6, 7, 8]

(E) [4, 6, 7]

18. (1 point) Consider the following program:

```python
x=[1,2,3]
def f(a):
    s=""
    a.reverse()
    for i in a:
        s+=str(i)
    return s

x.append(f(x))
```

What is the **value** of x after this program is executed?

(A) [1, 2, 3, '321']

(B) [1, 2, 3, 6]

(C) [3, 2, 1, '321']

(D) [3, 2, 1]

(E) [1, 2, 3]

19. (1 point) Consider the following program:

```
a=3
b=4
if a!=b:
    a=b
elif a==4:
    a=5
else:
    b=a
```

What is the **value** of a after this program is executed?

(A) 3

(B) None of the other answers are correct.

(C) 5

(D) 7

(E) 4

20. (1 point) Consider the following incomplete function.

```
def ismultiple(m,n):
    if ???:
        return False
    else:
        return True
```

The function is intended to return True if the input parameter m is a multiple of parameter n and False otherwise. For example, `ismultiple(4,2)` should return `True`, but `ismultiple(5,3)` should return `False`. What should replace the three question marks to complete the function?

(A) `(n % m) == 0`

(B) `(m // n) != 0`

(C) `(n // m) == 0`

(D) `(m % n) != 0`

21. (1 point) For this problem, you should compose a function which accomplishes a given task using the available code blocks arranged in the correct functional order. *We ignore indentation for this problem.*

find_max should accept a list and return the value of the maximum item in the list. (None is always the lowest value in any numeric comparison, so you may use it as an initializer.)

```
def find_max(my_list):

1 max_val = i

2 max_val = None

3 for i in range(len(my_list)):

4 if i > max_val:

5 max_val = my_list[i]

6 return max_val

7 for i in range(my_list):

8 if my_list[i] > max_val:

9 print(max_val)
```

(A) 2, 7, 4, 5, 6

(B) 2, 3, 8, 5, 6

(C) 2, 3, 8, 1, 6

(D) 3, 2, 8, 5, 9

(E) 2, 3, 4, 1, 6

22. (1 point)

```
x=str(3)+"str(3)"
```

What is the **value** of x after this program is executed?

(A) "333"

(B) "3str(3)"

(C) 33

(D) None of the other answers are correct.

(E) "33"

23. (1 point) Consider the following program:

```
pi="3.14159"
e="2.71828"
x=(float(e)**float(pi)-float(pi)) == 20
```

What is the **type** of x after this program is executed?

(A) None

(B) Boolean

(C) String

(D) Integer

(E) Float

24. (1 point) Consider the following program:

```
a=["S","T","U","P","E","F","Y"]
a=a[0:4]
a.sort()
x=""
for e in a:
    x=e+x
```

What is the **value** of x after this program is executed?

(A) `"PSTU"`

(B) `"PUST"`

(C) None of the other answers are correct.

(D) `"STUP"`

(E) `"UTSP"`

25. (1 point) Consider the following program:

```
s="Calvin"
i=0
x=-1
while i<len(s):
    if s[i]=='b':
        x=i
    i+=1
```

What is the **value** of x after this program is executed?

(A) -1

(B) 5

(C) 3

(D) 0

(E) 6

26. (1 point) How can the following mathematical equation be implemented as a Python expression? Assume a, b, and sin have already been defined.

$$a \sin(a^b - b)$$

(A) None of the other answers are correct.

(B) a*sin(a^b - b)

(C) a*sin(b^a - b)

(D) a sin(a**b - b)

(E) a*sin(a**b - b)

27. (1 point) Consider the following program:

```
i=2
x=3
while i < 7:
    x+=i
    i+=2
```

What is the **value** of x after this program is executed?

(A) 11

(B) 13

(C) 14

(D) 12

(E) 15

28. (1 point) What is the result of the following expression?

```
[ 1, 2, 3 ] * 3
```

(A) [3, 6, 9]

(B) [3.0, 6.0, 9.0]

(C) (3, 6, 9)

(D) [1.0, 2.0, 3.0, 1.0, 2.0, 3.0, 1.0, 2.0, 3.0]

(E) [1, 2, 3, 1, 2, 3, 1, 2, 3]

29. (1 point) Consider the following incomplete Python program.

```python
s="".join(["2","2","0","1"])
x=0
for i in range(len(s)-1):
    x+=int(???)
```

What should replace the three question marks so the resulting value of x is 43?

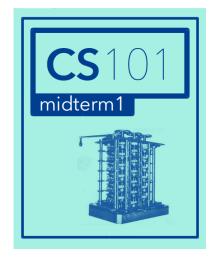(A) `s[i:i+2]`

(B) `s[i+1:i+2]`

(C) `s[i:i-1]`

(D) `s[i:i+1]`

30. (1 point) Consider the following program:

```python
x=3
a=7
if (a%3)==2:
    x=x**2
elif(a%3)==1:
    x=x**1
else:
    x=x**0
```

What is the **value** of x after this program is executed?

(A) 9

(B) 1

(C) 7

(D) None of the other answers are correct.

(E) 3

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CS101
midterm1

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- No books, notes, or electronic devices are permitted.
- This is a 60-minute exam.
- There are several different versions of this exam.

1. Fill in your information:

Full Name: _____

UIN (Student Number): _____

NetID: _____

2. Fill in the following answers on the Scantron form:

92. D

93. B

94. A

95. C

96. C

1. (1 point) Consider the following program:

```
a=3
b=4
if a!=b:
    a=b
elif a==4:
    a=5
else:
    b=a
```

What is the **value** of a after this program is executed?

(A) None of the other answers are correct.

(B) 3

(C) 4

(D) 7

(E) 5

2. (1 point) Consider the following program:

```
x=2
a=6
if (a%3)==2:
    x=x**3
elif(a%3)==1:
    x=x**2
else:
    x=x**1
```

What is the **value** of x after this program is executed?

(A) None of the other answers are correct.

(B) 4

(C) 2

(D) 8

(E) 16

3. (1 point) Consider the following program.

```
x=[]
for j in range(0,5):
    if (j%2)==0:
        x.append("-")
    if (j%5)==0:
        x.append("*")
```

After it is run, what is the final **value** of x?

(A) ["-","*","-"]

(B) ["-","-","*"]

(C) ["*","-","*","*"]

(D) ["-","*","-","-"]

(E) None of the other answers are correct.

4. (1 point) Evaluate the following expression:

```
[1,2]*len("3")
```

What value is produced?

(A) [1,2,1]

(B) [1,2,1,2,1,2]

(C) [1,2]

(D) [1,2,3]

5. (1 point) Consider the following incomplete program.

```
sum=0
for i in range(0,100):
    ???
```

The program is intended to sum all of the integers between 1 and 100 (inclusive). What should replace the three question marks to complete the program?

(A) `sum=sum+1`

(B) `sum+1=sum`

(C) `sum=sum+i`

(D) `sum=sum+i+1`

6. (1 point) Consider the following program:

```python
def fix(s):
    a=list(s)
    a.sort()
    return ''.join(a)

x=["one","two","eleven","twelve"]
s1=fix(x[0]+x[-1])
s2=fix(x[1]+x[-2])

if s1<s2:
    x.sort()
elif s1==s2:
    x.reverse()
else:
    x.append("six")
```

What is the **value** of x after this program is executed?

(A) ['one', 'two', 'eleven', 'twelve']

(B) ['twelve', 'eleven', 'two', 'one']

(C) ['two', 'twelve', 'one', 'eleven', 'six']

(D) ['one', 'two', 'eleven', 'twelve', 'six']

(E) ['eleven', 'one', 'twelve', 'two']

7. (1 point) Consider the following incomplete function.

```
def isdivisible(m,n):
    if ???:
        return False
    else:
        return True
```

The function is intended to return True if the input parameter m is evenly divisible by the parameter n and False otherwise. For example, `isdivisible(4,2)` should return `True`, but `isdivisible(5,3)` should return `False`. What should replace the three question marks to complete the function?

(A) `(m // n) != 0`

(B) `(n % m) == 0`

(C) `(m % n) != 0`

(D) `(n // m) == 0`

8. (1 point) Consider the following program:

```
x=0
for i in range(4,10):
    if i%3==0:
        x+=3
    elif i%2==0:
        x+=2
    else:
        x+=1
```

What is the **value** of x after this program is executed?

(A) 10

(B) 12

(C) 13

(D) 11

(E) 14

9. (1 point) Consider the following program.

```
def artificing(s):
    return s+"%i" % 2
    return s*2
    return s
```

```
s=artificing("MERLIN")
```

After it is run, what is the final **value** of s?

(A) `None`

(B) `"MERLIN%i"`

(C) `"MERLINMERLIN"`

(D) `"MERLIN2"`

(E) `0`

10. (1 point) How can the following mathematical equation be implemented as a Python expression? Assume `a`, `b`, and `cos` have already been defined.

$$a^b \cos(a - b)$$

(A) `(a**b)*cos(a-b)`

(B) `(a**b)cos(a-b)`

(C) None of the other answers are correct.

(D) `(a^b)*cos(a-b)`

(E) `(b^a)cos(a-b)`

11. (1 point) Consider the following incomplete Python program.

```
s="".join(["2","2","0","1"])
x=0
for i in range(len(s)-1):
    x+=int(???)
```

What should replace the three question marks so the resulting value of x is 43?

(A) `s[i:i+1]`

(B) `s[i:i+2]`

(C) `s[i:i-1]`

(D) `s[i+1:i+2]`

12. (1 point) Consider the following program:

```
pi="3.14159"
e="2.71828"
x=(float(e)**float(pi)-float(pi)) == 20
```

What is the **type** of x after this program is executed?

(A) `Boolean`

(B) `String`

(C) `Float`

(D) `Integer`

(E) `None`

13. (1 point) What is the result of the following expression?

```
[ 1, 2, 3 ] * 3.0
```

(A) [3, 6, 9]

(B) [1, 2, 3, 1, 2, 3, 1, 2, 3]

(C) [1.0, 2.0, 3.0, 1.0, 2.0, 3.0, 1.0, 2.0, 3.0]

(D) [3.0, 6.0, 9.0]

(E) None of the above.

14. (1 point) Consider the following Python program.

```
e=[1,3,5,7,9,11]
d=[0,0,0]
for i in range(0,len(e)):
    d[i%3]+=e[i]
x=d[2]
```

After it is run, what is the final **value** of x?

(A) 16

(B) 7

(C) 12

(D) 0

(E) 8

11

15. (1 point) For this problem, you should compose a function which accomplishes a given task using the available code blocks arranged in the correct functional order. *We ignore indentation for this problem.*

`find_max` should accept a `list` and return the value of the maximum item in the `list`. (`None` is always the lowest value in any numeric comparison, so you may use it as an initializer.)

```
def find_max(my_list):

1 max_val = i

2 max_val = None

3 for i in range(len(my_list)):

4 if i > max_val:

5 max_val = my_list[i]

6 return max_val

7 for i in range(my_list):

8 if my_list[i] > max_val:

9 print(max_val)
```

   (A) 2, 7, 4, 5, 6

   (B) 2, 3, 8, 1, 6

   (C) 2, 3, 8, 5, 6

   (D) 3, 2, 8, 5, 9

   (E) 2, 3, 4, 1, 6

16. (1 point) Consider the following program:

```python
x=[1,2,3]
def f(a):
    s=""
    a.append(4)
    for i in a:
        s+=str(i)
    return s


x.append(f(x))
```

What is the **value** of x after this program is executed?

(A) [1, 2, 3, '1234']

(B) [1, 2, 3, '123']

(C) [1, 2, 3, 4, '1234']

(D) [1, 2, 3, 10]

(E) [1, 2, 3]

17. (1 point) Consider the following program:

```
i=3
x=2
while i < 7:
    x+=i
    i+=2
```

What is the **value** of x after this program is executed?

(A) 14

(B) 13

(C) 12

(D) 10

(E) 11

18. (1 point) Consider the following program.

```
s="ABCBA"
x=0
y=len(s)-1
while s[x]==s[y] and x<=y:
    x+=1
    y-=1
```

After it is run, what is the final **value** of x?

(A) 0

(B) 1

(C) 3

(D) 4

(E) 2

19. (1 point) Consider the following program:

```
a=["merlin","sir agravaine","king pellinore"]
b=[ ]
for i in range(0,4):
    b.append(a[0-i].title())
```

What is the **value** of b after this program is executed?

(A) ['King Pellinore', 'Sir Agravaine', 'Merlin']

(B) [ ]

(C) ['Merlin', 'King Pellinore', 'Sir Agravaine']

(D) ['Merlin', 'Sir Agravaine', 'King Pellinore', 'Merlin']

(E) ['Merlin', 'King Pellinore', 'Sir Agravaine', 'Merlin']

20. (1 point) Consider the following program:

```
s="-B-O-R-S-"
x=s.split("-")[2:-2]
```

What is the **value** of x after this program is executed?

(A) None

(B) ['O', 'R']

(C) 'ORS'

(D) ''

(E) False

15

21. (1 point) Consider the following program.

```
kay = 2
wart = 3

def knight(kay,wart):
    wart += 2
    kay += 3
    return wart + kay

wart = knight(kay, kay) + knight(wart, wart)
```

After it is run, what is the final **value** of `wart`?

(A) 2

(B) None of the other answers are correct.

(C) 3

(D) 5

22. (1 point) Consider the following program:

```
x=[1,2,3,4,5,6,7,8,9]
x=x[2:-2]
i=1
while i <= 3:
    x[i]+=1
    i+=1
```

What is the **value** of x after this program is executed?

(A) [2, 4, 5, 5, 7, 7]

(B) [3, 5, 6, 7, 7]

(C) [3, 5, 7, 7]

(D) [3, 5, 6, 7, 7, 8]

(E) [2, 4, 5, 6, 7, 7]

23. (1 point) Consider the following program:

```
x=str(1.2)*2
```

What is the **value** of x after this program is executed?

(A) "2.4"

(B) "1.21.2"

(C) 2.4

(D) None of the other answers are correct.

(E) "1.2*2"

24. (1 point) Consider the following program.

```
x=0
i=1
while(i*i)<=9:
    x=x+(i*i)
    i=i+1
```

After it is run, what is the final **value** of x?

(A) 3

(B) 30

(C) 5

(D) 14

(E) 4

25. (1 point) Evaluate the following expression:

```
len("ABCD"[0:3])
```

What value is produced?

(A) 3

(B) 4

(C) 2

(D) 1

26. (1 point) Consider the following program:

```
s="Hobbes"
i=0
x=-1
while i<len(s):
    if s[i]=='b':
        x=i
    i+=1
```

What is the **value** of x after this program is executed?

(A) 5

(B) 2

(C) 3

(D) 4

(E) -1

27. (1 point) Consider the following program:

```
s="ECTOR"
t="GAWAIN"
x=(len(s)/(len(t)-1))+1
```

What is the **type** of x after this program is executed?

(A) Boolean

(B) Float

(C) Integer

(D) None

(E) String

19

28. (1 point) Consider the following program:

```
a=["S","T","U","P","E","F","Y"]
a=a[0:4]
a.sort()
x=""
for e in a:
    x=e+x
```

What is the **value** of x after this program is executed?

(A) "STUP"

(B) "PSTU"

(C) "PUST"

(D) "UTSP"

(E) None of the other answers are correct.

29. (1 point) Consider the following program:

```
x="KING ARTHUR-MORGANA LEFAY-SIR BEDIVERE".split("-")
y=x[:]
y.reverse()
```
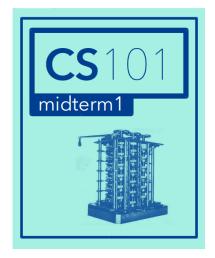
What is the **value** of x after this program is executed?

(A) ['SIR BEDIVERE', 'MORGANA LEFAY', 'KING ARTHUR']

(B) ['BEDIVERE', 'LEFAY-SIR', 'ARTHUR-MORGANA', 'KING']

(C) ['KING', 'ARTHUR-MORGANA', 'LEFAY-SIR', 'BEDIVERE']

(D) ['KING ARTHUR', 'MORGANA LEFAY', 'SIR BEDIVERE']

(E) None

30. (1 point) Consider the following program:

```
s="TRIS %i"
t="ISEU"
x=len(s) % len(t[2:-1])
```

What is the **type** of x after this program is executed?

(A) Boolean

(B) String

(C) Float

(D) None

(E) Integer

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CS101 midterm1

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- There are several different versions of this exam.

1. Fill in your information:

Full Name: _____

UIN (Student Number): _____

NetID: _____

2. Fill in the following answers on the Scantron form:

92. E

93. B

94. A

95. D

96. D

1. (1 point) Consider the following program:

```
x="KING ARTHUR-MORGANA LEFAY-SIR BEDIVERE".split("-")
y=x
x=y.reverse()
```

What is the **value** of x after this program is executed?

(A) None

(B) ['KING ARTHUR', 'MORGANA LEFAY', 'SIR BEDIVERE']

(C) ['KING', 'ARTHUR-MORGANA', 'LEFAY-SIR', 'BEDIVERE']

(D) ['SIR BEDIVERE', 'MORGANA LEFAY', 'KING ARTHUR']

(E) ['BEDIVERE', 'LEFAY-SIR', 'ARTHUR-MORGANA', 'KING']

2. (1 point) Consider the following program:

```
s="-B-O-R-S-"
x=s.split("-")[2:-2]
```

What is the **value** of x after this program is executed?

(A) None

(B) 'ORS'

(C) ['O', 'R']

(D) ''

(E) False

3. (1 point) Consider the following program:

```
i=3
x=2
while i < 7:
    x+=i
    i+=2
```

What is the **value** of x after this program is executed?

(A) 14

(B) 10

(C) 13

(D) 11

(E) 12

4. (1 point) What is the result of the following expression?

```
[ 1, 2, 3 ] * 3.0
```

(A) [1, 2, 3, 1, 2, 3, 1, 2, 3]

(B) [1.0, 2.0, 3.0, 1.0, 2.0, 3.0, 1.0, 2.0, 3.0]

(C) [3.0, 6.0, 9.0]

(D) None of the above.

(E) [3, 6, 9]

5. (1 point) Consider the following program:

```
pi="3.14159"
e="2.71828"
x=pi*len(e)+pi
```

What is the **type** of x after this program is executed?

(A) `Integer`

(B) `None`

(C) `String`

(D) `Float`

(E) `Boolean`

6. (1 point) Evaluate the following expression:

```
len("ABCDE"[1:4])
```

What value is produced?

(A) 1

(B) 4

(C) 3

(D) 5

4

7. (1 point) Consider the following program:

```
s="TRIS %i"
t="ISEU"
x=s % len(t)
```

What is the **type** of x after this program is executed?

(A) `Integer`

(B) `None`

(C) `Float`

(D) `Boolean`

(E) `String`

8. (1 point) Consider the following program:

```
x=[1,2,3]
def f(a):
    s=""
    a.reverse()
    for i in a:
        s+=str(i)
    return s

x.append(f(x))
```

What is the **value** of x after this program is executed?

(A) [1, 2, 3, 6]

(B) [3, 2, 1]

(C) [3, 2, 1, '321']

(D) [1, 2, 3, '321']

(E) [1, 2, 3]

9. (1 point) Consider the following program:

```python
def fix(s):
    a=list(s)
    a.sort()
    return ''.join(a)

x=["one","two","eleven","twelve"]
s1=fix(x[0]+x[-1])
s2=fix(x[1]+x[-2])

if s1<s2:
    x.sort()
elif s1>s2:
    x.reverse()
else:
    x.append("six")
```

What is the **value** of x after this program is executed?

(A) ['eleven', 'one', 'twelve', 'two']

(B) ['one', 'two', 'eleven', 'twelve', 'six']

(C) ['twelve', 'eleven', 'two', 'one']

(D) ['two', 'twelve', 'one', 'eleven', 'six']

(E) ['one', 'two', 'eleven', 'twelve']

7

10. (1 point) Consider the following program.

```
x=0
i=1
while(i*i)<=9:
    x=x+(i*i)
    i=i+1
```

After it is run, what is the final **value** of x?

(A) 5

(B) 14

(C) 4

(D) 30

(E) 3

11. (1 point) Consider the following Python program.

```
e=[1,3,5,7,9,11]
d=[0,0,0]
for i in range(0,len(e)):
    d[i%3]+=e[i]
x=d[1]
```

After it is run, what is the final **value** of x?

(A) 12

(B) 0

(C) 8

(D) 3

(E) 16

12. (1 point) Consider the following program.

```
kay = 2
wart = 3

def knight(kay,wart):
    wart += 2
    kay += 3
    return wart + kay

wart = knight(kay, kay) + knight(wart, wart)
```

After it is run, what is the final **value** of `wart`?

 (A) None of the other answers are correct.

 (B) 2

 (C) 5

 (D) 3

13. (1 point) Consider the following program:

```
x=0
for i in range(2,8):
    if i%3==0:
        x+=3
    elif i%2==0:
        x+=2
    else:
        x+=1
```

What is the **value** of x after this program is executed?

(A) 14

(B) 10

(C) 12

(D) 13

(E) 11

14. (1 point) Consider the following program:

```
x=3
a=7
if (a%3)==2:
    x=x**2
elif(a%3)==1:
    x=x**1
else:
    x=x**0
```

What is the **value** of x after this program is executed?

(A) 7

(B) 3

(C) 1

(D) 9

(E) None of the other answers are correct.

15. (1 point) Consider the following program:

```
s="Calvin"
i=0
x=-1
while i<len(s):
    if s[i]=='b':
        x=i
    i+=1
```

What is the **value** of x after this program is executed?

(A) 5

(B) 6

(C) 3

(D) -1

(E) 0

16. (1 point) How can the following mathematical equation be implemented as a Python expression? Assume a, b, and cos have already been defined.

$$a^b \cos(a - b)$$

(A) (b^a)cos(a-b)

(B) (a**b)cos(a-b)

(C) (a**b)*cos(a-b)

(D) (a^b)*cos(a-b)

(E) None of the other answers are correct.

17. (1 point) Consider the following program.

```
def artificing(s):
    return s+"%i" % 2
    return s*2
    return s
```

```
s=artificing("MERLIN")
```

After it is run, what is the final **value** of s?

(A) 0

(B) "MERLINMERLIN"

(C) "MERLIN%i"

(D) None

(E) "MERLIN2"

18. (1 point) Consider the following program:

```
s="ECTOR"
t="GAWAIN"
x=len(str(s.isupper()))-t.find("A")
```

What is the **type** of x after this program is executed?

(A) Integer

(B) Float

(C) Boolean

(D) String

(E) None

19. (1 point) For this problem, you should compose a function which accomplishes a given task using the available code blocks arranged in the correct functional order. *We ignore indentation for this problem.*

find_max should accept a list and return the value of the maximum item in the list. (None is always the lowest value in any numeric comparison, so you may use it as an initializer.)

```
def find_max(my_list):

1 max_val = i

2 max_val = None

3 for i in range(len(my_list)):

4 if i > max_val:

5 max_val = my_list[i]

6 return max_val

7 for i in range(my_list):

8 if my_list[i] > max_val:

9 print(max_val)
```

 (A) 2, 7, 4, 5, 6

 (B) 3, 2, 8, 5, 9

 (C) 2, 3, 8, 5, 6

 (D) 2, 3, 8, 1, 6

 (E) 2, 3, 4, 1, 6

20. (1 point) Consider the following program:

```
a=["S","T","U","P","E","F","Y"]
a=a[0:4]
a.sort()
x=""
for e in a:
    x=e+x
```

What is the **value** of x after this program is executed?

(A) "PSTU"

(B) None of the other answers are correct.

(C) "STUP"

(D) "PUST"

(E) "UTSP"

21. (1 point) Consider the following incomplete Python program.

```
s="".join(["2","2","0","1"])
x=0
for i in range(len(s)-1):
    x+=int(???)
```

What should replace the three question marks so the resulting value of x is 43?

(A) s[i:i+1]

(B) s[i+1:i+2]

(C) s[i:i-1]

(D) s[i:i+2]

22. (1 point) Consider the following program:

```
a=3
b=4
if a==3:
    a=b
elif a==4:
    a=5
else:
    b=a
```

What is the **value** of a after this program is executed?

(A) None of the other answers are correct.

(B) 5

(C) 3

(D) 7

(E) 4

23. (1 point) Consider the following program:

```
x=[1,2,3,4,5,6,7,8,9]
x=x[2:-2]
i=1
while i < 3:
    x[i]+=1
    i+=1
```

What is the **value** of x after this program is executed?

(A) [3, 5, 6, 6, 7, 8]

(B) [2, 4, 5, 6, 6, 7]

(C) [3, 5, 6, 6]

(D) [3, 5, 6, 6, 7]

(E) [2, 4, 5, 5, 6, 7]

24. (1 point) Evaluate the following expression:

```
[1,2]*len("3")
```

What value is produced?

(A) [1,2,1,2,1,2]

(B) [1,2,3]

(C) [1,2]

(D) [1,2,1]

25. (1 point) Consider the following program.

```
x=[]
for j in range(0,5):
    if (j%3)==0:
        x.append("-")
    if (j%4)==0:
        x.append("*")
```

After it is run, what is the final **value** of x?

(A) None of the other answers are correct.

(B) ["*","-","*"]

(C) ["-","*","-","*"]

(D) ["*","-","*"]

(E) ["-","*"]

26. (1 point) Consider the following incomplete program.

```
sum=0
for i in range(0,100):
    ???
```

The program is intended to sum all of the integers between 1 and 100 (inclusive). What should replace the three question marks to complete the program?

(A) sum=sum+i

(B) sum=sum+i+1

(C) sum+1=sum

(D) sum=sum+1

27. (1 point)

```
x=str(3)+"str(3)"
```

What is the **value** of x after this program is executed?

(A) "33"

(B) 33

(C) None of the other answers are correct.

(D) "333"

(E) "3str(3)"

28. (1 point) Consider the following incomplete function.

```
def ismultiple(m,n):
    if ???:
        return False
    else:
        return True
```

The function is intended to return True if the input parameter m is a multiple of parameter n and False otherwise. For example, `ismultiple(4,2)` should return `True`, but `ismultiple(5,3)` should return `False`. What should replace the three question marks to complete the function?

(A) (m // n) != 0

(B) (m % n) != 0

(C) (n // m) == 0

(D) (n % m) == 0

29. (1 point) Consider the following program:

```
a=["merlin","sir agravaine","king pellinore"]
b=[ ]
for i in range(0,4):
    b.append(a[0-i].title())
```

What is the **value** of b after this program is executed?

 (A) ['Merlin', 'King Pellinore', 'Sir Agravaine']

 (B) [ ]

 (C) ['Merlin', 'King Pellinore', 'Sir Agravaine', 'Merlin']

 (D) ['Merlin', 'Sir Agravaine', 'King Pellinore', 'Merlin']

 (E) ['King Pellinore', 'Sir Agravaine', 'Merlin']

30. (1 point) Consider the following program.

```
s="ABCBA"
x=0
y=len(s)-1
while s[x]==s[y] and x<=y:
    x+=1
    y-=1
```

After it is run, what is the final **value** of x?

 (A) 0

 (B) 3

 (C) 1

 (D) 4

 (E) 2

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CS101
midterm1

- **Be sure to enter your <u>NetID</u> and <u>the code below</u> on your Scantron**.

- Do not turn this page until instructed to do so.

- There are 30 questions, worth 1 point each.

- Each question has only **one** correct answer.

- You must not communicate with other students during this test.

- No books, notes, or electronic devices are permitted.

- This is a 60-minute exam.

- There are several different versions of this exam.

1. Fill in your information:

Full Name: _____

UIN (Student Number): _____

NetID: _____

2. Fill in the following answers on the Scantron form:

92. A

93. C

94. A

95. A

96. B

1. (1 point) Consider the following program:

```python
def fix(s):
    a=list(s)
    a.sort()
    return ''.join(a)

x=["one","two","eleven","twelve"]
s1=fix(x[0]+x[-1])
s2=fix(x[1]+x[-2])

if s1==s2:
    x.sort()
elif s1<s2:
    x.reverse()
else:
    x.append("six")
```

What is the **value** of x after this program is executed?

(A) ['two', 'twelve', 'one', 'eleven', 'six']

(B) ['one', 'two', 'eleven', 'twelve']

(C) ['one', 'two', 'eleven', 'twelve', 'six']

(D) ['twelve', 'eleven', 'two', 'one']

(E) ['eleven', 'one', 'twelve', 'two']

2. (1 point) Consider the following incomplete function.

```
def isdivisible(m,n):
    if ???:
        return False
    else:
        return True
```

The function is intended to return True if the input parameter m is evenly divisible by the parameter n and False otherwise. For example, `isdivisible(4,2)` should return `True`, but `isdivisible(5,3)` should return `False`. What should replace the three question marks to complete the function?

(A) `(m % n) != 0`

(B) `(m // n) != 0`

(C) `(n % m) == 0`

(D) `(n // m) == 0`

3. (1 point) Consider the following incomplete Python program.

```
s="".join(["2","2","0","1"])
x=0
for i in range(len(s)-1):
    x+=int(???)
```

What should replace the three question marks so the resulting value of `x` is 43?

(A) `s[i:i-1]`

(B) `s[i+1:i+2]`

(C) `s[i:i+1]`

(D) `s[i:i+2]`

4. (1 point) Consider the following program:

```
x=0
for i in range(2,8):
    if i%3==0:
        x+=3
    elif i%2==0:
        x+=2
    else:
        x+=1
```

What is the **value** of x after this program is executed?

(A) 12

(B) 11

(C) 14

(D) 10

(E) 13

5. (1 point) Consider the following program:

```
a=3
b=4
if a==3:
    b=a
elif a==4:
    a=5
else:
    a=b
```

What is the **value** of a after this program is executed?

(A) None of the other answers are correct.

(B) 3

(C) 5

(D) 4

(E) 7

6. (1 point) Consider the following program:

```
x="KING ARTHUR-MORGANA LEFAY-SIR BEDIVERE".split("-")
y=x
x=y.reverse()
```

What is the **value** of x after this program is executed?

(A) ['KING', 'ARTHUR-MORGANA', 'LEFAY-SIR', 'BEDIVERE']

(B) None

(C) ['SIR BEDIVERE', 'MORGANA LEFAY', 'KING ARTHUR']

(D) ['BEDIVERE', 'LEFAY-SIR', 'ARTHUR-MORGANA', 'KING']

(E) ['KING ARTHUR', 'MORGANA LEFAY', 'SIR BEDIVERE']

7. (1 point) Consider the following program.

```
s="BBCAA"
x=0
y=len(s)-1
while s[x]!=s[y] and x<len(s):
    x+=1
    y-=1
```

After it is run, what is the final **value** of x?

(A) 0

(B) 3

(C) 1

(D) 4

(E) 2

8. (1 point) Consider the following program.

```
x=1
i=0
while(x*x)<=9:
    i=i+(x*x)
    x=x+1
```

After it is run, what is the final **value** of x?

(A) 3

(B) 14

(C) 30

(D) 5

(E) 4

9. (1 point) Consider the following program:

```
s="ECTOR"
t="GAWAIN"
x=(len(s)+len(t)) < 4 and s in t
```

What is the **type** of x after this program is executed?

(A) Float

(B) Boolean

(C) None

(D) Integer

(E) String

10. (1 point) Consider the following program:

```
x=[1,2,3]
def f(a):
    s=""
    a.reverse()
    for i in a:
        s+=str(i)
    return s

x.append(f(x))
```

What is the **value** of x after this program is executed?

(A) [1, 2, 3, '321']

(B) [3, 2, 1]

(C) [1, 2, 3, 6]

(D) [1, 2, 3]

(E) [3, 2, 1, '321']

11. (1 point) Consider the following program.

```
x=[]
for j in range(0,5):
    if (j%3)==0:
        x.append("-")
    if (j%4)==0:
        x.append("*")
```

After it is run, what is the final **value** of x?

(A) ["*","-","*"]

(B) ["-","*","-","*"]

(C) ["-","*"]

(D) None of the other answers are correct.

(E) ["*","-","*"]

12. (1 point) Evaluate the following expression:

```
len("ABCD"[0:3])
```

What value is produced?

(A) 3

(B) 4

(C) 1

(D) 2

13. (1 point) Consider the following program.

```
def artificing(s):
    return s*2
    return s+"%i" % 2
    return s
```

```
s=artificing("MERLIN")
```

After it is run, what is the final **value** of s?

(A) `None`

(B) `"MERLIN2"`

(C) `12`

(D) `"MERLIN"`

(E) `"MERLINMERLIN"`

14. (1 point) Evaluate the following expression:

`[1,2]*len("3")`

What value is produced?

(A) `[1,2,1]`

(B) `[1,2,3]`

(C) `[1,2,1,2,1,2]`

(D) `[1,2]`

15. (1 point) Consider the following program.

```
kay = 2
wart = 3

def knight(kay,wart):
    wart += 2
    kay += 3
    return wart + kay

wart = knight(kay, kay) + knight(wart, wart)
```

After it is run, what is the final **value** of `wart`?

(A) 5

(B) 2

(C) None of the other answers are correct.

(D) 3

16. (1 point) For this problem, you should compose a function which accomplishes a given task using the available code blocks arranged in the correct functional order. *We ignore indentation for this problem.*

find_max should accept a list and return the value of the maximum item in the list. (None is always the lowest value in any numeric comparison, so you may use it as an initializer.)

```
def find_max(my_list):

1 max_val = i

2 max_val = None

3 for i in range(len(my_list)):

4 if i > max_val:

5 max_val = my_list[i]

6 return max_val

7 for i in range(my_list):

8 if my_list[i] > max_val:

9 print(max_val)
```

(A) 2, 7, 4, 5, 6

(B) 2, 3, 8, 5, 6

(C) 2, 3, 4, 1, 6

(D) 2, 3, 8, 1, 6

(E) 3, 2, 8, 5, 9

17. (1 point) Consider the following program:

```
a=["S","T","U","P","E","F","Y"]
a=a[0:4]
a.sort()
x=""
for e in a:
    x=e+x
```

What is the **value** of x after this program is executed?

(A) None of the other answers are correct.

(B) `"STUP"`

(C) `"UTSP"`

(D) `"PUST"`

(E) `"PSTU"`

18. (1 point) How can the following mathematical equation be implemented as a Python expression? Assume a, b, and cos have already been defined.

$$a^b \cos(a - b)$$

(A) None of the other answers are correct.

(B) `(b^a)cos(a-b)`

(C) `(a**b)cos(a-b)`

(D) `(a^b)*cos(a-b)`

(E) `(a**b)*cos(a-b)`

19. (1 point) Consider the following program:

```
pi="3.14159"
e="2.71828"
x=(float(e)**float(pi)-float(pi)) == 20
```

What is the **type** of x after this program is executed?

(A) Float

(B) Integer

(C) Boolean

(D) String

(E) None

20. (1 point) Consider the following Python program.

```
e=[1,3,5,7,9,11]
d=[0,0,0]
for i in range(0,len(e)):
    d[i%3]+=e[i]
x=d[2]
```

After it is run, what is the final **value** of x?

(A) 7

(B) 12

(C) 0

(D) 8

(E) 16

14

21. (1 point) What is the result of the following expression?

```
[ 1, 2, 3 ] * 3
```

  (A) [3.0, 6.0, 9.0]

  (B) [3, 6, 9]

  (C) [1.0, 2.0, 3.0, 1.0, 2.0, 3.0, 1.0, 2.0, 3.0]

  (D) (3, 6, 9)

  (E) [1, 2, 3, 1, 2, 3, 1, 2, 3]

22. (1 point) Consider the following program:

```
x=[1,2,3,4,5,6,7,8,9]
x=x[2:-2]
i=1
while i < 3:
    x[i]+=1
    i+=1
```

What is the **value** of x after this program is executed?

  (A) [2, 4, 5, 6, 6, 7]

  (B) [3, 5, 6, 6, 7, 8]

  (C) [2, 4, 5, 5, 6, 7]

  (D) [3, 5, 6, 6, 7]

  (E) [3, 5, 6, 6]

23. (1 point) Consider the following program:

```
s="Hobbes"
i=0
x=-1
while i<len(s):
    if s[i]=='b':
        x=i
    i+=1
```

What is the **value** of x after this program is executed?

(A) -1

(B) 4

(C) 5

(D) 2

(E) 3

24. (1 point) Consider the following program:

```
a=["merlin","sir agravaine","king pellinore"]
b=[ ]
for i in range(0,4):
    b.append(a[0-i].title())
```

What is the **value** of b after this program is executed?

(A) ['Merlin', 'Sir Agravaine', 'King Pellinore', 'Merlin']

(B) ['Merlin', 'King Pellinore', 'Sir Agravaine']

(C) [ ]

(D) ['Merlin', 'King Pellinore', 'Sir Agravaine', 'Merlin']

(E) ['King Pellinore', 'Sir Agravaine', 'Merlin']

25. (1 point) Consider the following program:

```
i=3
x=2
while i < 7:
    x+=i
    i+=2
```

What is the **value** of x after this program is executed?

(A) 10

(B) 13

(C) 12

(D) 11

(E) 14

26. (1 point) Consider the following program:

```
s="G+R+A+I+L"
x=s.split("+")[1:-2]
```

What is the **value** of x after this program is executed?

(A) None

(B) ['R','A']

(C) False

(D) 3

(E) 'RAI'

27. (1 point) Consider the following incomplete program.

```
sum=0
for i in range(0,100):
    ???
```

The program is intended to sum all of the integers between 1 and 100 (inclusive). What should replace the three question marks to complete the program?

(A) `sum=sum+i`

(B) `sum=sum+1`

(C) `sum+1=sum`

(D) `sum=sum+i+1`

28. (1 point) Consider the following program:

```
s="TRIS %i"
t="ISEU"
x=len(s) % len(t[2:-1])
```

What is the **type** of x after this program is executed?

(A) `Integer`

(B) `Float`

(C) `String`

(D) `None`

(E) `Boolean`

29. (1 point)

```
x=str(3)+"str(3)"
```

What is the **value** of x after this program is executed?

(A) `"3str(3)"`

(B) `"33"`

(C) None of the other answers are correct.

(D) `"333"`

(E) `33`

30. (1 point) Consider the following program:

```
x=2
a=6
if (a%3)==2:
    x=x**3
elif(a%3)==1:
    x=x**2
else:
    x=x**1
```

What is the **value** of x after this program is executed?

(A) None of the other answers are correct.

(B) `8`

(C) `16`

(D) `2`

(E) `4`

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CS101
midterm1

- **Be sure to enter your <u>NetID</u> and <u>the code below</u> on your Scantron**.
- Do not turn this page until instructed to do so.
- There are 30 questions, worth 1 point each.
- Each question has only **one** correct answer.
- You must not communicate with other students during this test.
- No books, notes, or electronic devices are permitted.
- This is a 60-minute exam.
- There are several different versions of this exam.

1. Fill in your information:

Full Name: _____

UIN (Student Number): _____

NetID: _____

2. Fill in the following answers on the Scantron form:

92. B

93. C

94. A

95. B

96. C

1. (1 point) Consider the following program:

```
a=["A","C","C","I","O"]
a.sort()
a[0]=a[-1]
x=""
for e in a:
    x=x+e
```

What is the **value** of x after this program is executed?

(A) "OCCIO"

(B) "ACCOA"

(C) None of the other answers are correct.

(D) "ACCIA"

(E) "ICCOI"

2. (1 point) Consider the following program:

```
x="KING ARTHUR-MORGANA LEFAY-SIR BEDIVERE".split("-")
y=x
x=y.reverse()
```

What is the **value** of x after this program is executed?

(A) ['SIR BEDIVERE', 'MORGANA LEFAY', 'KING ARTHUR']

(B) ['KING', 'ARTHUR-MORGANA', 'LEFAY-SIR', 'BEDIVERE']

(C) ['KING ARTHUR', 'MORGANA LEFAY', 'SIR BEDIVERE']

(D) None

(E) ['BEDIVERE', 'LEFAY-SIR', 'ARTHUR-MORGANA', 'KING']

3. (1 point) Consider the following program:

```
pi="3.14159"
e="2.71828"
x=(float(e)**float(pi)-float(pi)) == 20
```

What is the **type** of x after this program is executed?

(A) Boolean

(B) String

(C) Integer

(D) Float

(E) None

4. (1 point) Consider the following incomplete program.

```
sum=0
for i in range(0,100):
    ???
```

The program is intended to sum all of the integers between 1 and 100 (inclusive). What should replace the three question marks to complete the program?

(A) sum=sum+i+1

(B) sum=sum+i

(C) sum=sum+1

(D) sum+1=sum

5. (1 point) Consider the following program.

```
x=[]
for j in range(0,5):
    if (j%2)==0:
        x.append("-")
    if (j%5)==0:
        x.append("*")
```

After it is run, what is the final **value** of x?

(A) ["-","*","-","-"]

(B) ["*","-","*","*"]

(C) ["-","-","*"]

(D) ["-","*","-"]

(E) None of the other answers are correct.

6. (1 point) Consider the following program:

```
x=[1,2,3]
def f(a):
    s=""
    a.append(4)
    for i in a:
        s+=str(i)
    return s


x.append(f(x))
```

What is the **value** of x after this program is executed?

(A) [1, 2, 3]

(B) [1, 2, 3, '1234']

(C) [1, 2, 3, 4, '1234']

(D) [1, 2, 3, 10]

(E) [1, 2, 3, '123']

7. (1 point) Consider the following program:

```
a=["merlin","sir agravaine","king pellinore"]
b=[ ]
for i in range(1,3):
    b.append(a[0-i].title())
```

What is the **value** of b after this program is executed?

(A) ['King Pellinore', 'Sir Agravaine']

(B) ['Sir Agravaine', 'King Pellinore']

(C) [ ]

(D) ['Merlin', 'King Pellinore', 'Sir Agravaine']

(E) ['King Pellinore', 'Sir Agravaine', 'Merlin']

8. (1 point) Consider the following program:

```python
def fix(s):
    a=list(s)
    a.sort()
    return ''.join(a)

x=["one","two","eleven","twelve"]
s1=fix(x[0]+x[-1])
s2=fix(x[1]+x[-2])

if s1<s2:
    x.sort()
elif s1==s2:
    x.reverse()
else:
    x.append("six")
```

What is the **value** of x after this program is executed?

  (A) ['twelve', 'eleven', 'two', 'one']

  (B) ['one', 'two', 'eleven', 'twelve']

  (C) ['eleven', 'one', 'twelve', 'two']

  (D) ['two', 'twelve', 'one', 'eleven', 'six']

  (E) ['one', 'two', 'eleven', 'twelve', 'six']

9. (1 point) Consider the following program:

```
a=3
b=4
if a==3:
    a=b
elif a==4:
    a=5
else:
    b=a
```

What is the **value** of a after this program is executed?

(A) None of the other answers are correct.

(B) 7

(C) 4

(D) 3

(E) 5

10. (1 point) Consider the following program:

```
s="ECTOR"
t="GAWAIN"
x=(len(s)+len(t)) < 4 and s in t
```

What is the **type** of x after this program is executed?

(A) Integer

(B) None

(C) Boolean

(D) String

(E) Float

11. (1 point) Consider the following incomplete Python program.

```python
s="".join(["0","1","2","1"])
x=0
for i in range(len(s)-1):
    x+=int(???)
```

What should replace the three question marks so the resulting value of x is 34?

(A) `s[i+1:i+2]`

(B) `s[i:i-1]`

(C) `s[i:i+2]`

(D) `s[i:i+1]`

12. (1 point) Consider the following program:

```python
x=[2,3,4,5,6,7,8,9]
x=x[2:-2]
i=1
while i <= 3:
    x[i]+=1
    i+=1
```

What is the **value** of x after this program is executed?

(A) `[2, 4, 6, 6]`

(B) `[4, 6, 7]`

(C) `[4, 6, 7, 8]`

(D) `[4, 6, 7, 7]`

(E) `[3, 4, 6, 7, 8]`

13. (1 point) Consider the following Python program.

```
e=[1,3,5,7,9,11]
d=[0,0,0]
for i in range(0,len(e)):
    d[i%3]+=e[i]
x=d[2]
```

After it is run, what is the final **value** of x?

 (A) 16

 (B) 8

 (C) 7

 (D) 0

 (E) 12

14. (1 point) What is the result of the following expression?

```
[ 1, 2, 3 ] * 3.0
```

 (A) [1.0, 2.0, 3.0, 1.0, 2.0, 3.0, 1.0, 2.0, 3.0]

 (B) [1, 2, 3, 1, 2, 3, 1, 2, 3]

 (C) [3.0, 6.0, 9.0]

 (D) None of the above.

 (E) [3, 6, 9]

15. (1 point) Consider the following program:

```
s="Calvin"
i=0
x=-1
while i<len(s):
    if s[i]=='b':
        x=i
    i+=1
```

What is the **value** of x after this program is executed?

(A) 5

(B) -1

(C) 0

(D) 6

(E) 3

16. (1 point) For this problem, you should compose a function which accomplishes a given task using the available code blocks arranged in the correct functional order. *We ignore indentation for this problem.*

find_max should accept a `list` and return the value of the maximum item in the `list`. (`None` is always the lowest value in any numeric comparison, so you may use it as an initializer.)

```
def find_max(my_list):

1 max_val = i

2 max_val = None

3 for i in range(len(my_list)):

4 if i > max_val:

5 max_val = my_list[i]

6 return max_val

7 for i in range(my_list):

8 if my_list[i] > max_val:

9 print(max_val)
```

(A) 2, 7, 4, 5, 6

(B) 2, 3, 8, 5, 6

(C) 2, 3, 8, 1, 6

(D) 2, 3, 4, 1, 6

(E) 3, 2, 8, 5, 9

17. (1 point) Evaluate the following expression:

`len("ABCDE"[1:4])`

What value is produced?

  (A) 5

  (B) 1

  (C) 3

  (D) 4

18. (1 point) How can the following mathematical equation be implemented as a Python expression? Assume `a`, `b`, and `sin` have already been defined.

$$a \sin(a^b - b)$$

  (A) `a*sin(a^b - b)`

  (B) `a sin(a**b - b)`

  (C) `a*sin(a**b - b)`

  (D) None of the other answers are correct.

  (E) `a*sin(b^a - b)`

19. (1 point) Consider the following program:

```
s="TRIS %i"
t="ISEU"
x=len(s) % len(t[2:-1])
```

What is the **type** of x after this program is executed?

(A) Integer

(B) Boolean

(C) String

(D) Float

(E) None

20. (1 point) Consider the following program:

```
x=3
a=5
if (a%3)==2:
    x=x**3
elif(a%3)==1:
    x=x**2
else:
    x=x**1
```

What is the **value** of x after this program is executed?

(A) None of the other answers are correct.

(B) 27

(C) 1

(D) 3

(E) 9

21. (1 point) Consider the following program.

```
x=0
i=1
while(i*i)<=9:
    x=x+(i*i)
    i=i+1
```

After it is run, what is the final **value** of x?

(A) 14

(B) 5

(C) 4

(D) 3

(E) 30

22. (1 point) Consider the following program:

```
x=0
for i in range(4,10):
    if i%3==0:
        x+=3
    elif i%2==0:
        x+=2
    else:
        x+=1
```

What is the **value** of x after this program is executed?

(A) 14

(B) 10

(C) 12

(D) 13

(E) 11

23. (1 point) Evaluate the following expression:

`[1,2]+[len("3")]`

What value is produced?

(A) `[1,2,1,2,1,2]`

(B) `[1,2,"3"]`

(C) `[1,2,3]`

(D) `[1,2,1]`

24. (1 point) Consider the following program.

```
def artificing(s):
    return s+"%i" % 2
    return s*2
    return s
```

```
s=artificing("MERLIN")
```

After it is run, what is the final **value** of s?

(A) "MERLINMERLIN"

(B) 0

(C) "MERLIN%i"

(D) "MERLIN2"

(E) None

25. (1 point) Consider the following program:

```
i=3
x=2
while i < 7:
    x+=i
    i+=2
```

What is the **value** of x after this program is executed?

(A) 13

(B) 11

(C) 14

(D) 10

(E) 12

26. (1 point) Consider the following program:

```
s="G+R+A+I+L"
x=s.split("+")[1:-2]
```

What is the **value** of x after this program is executed?

(A) `'RAI'`

(B) `3`

(C) `False`

(D) `None`

(E) `['R','A']`

27. (1 point) Consider the following program:

```
x=str("1"*3)
```

What is the **value** of x after this program is executed?

(A) `"111"`

(B) `3`

(C) `111`

(D) None of the other answers are correct.

(E) `"3"`

28. (1 point) Consider the following program.

```
kay = 2
wart = 3

def knight(kay,wart):
    wart += 2
    kay += 3
    return wart + kay

wart = knight(kay, kay) + knight(wart, wart)
```

After it is run, what is the final **value** of `wart`?

(A) 2

(B) None of the other answers are correct.

(C) 3

(D) 5

29. (1 point) Consider the following incomplete function.

```
def ismultiple(m,n):
    if ???:
        return False
    else:
        return True
```

The function is intended to return True if the input parameter m is a multiple of parameter n and False otherwise. For example, `ismultiple(4,2)` should return `True`, but `ismultiple(5,3)` should return `False`. What should replace the three question marks to complete the function?

(A) `(n // m) == 0`

(B) `(m // n) != 0`

(C) `(n % m) == 0`

(D) `(m % n) != 0`

30. (1 point) Consider the following program.

```
s="ABCBA"
x=0
y=len(s)-1
while s[x]==s[y] and x<=y:
    x+=1
    y-=1
```

After it is run, what is the final **value** of x?

(A) 0

(B) 1

(C) 2

(D) 3

(E) 4

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CS101
midterm1

- **Be sure to enter your <u>NetID</u> and <u>the code below</u> on your Scantron.**
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- This is a 60-minute exam.
- There are several different versions of this exam.

1. Fill in your information:

Full Name: _____

UIN (Student Number): _____

NetID: _____

2. Fill in the following answers on the Scantron form:

92. C

93. C

94. A

95. C

96. D

1. (1 point) Consider the following program:

```
x="KING ARTHUR-MORGANA LEFAY-SIR BEDIVERE".split("-")
y=x[:]
y.reverse()
```

What is the **value** of x after this program is executed?

(A) ['BEDIVERE', 'LEFAY-SIR', 'ARTHUR-MORGANA', 'KING']

(B) ['KING ARTHUR', 'MORGANA LEFAY', 'SIR BEDIVERE']

(C) None

(D) ['KING', 'ARTHUR-MORGANA', 'LEFAY-SIR', 'BEDIVERE']

(E) ['SIR BEDIVERE', 'MORGANA LEFAY', 'KING ARTHUR']

2. (1 point) Consider the following program.

```
kay = 2
wart = 3

def knight(kay,wart):
    wart += 2
    kay += 3
    return wart + kay

wart = knight(kay, kay) + knight(wart, wart)
```

After it is run, what is the final **value** of wart?

(A) 3

(B) None of the other answers are correct.

(C) 2

(D) 5

3. (1 point) Evaluate the following expression:

`len("ABCDE"[1:4])`

What value is produced?

  (A) 1

  (B) 3

  (C) 5

  (D) 4

4. (1 point) Consider the following program:

`x=str("1"*3)`

What is the **value** of x after this program is executed?

  (A) `"3"`

  (B) `3`

  (C) `"111"`

  (D) None of the other answers are correct.

  (E) `111`

5. (1 point) What is the result of the following expression?

```
[ 1, 2, 3 ] * 3.0
```

(A) None of the above.

(B) [3.0, 6.0, 9.0]

(C) [1.0, 2.0, 3.0, 1.0, 2.0, 3.0, 1.0, 2.0, 3.0]

(D) [1, 2, 3, 1, 2, 3, 1, 2, 3]

(E) [3, 6, 9]

6. (1 point) Consider the following program:

```
a=["merlin","sir agravaine","king pellinore"]
b=[ ]
for i in range(0,3):
    b.append(a[0-i].title())
```

What is the **value** of b after this program is executed?

(A) ['Sir Agravaine', 'King Pellinore']

(B) ['King Pellinore', 'Sir Agravaine']

(C) [ ]

(D) ['King Pellinore', 'Sir Agravaine', 'Merlin']

(E) ['Merlin', 'King Pellinore', 'Sir Agravaine']

7. (1 point) Consider the following program:

```
x=0
for i in range(2,7):
    if i%3==0:
        x+=3
    elif i%2==0:
        x+=2
    else:
        x+=1
```

What is the **value** of x after this program is executed?

(A) 11

(B) 10

(C) 12

(D) 14

(E) 13

8. (1 point) Consider the following program:

```
i=3
x=2
while i < 7:
    x+=i
    i+=2
```

What is the **value** of x after this program is executed?

(A) 10

(B) 13

(C) 14

(D) 11

(E) 12

9. (1 point) Consider the following program:

```
x=2
a=6
if (a%3)==2:
    x=x**3
elif(a%3)==1:
    x=x**2
else:
    x=x**1
```

What is the **value** of x after this program is executed?

(A) 4

(B) None of the other answers are correct.

(C) 2

(D) 8

(E) 16

10. (1 point) Consider the following incomplete function.

```
def isdivisible(m,n):
    if ???:
        return False
    else:
        return True
```

The function is intended to return True if the input parameter m is evenly divisible by the parameter n and False otherwise. For example, `isdivisible(4,2)` should return `True`, but `isdivisible(5,3)` should return `False`. What should replace the three question marks to complete the function?

(A) `(n % m) == 0`

(B) `(m // n) != 0`

(C) `(n // m) == 0`

(D) `(m % n) != 0`

11. (1 point) Consider the following program:

```
s="ECTOR"
t="GAWAIN"
x=(len(s)+len(t)) < 4 and s in t
```

What is the **type** of x after this program is executed?

(A) `None`

(B) `Float`

(C) `Boolean`

(D) `Integer`

(E) `String`

12. (1 point) Consider the following program:

```
s="G+R+A+I+L"
x=s.split("+")[1:-2]
```

What is the **value** of x after this program is executed?

(A) `None`

(B) `'RAI'`

(C) `['R','A']`

(D) `3`

(E) `False`

13. (1 point) Consider the following Python program.

```
e=[1,3,5,7,9,11]
d=[0,0,0]
for i in range(0,len(e)):
    d[i%3]+=e[i]
x=d[1]
```

After it is run, what is the final **value** of x?

(A) `3`

(B) `8`

(C) `16`

(D) `0`

(E) `12`

9

14. (1 point) Consider the following program.

```
s="ABCBA"
x=0
y=len(s)-1
while s[x]==s[y] and x<y:
    x+=1
    y-=1
```

After it is run, what is the final **value** of x?

(A) 1

(B) 0

(C) 3

(D) 2

(E) 4

15. (1 point) Consider the following program:

```
a=3
b=4
if a==3:
    a=b
elif a==4:
    a=5
else:
    b=a
```

What is the **value** of a after this program is executed?

(A) 5

(B) 4

(C) None of the other answers are correct.

(D) 7

(E) 3

16. (1 point) Evaluate the following expression:

`[1,2]+[len("3")]`

What value is produced?

(A) `[1,2,1,2,1,2]`

(B) `[1,2,"3"]`

(C) `[1,2,3]`

(D) `[1,2,1]`

17. (1 point) Consider the following program:

```
a=["S","T","U","P","E","F","Y"]
a=a[0:4]
a.sort()
x=""
for e in a:
    x=e+x
```

What is the **value** of x after this program is executed?

(A) "UTSP"

(B) None of the other answers are correct.

(C) "STUP"

(D) "PSTU"

(E) "PUST"

12

18. (1 point) Consider the following program:

```
x=[1,2,3,4,5,6,7,8,9]
x=x[2:-2]
i=1
while i < 3:
    x[i]+=1
    i+=1
```

What is the **value** of x after this program is executed?

(A) [3, 5, 6, 6, 7, 8]

(B) [3, 5, 6, 6, 7]

(C) [2, 4, 5, 5, 6, 7]

(D) [2, 4, 5, 6, 6, 7]

(E) [3, 5, 6, 6]

19. (1 point) Consider the following program:

```python
def fix(s):
    a=list(s)
    a.sort()
    return ''.join(a)

x=["one","two","eleven","twelve"]
s1=fix(x[0]+x[-1])
s2=fix(x[1]+x[-2])

if s1<s2:
    x.sort()
elif s1>s2:
    x.reverse()
else:
    x.append("six")
```

What is the **value** of x after this program is executed?

(A) ['twelve', 'eleven', 'two', 'one']

(B) ['one', 'two', 'eleven', 'twelve']

(C) ['one', 'two', 'eleven', 'twelve', 'six']

(D) ['two', 'twelve', 'one', 'eleven', 'six']

(E) ['eleven', 'one', 'twelve', 'two']

20. (1 point) Consider the following incomplete Python program.

```python
s="".join(["2","2","0","1"])
x=0
for i in range(len(s)-1):
    x+=int(???)
```

What should replace the three question marks so the resulting value of x is 43?

(A) s[i+1:i+2]

(B) s[i:i+1]

(C) s[i:i-1]

(D) s[i:i+2]

21. (1 point) Consider the following program.

```python
x=0
i=1
while(i*i)<=9:
    x=x+(i*i)
    i=i+1
```

After it is run, what is the final **value** of x?

(A) 5

(B) 30

(C) 14

(D) 4

(E) 3

22. (1 point) For this problem, you should compose a function which accomplishes a given task using the available code blocks arranged in the correct functional order. *We ignore indentation for this problem.*

find_max should accept a list and return the value of the maximum item in the list. (None is always the lowest value in any numeric comparison, so you may use it as an initializer.)

```
def find_max(my_list):
```

```
1 max_val = i
```

```
2 max_val = None
```

```
3 for i in range(len(my_list)):
```

```
4 if i > max_val:
```

```
5 max_val = my_list[i]
```

```
6 return max_val
```

```
7 for i in range(my_list):
```

```
8 if my_list[i] > max_val:
```

```
9 print(max_val)
```

(A) 2, 7, 4, 5, 6

(B) 2, 3, 8, 5, 6

(C) 3, 2, 8, 5, 9

(D) 2, 3, 4, 1, 6

(E) 2, 3, 8, 1, 6

23. (1 point) Consider the following program:

```
s="Hobbes"
i=0
x=-1
while i<len(s):
    if s[i]=='b':
        x=i
    i+=1
```

What is the **value** of x after this program is executed?

(A) 2

(B) 3

(C) 5

(D) 4

(E) -1

24. (1 point) Consider the following program.

```
def artificing(s):
    return s*2
    return s+"%i" % 2
    return s

s=artificing("MERLIN")
```

After it is run, what is the final **value** of s?

(A) "MERLINMERLIN"

(B) None

(C) 12

(D) "MERLIN2"

(E) "MERLIN"

25. (1 point) Consider the following program:

```
pi="3.14159"
e="2.71828"
x=pi*len(e)+pi
```

What is the **type** of x after this program is executed?

(A) None

(B) Integer

(C) Float

(D) Boolean

(E) String

26. (1 point) Consider the following program.

```
x=[]
for j in range(0,5):
    if (j%2)==0:
        x.append("-")
    if (j%5)==0:
        x.append("*")
```

After it is run, what is the final **value** of x?

(A) None of the other answers are correct.

(B) ["-","*","-","-"]

(C) ["*","-","*","*"]

(D) ["-","-","*"]

(E) ["-","*","-"]

27. (1 point) Consider the following incomplete program.

```
sum=0
???:
    sum=sum+i
```

The program is intended to sum all of the integers between 1 and 100 (inclusive). What should replace the three question marks to complete the program?

(A) `for i in range(1,101)`

(B) `while i in range(100)`

(C) `for i in range(0,100)`

(D) `while i<=100`

28. (1 point) Consider the following program:

```
x=[1,2,3]
def f(a):
    s=""
    a.reverse()
    for i in a:
        s+=str(i)
    return s

x.append(f(x))
```

What is the **value** of x after this program is executed?

(A) [1, 2, 3, 6]

(B) [1, 2, 3]

(C) [3, 2, 1]

(D) [3, 2, 1, '321']

(E) [1, 2, 3, '321']

29. (1 point) Consider the following program:

```
s="TRIS %i"
t="ISEU"
x=len(s) % len(t[2:-1])
```

What is the **type** of x after this program is executed?

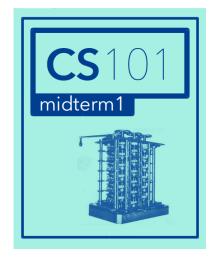(A) String

(B) None

(C) Boolean

(D) Integer

(E) Float

30. (1 point) How can the following mathematical equation be implemented as a Python expression? Assume a, b, and sin have already been defined.

$$a \sin(a^b - b)$$

(A) `a*sin(a**b - b)`

(B) None of the other answers are correct.

(C) `a*sin(a^b - b)`

(D) `a sin(a**b - b)`

(E) `a*sin(b^a - b)`

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1. Fill in your information:

Full Name: _____

UIN (Student Number): _____

NetID: _____

2. Fill in the following answers on the Scantron form:

92. D

93. C

94. A

95. D

96. E

1. (1 point)

```
x=str(3)+"str(3)"
```

What is the **value** of x after this program is executed?

(A) `"33"`

(B) `"3str(3)"`

(C) None of the other answers are correct.

(D) `"333"`

(E) `33`

2. (1 point) Consider the following incomplete program.

```
sum=0
???:
    sum=sum+i
```

The program is intended to sum all of the integers between 1 and 100 (inclusive). What should replace the three question marks to complete the program?

(A) `for i in range(0,100)`

(B) `while i in range(100)`

(C) `while i<=100`

(D) `for i in range(1,101)`

3. (1 point) Consider the following program:

```python
def fix(s):
    a=list(s)
    a.sort()
    return ''.join(a)

x=["one","two","eleven","twelve"]
s1=fix(x[0]+x[-1])
s2=fix(x[1]+x[-2])

if s1<s2:
    x.sort()
elif s1>s2:
    x.reverse()
else:
    x.append("six")
```

What is the **value** of x after this program is executed?

(A) ['one', 'two', 'eleven', 'twelve', 'six']

(B) ['eleven', 'one', 'twelve', 'two']

(C) ['one', 'two', 'eleven', 'twelve']

(D) ['twelve', 'eleven', 'two', 'one']

(E) ['two', 'twelve', 'one', 'eleven', 'six']

4. (1 point) Consider the following Python program.

```python
e=[1,3,5,7,9,11]
d=[0,0,0]
for i in range(0,len(e)):
    d[i%3]+=e[i]
x=d[1]
```

After it is run, what is the final **value** of x?

(A) 0

(B) 16

(C) 8

(D) 3

(E) 12

5. (1 point) Consider the following program.

```
kay = 2
wart = 3

def knight(kay,wart):
    wart += 2
    kay += 3
    return wart + kay

kay = knight(wart, kay) + knight(kay, wart)
```

After it is run, what is the final **value** of `kay`?

  (A) 2

  (B) None of the other answers are correct.

  (C) 3

  (D) 5

6. (1 point) Consider the following incomplete Python program.

```
s="".join(["0","1","2","1"])
x=0
for i in range(len(s)-1):
    x+=int(???)
```

What should replace the three question marks so the resulting value of `x` is 34?

  (A) `s[i+1:i+2]`

  (B) `s[i:i+1]`

  (C) `s[i:i-1]`

  (D) `s[i:i+2]`

7. (1 point) Consider the following program:

```
a=3
b=4
if a==3:
    b=a
elif a==4:
    a=5
else:
    a=b
```

What is the **value** of a after this program is executed?

(A) 3

(B) 4

(C) None of the other answers are correct.

(D) 5

(E) 7

8. (1 point) Consider the following program:

```
a=["merlin","sir agravaine","king pellinore"]
b=[ ]
for i in range(1,3):
    b.append(a[0-i].title())
```

What is the **value** of b after this program is executed?

(A) ['King Pellinore', 'Sir Agravaine', 'Merlin']

(B) ['Merlin', 'King Pellinore', 'Sir Agravaine']

(C) ['King Pellinore', 'Sir Agravaine']

(D) [ ]

(E) ['Sir Agravaine', 'King Pellinore']

9. (1 point) Consider the following program:

```
x=3
a=5
if (a%3)==2:
    x=x**3
elif(a%3)==1:
    x=x**2
else:
    x=x**1
```

What is the **value** of x after this program is executed?

(A) 1

(B) 3

(C) None of the other answers are correct.

(D) 9

(E) 27

10. (1 point) Consider the following program.

```
x=1
i=0
while(x*x)<=9:
    i=i+(x*x)
    x=x+1
```

After it is run, what is the final **value** of x?

(A) 5

(B) 3

(C) 30

(D) 14

(E) 4

11. (1 point) Consider the following program.

```
def artificing(s):
    return s+"%i" % 2
    return s*2
    return s
```

```
s=artificing("MERLIN")
```

After it is run, what is the final **value** of s?

(A) "MERLIN%i"

(B) None

(C) 0

(D) "MERLINMERLIN"

(E) "MERLIN2"

12. (1 point) Evaluate the following expression:

`[1,2]*len("3")`

What value is produced?

  (A) `[1,2]`

  (B) `[1,2,3]`

  (C) `[1,2,1]`

  (D) `[1,2,1,2,1,2]`

13. (1 point) Consider the following program.

```
x=[]
for j in range(0,5):
    if (j%3)==0:
        x.append("-")
    if (j%4)==0:
        x.append("*")
```

After it is run, what is the final **value** of x?

  (A) `["*","-","*"]`

  (B) `["*","-","*"]`

  (C) `["-","*"]`

  (D) `["-","*","-","*"]`

  (E) None of the other answers are correct.

14. (1 point) Consider the following program:

```
pi="3.14159"
e="2.71828"
x=pi*len(e)+pi
```

What is the **type** of x after this program is executed?

(A) None

(B) Boolean

(C) String

(D) Integer

(E) Float

15. (1 point) Consider the following program.

```
s="BBCAA"
x=0
y=len(s)-1
while s[x]!=s[y] and x<len(s):
    x+=1
    y-=1
```

After it is run, what is the final **value** of x?

(A) 3

(B) 0

(C) 4

(D) 1

(E) 2

16. (1 point) Consider the following program:

```
s="ECTOR"
t="GAWAIN"
x=(len(s)+len(t)) < 4 and s in t
```

What is the **type** of x after this program is executed?

(A) String

(B) None

(C) Boolean

(D) Integer

(E) Float

17. (1 point) Consider the following program:

```
x=0
for i in range(2,8):
    if i%3==0:
        x+=3
    elif i%2==0:
        x+=2
    else:
        x+=1
```

What is the **value** of x after this program is executed?

(A) 11

(B) 10

(C) 12

(D) 14

(E) 13

18. (1 point) Consider the following program:

```
x="KING ARTHUR-MORGANA LEFAY-SIR BEDIVERE".split("-")
y=x
y.reverse()
```

What is the **value** of x after this program is executed?

(A) ['KING ARTHUR', 'MORGANA LEFAY', 'SIR BEDIVERE']

(B) ['SIR BEDIVERE', 'MORGANA LEFAY', 'KING ARTHUR']

(C) ['KING', 'ARTHUR-MORGANA', 'LEFAY-SIR', 'BEDIVERE']

(D) None

(E) ['BEDIVERE', 'LEFAY-SIR', 'ARTHUR-MORGANA', 'KING']

19. (1 point) Consider the following program:

```
s="-B-O-R-S-"
x=s.split("-")[2:-2]
```

What is the **value** of x after this program is executed?

(A) False

(B) ''

(C) 'ORS'

(D) None

(E) ['O', 'R']

20. (1 point) For this problem, you should compose a function which accomplishes a given task using the available code blocks arranged in the correct functional order. *We ignore indentation for this problem.*

`find_max` should accept a `list` and return the value of the maximum item in the `list`. (`None` is always the lowest value in any numeric comparison, so you may use it as an initializer.)

```
def find_max(my_list):

1 max_val = i

2 max_val = None

3 for i in range(len(my_list)):

4 if i > max_val:

5 max_val = my_list[i]

6 return max_val

7 for i in range(my_list):

8 if my_list[i] > max_val:

9 print(max_val)
```

(A) 2, 3, 8, 1, 6

(B) 2, 3, 4, 1, 6

(C) 2, 7, 4, 5, 6

(D) 2, 3, 8, 5, 6

(E) 3, 2, 8, 5, 9

21. (1 point) How can the following mathematical equation be implemented as a Python expression? Assume `a`, `b`, and `cos` have already been defined.

$$a^b \cos(a - b)$$

(A) `(a**b)*cos(a-b)`

(B) `(b^a)cos(a-b)`

(C) `(a^b)*cos(a-b)`

(D) `(a**b)cos(a-b)`

(E) None of the other answers are correct.

22. (1 point) Consider the following incomplete function.

```
def isdivisible(m,n):
    if ???:
        return False
    else:
        return True
```

The function is intended to return True if the input parameter m is evenly divisible by the parameter n and False otherwise. For example, `isdivisible(4,2)` should return `True`, but `isdivisible(5,3)` should return `False`. What should replace the three question marks to complete the function?

(A) `(n % m) == 0`

(B) `(m // n) != 0`

(C) `(m % n) != 0`

(D) `(n // m) == 0`

23. (1 point) Consider the following program:

```
x=[2,3,4,5,6,7,8,9]
x=x[2:-2]
i=1
while i <= 3:
    x[i]+=1
    i+=1
```

What is the **value** of x after this program is executed?

(A) [4, 6, 7, 8]

(B) [4, 6, 7]

(C) [3, 4, 6, 7, 8]

(D) [2, 4, 6, 6]

(E) [4, 6, 7, 7]

24. (1 point) Consider the following program:

```
x=[1,2,3]
def f(a):
    s=""
    a.reverse()
    for i in a:
        s+=str(i)
    return s

x.append(f(x))
```

What is the **value** of x after this program is executed?

(A) [1, 2, 3]

(B) [3, 2, 1, '321']

(C) [3, 2, 1]

(D) [1, 2, 3, 6]

(E) [1, 2, 3, '321']

25. (1 point) What is the result of the following expression?

```
[ 1, 2, 3 ] * 3
```

(A) [1, 2, 3, 1, 2, 3, 1, 2, 3]

(B) (3, 6, 9)

(C) [3.0, 6.0, 9.0]

(D) [3, 6, 9]

(E) [1.0, 2.0, 3.0, 1.0, 2.0, 3.0, 1.0, 2.0, 3.0]

26. (1 point) Evaluate the following expression:

`len("ABCD"[0:3])`

What value is produced?

  (A) 3

  (B) 1

  (C) 4

  (D) 2

27. (1 point) Consider the following program:

```
a=["S","T","U","P","E","F","Y"]
a=a[0:4]
a.sort()
x=""
for e in a:
    x=e+x
```

What is the **value** of x after this program is executed?

  (A) None of the other answers are correct.

  (B) `"UTSP"`

  (C) `"PSTU"`

  (D) `"STUP"`

  (E) `"PUST"`

28. (1 point) Consider the following program:

```
s="TRIS %i"
t="ISEU"
x=s % len(t)
```

What is the **type** of x after this program is executed?

(A) Float

(B) None

(C) Boolean

(D) String

(E) Integer

29. (1 point) Consider the following program:

```
s="Calvin"
i=0
x=-1
while i<len(s):
    if s[i]=='b':
        x=i
    i+=1
```

What is the **value** of x after this program is executed?

(A) 5

(B) 0

(C) 3

(D) -1

(E) 6

30. (1 point) Consider the following program:

```
i=2
x=3
while i < 7:
    x+=i
    i+=2
```

What is the **value** of x after this program is executed?

(A) 12

(B) 14

(C) 13

(D) 11

(E) 15

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CS101

midterm1

- **Be sure to enter your <u>NetID</u> and <u>the code below</u> on your Scantron**.

- Do not turn this page until instructed to do so.

- There are 30 questions, worth 1 point each.

- Each question has only **one** correct answer.

- You must not communicate with other students during this test.

- No books, notes, or electronic devices are permitted.

- This is a 60-minute exam.

- There are several different versions of this exam.

1. Fill in your information:

Full Name: _____

UIN (Student Number): _____

NetID: _____

2. Fill in the following answers on the Scantron form:

92. E

93. C

94. A

95. E

96. A

1. (1 point) Consider the following program:

```
x=str(1.2)*2
```

What is the **value** of x after this program is executed?

(A) None of the other answers are correct.

(B) `"2.4"`

(C) `2.4`

(D) `"1.2*2"`

(E) `"1.21.2"`

2. (1 point) Consider the following program:

```
a=["A","C","C","I","O"]
a.sort()
a[0]=a[-1]
x=""
for e in a:
    x=x+e
```

What is the **value** of x after this program is executed?

(A) `"ICCOI"`

(B) `"ACCOA"`

(C) `"ACCIA"`

(D) None of the other answers are correct.

(E) `"OCCIO"`

3. (1 point) Consider the following program:

```
s="TRIS %i"
t="ISEU"
x=s % len(t)
```

What is the **type** of x after this program is executed?

(A) String

(B) Float

(C) None

(D) Integer

(E) Boolean

4. (1 point) Consider the following program.

```
x=0
i=1
while(i*i)<=9:
    x=x+(i*i)
    i=i+1
```

After it is run, what is the final **value** of x?

(A) 14

(B) 5

(C) 30

(D) 3

(E) 4

5. (1 point) Consider the following incomplete function.

```
def ismultiple(m,n):
    if ???:
        return False
    else:
        return True
```

The function is intended to return True if the input parameter m is a multiple of parameter n and False otherwise. For example, `ismultiple(4,2)` should return `True`, but `ismultiple(5,3)` should return `False`. What should replace the three question marks to complete the function?

(A) `(m % n) != 0`

(B) `(n % m) == 0`

(C) `(m // n) != 0`

(D) `(n // m) == 0`

6. (1 point) Consider the following Python program.

```
e=[1,3,5,7,9,11]
d=[0,0,0]
for i in range(0,len(e)):
    d[i%3]+=e[i]
x=d[1]
```

After it is run, what is the final **value** of x?

(A) 8

(B) 3

(C) 0

(D) 16

(E) 12

7. (1 point) Evaluate the following expression:

```
len("ABCDE"[1:4])
```

What value is produced?

(A) 5

(B) 4

(C) 3

(D) 1

8. (1 point) Consider the following program:

```
x=[1,2,3]
def f(a):
    s=""
    a.append(4)
    for i in a:
        s+=str(i)
    return s

x.append(f(x))
```

What is the **value** of x after this program is executed?

(A) [1, 2, 3, '1234']

(B) [1, 2, 3, 4, '1234']

(C) [1, 2, 3]

(D) [1, 2, 3, '123']

(E) [1, 2, 3, 10]

9. (1 point) Consider the following program:

```
x=0
for i in range(2,7):
    if i%3==0:
        x+=3
    elif i%2==0:
        x+=2
    else:
        x+=1
```

What is the **value** of x after this program is executed?

(A) 14

(B) 11

(C) 12

(D) 10

(E) 13

10. (1 point) Consider the following program:

```
x=[2,3,4,5,6,7,8,9]
x=x[2:-2]
i=1
while i <= 3:
    x[i]+=1
    i+=1
```

What is the **value** of x after this program is executed?

(A) [3, 4, 6, 7, 8]

(B) [2, 4, 6, 6]

(C) [4, 6, 7, 7]

(D) [4, 6, 7, 8]

(E) [4, 6, 7]

11. (1 point) For this problem, you should compose a function which accomplishes a given task using the available code blocks arranged in the correct functional order. *We ignore indentation for this problem.*

find_max should accept a `list` and return the value of the maximum item in the `list`. (`None` is always the lowest value in any numeric comparison, so you may use it as an initializer.)

```
def find_max(my_list):
```

```
1 max_val = i
```

```
2 max_val = None
```

```
3 for i in range(len(my_list)):
```

```
4 if i > max_val:
```

```
5 max_val = my_list[i]
```

```
6 return max_val
```

```
7 for i in range(my_list):
```

```
8 if my_list[i] > max_val:
```

```
9 print(max_val)
```

(A) 2, 3, 4, 1, 6

(B) 3, 2, 8, 5, 9

(C) 2, 3, 8, 1, 6

(D) 2, 3, 8, 5, 6

(E) 2, 7, 4, 5, 6

12. (1 point) Consider the following program:

```
a=3
b=4
if a==3:
    b=a
elif a==4:
    a=5
else:
    a=b
```

What is the **value** of a after this program is executed?

(A) None of the other answers are correct.

(B) 5

(C) 3

(D) 7

(E) 4

13. (1 point) Consider the following program:

```
s="ECTOR"
t="GAWAIN"
x=(len(s)+len(t)) < 4 and s in t
```

What is the **type** of x after this program is executed?

(A) Float

(B) Boolean

(C) Integer

(D) String

(E) None

14. (1 point) Consider the following incomplete Python program.

```
s="".join(["2","2","0","1"])
x=0
for i in range(len(s)-1):
    x+=int(???)
```

What should replace the three question marks so the resulting value of x is 43?

(A) `s[i:i+1]`

(B) `s[i:i-1]`

(C) `s[i+1:i+2]`

(D) `s[i:i+2]`

15. (1 point) Consider the following program.

```
x=[]
for j in range(0,5):
    if (j%2)==0:
        x.append("-")
    if (j%5)==0:
        x.append("*")
```

After it is run, what is the final **value** of x?

(A) `["-","*","-"]`

(B) `["-","*","-","-"]`

(C) `["-","-","*"]`

(D) None of the other answers are correct.

(E) `["*","-","*","*"]`

10

16. (1 point) Consider the following program:

```
s="-B-O-R-S-"
x=s.split("-")[2:-2]
```

What is the **value** of x after this program is executed?

(A) `None`

(B) `''`

(C) `False`

(D) `'ORS'`

(E) `['O', 'R']`

17. (1 point) Consider the following incomplete program.

```
sum=0
???:
    sum=sum+i
```

The program is intended to sum all of the integers between 1 and 100 (inclusive). What should replace the three question marks to complete the program?

(A) `for i in range(1,101)`

(B) `while i<=100`

(C) `while i in range(100)`

(D) `for i in range(0,100)`

18. (1 point) What is the result of the following expression?

```
[ 1, 2, 3 ] * 3
```

(A) [1, 2, 3, 1, 2, 3, 1, 2, 3]

(B) (3, 6, 9)

(C) [3.0, 6.0, 9.0]

(D) [3, 6, 9]

(E) [1.0, 2.0, 3.0, 1.0, 2.0, 3.0, 1.0, 2.0, 3.0]

19. (1 point) Consider the following program:

```
s="Calvin"
i=0
x=-1
while i<len(s):
    if s[i]=='b':
        x=i
    i+=1
```

What is the **value** of x after this program is executed?

(A) 0

(B) 5

(C) 6

(D) 3

(E) -1

20. (1 point) Consider the following program:

```
x=2
a=6
if (a%3)==2:
    x=x**3
elif(a%3)==1:
    x=x**2
else:
    x=x**1
```

What is the **value** of x after this program is executed?

(A) None of the other answers are correct.

(B) 8

(C) 4

(D) 2

(E) 16

21. (1 point) Evaluate the following expression:

`[1,2]+[len("3")]`

What value is produced?

(A) `[1,2,1,2,1,2]`

(B) `[1,2,3]`

(C) `[1,2,1]`

(D) `[1,2,"3"]`

22. (1 point) Consider the following program.

```
s="BBCAA"
x=0
y=len(s)-1
while s[x]!=s[y] and x<len(s):
    x+=1
    y-=1
```

After it is run, what is the final **value** of x?

(A) 4

(B) 1

(C) 0

(D) 3

(E) 2

23. (1 point) Consider the following program.

```
def artificing(s):
    return s+"%i" % 2
    return s*2
    return s
```

```
s=artificing("MERLIN")
```

After it is run, what is the final **value** of s?

(A) "MERLIN2"

(B) 0

(C) "MERLIN%i"

(D) "MERLINMERLIN"

(E) None

24. (1 point) Consider the following program:

```python
def fix(s):
    a=list(s)
    a.sort()
    return ''.join(a)

x=["one","two","eleven","twelve"]
s1=fix(x[0]+x[-1])
s2=fix(x[1]+x[-2])

if s1<s2:
    x.sort()
elif s1==s2:
    x.reverse()
else:
    x.append("six")
```

What is the **value** of x after this program is executed?

(A) ['twelve', 'eleven', 'two', 'one']

(B) ['one', 'two', 'eleven', 'twelve', 'six']

(C) ['two', 'twelve', 'one', 'eleven', 'six']

(D) ['one', 'two', 'eleven', 'twelve']

(E) ['eleven', 'one', 'twelve', 'two']

25. (1 point) Consider the following program:

```
x="KING ARTHUR-MORGANA LEFAY-SIR BEDIVERE".split("-")
y=x
y.reverse()
```

What is the **value** of x after this program is executed?

(A) ['KING ARTHUR', 'MORGANA LEFAY', 'SIR BEDIVERE']

(B) None

(C) ['BEDIVERE', 'LEFAY-SIR', 'ARTHUR-MORGANA', 'KING']

(D) ['KING', 'ARTHUR-MORGANA', 'LEFAY-SIR', 'BEDIVERE']

(E) ['SIR BEDIVERE', 'MORGANA LEFAY', 'KING ARTHUR']

26. (1 point) How can the following mathematical equation be implemented as a Python expression? Assume a, b, and sin have already been defined.

$$a\sin(a^b - b)$$

(A) None of the other answers are correct.

(B) a*sin(a**b - b)

(C) a*sin(b^a - b)

(D) a sin(a**b - b)

(E) a*sin(a^b - b)

27. (1 point) Consider the following program:

```
i=2
x=3
while i < 7:
    x+=i
    i+=2
```

What is the **value** of x after this program is executed?

(A) 11

(B) 14

(C) 13

(D) 12

(E) 15

28. (1 point) Consider the following program:

```
a=["merlin","sir agravaine","king pellinore"]
b=[ ]
for i in range(1,3):
    b.append(a[0-i].title())
```

What is the **value** of b after this program is executed?

(A) ['Sir Agravaine', 'King Pellinore']

(B) ['King Pellinore', 'Sir Agravaine', 'Merlin']

(C) [ ]

(D) ['King Pellinore', 'Sir Agravaine']

(E) ['Merlin', 'King Pellinore', 'Sir Agravaine']

18

29. (1 point) Consider the following program.

```
kay = 2
wart = 3

def knight(kay,wart):
    wart += 2
    kay += 3
    return wart + kay

wart = knight(kay, kay) + knight(wart, wart)
```

After it is run, what is the final **value** of `wart`?

(A) 2

(B) 3

(C) 5

(D) None of the other answers are correct.

30. (1 point) Consider the following program:

```
pi="3.14159"
e="2.71828"
x=pi in pi*len(e)
```

What is the **type** of `x` after this program is executed?

(A) Integer

(B) Boolean

(C) None

(D) Float

(E) String

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CS101
midterm1

- **Be sure to enter your <u>NetID</u> and <u>the code below</u> on your Scantron**.

- Do not turn this page until instructed to do so.

- There are 30 questions, worth 1 point each.

- Each question has only **one** correct answer.

- You must not communicate with other students during this test.

- No books, notes, or electronic devices are permitted.

- This is a 60-minute exam.

- There are several different versions of this exam.

1. Fill in your information:

Full Name: _____

UIN (Student Number): _____

NetID: _____

2. Fill in the following answers on the Scantron form:

92. A

93. D

94. A

95. B

96. D

1. (1 point) Consider the following program:

```python
def fix(s):
    a=list(s)
    a.sort()
    return ''.join(a)

x=["one","two","eleven","twelve"]
s1=fix(x[0]+x[-1])
s2=fix(x[1]+x[-2])

if s1==s2:
    x.sort()
elif s1<s2:
    x.reverse()
else:
    x.append("six")
```

What is the **value** of x after this program is executed?

  (A) ['twelve', 'eleven', 'two', 'one']

  (B) ['one', 'two', 'eleven', 'twelve']

  (C) ['eleven', 'one', 'twelve', 'two']

  (D) ['two', 'twelve', 'one', 'eleven', 'six']

  (E) ['one', 'two', 'eleven', 'twelve', 'six']

2. (1 point) Evaluate the following expression:

`len("ABCD"[0:3])`

What value is produced?

  (A) 2

  (B) 3

  (C) 4

  (D) 1

3. (1 point) Consider the following program.

```
kay = 2
wart = 3

def knight(kay,wart):
    wart += 2
    kay += 3
    return wart + kay

wart = knight(kay, kay) + knight(wart, wart)
```

After it is run, what is the final **value** of `wart`?

  (A) 5

  (B) None of the other answers are correct.

  (C) 3

  (D) 2

4. (1 point) Consider the following program:

```
s="ECTOR"
t="GAWAIN"
x=(len(s)/(len(t)-1))+1
```

What is the **type** of x after this program is executed?

(A) Float

(B) Boolean

(C) Integer

(D) String

(E) None

5. (1 point) Consider the following program:

```
x=3
a=5
if (a%3)==2:
    x=x**3
elif(a%3)==1:
    x=x**2
else:
    x=x**1
```

What is the **value** of x after this program is executed?

(A) 27

(B) 1

(C) 9

(D) 3

(E) None of the other answers are correct.

6. (1 point) Consider the following program:

```
a=3
b=4
if a!=b:
    a=b
elif a==4:
    a=5
else:
    b=a
```

What is the **value** of a after this program is executed?

(A) 5

(B) 3

(C) 7

(D) None of the other answers are correct.

(E) 4

7. (1 point) Consider the following program.

```
x=[]
for j in range(0,5):
    if (j%2)==0:
        x.append("-")
    if (j%5)==0:
        x.append("*")
```

After it is run, what is the final **value** of x?

(A) ["-","*","-","-"]

(B) None of the other answers are correct.

(C) ["*","-","*","*"]

(D) ["-","*","-"]

(E) ["-","-","*"]

8. (1 point) Consider the following incomplete Python program.

```
s="".join(["1","0","2","1"])
x=0
for i in range(len(s)-1):
    x+=int(???)
```

What should replace the three question marks so the resulting value of x is 33?

(A) s[i:i+2]

(B) s[i:i+1]

(C) s[i:i-1]

(D) s[i+1:i+2]

9. (1 point) Consider the following incomplete function.

```
def ismultiple(m,n):
    if ???:
        return False
    else:
        return True
```

The function is intended to return True if the input parameter m is a multiple of parameter n and False otherwise. For example, `ismultiple(4,2)` should return `True`, but `ismultiple(5,3)` should return `False`. What should replace the three question marks to complete the function?

(A) `(n % m) == 0`

(B) `(m // n) != 0`

(C) `(n // m) == 0`

(D) `(m % n) != 0`

10. (1 point) Consider the following incomplete program.

```
sum=0
for i in range(0,100):
    ???
```

The program is intended to sum all of the integers between 1 and 100 (inclusive). What should replace the three question marks to complete the program?

(A) `sum=sum+i+1`

(B) `sum=sum+i`

(C) `sum=sum+1`

(D) `sum+1=sum`

11. (1 point) How can the following mathematical equation be implemented as a Python expression? Assume a, b, and cos have already been defined.

$$a^b \cos(a - b)$$

(A) `(a^b)*cos(a-b)`

(B) `(a**b)cos(a-b)`

(C) `(b^a)cos(a-b)`

(D) None of the other answers are correct.

(E) `(a**b)*cos(a-b)`

12. (1 point) Consider the following program:

```
x=[1,2,3]
def f(a):
    s=""
    a.append(4)
    for i in a:
        s+=str(i)
    return s

x.append(f(x))
```

What is the **value** of x after this program is executed?

(A) `[1, 2, 3, 4, '1234']`

(B) `[1, 2, 3, '1234']`

(C) `[1, 2, 3]`

(D) `[1, 2, 3, '123']`

(E) `[1, 2, 3, 10]`

13. (1 point) Consider the following program:

```
s="-B-O-R-S-"
x=s.split("-")[2:-2]
```

What is the **value** of x after this program is executed?

(A) ['O', 'R']

(B) ''

(C) False

(D) None

(E) 'ORS'

14. (1 point) Consider the following program:

```
x="KING ARTHUR-MORGANA LEFAY-SIR BEDIVERE".split("-")
y=x
x=y.reverse()
```

What is the **value** of x after this program is executed?

(A) ['KING ARTHUR', 'MORGANA LEFAY', 'SIR BEDIVERE']

(B) None

(C) ['BEDIVERE', 'LEFAY-SIR', 'ARTHUR-MORGANA', 'KING']

(D) ['SIR BEDIVERE', 'MORGANA LEFAY', 'KING ARTHUR']

(E) ['KING', 'ARTHUR-MORGANA', 'LEFAY-SIR', 'BEDIVERE']

15. (1 point) Consider the following program.

```
s="ABCBA"
x=0
y=len(s)-1
while s[x]==s[y] and x<y:
    x+=1
    y-=1
```

After it is run, what is the final **value** of x?

(A) 2

(B) 3

(C) 4

(D) 0

(E) 1

16. (1 point) Consider the following Python program.

```
e=[1,3,5,7,9,11]
d=[0,0,0]
for i in range(0,len(e)):
    d[i%3]+=e[i]
x=d[2]
```

After it is run, what is the final **value** of x?

(A) 12

(B) 16

(C) 0

(D) 7

(E) 8

17. (1 point) Consider the following program:

```
x=[1,2,3,4,5,6,7,8,9]
x=x[2:-2]
i=1
while i < 3:
    x[i]+=1
    i+=1
```

What is the **value** of x after this program is executed?

(A) [2, 4, 5, 5, 6, 7]

(B) [3, 5, 6, 6, 7]

(C) [3, 5, 6, 6]

(D) [3, 5, 6, 6, 7, 8]

(E) [2, 4, 5, 6, 6, 7]

18. (1 point) Evaluate the following expression:

```
[1,2]*len("3")
```

What value is produced?

(A) [1,2,3]

(B) [1,2]

(C) [1,2,1]

(D) [1,2,1,2,1,2]

11

19. (1 point) Consider the following program:

```
a=["merlin","sir agravaine","king pellinore"]
b=[ ]
for i in range(0,3):
    b.append(a[0-i].title())
```

What is the **value** of b after this program is executed?

(A) ['King Pellinore', 'Sir Agravaine']

(B) ['Merlin', 'King Pellinore', 'Sir Agravaine']

(C) ['Sir Agravaine', 'King Pellinore']

(D) ['King Pellinore', 'Sir Agravaine', 'Merlin']

(E) [ ]

20. (1 point) Consider the following program:

```
x=0
for i in range(2,7):
    if i%3==0:
        x+=3
    elif i%2==0:
        x+=2
    else:
        x+=1
```

What is the **value** of x after this program is executed?

(A) 10

(B) 14

(C) 12

(D) 13

(E) 11

21. (1 point) Consider the following program:

```
pi="3.14159"
e="2.71828"
x=pi in pi*len(e)
```

What is the **type** of x after this program is executed?

(A) Boolean

(B) String

(C) None

(D) Float

(E) Integer

22. (1 point) For this problem, you should compose a function which accomplishes a given task using the available code blocks arranged in the correct functional order. *We ignore indentation for this problem.*

`find_max` should accept a `list` and return the value of the maximum item in the `list`. (`None` is always the lowest value in any numeric comparison, so you may use it as an initializer.)

```
def find_max(my_list):

1 max_val = i

2 max_val = None

3 for i in range(len(my_list)):

4 if i > max_val:

5 max_val = my_list[i]

6 return max_val

7 for i in range(my_list):

8 if my_list[i] > max_val:

9 print(max_val)
```

(A) 3, 2, 8, 5, 9

(B) 2, 3, 8, 1, 6

(C) 2, 7, 4, 5, 6

(D) 2, 3, 8, 5, 6

(E) 2, 3, 4, 1, 6

23. (1 point) Consider the following program:

```
s="TRIS %i"
t="ISEU"
x=len(s) % len(t[2:-1])
```

What is the **type** of x after this program is executed?

(A) Integer

(B) None

(C) String

(D) Boolean

(E) Float

24. (1 point) Consider the following program:

```
a=["S","T","U","P","E","F","Y"]
a=a[0:4]
a.sort()
x=""
for e in a:
    x=e+x
```

What is the **value** of x after this program is executed?

(A) "STUP"

(B) "UTSP"

(C) "PUST"

(D) None of the other answers are correct.

(E) "PSTU"

25. (1 point) Consider the following program:

```
i=2
x=3
while i < 7:
    x+=i
    i+=2
```

What is the **value** of x after this program is executed?

(A) 12

(B) 11

(C) 13

(D) 14

(E) 15

26. (1 point) Consider the following program.

```
def artificing(s):
    return s+"%i" % 2
    return s*2
    return s
```

```
s=artificing("MERLIN")
```

After it is run, what is the final **value** of s?

(A) "MERLIN%i"

(B) "MERLINMERLIN"

(C) 0

(D) "MERLIN2"

(E) None

27. (1 point) Consider the following program.

```
x=0
i=1
while(i*i)<=9:
    x=x+(i*i)
    i=i+1
```

After it is run, what is the final **value** of x?

(A) 5

(B) 4

(C) 14

(D) 30

(E) 3

28. (1 point) Consider the following program:

```
s="Calvin"
i=0
x=-1
while i<len(s):
    if s[i]=='b':
        x=i
    i+=1
```

What is the **value** of x after this program is executed?

(A) 0

(B) 3

(C) -1

(D) 6

(E) 5

29. (1 point) What is the result of the following expression?

```
[ 1, 2, 3 ] * 3
```

(A) [3.0, 6.0, 9.0]

(B) [1, 2, 3, 1, 2, 3, 1, 2, 3]

(C) [3, 6, 9]

(D) (3, 6, 9)

(E) [1.0, 2.0, 3.0, 1.0, 2.0, 3.0, 1.0, 2.0, 3.0]

30. (1 point) Consider the following program:

```
x=str("1"*3)
```

What is the **value** of x after this program is executed?

(A) `111`

(B) None of the other answers are correct.

(C) `3`

(D) `"3"`

(E) `"111"`

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CS101
midterm1

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Full Name: _____

UIN (Student Number): _____

NetID: _____

2. Fill in the following answers on the Scantron form:

92. B

93. D

94. A

95. C

96. E

1. (1 point) Evaluate the following expression:

`len("ABCD"[0:3])`

What value is produced?

(A) 4

(B) 2

(C) 1

(D) 3

2. (1 point) Consider the following program:

```
x=0
for i in range(2,8):
    if i%3==0:
        x+=3
    elif i%2==0:
        x+=2
    else:
        x+=1
```

What is the **value** of x after this program is executed?

(A) 11

(B) 14

(C) 12

(D) 10

(E) 13

3. (1 point) Consider the following program:

```
s="TRIS %i"
t="ISEU"
x=s % len(t)
```

What is the **type** of x after this program is executed?

(A) Float

(B) None

(C) Integer

(D) Boolean

(E) String

4. (1 point) Consider the following program:

```python
x=[1,2,3]
def f(a):
    s=""
    a.reverse()
    for i in a:
        s+=str(i)
    return s

x.append(f(x))
```

What is the **value** of x after this program is executed?

(A) [3, 2, 1]

(B) [3, 2, 1, '321']

(C) [1, 2, 3, 6]

(D) [1, 2, 3]

(E) [1, 2, 3, '321']

5. (1 point) Consider the following program.

```
def artificing(s):
    return s+"%i" % 2
    return s*2
    return s
```

```
s=artificing("MERLIN")
```

After it is run, what is the final **value** of s?

(A) 0

(B) "MERLIN2"

(C) "MERLINMERLIN"

(D) None

(E) "MERLIN%i"

6. (1 point) Consider the following program:

```
x=[1,2,3,4,5,6,7,8,9]
x=x[2:-2]
i=1
while i <= 3:
    x[i]+=1
    i+=1
```

What is the **value** of x after this program is executed?

(A) [2, 4, 5, 6, 7, 7]

(B) [3, 5, 6, 7, 7, 8]

(C) [2, 4, 5, 5, 7, 7]

(D) [3, 5, 6, 7, 7]

(E) [3, 5, 7, 7]

7. (1 point) Consider the following program:

```
x=2
a=6
if (a%3)==2:
    x=x**3
elif(a%3)==1:
    x=x**2
else:
    x=x**1
```

What is the **value** of x after this program is executed?

(A) 2

(B) None of the other answers are correct.

(C) 8

(D) 16

(E) 4

8. (1 point) Consider the following program:

```
s="-B-O-R-S-"
x=s.split("-")[2:-2]
```

What is the **value** of x after this program is executed?

(A) None

(B) ['O', 'R']

(C) False

(D) ''

(E) 'ORS'

9. (1 point) What is the result of the following expression?

```
[ 1, 2, 3 ] * 3.0
```

(A) [3.0, 6.0, 9.0]

(B) [3, 6, 9]

(C) [1.0, 2.0, 3.0, 1.0, 2.0, 3.0, 1.0, 2.0, 3.0]

(D) None of the above.

(E) [1, 2, 3, 1, 2, 3, 1, 2, 3]

10. (1 point) Consider the following program:

```
x="KING ARTHUR-MORGANA LEFAY-SIR BEDIVERE".split("-")
y=x
x=y.reverse()
```

What is the **value** of x after this program is executed?

(A) ['KING', 'ARTHUR-MORGANA', 'LEFAY-SIR', 'BEDIVERE']

(B) ['KING ARTHUR', 'MORGANA LEFAY', 'SIR BEDIVERE']

(C) None

(D) ['SIR BEDIVERE', 'MORGANA LEFAY', 'KING ARTHUR']

(E) ['BEDIVERE', 'LEFAY-SIR', 'ARTHUR-MORGANA', 'KING']

11. (1 point) Consider the following program:

```
a=["merlin","sir agravaine","king pellinore"]
b=[ ]
for i in range(1,3):
    b.append(a[0-i].title())
```

What is the **value** of b after this program is executed?

 (A) ['King Pellinore', 'Sir Agravaine']

 (B) [ ]

 (C) ['King Pellinore', 'Sir Agravaine', 'Merlin']

 (D) ['Merlin', 'King Pellinore', 'Sir Agravaine']

 (E) ['Sir Agravaine', 'King Pellinore']

12. (1 point) Consider the following program.

```
x=0
i=1
while(i*i)<=9:
    x=x+(i*i)
    i=i+1
```

After it is run, what is the final **value** of x?

 (A) 5

 (B) 4

 (C) 14

 (D) 30

 (E) 3

13. (1 point) Consider the following program:

```
x=str(1.2)*2
```

What is the **value** of x after this program is executed?

(A) "1.2*2"

(B) "2.4"

(C) None of the other answers are correct.

(D) "1.21.2"

(E) 2.4

14. (1 point) Consider the following program:

```
pi="3.14159"
e="2.71828"
x=pi in pi*len(e)
```

What is the **type** of x after this program is executed?

(A) None

(B) Boolean

(C) Float

(D) String

(E) Integer

15. (1 point) Consider the following program:

```
s="Hobbes"
i=0
x=-1
while i<len(s):
    if s[i]=='b':
        x=i
    i+=1
```

What is the **value** of x after this program is executed?

(A) 2

(B) 4

(C) 5

(D) 3

(E) -1

16. (1 point) Consider the following incomplete program.

```
sum=0
???:
    sum=sum+i
```

The program is intended to sum all of the integers between 1 and 100 (inclusive). What should replace the three question marks to complete the program?

(A) `while i<=100`

(B) `while i in range(100)`

(C) `for i in range(0,100)`

(D) `for i in range(1,101)`

17. (1 point) Consider the following program:

```python
def fix(s):
    a=list(s)
    a.sort()
    return ''.join(a)

x=["one","two","eleven","twelve"]
s1=fix(x[0]+x[-1])
s2=fix(x[1]+x[-2])

if s1<s2:
    x.sort()
elif s1==s2:
    x.reverse()
else:
    x.append("six")
```

What is the **value** of x after this program is executed?

(A) ['one', 'two', 'eleven', 'twelve', 'six']

(B) ['two', 'twelve', 'one', 'eleven', 'six']

(C) ['one', 'two', 'eleven', 'twelve']

(D) ['eleven', 'one', 'twelve', 'two']

(E) ['twelve', 'eleven', 'two', 'one']

18. (1 point) Consider the following program.

```
kay = 2
wart = 3

def knight(kay,wart):
    wart += 2
    kay += 3
    return wart + kay

kay = knight(wart, kay) + knight(kay, wart)
```

After it is run, what is the final **value** of `kay`?

(A) 3

(B) None of the other answers are correct.

(C) 5

(D) 2

19. (1 point) Consider the following program.

```
x=[]
for j in range(0,5):
    if (j%3)==0:
        x.append("-")
    if (j%4)==0:
        x.append("*")
```

After it is run, what is the final **value** of x?

(A) ["-","*","-","*"]

(B) ["-","*"]

(C) ["*","-","*"]

(D) None of the other answers are correct.

(E) ["*","-","*"]

20. (1 point) Consider the following program:

```
i=3
x=2
while i < 7:
    x+=i
    i+=2
```

What is the **value** of x after this program is executed?

(A) 14

(B) 13

(C) 10

(D) 11

(E) 12

21. (1 point) Consider the following program.

```
s="BBCAA"
x=0
y=len(s)-1
while s[x]!=s[y] and x<len(s):
    x+=1
    y-=1
```

After it is run, what is the final **value** of x?

(A) 4

(B) 3

(C) 2

(D) 0

(E) 1

22. (1 point) Consider the following Python program.

```
e=[1,3,5,7,9,11]
d=[0,0,0]
for i in range(0,len(e)):
    d[i%3]+=e[i]
x=d[1]
```

After it is run, what is the final **value** of x?

(A) 0

(B) 16

(C) 3

(D) 8

(E) 12

23. (1 point) For this problem, you should compose a function which accomplishes a given task using the available code blocks arranged in the correct functional order. *We ignore indentation for this problem.*

`find_max` should accept a `list` and return the value of the maximum item in the `list`. (`None` is always the lowest value in any numeric comparison, so you may use it as an initializer.)

```
def find_max(my_list):

1 max_val = i

2 max_val = None

3 for i in range(len(my_list)):

4 if i > max_val:

5 max_val = my_list[i]

6 return max_val

7 for i in range(my_list):

8 if my_list[i] > max_val:

9 print(max_val)
```

(A) 2, 7, 4, 5, 6

(B) 2, 3, 8, 1, 6

(C) 2, 3, 4, 1, 6

(D) 3, 2, 8, 5, 9

(E) 2, 3, 8, 5, 6

24. (1 point) Consider the following program:

```
a=["S","T","U","P","E","F","Y"]
a=a[0:4]
a.sort()
x=""
for e in a:
    x=e+x
```

What is the **value** of x after this program is executed?

(A) "PUST"

(B) "STUP"

(C) None of the other answers are correct.

(D) "UTSP"

(E) "PSTU"

25. (1 point) Evaluate the following expression:

```
[1,2]*len("3")
```

What value is produced?

(A) [1,2]

(B) [1,2,3]

(C) [1,2,1,2,1,2]

(D) [1,2,1]

26. (1 point) How can the following mathematical equation be implemented as a Python expression? Assume a, b, and sin have already been defined.

$$a \sin(a^b - b)$$

(A) `a*sin(b^a - b)`

(B) `a*sin(a^b - b)`

(C) `a sin(a**b - b)`

(D) None of the other answers are correct.

(E) `a*sin(a**b - b)`

27. (1 point) Consider the following program:

```
a=3
b=4
if a!=b:
    a=b
elif a==4:
    a=5
else:
    b=a
```

What is the **value** of a after this program is executed?

(A) None of the other answers are correct.

(B) 4

(C) 5

(D) 3

(E) 7

28. (1 point) Consider the following program:

```
s="ECTOR"
t="GAWAIN"
x=(len(s)/(len(t)-1))+1
```

What is the **type** of x after this program is executed?

(A) String

(B) Float

(C) None

(D) Integer

(E) Boolean

29. (1 point) Consider the following incomplete Python program.

```
s="".join(["1","0","2","1"])
x=0
for i in range(len(s)-1):
    x+=int(???)
```

What should replace the three question marks so the resulting value of x is 33?

(A) s[i:i+2]

(B) s[i:i+1]

(C) s[i+1:i+2]

(D) s[i:i-1]

30. (1 point) Consider the following incomplete function.

```
def ismultiple(m,n):
    if ???:
        return False
    else:
        return True
```

The function is intended to return True if the input parameter m is a multiple of parameter n and False otherwise. For example, `ismultiple(4,2)` should return `True`, but `ismultiple(5,3)` should return `False`. What should replace the three question marks to complete the function?

(A) `(m // n) != 0`

(B) `(n // m) == 0`

(C) `(n % m) == 0`

(D) `(m % n) != 0`

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CS101
midterm1

- **Be sure to enter your <u>NetID</u> and <u>the code below</u> on your Scantron**.

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- This is a 60-minute exam.

- There are several different versions of this exam.

1. Fill in your information:

Full Name: _____

UIN (Student Number): _____

NetID: _____

2. Fill in the following answers on the Scantron form:

92. C

93. D

94. A

95. D

96. A

1. (1 point) Consider the following program:

```
i=2
x=3
while i < 7:
    x+=i
    i+=2
```

What is the **value** of x after this program is executed?

(A) 11

(B) 12

(C) 13

(D) 14

(E) 15

2. (1 point) What is the result of the following expression?

```
[ 1, 2, 3 ] * 3
```

(A) [1, 2, 3, 1, 2, 3, 1, 2, 3]

(B) [3, 6, 9]

(C) (3, 6, 9)

(D) [3.0, 6.0, 9.0]

(E) [1.0, 2.0, 3.0, 1.0, 2.0, 3.0, 1.0, 2.0, 3.0]

3. (1 point) Consider the following program:

```
x=[1,2,3]
def f(a):
    s=""
    a.reverse()
    for i in a:
        s+=str(i)
    return s

x.append(f(x))
```

What is the **value** of x after this program is executed?

(A) `[1, 2, 3, '321']`

(B) `[1, 2, 3]`

(C) `[3, 2, 1]`

(D) `[3, 2, 1, '321']`

(E) `[1, 2, 3, 6]`

4. (1 point) Consider the following program:

```
s="ECTOR"
t="GAWAIN"
x=(len(s)/(len(t)-1))+1
```

What is the **type** of x after this program is executed?

(A) String

(B) None

(C) Float

(D) Integer

(E) Boolean

5. (1 point) Consider the following program:

```
x="KING ARTHUR-MORGANA LEFAY-SIR BEDIVERE".split("-")
y=x
y.reverse()
```

What is the **value** of x after this program is executed?

(A) ['SIR BEDIVERE', 'MORGANA LEFAY', 'KING ARTHUR']

(B) ['KING ARTHUR', 'MORGANA LEFAY', 'SIR BEDIVERE']

(C) ['KING', 'ARTHUR-MORGANA', 'LEFAY-SIR', 'BEDIVERE']

(D) ['BEDIVERE', 'LEFAY-SIR', 'ARTHUR-MORGANA', 'KING']

(E) None

6. (1 point) How can the following mathematical equation be implemented as a Python expression? Assume `a`, `b`, and `sin` have already been defined.

$$a \sin(a^b - b)$$

(A) `a*sin(b^a - b)`

(B) `a*sin(a^b - b)`

(C) `a*sin(a**b - b)`

(D) None of the other answers are correct.

(E) `a sin(a**b - b)`

7. (1 point) Consider the following program:

```
a=["merlin","sir agravaine","king pellinore"]
b=[ ]
for i in range(0,4):
    b.append(a[0-i].title())
```

What is the **value** of b after this program is executed?

(A) `['King Pellinore', 'Sir Agravaine', 'Merlin']`

(B) `['Merlin', 'King Pellinore', 'Sir Agravaine', 'Merlin']`

(C) `['Merlin', 'Sir Agravaine', 'King Pellinore', 'Merlin']`

(D) `[ ]`

(E) `['Merlin', 'King Pellinore', 'Sir Agravaine']`

8. (1 point) Consider the following program:

```python
def fix(s):
    a=list(s)
    a.sort()
    return ''.join(a)

x=["one","two","eleven","twelve"]
s1=fix(x[0]+x[-1])
s2=fix(x[1]+x[-2])

if s1<s2:
    x.sort()
elif s1==s2:
    x.reverse()
else:
    x.append("six")
```

What is the **value** of x after this program is executed?

(A) ['one', 'two', 'eleven', 'twelve', 'six']

(B) ['eleven', 'one', 'twelve', 'two']

(C) ['two', 'twelve', 'one', 'eleven', 'six']

(D) ['one', 'two', 'eleven', 'twelve']

(E) ['twelve', 'eleven', 'two', 'one']

9. (1 point) Consider the following program:

```
s="Calvin"
i=0
x=-1
while i<len(s):
    if s[i]=='b':
        x=i
    i+=1
```

What is the **value** of x after this program is executed?

(A) 0

(B) 6

(C) 3

(D) 5

(E) -1

10. (1 point) Consider the following program.

```
s="ABCBA"
x=0
y=len(s)-1
while s[x]==s[y] and x<y:
    x+=1
    y-=1
```

After it is run, what is the final **value** of x?

(A) 2

(B) 1

(C) 3

(D) 4

(E) 0

11. (1 point) Evaluate the following expression:

`[1,2]+[len("3")]`

What value is produced?

(A) `[1,2,1,2,1,2]`

(B) `[1,2,3]`

(C) `[1,2,1]`

(D) `[1,2,"3"]`

12. (1 point) Consider the following incomplete Python program.

```
s="".join(["1","0","2","1"])
x=0
for i in range(len(s)-1):
    x+=int(???)
```

What should replace the three question marks so the resulting value of x is 33?

(A) `s[i:i+2]`

(B) `s[i+1:i+2]`

(C) `s[i:i+1]`

(D) `s[i:i-1]`

13. (1 point) Consider the following incomplete program.

```
sum=0
???:
    sum=sum+i
```

The program is intended to sum all of the integers between 1 and 100 (inclusive). What should replace the three question marks to complete the program?

(A) `for i in range(0,100)`

(B) `while i<=100`

(C) `while i in range(100)`

(D) `for i in range(1,101)`

14. (1 point) Consider the following incomplete function.

```
def ismultiple(m,n):
    if ???:
        return False
    else:
        return True
```

The function is intended to return True if the input parameter m is a multiple of parameter n and False otherwise. For example, `ismultiple(4,2)` should return `True`, but `ismultiple(5,3)` should return `False`. What should replace the three question marks to complete the function?

(A) `(n % m) == 0`

(B) `(m // n) != 0`

(C) `(n // m) == 0`

(D) `(m % n) != 0`

15. (1 point) Consider the following program:

```
x=[1,2,3,4,5,6,7,8,9]
x=x[2:-2]
i=1
while i <= 3:
    x[i]+=1
    i+=1
```

What is the **value** of x after this program is executed?

(A) `[2, 4, 5, 5, 7, 7]`

(B) `[3, 5, 6, 7, 7]`

(C) `[3, 5, 6, 7, 7, 8]`

(D) `[2, 4, 5, 6, 7, 7]`

(E) `[3, 5, 7, 7]`

16. (1 point) Evaluate the following expression:

```
len("ABCDE"[1:4])
```

What value is produced?

(A) 5

(B) 3

(C) 4

(D) 1

17. (1 point) Consider the following program.

```
kay = 2
wart = 3

def knight(kay,wart):
    wart += 2
    kay += 3
    return wart + kay

kay = knight(wart, kay) + knight(kay, wart)
```

After it is run, what is the final **value** of kay?

(A) None of the other answers are correct.

(B) 5

(C) 3

(D) 2

11

18. (1 point) Consider the following program:

```
x=2
a=6
if (a%3)==2:
    x=x**3
elif(a%3)==1:
    x=x**2
else:
    x=x**1
```

What is the **value** of x after this program is executed?

(A) None of the other answers are correct.

(B) 8

(C) 4

(D) 2

(E) 16

19. (1 point) Consider the following program:

```
s="TRIS %i"
t="ISEU"
x=s % len(t)
```

What is the **type** of x after this program is executed?

(A) Integer

(B) String

(C) None

(D) Float

(E) Boolean

20. (1 point) Consider the following program.

```
x=1
i=0
while(x*x)<=9:
    i=i+(x*x)
    x=x+1
```

After it is run, what is the final **value** of x?

(A) 14

(B) 3

(C) 5

(D) 30

(E) 4

21. (1 point) Consider the following program:

```
pi="3.14159"
e="2.71828"
x=pi*len(e)+pi
```

What is the **type** of x after this program is executed?

(A) String

(B) Boolean

(C) Float

(D) Integer

(E) None

13

22. (1 point) Consider the following program.

```
x=[]
for j in range(0,5):
    if (j%4)==0:
        x.append("-")
    if (j%5)==0:
        x.append("*")
```

After it is run, what is the final **value** of x?

(A) ["-","*"]

(B) ["-","-","*"]

(C) ["-","*","-"]

(D) ["-","*","*"]

(E) None of the other answers are correct.

14

23. (1 point) For this problem, you should compose a function which accomplishes a given task using the available code blocks arranged in the correct functional order. *We ignore indentation for this problem.*

find_max should accept a list and return the value of the maximum item in the list. (None is always the lowest value in any numeric comparison, so you may use it as an initializer.)

```
def find_max(my_list):

1 max_val = i

2 max_val = None

3 for i in range(len(my_list)):

4 if i > max_val:

5 max_val = my_list[i]

6 return max_val

7 for i in range(my_list):

8 if my_list[i] > max_val:

9 print(max_val)
```

(A) 2, 3, 8, 5, 6

(B) 2, 3, 8, 1, 6

(C) 3, 2, 8, 5, 9

(D) 2, 3, 4, 1, 6

(E) 2, 7, 4, 5, 6

24. (1 point) Consider the following program:

```
s="-B-O-R-S-"
x=s.split("-")[2:-2]
```

What is the **value** of x after this program is executed?

(A) ['O', 'R']

(B) False

(C) 'ORS'

(D) ''

(E) None

25. (1 point) Consider the following program:

```
x=0
for i in range(4,10):
    if i%3==0:
        x+=3
    elif i%2==0:
        x+=2
    else:
        x+=1
```

What is the **value** of x after this program is executed?

(A) 13

(B) 14

(C) 10

(D) 12

(E) 11

26. (1 point)

```
x=str(3)+"str(3)"
```

What is the **value** of x after this program is executed?

(A) 33

(B) "3str(3)"

(C) None of the other answers are correct.

(D) "33"

(E) "333"

27. (1 point) Consider the following program:

```
a=["A","C","C","I","O"]
a.sort()
a[0]=a[-1]
x=""
for e in a:
    x=x+e
```

What is the **value** of x after this program is executed?

(A) "ACCOA"

(B) "OCCIO"

(C) "ACCIA"

(D) None of the other answers are correct.

(E) "ICCOI"

28. (1 point) Consider the following program:

```
a=3
b=4
if a==3:
    b=a
elif a==4:
    a=5
else:
    a=b
```

What is the **value** of a after this program is executed?

(A) 3

(B) 4

(C) 5

(D) None of the other answers are correct.

(E) 7

29. (1 point) Consider the following Python program.

```
e=[1,3,5,7,9,11]
d=[0,0,0]
for i in range(0,len(e)):
    d[i%3]+=e[i]
x=d[2]
```

After it is run, what is the final **value** of x?

(A) 0

(B) 7

(C) 16

(D) 8

(E) 12

30. (1 point) Consider the following program.

```
def artificing(s):
    return s*2
    return s+"%i" % 2
    return s
```

```
s=artificing("MERLIN")
```

After it is run, what is the final **value** of s?

(A) 12

(B) None

(C) "MERLIN2"

(D) "MERLINMERLIN"

(E) "MERLIN"

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CS101
midterm1

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1. Fill in your information:

Full Name: _____

UIN (Student Number): _____

NetID: _____

2. Fill in the following answers on the Scantron form:

92. D

93. D

94. A

95. E

96. B

1. (1 point) Consider the following program:

```
x=[2,3,4,5,6,7,8,9]
x=x[2:-2]
i=1
while i <= 3:
    x[i]+=1
    i+=1
```

What is the **value** of x after this program is executed?

(A) [2, 4, 6, 6]

(B) [3, 4, 6, 7, 8]

(C) [4, 6, 7]

(D) [4, 6, 7, 7]

(E) [4, 6, 7, 8]

2. (1 point) Consider the following program:

```
a=3
b=4
if a==3:
    a=b
elif a==4:
    a=5
else:
    b=a
```

What is the **value** of a after this program is executed?

  (A) 3

  (B) None of the other answers are correct.

  (C) 5

  (D) 4

  (E) 7

3. (1 point) Evaluate the following expression:

```
len("ABCD"[0:3])
```

What value is produced?

  (A) 2

  (B) 3

  (C) 4

  (D) 1

4. (1 point) Consider the following program.

```
kay = 2
wart = 3

def knight(kay,wart):
    wart += 2
    kay += 3
    return wart + kay

kay = knight(wart, kay) + knight(kay, wart)
```

After it is run, what is the final **value** of kay?

  (A) None of the other answers are correct.

  (B) 2

  (C) 3

  (D) 5

5. (1 point) Consider the following program:

```
a=["merlin","sir agravaine","king pellinore"]
b=[ ]
for i in range(0,4):
    b.append(a[0-i].title())
```

What is the **value** of b after this program is executed?

  (A) ['King Pellinore', 'Sir Agravaine', 'Merlin']

  (B) ['Merlin', 'Sir Agravaine', 'King Pellinore', 'Merlin']

  (C) ['Merlin', 'King Pellinore', 'Sir Agravaine', 'Merlin']

  (D) [ ]

  (E) ['Merlin', 'King Pellinore', 'Sir Agravaine']

4

6. (1 point) Consider the following program:

```
s="Hobbes"
i=0
x=-1
while i<len(s):
    if s[i]=='b':
        x=i
    i+=1
```

What is the **value** of x after this program is executed?

(A) 2

(B) -1

(C) 5

(D) 3

(E) 4

7. (1 point) Consider the following program:

```
i=2
x=3
while i < 7:
    x+=i
    i+=2
```

What is the **value** of x after this program is executed?

(A) 13

(B) 14

(C) 12

(D) 11

(E) 15

8. (1 point) Consider the following program:

```
pi="3.14159"
e="2.71828"
x=pi in pi*len(e)
```

What is the **type** of x after this program is executed?

(A) Float

(B) Boolean

(C) None

(D) Integer

(E) String

9. (1 point) Consider the following incomplete program.

```
sum=0
for i in range(0,100):
    ???
```

The program is intended to sum all of the integers between 1 and 100 (inclusive). What should replace the three question marks to complete the program?

(A) `sum+1=sum`

(B) `sum=sum+i+1`

(C) `sum=sum+1`

(D) `sum=sum+i`

10. (1 point) Consider the following program:

```
s="-B-O-R-S-"
x=s.split("-")[2:-2]
```

What is the **value** of x after this program is executed?

(A) `'ORS'`

(B) `False`

(C) `''`

(D) `None`

(E) `['O', 'R']`

11. (1 point) Consider the following program:

```python
def fix(s):
    a=list(s)
    a.sort()
    return ''.join(a)

x=["one","two","eleven","twelve"]
s1=fix(x[0]+x[-1])
s2=fix(x[1]+x[-2])

if s1==s2:
    x.sort()
elif s1<s2:
    x.reverse()
else:
    x.append("six")
```

What is the **value** of x after this program is executed?

(A) ['one', 'two', 'eleven', 'twelve', 'six']

(B) ['two', 'twelve', 'one', 'eleven', 'six']

(C) ['one', 'two', 'eleven', 'twelve']

(D) ['eleven', 'one', 'twelve', 'two']

(E) ['twelve', 'eleven', 'two', 'one']

8

12. (1 point) Consider the following program.

```
def artificing(s):
    return s*2
    return s+"%i" % 2
    return s

s=artificing("MERLIN")
```

After it is run, what is the final **value** of s?

(A) "MERLINMERLIN"

(B) "MERLIN2"

(C) None

(D) "MERLIN"

(E) 12

13. (1 point) Consider the following program:

```
s="TRIS %i"
t="ISEU"
x=s % len(t)
```

What is the **type** of x after this program is executed?

(A) String

(B) Float

(C) Integer

(D) None

(E) Boolean

14. (1 point) Consider the following program:

```
x=0
for i in range(4,10):
    if i%3==0:
        x+=3
    elif i%2==0:
        x+=2
    else:
        x+=1
```

What is the **value** of x after this program is executed?

(A) 14

(B) 13

(C) 10

(D) 11

(E) 12

15. (1 point) Consider the following program:

```
s="ECTOR"
t="GAWAIN"
x=(len(s)+len(t)) < 4 and s in t
```

What is the **type** of x after this program is executed?

(A) Boolean

(B) Float

(C) String

(D) None

(E) Integer

16. (1 point) Consider the following program.

```
s="ABCBA"
x=0
y=len(s)-1
while s[x]==s[y] and x<=y:
    x+=1
    y-=1
```

After it is run, what is the final **value** of x?

(A) 1

(B) 2

(C) 3

(D) 0

(E) 4

17. (1 point) What is the result of the following expression?

```
[ 1, 2, 3 ] * 3.0
```

(A) None of the above.

(B) [3.0, 6.0, 9.0]

(C) [1, 2, 3, 1, 2, 3, 1, 2, 3]

(D) [3, 6, 9]

(E) [1.0, 2.0, 3.0, 1.0, 2.0, 3.0, 1.0, 2.0, 3.0]

18. (1 point) Consider the following program:

```
x=[1,2,3]
def f(a):
    s=""
    a.reverse()
    for i in a:
        s+=str(i)
    return s

x.append(f(x))
```

What is the **value** of x after this program is executed?

(A) [1, 2, 3, '321']

(B) [1, 2, 3]

(C) [3, 2, 1]

(D) [3, 2, 1, '321']

(E) [1, 2, 3, 6]

19. (1 point) For this problem, you should compose a function which accomplishes a given task using the available code blocks arranged in the correct functional order. *We ignore indentation for this problem.*

find_max should accept a `list` and return the value of the maximum item in the `list`. (`None` is always the lowest value in any numeric comparison, so you may use it as an initializer.)

```
def find_max(my_list):

1 max_val = i

2 max_val = None

3 for i in range(len(my_list)):

4 if i > max_val:

5 max_val = my_list[i]

6 return max_val

7 for i in range(my_list):

8 if my_list[i] > max_val:

9 print(max_val)
```

(A) 2, 3, 8, 1, 6

(B) 2, 3, 4, 1, 6

(C) 2, 7, 4, 5, 6

(D) 2, 3, 8, 5, 6

(E) 3, 2, 8, 5, 9

20. (1 point) Consider the following Python program.

```python
e=[1,3,5,7,9,11]
d=[0,0,0]
for i in range(0,len(e)):
    d[i%3]+=e[i]
x=d[1]
```

After it is run, what is the final **value** of x?

(A) 8

(B) 16

(C) 3

(D) 12

(E) 0

21. (1 point) Consider the following incomplete function.

```python
def ismultiple(m,n):
    if ???:
        return False
    else:
        return True
```

The function is intended to return True if the input parameter m is a multiple of parameter n and False otherwise. For example, `ismultiple(4,2)` should return `True`, but `ismultiple(5,3)` should return `False`. What should replace the three question marks to complete the function?

(A) (m // n) != 0

(B) (m % n) != 0

(C) (n // m) == 0

(D) (n % m) == 0

22. (1 point) Consider the following program.

```
x=1
i=0
while(x*x)<=9:
    i=i+(x*x)
    x=x+1
```

After it is run, what is the final **value** of x?

 (A) 14

 (B) 5

 (C) 3

 (D) 4

 (E) 30

23. (1 point) Consider the following program:

```
x=3
a=5
if (a%3)==2:
    x=x**3
elif(a%3)==1:
    x=x**2
else:
    x=x**1
```

What is the **value** of x after this program is executed?

(A) 3

(B) 27

(C) None of the other answers are correct.

(D) 9

(E) 1

24. (1 point) How can the following mathematical equation be implemented as a Python expression? Assume a, b, and cos have already been defined.

$$a^b \cos(a - b)$$

(A) (a**b)cos(a-b)

(B) (a**b)*cos(a-b)

(C) (b^a)cos(a-b)

(D) (a^b)*cos(a-b)

(E) None of the other answers are correct.

25. (1 point) Evaluate the following expression:

`[1,2]+[len("3")]`

What value is produced?

  (A) `[1,2,3]`

  (B) `[1,2,1,2,1,2]`

  (C) `[1,2,1]`

  (D) `[1,2,"3"]`

26. (1 point) Consider the following incomplete Python program.

```
s="".join(["1","0","2","1"])
x=0
for i in range(len(s)-1):
    x+=int(???)
```

What should replace the three question marks so the resulting value of x is 33?

  (A) `s[i+1:i+2]`

  (B) `s[i:i-1]`

  (C) `s[i:i+1]`

  (D) `s[i:i+2]`

27. (1 point) Consider the following program:

```
x="KING ARTHUR-MORGANA LEFAY-SIR BEDIVERE".split("-")
y=x
y.reverse()
```

What is the **value** of x after this program is executed?

(A) ['KING', 'ARTHUR-MORGANA', 'LEFAY-SIR', 'BEDIVERE']

(B) ['SIR BEDIVERE', 'MORGANA LEFAY', 'KING ARTHUR']

(C) ['BEDIVERE', 'LEFAY-SIR', 'ARTHUR-MORGANA', 'KING']

(D) ['KING ARTHUR', 'MORGANA LEFAY', 'SIR BEDIVERE']

(E) None

28. (1 point) Consider the following program.

```
x=[]
for j in range(0,5):
    if (j%4)==0:
        x.append("-")
    if (j%5)==0:
        x.append("*")
```

After it is run, what is the final **value** of x?

(A) ["-","*","*"]

(B) None of the other answers are correct.

(C) ["-","*","-"]

(D) ["-","*"]

(E) ["-","-","*"]

29. (1 point) Consider the following program:

```
x=str("1"*3)
```

What is the **value** of x after this program is executed?

(A) 111

(B) 3

(C) None of the other answers are correct.

(D) "3"

(E) "111"

30. (1 point) Consider the following program:

```
a=["S","T","U","P","E","F","Y"]
a=a[0:4]
a.sort()
x=""
for e in a:
    x=e+x
```

What is the **value** of x after this program is executed?

(A) "UTSP"

(B) "PSTU"

(C) "PUST"

(D) None of the other answers are correct.

(E) "STUP"

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- There are 30 questions, worth 1 point each.

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- No books, notes, or electronic devices are permitted.

- This is a 60-minute exam.

- There are several different versions of this exam.

1. Fill in your information:

Full Name: _____

UIN (Student Number): _____

NetID: _____

2. Fill in the following answers on the Scantron form:

92. E

93. D

94. A

95. A

96. C

1. (1 point) Consider the following program:

```
s="Calvin"
i=0
x=-1
while i<len(s):
    if s[i]=='b':
        x=i
    i+=1
```

What is the **value** of x after this program is executed?

(A) 0

(B) 5

(C) 3

(D) 6

(E) -1

2. (1 point) Consider the following program:

```
pi="3.14159"
e="2.71828"
x=pi*len(e)+pi
```

What is the **type** of x after this program is executed?

(A) String

(B) None

(C) Integer

(D) Boolean

(E) Float

3. (1 point) Consider the following program.

```
x=0
i=1
while(i*i)<=9:
    x=x+(i*i)
    i=i+1
```

After it is run, what is the final **value** of x?

(A) 5

(B) 4

(C) 3

(D) 14

(E) 30

4. (1 point) Consider the following program.

```
kay = 2
wart = 3

def knight(kay,wart):
    wart += 2
    kay += 3
    return wart + kay

kay = knight(wart, kay) + knight(kay, wart)
```

After it is run, what is the final **value** of `kay`?

(A) None of the other answers are correct.

(B) 3

(C) 2

(D) 5

5. (1 point) Consider the following Python program.

```python
e=[1,3,5,7,9,11]
d=[0,0,0]
for i in range(0,len(e)):
    d[i%3]+=e[i]
x=d[2]
```

After it is run, what is the final **value** of x?

(A) 7

(B) 0

(C) 12

(D) 8

(E) 16

6. (1 point) Consider the following program.

```python
x=[]
for j in range(0,5):
    if (j%3)==0:
        x.append("-")
    if (j%4)==0:
        x.append("*")
```

After it is run, what is the final **value** of x?

(A) ["-","*","-","*"]

(B) None of the other answers are correct.

(C) ["*","-","*"]

(D) ["*","-","*"]

(E) ["-","*"]

7. (1 point) Consider the following program:

```
x=str(1.2)*2
```

What is the **value** of x after this program is executed?

  (A) None of the other answers are correct.

  (B) "2.4"

  (C) "1.2*2"

  (D) "1.21.2"

  (E) 2.4

8. (1 point) Consider the following program:

```
s="TRIS %i"
t="ISEU"
x=len(s) % len(t[2:-1])
```

What is the **type** of x after this program is executed?

  (A) Float

  (B) Integer

  (C) None

  (D) Boolean

  (E) String

9. (1 point) Consider the following program:

```
i=3
x=2
while i < 7:
    x+=i
    i+=2
```

What is the **value** of x after this program is executed?

(A) 11

(B) 10

(C) 13

(D) 14

(E) 12

10. (1 point) What is the result of the following expression?

```
[ 1, 2, 3 ] * 3.0
```

(A) [1, 2, 3, 1, 2, 3, 1, 2, 3]

(B) [3.0, 6.0, 9.0]

(C) [1.0, 2.0, 3.0, 1.0, 2.0, 3.0, 1.0, 2.0, 3.0]

(D) None of the above.

(E) [3, 6, 9]

11. (1 point) Evaluate the following expression:

`[1,2]*len("3")`

What value is produced?

 (A) `[1,2,3]`

 (B) `[1,2,1]`

 (C) `[1,2,1,2,1,2]`

 (D) `[1,2]`

12. (1 point) Consider the following incomplete function.

```
def ismultiple(m,n):
    if ???:
        return False
    else:
        return True
```

The function is intended to return True if the input parameter m is a multiple of parameter n and False otherwise. For example, `ismultiple(4,2)` should return `True`, but `ismultiple(5,3)` should return `False`. What should replace the three question marks to complete the function?

 (A) `(m // n) != 0`

 (B) `(n % m) == 0`

 (C) `(n // m) == 0`

 (D) `(m % n) != 0`

13. (1 point) How can the following mathematical equation be implemented as a Python expression? Assume `a`, `b`, and `cos` have already been defined.

$$a^b \cos(a - b)$$

(A) `(a**b)*cos(a-b)`

(B) None of the other answers are correct.

(C) `(a**b)cos(a-b)`

(D) `(b^a)cos(a-b)`

(E) `(a^b)*cos(a-b)`

14. (1 point) Consider the following program:

```
s="-B-O-R-S-"
x=s.split("-")[2:-2]
```

What is the **value** of `x` after this program is executed?

(A) `False`

(B) `'ORS'`

(C) `['O', 'R']`

(D) `''`

(E) `None`

15. (1 point) Consider the following incomplete Python program.

```python
s="".join(["1","0","2","1"])
x=0
for i in range(len(s)-1):
    x+=int(???)
```

What should replace the three question marks so the resulting value of x is 33?

(A) `s[i:i-1]`

(B) `s[i+1:i+2]`

(C) `s[i:i+1]`

(D) `s[i:i+2]`

16. (1 point) Consider the following program:

```python
a=["merlin","sir agravaine","king pellinore"]
b=[ ]
for i in range(1,3):
    b.append(a[0-i].title())
```

What is the **value** of b after this program is executed?

(A) `[ ]`

(B) `['King Pellinore', 'Sir Agravaine', 'Merlin']`

(C) `['King Pellinore', 'Sir Agravaine']`

(D) `['Sir Agravaine', 'King Pellinore']`

(E) `['Merlin', 'King Pellinore', 'Sir Agravaine']`

17. (1 point) Consider the following program:

```python
a=["A","C","C","I","O"]
a.sort()
a[0]=a[-1]
x=""
for e in a:
    x=x+e
```

What is the **value** of x after this program is executed?

(A) `"OCCIO"`

(B) `"ICCOI"`

(C) `"ACCOA"`

(D) None of the other answers are correct.

(E) `"ACCIA"`

18. (1 point) Consider the following program:

```
a=3
b=4
if a==3:
    b=a
elif a==4:
    a=5
else:
    a=b
```

What is the **value** of a after this program is executed?

(A) 5

(B) 4

(C) None of the other answers are correct.

(D) 7

(E) 3

19. (1 point) Consider the following program:

```
s="ECTOR"
t="GAWAIN"
x=(len(s)+len(t)) < 4 and s in t
```

What is the **type** of x after this program is executed?

(A) Integer

(B) None

(C) String

(D) Float

(E) Boolean

20. (1 point) Consider the following program.

```
def artificing(s):
    return s*2
    return s+"%i" % 2
    return s
```

```
s=artificing("MERLIN")
```

After it is run, what is the final **value** of s?

(A) `"MERLIN"`

(B) `None`

(C) `12`

(D) `"MERLIN2"`

(E) `"MERLINMERLIN"`

21. (1 point) Consider the following program.

```
s="BBCAA"
x=0
y=len(s)-1
while s[x]!=s[y] and x<len(s):
    x+=1
    y-=1
```

After it is run, what is the final **value** of x?

(A) 2

(B) 0

(C) 4

(D) 3

(E) 1

22. (1 point) Consider the following program:

```
x=[1,2,3]
def f(a):
    s=""
    a.append(4)
    for i in a:
        s+=str(i)
    return s

x.append(f(x))
```

What is the **value** of x after this program is executed?

(A) [1, 2, 3, 4, '1234']

(B) [1, 2, 3, '123']

(C) [1, 2, 3, '1234']

(D) [1, 2, 3]

(E) [1, 2, 3, 10]

23. (1 point) Consider the following program:

```
x="KING ARTHUR-MORGANA LEFAY-SIR BEDIVERE".split("-")
y=x[:]
y.reverse()
```

What is the **value** of x after this program is executed?

(A) ['KING ARTHUR', 'MORGANA LEFAY', 'SIR BEDIVERE']

(B) ['BEDIVERE', 'LEFAY-SIR', 'ARTHUR-MORGANA', 'KING']

(C) None

(D) ['SIR BEDIVERE', 'MORGANA LEFAY', 'KING ARTHUR']

(E) ['KING', 'ARTHUR-MORGANA', 'LEFAY-SIR', 'BEDIVERE']

24. (1 point) Consider the following incomplete program.

```
sum=0
for i in range(0,100):
    ???
```

The program is intended to sum all of the integers between 1 and 100 (inclusive). What should replace the three question marks to complete the program?

(A) sum+1=sum

(B) sum=sum+i+1

(C) sum=sum+i

(D) sum=sum+1

16

25. (1 point) For this problem, you should compose a function which accomplishes a given task using the available code blocks arranged in the correct functional order. *We ignore indentation for this problem.*

`find_max` should accept a `list` and return the value of the maximum item in the `list`. (`None` is always the lowest value in any numeric comparison, so you may use it as an initializer.)

```
def find_max(my_list):

1 max_val = i

2 max_val = None

3 for i in range(len(my_list)):

4 if i > max_val:

5 max_val = my_list[i]

6 return max_val

7 for i in range(my_list):

8 if my_list[i] > max_val:

9 print(max_val)
```

(A) 3, 2, 8, 5, 9

(B) 2, 3, 8, 5, 6

(C) 2, 3, 8, 1, 6

(D) 2, 7, 4, 5, 6

(E) 2, 3, 4, 1, 6

26. (1 point) Evaluate the following expression:

`len("ABCDE"[1:4])`

What value is produced?

(A) 1

(B) 3

(C) 5

(D) 4

27. (1 point) Consider the following program:

```
x=0
for i in range(4,10):
    if i%3==0:
        x+=3
    elif i%2==0:
        x+=2
    else:
        x+=1
```

What is the **value** of x after this program is executed?

(A) 10

(B) 13

(C) 14

(D) 12

(E) 11

28. (1 point) Consider the following program:

```
x=3
a=7
if (a%3)==2:
    x=x**2
elif(a%3)==1:
    x=x**1
else:
    x=x**0
```

What is the **value** of x after this program is executed?

(A) 1

(B) 3

(C) 7

(D) None of the other answers are correct.

(E) 9

29. (1 point) Consider the following program:

```
x=[1,2,3,4,5,6,7,8,9]
x=x[2:-2]
i=1
while i <= 3:
    x[i]+=1
    i+=1
```

What is the **value** of x after this program is executed?

(A) [2, 4, 5, 6, 7, 7]

(B) [3, 5, 7, 7]

(C) [3, 5, 6, 7, 7, 8]

(D) [3, 5, 6, 7, 7]

(E) [2, 4, 5, 5, 7, 7]

30. (1 point) Consider the following program:

```python
def fix(s):
    a=list(s)
    a.sort()
    return ''.join(a)

x=["one","two","eleven","twelve"]
s1=fix(x[0]+x[-1])
s2=fix(x[1]+x[-2])

if s1==s2:
    x.sort()
elif s1<s2:
    x.reverse()
else:
    x.append("six")
```

What is the **value** of x after this program is executed?

(A) ['eleven', 'one', 'twelve', 'two']

(B) ['twelve', 'eleven', 'two', 'one']

(C) ['one', 'two', 'eleven', 'twelve']

(D) ['one', 'two', 'eleven', 'twelve', 'six']

(E) ['two', 'twelve', 'one', 'eleven', 'six']

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CS101
midterm1

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1. Fill in your information:

Full Name: _____

UIN (Student Number): _____

NetID: _____

2. Fill in the following answers on the Scantron form:

92. A

93. E

94. A

95. C

96. A

1. (1 point) For this problem, you should compose a function which accomplishes a given task using the available code blocks arranged in the correct functional order. *We ignore indentation for this problem.*

find_max should accept a list and return the value of the maximum item in the list. (None is always the lowest value in any numeric comparison, so you may use it as an initializer.)

```
def find_max(my_list):

1 max_val = i

2 max_val = None

3 for i in range(len(my_list)):

4 if i > max_val:

5 max_val = my_list[i]

6 return max_val

7 for i in range(my_list):

8 if my_list[i] > max_val:

9 print(max_val)
```

(A) 2, 7, 4, 5, 6

(B) 3, 2, 8, 5, 9

(C) 2, 3, 4, 1, 6

(D) 2, 3, 8, 5, 6

(E) 2, 3, 8, 1, 6

2. (1 point) Consider the following program.

```
def artificing(s):
    return s+"%i" % 2
    return s*2
    return s
```

```
s=artificing("MERLIN")
```

After it is run, what is the final **value** of s?

(A) "MERLIN2"

(B) None

(C) 0

(D) "MERLINMERLIN"

(E) "MERLIN%i"

3. (1 point) Consider the following program.

```
s="BBCAA"
x=0
y=len(s)-1
while s[x]!=s[y] and x<len(s):
    x+=1
    y-=1
```

After it is run, what is the final **value** of x?

(A) 4

(B) 1

(C) 2

(D) 0

(E) 3

4. (1 point) Consider the following program:

```
a=["A","C","C","I","O"]
a.sort()
a[0]=a[-1]
x=""
for e in a:
    x=x+e
```

What is the **value** of x after this program is executed?

(A) "ACCOA"

(B) "OCCIO"

(C) "ICCOI"

(D) "ACCIA"

(E) None of the other answers are correct.

5. (1 point) Consider the following program:

```
a=["merlin","sir agravaine","king pellinore"]
b=[ ]
for i in range(0,3):
    b.append(a[0-i].title())
```

What is the **value** of b after this program is executed?

(A) ['Sir Agravaine', 'King Pellinore']

(B) [ ]

(C) ['Merlin', 'King Pellinore', 'Sir Agravaine']

(D) ['King Pellinore', 'Sir Agravaine', 'Merlin']

(E) ['King Pellinore', 'Sir Agravaine']

6. (1 point) Evaluate the following expression:

`[1,2]+[len("3")]`

What value is produced?

  (A) `[1,2,3]`

  (B) `[1,2,"3"]`

  (C) `[1,2,1,2,1,2]`

  (D) `[1,2,1]`

7. (1 point) Consider the following program:

```
x=0
for i in range(2,8):
    if i%3==0:
        x+=3
    elif i%2==0:
        x+=2
    else:
        x+=1
```

What is the **value** of x after this program is executed?

  (A) `11`

  (B) `13`

  (C) `14`

  (D) `10`

  (E) `12`

8. (1 point) Consider the following incomplete Python program.

```
s="".join(["1","0","2","1"])
x=0
for i in range(len(s)-1):
    x+=int(???)
```

What should replace the three question marks so the resulting value of x is 33?

(A) `s[i:i+2]`

(B) `s[i:i+1]`

(C) `s[i:i-1]`

(D) `s[i+1:i+2]`

9. (1 point) What is the result of the following expression?

`[ 1, 2, 3 ] * 3.0`

(A) `[3.0, 6.0, 9.0]`

(B) `[3, 6, 9]`

(C) `None of the above.`

(D) `[1.0, 2.0, 3.0, 1.0, 2.0, 3.0, 1.0, 2.0, 3.0]`

(E) `[1, 2, 3, 1, 2, 3, 1, 2, 3]`

10. (1 point) Consider the following program:

```
s="ECTOR"
t="GAWAIN"
x=(len(s)/(len(t)-1))+1
```

What is the **type** of x after this program is executed?

(A) Integer

(B) Boolean

(C) Float

(D) None

(E) String

11. (1 point) Consider the following incomplete function.

```
def ismultiple(m,n):
    if ???:
        return False
    else:
        return True
```

The function is intended to return True if the input parameter m is a multiple of parameter n and False otherwise. For example, ismultiple(4,2) should return True, but ismultiple(5,3) should return False. What should replace the three question marks to complete the function?

(A) (m % n) != 0

(B) (m // n) != 0

(C) (n % m) == 0

(D) (n // m) == 0

12. (1 point) Consider the following program:

```
pi="3.14159"
e="2.71828"
x=(float(e)**float(pi)-float(pi)) == 20
```

What is the **type** of x after this program is executed?

(A) Boolean

(B) Float

(C) String

(D) Integer

(E) None

13. (1 point) Consider the following program:

```
s="Hobbes"
i=0
x=-1
while i<len(s):
    if s[i]=='b':
        x=i
    i+=1
```

What is the **value** of x after this program is executed?

(A) 3

(B) 4

(C) 2

(D) -1

(E) 5

14. (1 point) Consider the following program:

```
s="TRIS %i"
t="ISEU"
x=len(s) % len(t[2:-1])
```

What is the **type** of x after this program is executed?

(A) Float

(B) None

(C) String

(D) Integer

(E) Boolean

15. (1 point) Consider the following program.

```
x=0
i=1
while(i*i)<=9:
    x=x+(i*i)
    i=i+1
```

After it is run, what is the final **value** of x?

(A) 4

(B) 5

(C) 14

(D) 30

(E) 3

16. (1 point) Consider the following program.

```
kay = 2
wart = 3

def knight(kay,wart):
    wart += 2
    kay += 3
    return wart + kay

wart = knight(kay, kay) + knight(wart, wart)
```

After it is run, what is the final **value** of wart?

(A) 5

(B) 3

(C) 2

(D) None of the other answers are correct.

17. (1 point) Consider the following Python program.

```
e=[1,3,5,7,9,11]
d=[0,0,0]
for i in range(0,len(e)):
    d[i%3]+=e[i]
x=d[2]
```

After it is run, what is the final **value** of x?

(A) 8

(B) 16

(C) 12

(D) 0

(E) 7

18. (1 point) Consider the following program:

```
i=2
x=3
while i < 7:
    x+=i
    i+=2
```

What is the **value** of x after this program is executed?

(A) 12

(B) 11

(C) 15

(D) 13

(E) 14

19. (1 point) Consider the following incomplete program.

```
sum=0
???:
    sum=sum+i
```

The program is intended to sum all of the integers between 1 and 100 (inclusive). What should replace the three question marks to complete the program?

(A) `for i in range(1,101)`

(B) `for i in range(0,100)`

(C) `while i<=100`

(D) `while i in range(100)`

20. (1 point) Consider the following program:

```
x="KING ARTHUR-MORGANA LEFAY-SIR BEDIVERE".split("-")
y=x
y.reverse()
```

What is the **value** of x after this program is executed?

(A) `None`

(B) `['KING', 'ARTHUR-MORGANA', 'LEFAY-SIR', 'BEDIVERE']`

(C) `['SIR BEDIVERE', 'MORGANA LEFAY', 'KING ARTHUR']`

(D) `['BEDIVERE', 'LEFAY-SIR', 'ARTHUR-MORGANA', 'KING']`

(E) `['KING ARTHUR', 'MORGANA LEFAY', 'SIR BEDIVERE']`

21. (1 point) Consider the following program:

```
s="-B-O-R-S-"
x=s.split("-")[2:-2]
```

What is the **value** of x after this program is executed?

(A) ''

(B) 'ORS'

(C) None

(D) False

(E) ['O', 'R']

22. (1 point) Consider the following program:

```
x=[1,2,3]
def f(a):
    s=""
    a.reverse()
    for i in a:
        s+=str(i)
    return s

x.append(f(x))
```

What is the **value** of x after this program is executed?

(A) [1, 2, 3, 6]

(B) [3, 2, 1]

(C) [1, 2, 3, '321']

(D) [1, 2, 3]

(E) [3, 2, 1, '321']

23. (1 point)

```
x=str(3)+"str(3)"
```

What is the **value** of x after this program is executed?

(A) "333"

(B) None of the other answers are correct.

(C) "3str(3)"

(D) "33"

(E) 33

24. (1 point) Consider the following program:

```
a=3
b=4
if a==3:
    b=a
elif a==4:
    a=5
else:
    a=b
```

What is the **value** of a after this program is executed?

(A) 4

(B) 3

(C) 5

(D) None of the other answers are correct.

(E) 7

25. (1 point) Consider the following program.

```
x=[]
for j in range(0,5):
    if (j%2)==0:
        x.append("-")
    if (j%5)==0:
        x.append("*")
```

After it is run, what is the final **value** of x?

(A) ["*","-","*","*"]

(B) None of the other answers are correct.

(C) ["-","-","*"]

(D) ["-","*","-"]

(E) ["-","*","-","-"]

26. (1 point) How can the following mathematical equation be implemented as a Python expression?
Assume a, b, and cos have already been defined.

$$a^b \cos(a - b)$$

(A) (a**b)cos(a-b)

(B) None of the other answers are correct.

(C) (a^b)*cos(a-b)

(D) (a**b)*cos(a-b)

(E) (b^a)cos(a-b)

27. (1 point) Consider the following program:

```
x=3
a=7
if (a%3)==2:
    x=x**2
elif(a%3)==1:
    x=x**1
else:
    x=x**0
```

What is the **value** of x after this program is executed?

(A) 9

(B) None of the other answers are correct.

(C) 3

(D) 7

(E) 1

28. (1 point) Consider the following program:

```python
def fix(s):
    a=list(s)
    a.sort()
    return ''.join(a)

x=["one","two","eleven","twelve"]
s1=fix(x[0]+x[-1])
s2=fix(x[1]+x[-2])

if s1==s2:
    x.sort()
elif s1<s2:
    x.reverse()
else:
    x.append("six")
```

What is the **value** of x after this program is executed?

(A) ['one', 'two', 'eleven', 'twelve', 'six']

(B) ['two', 'twelve', 'one', 'eleven', 'six']

(C) ['twelve', 'eleven', 'two', 'one']

(D) ['one', 'two', 'eleven', 'twelve']

(E) ['eleven', 'one', 'twelve', 'two']

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29. (1 point) Consider the following program:

```
x=[1,2,3,4,5,6,7,8,9]
x=x[2:-2]
i=1
while i < 3:
    x[i]+=1
    i+=1
```

What is the **value** of x after this program is executed?

(A) [3, 5, 6, 6]

(B) [2, 4, 5, 5, 6, 7]

(C) [2, 4, 5, 6, 6, 7]

(D) [3, 5, 6, 6, 7]

(E) [3, 5, 6, 6, 7, 8]

30. (1 point) Evaluate the following expression:

```
len("ABCDE"[1:4])
```

What value is produced?

(A) 1

(B) 4

(C) 5

(D) 3

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CS101

midterm1

- **Be sure to enter your <u>NetID</u> and <u>the code below</u> on your Scantron**.

- Do not turn this page until instructed to do so.

- There are 30 questions, worth 1 point each.

- Each question has only **one** correct answer.

- You must not communicate with other students during this test.

- No books, notes, or electronic devices are permitted.

- This is a 60-minute exam.

- There are several different versions of this exam.

1. Fill in your information:

Full Name: _____

UIN (Student Number): _____

NetID: _____

2. Fill in the following answers on the Scantron form:

92. B

93. E

94. A

95. D

96. B

1. (1 point) Evaluate the following expression:

`[1,2]+[len("3")]`

What value is produced?

 (A) `[1,2,1]`

 (B) `[1,2,3]`

 (C) `[1,2,1,2,1,2]`

 (D) `[1,2,"3"]`

2. (1 point) Consider the following program:

`x=str("1"*3)`

What is the **value** of x after this program is executed?

 (A) `3`

 (B) None of the other answers are correct.

 (C) `"3"`

 (D) `111`

 (E) `"111"`

3. (1 point) Consider the following program:

```
s="Calvin"
i=0
x=-1
while i<len(s):
    if s[i]=='b':
        x=i
    i+=1
```

What is the **value** of x after this program is executed?

(A) 5

(B) 6

(C) -1

(D) 3

(E) 0

4. (1 point) Consider the following program:

```
x=2
a=6
if (a%3)==2:
    x=x**3
elif(a%3)==1:
    x=x**2
else:
    x=x**1
```

What is the **value** of x after this program is executed?

(A) 16

(B) 8

(C) None of the other answers are correct.

(D) 2

(E) 4

5. (1 point) Consider the following incomplete function.

```python
def ismultiple(m,n):
    if ???:
        return False
    else:
        return True
```

The function is intended to return True if the input parameter m is a multiple of parameter n and False otherwise. For example, `ismultiple(4,2)` should return `True`, but `ismultiple(5,3)` should return `False`. What should replace the three question marks to complete the function?

(A) `(n // m) == 0`

(B) `(m % n) != 0`

(C) `(n % m) == 0`

(D) `(m // n) != 0`

6. (1 point) Consider the following incomplete Python program.

```python
s="".join(["1","0","2","1"])
x=0
for i in range(len(s)-1):
    x+=int(???)
```

What should replace the three question marks so the resulting value of `x` is 33?

(A) `s[i:i+2]`

(B) `s[i:i-1]`

(C) `s[i+1:i+2]`

(D) `s[i:i+1]`

7. (1 point) Consider the following program:

```
a=["merlin","sir agravaine","king pellinore"]
b=[ ]
for i in range(0,3):
    b.append(a[0-i].title())
```

What is the **value** of b after this program is executed?

(A) [ ]

(B) ['Merlin', 'King Pellinore', 'Sir Agravaine']

(C) ['Sir Agravaine', 'King Pellinore']

(D) ['King Pellinore', 'Sir Agravaine']

(E) ['King Pellinore', 'Sir Agravaine', 'Merlin']

8. (1 point) Consider the following Python program.

```
e=[1,3,5,7,9,11]
d=[0,0,0]
for i in range(0,len(e)):
    d[i%3]+=e[i]
x=d[1]
```

After it is run, what is the final **value** of x?

(A) 0

(B) 16

(C) 8

(D) 12

(E) 3

9. (1 point) How can the following mathematical equation be implemented as a Python expression? Assume a, b, and cos have already been defined.

$$a^b \cos(a - b)$$

(A) None of the other answers are correct.

(B) `(b^a)cos(a-b)`

(C) `(a**b)cos(a-b)`

(D) `(a**b)*cos(a-b)`

(E) `(a^b)*cos(a-b)`

10. (1 point) Consider the following program:

```
a=3
b=4
if a==3:
    b=a
elif a==4:
    a=5
else:
    a=b
```

What is the **value** of a after this program is executed?

(A) None of the other answers are correct.

(B) 3

(C) 7

(D) 5

(E) 4

11. (1 point) Consider the following program:

```
x=[2,3,4,5,6,7,8,9]
x=x[2:-2]
i=1
while i <= 3:
    x[i]+=1
    i+=1
```

What is the **value** of x after this program is executed?

(A) [4, 6, 7]

(B) [2, 4, 6, 6]

(C) [3, 4, 6, 7, 8]

(D) [4, 6, 7, 8]

(E) [4, 6, 7, 7]

12. (1 point) Consider the following program.

```
x=1
i=0
while(x*x)<=9:
    i=i+(x*x)
    x=x+1
```

After it is run, what is the final **value** of x?

(A) 30

(B) 3

(C) 14

(D) 5

(E) 4

13. (1 point) Consider the following program:

```
x="KING ARTHUR-MORGANA LEFAY-SIR BEDIVERE".split("-")
y=x[:]
y.reverse()
```

What is the **value** of x after this program is executed?

(A) ['BEDIVERE', 'LEFAY-SIR', 'ARTHUR-MORGANA', 'KING']

(B) ['KING ARTHUR', 'MORGANA LEFAY', 'SIR BEDIVERE']

(C) ['KING', 'ARTHUR-MORGANA', 'LEFAY-SIR', 'BEDIVERE']

(D) ['SIR BEDIVERE', 'MORGANA LEFAY', 'KING ARTHUR']

(E) None

14. (1 point) Consider the following program.

```
def artificing(s):
    return s*2
    return s+"%i" % 2
    return s

s=artificing("MERLIN")
```

After it is run, what is the final **value** of s?

(A) "MERLINMERLIN"

(B) "MERLIN2"

(C) "MERLIN"

(D) None

(E) 12

15. (1 point) Consider the following program:

```
x=0
for i in range(2,7):
    if i%3==0:
        x+=3
    elif i%2==0:
        x+=2
    else:
        x+=1
```

What is the **value** of x after this program is executed?

(A) 13

(B) 11

(C) 12

(D) 10

(E) 14

16. (1 point) Consider the following program:

```
s="ECTOR"
t="GAWAIN"
x=(len(s)+len(t)) < 4 and s in t
```

What is the **type** of x after this program is executed?

(A) Boolean

(B) None

(C) Integer

(D) Float

(E) String

17. (1 point) Consider the following program:

```
i=3
x=2
while i < 7:
    x+=i
    i+=2
```

What is the **value** of x after this program is executed?

(A) 14

(B) 13

(C) 10

(D) 11

(E) 12

18. (1 point) For this problem, you should compose a function which accomplishes a given task using the available code blocks arranged in the correct functional order. *We ignore indentation for this problem.*

`find_max` should accept a `list` and return the value of the maximum item in the `list`. (`None` is always the lowest value in any numeric comparison, so you may use it as an initializer.)

```
def find_max(my_list):

1 max_val = i

2 max_val = None

3 for i in range(len(my_list)):

4 if i > max_val:

5 max_val = my_list[i]

6 return max_val

7 for i in range(my_list):

8 if my_list[i] > max_val:

9 print(max_val)
```

(A) 2, 3, 4, 1, 6

(B) 2, 3, 8, 1, 6

(C) 2, 7, 4, 5, 6

(D) 3, 2, 8, 5, 9

(E) 2, 3, 8, 5, 6

19. (1 point) Consider the following program:

```
x=[1,2,3]
def f(a):
    s=""
    a.append(4)
    for i in a:
        s+=str(i)
    return s

x.append(f(x))
```

What is the **value** of x after this program is executed?

(A) [1, 2, 3, 10]

(B) [1, 2, 3]

(C) [1, 2, 3, 4, '1234']

(D) [1, 2, 3, '1234']

(E) [1, 2, 3, '123']

20. (1 point) Consider the following program:

```
s="TRIS %i"
t="ISEU"
x=s % len(t)
```

What is the **type** of x after this program is executed?

(A) String

(B) Float

(C) Boolean

(D) Integer

(E) None

21. (1 point) Consider the following program:

```
pi="3.14159"
e="2.71828"
x=(float(e)**float(pi)-float(pi)) == 20
```

What is the **type** of x after this program is executed?

(A) None

(B) Boolean

(C) Integer

(D) Float

(E) String

22. (1 point) What is the result of the following expression?

[1, 2, 3] * 3

(A) [1, 2, 3, 1, 2, 3, 1, 2, 3]

(B) [1.0, 2.0, 3.0, 1.0, 2.0, 3.0, 1.0, 2.0, 3.0]

(C) [3, 6, 9]

(D) (3, 6, 9)

(E) [3.0, 6.0, 9.0]

23. (1 point) Consider the following program:

```python
def fix(s):
    a=list(s)
    a.sort()
    return ''.join(a)

x=["one","two","eleven","twelve"]
s1=fix(x[0]+x[-1])
s2=fix(x[1]+x[-2])

if s1<s2:
    x.sort()
elif s1>s2:
    x.reverse()
else:
    x.append("six")
```

What is the **value** of x after this program is executed?

(A) ['twelve', 'eleven', 'two', 'one']

(B) ['one', 'two', 'eleven', 'twelve', 'six']

(C) ['eleven', 'one', 'twelve', 'two']

(D) ['two', 'twelve', 'one', 'eleven', 'six']

(E) ['one', 'two', 'eleven', 'twelve']

24. (1 point) Consider the following program:

```
s="G+R+A+I+L"
x=s.split("+")[1:-2]
```

What is the **value** of x after this program is executed?

(A) None

(B) False

(C) 'RAI'

(D) ['R','A']

(E) 3

25. (1 point) Consider the following program:

```
a=["A","C","C","I","O"]
a.sort()
a[0]=a[-1]
x=""
for e in a:
    x=x+e
```

What is the **value** of x after this program is executed?

(A) "ICCOI"

(B) None of the other answers are correct.

(C) "ACCIA"

(D) "ACCOA"

(E) "OCCIO"

26. (1 point) Evaluate the following expression:

```
len("ABCD"[0:3])
```

What value is produced?

  (A) 1

  (B) 2

  (C) 3

  (D) 4

27. (1 point) Consider the following program.

```
kay = 2
wart = 3

def knight(kay,wart):
    wart += 2
    kay += 3
    return wart + kay

wart = knight(kay, kay) + knight(wart, wart)
```

After it is run, what is the final **value** of `wart`?

  (A) 3

  (B) None of the other answers are correct.

  (C) 2

  (D) 5

28. (1 point) Consider the following program.

```
s="ABCBA"
x=0
y=len(s)-1
while s[x]==s[y] and x<y:
    x+=1
    y-=1
```

After it is run, what is the final **value** of x?

(A) 3

(B) 1

(C) 0

(D) 2

(E) 4

29. (1 point) Consider the following program.

```
x=[]
for j in range(0,5):
    if (j%3)==0:
        x.append("-")
    if (j%4)==0:
        x.append("*")
```

After it is run, what is the final **value** of x?

(A) ["*","-","*"]

(B) ["-","*"]

(C) None of the other answers are correct.

(D) ["-","*","-","*"]

(E) ["*","-","*"]

30. (1 point) Consider the following incomplete program.

```
sum=0
???:
    sum=sum+i
```

The program is intended to sum all of the integers between 1 and 100 (inclusive). What should replace the three question marks to complete the program?

(A) while i in range(100)

(B) for i in range(1,101)

(C) while i<=100

(D) for i in range(0,100)

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CS101
midterm1

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1. Fill in your information:

Full Name: _____

UIN (Student Number): _____

NetID: _____

2. Fill in the following answers on the Scantron form:

92. C

93. E

94. A

95. E

96. C

1. (1 point) Consider the following program:

```
pi="3.14159"
e="2.71828"
x=(float(e)**float(pi)-float(pi)) == 20
```

What is the **type** of x after this program is executed?

(A) Integer

(B) Boolean

(C) None

(D) String

(E) Float

2. (1 point) Consider the following program:

```
s="ECTOR"
t="GAWAIN"
x=(len(s)+len(t)) < 4 and s in t
```

What is the **type** of x after this program is executed?

(A) None

(B) Integer

(C) String

(D) Float

(E) Boolean

3. (1 point) Consider the following program.

```
x=1
i=0
while(x*x)<=9:
    i=i+(x*x)
    x=x+1
```

After it is run, what is the final **value** of x?

(A) 3

(B) 4

(C) 5

(D) 30

(E) 14

4. (1 point) Consider the following program.

```
def artificing(s):
    return s*2
    return s+"%i" % 2
    return s

s=artificing("MERLIN")
```

After it is run, what is the final **value** of s?

(A) 12

(B) "MERLIN2"

(C) "MERLIN"

(D) "MERLINMERLIN"

(E) None

5. (1 point) Consider the following program:

```
x=str("1"*3)
```

What is the **value** of x after this program is executed?

(A) 111

(B) 3

(C) "111"

(D) None of the other answers are correct.

(E) "3"

6. (1 point) Consider the following program:

```
s="Calvin"
i=0
x=-1
while i<len(s):
    if s[i]=='b':
        x=i
    i+=1
```

What is the **value** of x after this program is executed?

(A) -1

(B) 5

(C) 0

(D) 6

(E) 3

7. (1 point) Consider the following program:

```
s="TRIS %i"
t="ISEU"
x=len(s) % len(t[2:-1])
```

What is the **type** of x after this program is executed?

(A) Boolean

(B) Float

(C) String

(D) None

(E) Integer

8. (1 point) Consider the following program:

```
a=3
b=4
if a==3:
    a=b
elif a==4:
    a=5
else:
    b=a
```

What is the **value** of a after this program is executed?

(A) None of the other answers are correct.

(B) 3

(C) 4

(D) 5

(E) 7

9. (1 point) How can the following mathematical equation be implemented as a Python expression? Assume `a`, `b`, and `cos` have already been defined.

$$a^b \cos(a - b)$$

(A) `(a^b)*cos(a-b)`

(B) None of the other answers are correct.

(C) `(a**b)*cos(a-b)`

(D) `(a**b)cos(a-b)`

(E) `(b^a)cos(a-b)`

10. (1 point) Consider the following program:

```
x=3
a=7
if (a%3)==2:
    x=x**2
elif(a%3)==1:
    x=x**1
else:
    x=x**0
```

What is the **value** of `x` after this program is executed?

(A) `1`

(B) `9`

(C) None of the other answers are correct.

(D) `3`

(E) `7`

11. (1 point) Consider the following program:

```
x=[1,2,3]
def f(a):
    s=""
    a.append(4)
    for i in a:
        s+=str(i)
    return s


x.append(f(x))
```

What is the **value** of x after this program is executed?

(A) [1, 2, 3, '123']

(B) [1, 2, 3]

(C) [1, 2, 3, '1234']

(D) [1, 2, 3, 10]

(E) [1, 2, 3, 4, '1234']

12. (1 point) Consider the following program:

```
s="-B-O-R-S-"
x=s.split("-")[2:-2]
```

What is the **value** of x after this program is executed?

(A) None

(B) 'ORS'

(C) ['O', 'R']

(D) False

(E) ''

13. (1 point) Consider the following program:

```
x=[1,2,3,4,5,6,7,8,9]
x=x[2:-2]
i=1
while i <= 3:
    x[i]+=1
    i+=1
```

What is the **value** of x after this program is executed?

(A) [3, 5, 6, 7, 7]

(B) [3, 5, 6, 7, 7, 8]

(C) [2, 4, 5, 6, 7, 7]

(D) [2, 4, 5, 5, 7, 7]

(E) [3, 5, 7, 7]

14. (1 point) Consider the following program.

```
x=[]
for j in range(0,5):
    if (j%4)==0:
        x.append("-")
    if (j%5)==0:
        x.append("*")
```

After it is run, what is the final **value** of x?

(A) ["-","*","*"]

(B) None of the other answers are correct.

(C) ["-","*","-"]

(D) ["-","*"]

(E) ["-","-","*"]

15. (1 point) For this problem, you should compose a function which accomplishes a given task using the available code blocks arranged in the correct functional order. *We ignore indentation for this problem.*

find_max should accept a list and return the value of the maximum item in the list. (None is always the lowest value in any numeric comparison, so you may use it as an initializer.)

```
def find_max(my_list):

1 max_val = i

2 max_val = None

3 for i in range(len(my_list)):

4 if i > max_val:

5 max_val = my_list[i]

6 return max_val

7 for i in range(my_list):

8 if my_list[i] > max_val:

9 print(max_val)
```

(A) 2, 3, 4, 1, 6

(B) 2, 3, 8, 1, 6

(C) 3, 2, 8, 5, 9

(D) 2, 7, 4, 5, 6

(E) 2, 3, 8, 5, 6

16. (1 point) Consider the following incomplete function.

```
def ismultiple(m,n):
    if ???:
        return False
    else:
        return True
```

The function is intended to return True if the input parameter m is a multiple of parameter n and False otherwise. For example, `ismultiple(4,2)` should return `True`, but `ismultiple(5,3)` should return `False`. What should replace the three question marks to complete the function?

(A) `(m // n) != 0`

(B) `(n // m) == 0`

(C) `(m % n) != 0`

(D) `(n % m) == 0`

17. (1 point) Consider the following program:

```
a=["merlin","sir agravaine","king pellinore"]
b=[ ]
for i in range(0,3):
    b.append(a[0-i].title())
```

What is the **value** of b after this program is executed?

(A) `[ ]`

(B) `['Sir Agravaine', 'King Pellinore']`

(C) `['King Pellinore', 'Sir Agravaine', 'Merlin']`

(D) `['King Pellinore', 'Sir Agravaine']`

(E) `['Merlin', 'King Pellinore', 'Sir Agravaine']`

18. (1 point) Consider the following program:

```
x="KING ARTHUR-MORGANA LEFAY-SIR BEDIVERE".split("-")
y=x
x=y.reverse()
```

What is the **value** of x after this program is executed?

(A) None

(B) ['SIR BEDIVERE', 'MORGANA LEFAY', 'KING ARTHUR']

(C) ['KING ARTHUR', 'MORGANA LEFAY', 'SIR BEDIVERE']

(D) ['KING', 'ARTHUR-MORGANA', 'LEFAY-SIR', 'BEDIVERE']

(E) ['BEDIVERE', 'LEFAY-SIR', 'ARTHUR-MORGANA', 'KING']

19. (1 point) Consider the following program:

```
i=3
x=2
while i < 7:
    x+=i
    i+=2
```

What is the **value** of x after this program is executed?

(A) 10

(B) 14

(C) 12

(D) 11

(E) 13

20. (1 point) Consider the following program:

```python
def fix(s):
    a=list(s)
    a.sort()
    return ''.join(a)

x=["one","two","eleven","twelve"]
s1=fix(x[0]+x[-1])
s2=fix(x[1]+x[-2])

if s1<s2:
    x.sort()
elif s1==s2:
    x.reverse()
else:
    x.append("six")
```

What is the **value** of x after this program is executed?

(A) ['two', 'twelve', 'one', 'eleven', 'six']

(B) ['one', 'two', 'eleven', 'twelve']

(C) ['twelve', 'eleven', 'two', 'one']

(D) ['one', 'two', 'eleven', 'twelve', 'six']

(E) ['eleven', 'one', 'twelve', 'two']

21. (1 point) Consider the following program.

```
s="BBCAA"
x=0
y=len(s)-1
while s[x]!=s[y] and x<len(s):
    x+=1
    y-=1
```

After it is run, what is the final **value** of x?

(A) 3

(B) 4

(C) 2

(D) 1

(E) 0

22. (1 point) Consider the following Python program.

```
e=[1,3,5,7,9,11]
d=[0,0,0]
for i in range(0,len(e)):
    d[i%3]+=e[i]
x=d[1]
```

After it is run, what is the final **value** of x?

(A) 12

(B) 0

(C) 8

(D) 16

(E) 3

23. (1 point) Evaluate the following expression:

`[1,2]+[len("3")]`

What value is produced?

   (A) `[1,2,3]`

   (B) `[1,2,1,2,1,2]`

   (C) `[1,2,1]`

   (D) `[1,2,"3"]`

24. (1 point) Evaluate the following expression:

`len("ABCDE"[1:4])`

What value is produced?

   (A) 1

   (B) 5

   (C) 4

   (D) 3

25. (1 point) Consider the following incomplete program.

```
sum=0
???:
    sum=sum+i
```

The program is intended to sum all of the integers between 1 and 100 (inclusive). What should replace the three question marks to complete the program?

(A) `while i<=100`

(B) `for i in range(1,101)`

(C) `while i in range(100)`

(D) `for i in range(0,100)`

26. (1 point) Consider the following program.

```
kay = 2
wart = 3

def knight(kay,wart):
    wart += 2
    kay += 3
    return wart + kay

kay = knight(wart, kay) + knight(kay, wart)
```

After it is run, what is the final **value** of `kay`?

(A) 3

(B) None of the other answers are correct.

(C) 5

(D) 2

27. (1 point) Consider the following program:

```
x=0
for i in range(4,10):
    if i%3==0:
        x+=3
    elif i%2==0:
        x+=2
    else:
        x+=1
```

What is the **value** of x after this program is executed?

(A) 14

(B) 12

(C) 11

(D) 13

(E) 10

28. (1 point) Consider the following incomplete Python program.

```
s="".join(["1","0","2","1"])
x=0
for i in range(len(s)-1):
    x+=int(???)
```

What should replace the three question marks so the resulting value of x is 33?

(A) s[i:i-1]

(B) s[i:i+1]

(C) s[i+1:i+2]

(D) s[i:i+2]

29. (1 point) Consider the following program:

```
a=["S","T","U","P","E","F","Y"]
a=a[0:4]
a.sort()
x=""
for e in a:
    x=e+x
```

What is the **value** of x after this program is executed?

(A) None of the other answers are correct.

(B) "STUP"

(C) "PSTU"

(D) "UTSP"

(E) "PUST"

30. (1 point) What is the result of the following expression?

```
[ 1, 2, 3 ] * 3.0
```

(A) [3, 6, 9]

(B) None of the above.

(C) [1, 2, 3, 1, 2, 3, 1, 2, 3]

(D) [1.0, 2.0, 3.0, 1.0, 2.0, 3.0, 1.0, 2.0, 3.0]

(E) [3.0, 6.0, 9.0]

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CS101
midterm1

- **Be sure to enter your <u>NetID</u> and <u>the code below</u> on your Scantron**.

- Do not turn this page until instructed to do so.

- There are 30 questions, worth 1 point each.

- Each question has only **one** correct answer.

- You must not communicate with other students during this test.

- No books, notes, or electronic devices are permitted.

- This is a 60-minute exam.

- There are several different versions of this exam.

1. Fill in your information:

Full Name: _____

UIN (Student Number): _____

NetID: _____

2. Fill in the following answers on the Scantron form:

92. D

93. E

94. A

95. A

96. D

1. (1 point) Consider the following program:

```
s="ECTOR"
t="GAWAIN"
x=(len(s)/(len(t)-1))+1
```

What is the **type** of x after this program is executed?

(A) String

(B) None

(C) Integer

(D) Boolean

(E) Float

2. (1 point) Consider the following incomplete function.

```
def ismultiple(m,n):
    if ???:
        return False
    else:
        return True
```

The function is intended to return True if the input parameter m is a multiple of parameter n and False otherwise. For example, `ismultiple(4,2)` should return `True`, but `ismultiple(5,3)` should return `False`. What should replace the three question marks to complete the function?

(A) (m % n) != 0

(B) (m // n) != 0

(C) (n // m) == 0

(D) (n % m) == 0

3. (1 point) For this problem, you should compose a function which accomplishes a given task using the available code blocks arranged in the correct functional order. *We ignore indentation for this problem.*

find_max should accept a list and return the value of the maximum item in the list. (None is always the lowest value in any numeric comparison, so you may use it as an initializer.)

```
def find_max(my_list):

1 max_val = i

2 max_val = None

3 for i in range(len(my_list)):

4 if i > max_val:

5 max_val = my_list[i]

6 return max_val

7 for i in range(my_list):

8 if my_list[i] > max_val:

9 print(max_val)
```

(A) 2, 3, 8, 5, 6

(B) 2, 3, 8, 1, 6

(C) 3, 2, 8, 5, 9

(D) 2, 7, 4, 5, 6

(E) 2, 3, 4, 1, 6

4. (1 point) Consider the following program.

```
x=0
i=1
while(i*i)<=9:
    x=x+(i*i)
    i=i+1
```

After it is run, what is the final **value** of x?

(A) 5

(B) 14

(C) 30

(D) 4

(E) 3

5. (1 point) How can the following mathematical equation be implemented as a Python expression?
Assume a, b, and sin have already been defined.

$$a \sin(a^b - b)$$

(A) `a*sin(b^a - b)`

(B) `a*sin(a^b - b)`

(C) `a sin(a**b - b)`

(D) `a*sin(a**b - b)`

(E) None of the other answers are correct.

6. (1 point) Consider the following program:

```
s="TRIS %i"
t="ISEU"
x=s % len(t)
```

What is the **type** of x after this program is executed?

 (A) None

 (B) String

 (C) Float

 (D) Integer

 (E) Boolean

7. (1 point) Consider the following incomplete program.

```
sum=0
for i in range(0,100):
    ???
```

The program is intended to sum all of the integers between 1 and 100 (inclusive). What should replace the three question marks to complete the program?

 (A) sum=sum+i+1

 (B) sum=sum+i

 (C) sum+1=sum

 (D) sum=sum+1

8. (1 point) Consider the following program:

```
a=3
b=4
if a==3:
    a=b
elif a==4:
    a=5
else:
    b=a
```

What is the **value** of a after this program is executed?

(A) 4

(B) 7

(C) None of the other answers are correct.

(D) 3

(E) 5

9. (1 point) Consider the following program:

```
def fix(s):
    a=list(s)
    a.sort()
    return ''.join(a)

x=["one","two","eleven","twelve"]
s1=fix(x[0]+x[-1])
s2=fix(x[1]+x[-2])

if s1==s2:
    x.sort()
elif s1<s2:
    x.reverse()
else:
    x.append("six")
```

What is the **value** of x after this program is executed?

(A) ['eleven', 'one', 'twelve', 'two']

(B) ['one', 'two', 'eleven', 'twelve', 'six']

(C) ['one', 'two', 'eleven', 'twelve']

(D) ['two', 'twelve', 'one', 'eleven', 'six']

(E) ['twelve', 'eleven', 'two', 'one']

10. (1 point) What is the result of the following expression?

```
[ 1, 2, 3 ] * 3
```

(A) [1, 2, 3, 1, 2, 3, 1, 2, 3]

(B) [3, 6, 9]

(C) [1.0, 2.0, 3.0, 1.0, 2.0, 3.0, 1.0, 2.0, 3.0]

(D) (3, 6, 9)

(E) [3.0, 6.0, 9.0]

11. (1 point) Consider the following program:

```
pi="3.14159"
e="2.71828"
x=(float(e)**float(pi)-float(pi)) == 20
```

What is the **type** of x after this program is executed?

(A) Boolean

(B) Integer

(C) None

(D) String

(E) Float

12. (1 point) Consider the following program:

```
i=3
x=2
while i < 7:
    x+=i
    i+=2
```

What is the **value** of x after this program is executed?

(A) 10

(B) 14

(C) 11

(D) 13

(E) 12

13. (1 point) Consider the following program:

```
x=3
a=5
if (a%3)==2:
    x=x**3
elif(a%3)==1:
    x=x**2
else:
    x=x**1
```

What is the **value** of x after this program is executed?

(A) 9

(B) 3

(C) 27

(D) None of the other answers are correct.

(E) 1

14. (1 point) Consider the following program:

```
x="KING ARTHUR-MORGANA LEFAY-SIR BEDIVERE".split("-")
y=x
x=y.reverse()
```

What is the **value** of x after this program is executed?

(A) None

(B) ['KING', 'ARTHUR-MORGANA', 'LEFAY-SIR', 'BEDIVERE']

(C) ['BEDIVERE', 'LEFAY-SIR', 'ARTHUR-MORGANA', 'KING']

(D) ['SIR BEDIVERE', 'MORGANA LEFAY', 'KING ARTHUR']

(E) ['KING ARTHUR', 'MORGANA LEFAY', 'SIR BEDIVERE']

15. (1 point) Consider the following program:

```python
x=[1,2,3]
def f(a):
    s=""
    a.reverse()
    for i in a:
        s+=str(i)
    return s


x.append(f(x))
```

What is the **value** of x after this program is executed?

(A) [1, 2, 3]

(B) [3, 2, 1]

(C) [1, 2, 3, '321']

(D) [1, 2, 3, 6]

(E) [3, 2, 1, '321']

16. (1 point) Consider the following program:

```
x=0
for i in range(2,7):
    if i%3==0:
        x+=3
    elif i%2==0:
        x+=2
    else:
        x+=1
```

What is the **value** of x after this program is executed?

(A) 10

(B) 14

(C) 12

(D) 13

(E) 11

17. (1 point) Consider the following program:

```
s="G+R+A+I+L"
x=s.split("+")[1:-2]
```

What is the **value** of x after this program is executed?

(A) ['R','A']

(B) 3

(C) False

(D) 'RAI'

(E) None

18. (1 point) Consider the following program:

```
s="Hobbes"
i=0
x=-1
while i<len(s):
    if s[i]=='b':
        x=i
    i+=1
```

What is the **value** of x after this program is executed?

(A) 5

(B) 2

(C) 4

(D) -1

(E) 3

19. (1 point) Consider the following program.

```
kay = 2
wart = 3

def knight(kay,wart):
    wart += 2
    kay += 3
    return wart + kay

wart = knight(kay, kay) + knight(wart, wart)
```

After it is run, what is the final **value** of `wart`?

(A) 5

(B) None of the other answers are correct.

(C) 2

(D) 3

20. (1 point) Consider the following program:

```
a=["merlin","sir agravaine","king pellinore"]
b=[ ]
for i in range(1,3):
    b.append(a[0-i].title())
```

What is the **value** of b after this program is executed?

(A) ['Merlin', 'King Pellinore', 'Sir Agravaine']

(B) ['Sir Agravaine', 'King Pellinore']

(C) [ ]

(D) ['King Pellinore', 'Sir Agravaine', 'Merlin']

(E) ['King Pellinore', 'Sir Agravaine']

21. (1 point) Consider the following incomplete Python program.

```
s="".join(["0","1","2","1"])
x=0
for i in range(len(s)-1):
    x+=int(???)
```

What should replace the three question marks so the resulting value of x is 34?

(A) `s[i:i-1]`

(B) `s[i:i+2]`

(C) `s[i+1:i+2]`

(D) `s[i:i+1]`

22. (1 point) Consider the following program:

```
a=["S","T","U","P","E","F","Y"]
a=a[0:4]
a.sort()
x=""
for e in a:
    x=e+x
```

What is the **value** of x after this program is executed?

(A) `"UTSP"`

(B) `"PSTU"`

(C) `"STUP"`

(D) `"PUST"`

(E) None of the other answers are correct.

23. (1 point) Consider the following program:

```
x=str(1.2)*2
```

What is the **value** of x after this program is executed?

(A) "1.2*2"

(B) None of the other answers are correct.

(C) 2.4

(D) "2.4"

(E) "1.21.2"

24. (1 point) Consider the following program:

```
x=[1,2,3,4,5,6,7,8,9]
x=x[2:-2]
i=1
while i <= 3:
    x[i]+=1
    i+=1
```

What is the **value** of x after this program is executed?

(A) [3, 5, 7, 7]

(B) [2, 4, 5, 6, 7, 7]

(C) [3, 5, 6, 7, 7, 8]

(D) [3, 5, 6, 7, 7]

(E) [2, 4, 5, 5, 7, 7]

25. (1 point) Evaluate the following expression:

`[1,2]*len("3")`

What value is produced?

(A) `[1,2,1]`

(B) `[1,2,1,2,1,2]`

(C) `[1,2]`

(D) `[1,2,3]`

26. (1 point) Evaluate the following expression:

`len("ABCDE"[1:4])`

What value is produced?

(A) 3

(B) 5

(C) 1

(D) 4

27. (1 point) Consider the following Python program.

```python
e=[1,3,5,7,9,11]
d=[0,0,0]
for i in range(0,len(e)):
    d[i%3]+=e[i]
x=d[2]
```

After it is run, what is the final **value** of x?

(A) 7

(B) 16

(C) 8

(D) 12

(E) 0

28. (1 point) Consider the following program.

```python
x=[]
for j in range(0,5):
    if (j%4)==0:
        x.append("-")
    if (j%5)==0:
        x.append("*")
```

After it is run, what is the final **value** of x?

(A) None of the other answers are correct.

(B) ["-","*"]

(C) ["-","*","-"]

(D) ["-","-","*"]

(E) ["-","*","*"]

29. (1 point) Consider the following program.

```
s="BBCAA"
x=0
y=len(s)-1
while s[x]!=s[y] and x<len(s):
    x+=1
    y-=1
```

After it is run, what is the final **value** of x?

(A) 2

(B) 0

(C) 3

(D) 4

(E) 1

30. (1 point) Consider the following program.

```
def artificing(s):
    return s+"%i" % 2
    return s*2
    return s
```

```
s=artificing("MERLIN")
```

After it is run, what is the final **value** of s?

(A) "MERLINMERLIN"

(B) 0

(C) "MERLIN2"

(D) None

(E) "MERLIN%i"

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CS101
midterm1

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1. Fill in your information:

Full Name: _____

UIN (Student Number): _____

NetID: _____

2. Fill in the following answers on the Scantron form:

92. E

93. E

94. A

95. B

96. E

1. (1 point) Consider the following incomplete Python program.

```
s="".join(["1","0","2","1"])
x=0
for i in range(len(s)-1):
    x+=int(???)
```

What should replace the three question marks so the resulting value of x is 33?

(A) `s[i:i-1]`

(B) `s[i+1:i+2]`

(C) `s[i:i+2]`

(D) `s[i:i+1]`

2. (1 point) Consider the following program:

```
s="ECTOR"
t="GAWAIN"
x=len(str(s.isupper()))-t.find("A")
```

What is the **type** of x after this program is executed?

(A) `Boolean`

(B) `None`

(C) `Integer`

(D) `Float`

(E) `String`

3. (1 point) Consider the following program.

```
s="ABCBA"
x=0
y=len(s)-1
while s[x]==s[y] and x<=y:
    x+=1
    y-=1
```

After it is run, what is the final **value** of x?

(A) 4

(B) 0

(C) 1

(D) 3

(E) 2

4. (1 point) Consider the following program.

```
x=0
i=1
while(i*i)<=9:
    x=x+(i*i)
    i=i+1
```

After it is run, what is the final **value** of x?

(A) 5

(B) 30

(C) 4

(D) 3

(E) 14

3

5. (1 point) Consider the following program:

```
x="KING ARTHUR-MORGANA LEFAY-SIR BEDIVERE".split("-")
y=x
x=y.reverse()
```

What is the **value** of x after this program is executed?

 (A) ['SIR BEDIVERE', 'MORGANA LEFAY', 'KING ARTHUR']

 (B) ['KING ARTHUR', 'MORGANA LEFAY', 'SIR BEDIVERE']

 (C) ['KING', 'ARTHUR-MORGANA', 'LEFAY-SIR', 'BEDIVERE']

 (D) ['BEDIVERE', 'LEFAY-SIR', 'ARTHUR-MORGANA', 'KING']

 (E) None

6. (1 point) Consider the following program:

```
s="Hobbes"
i=0
x=-1
while i<len(s):
    if s[i]=='b':
         x=i
    i+=1
```

What is the **value** of x after this program is executed?

 (A) 5

 (B) -1

 (C) 3

 (D) 4

 (E) 2

7. (1 point) For this problem, you should compose a function which accomplishes a given task using the available code blocks arranged in the correct functional order. *We ignore indentation for this problem.*

find_max should accept a `list` and return the value of the maximum item in the `list`. (`None` is always the lowest value in any numeric comparison, so you may use it as an initializer.)

```
def find_max(my_list):

1 max_val = i

2 max_val = None

3 for i in range(len(my_list)):

4 if i > max_val:

5 max_val = my_list[i]

6 return max_val

7 for i in range(my_list):

8 if my_list[i] > max_val:

9 print(max_val)
```

(A) 2, 3, 8, 1, 6

(B) 2, 3, 8, 5, 6

(C) 2, 3, 4, 1, 6

(D) 2, 7, 4, 5, 6

(E) 3, 2, 8, 5, 9

8. (1 point) Consider the following program:

```
s="G+R+A+I+L"
x=s.split("+")[1:-2]
```

What is the **value** of x after this program is executed?

(A) 'RAI'

(B) 3

(C) False

(D) ['R','A']

(E) None

9. (1 point) Consider the following program:

```
x=[1,2,3]
def f(a):
    s=""
    a.append(4)
    for i in a:
        s+=str(i)
    return s

x.append(f(x))
```

What is the **value** of x after this program is executed?

(A) [1, 2, 3, '123']

(B) [1, 2, 3, 4, '1234']

(C) [1, 2, 3, 10]

(D) [1, 2, 3, '1234']

(E) [1, 2, 3]

10. (1 point) Consider the following program:

```
pi="3.14159"
e="2.71828"
x=pi in pi*len(e)
```

What is the **type** of x after this program is executed?

(A) Integer

(B) None

(C) Boolean

(D) String

(E) Float

11. (1 point) Consider the following incomplete program.

```
sum=0
for i in range(0,100):
    ???
```

The program is intended to sum all of the integers between 1 and 100 (inclusive). What should replace the three question marks to complete the program?

(A) sum=sum+1

(B) sum+1=sum

(C) sum=sum+i+1

(D) sum=sum+i

7

12. (1 point) Consider the following program:

```
x=3
a=5
if (a%3)==2:
    x=x**3
elif(a%3)==1:
    x=x**2
else:
    x=x**1
```

What is the **value** of x after this program is executed?

(A) 27

(B) 1

(C) 3

(D) None of the other answers are correct.

(E) 9

13. (1 point) Consider the following program:

```
x=[1,2,3,4,5,6,7,8,9]
x=x[2:-2]
i=1
while i < 3:
    x[i]+=1
    i+=1
```

What is the **value** of x after this program is executed?

(A) [3, 5, 6, 6, 7]

(B) [2, 4, 5, 5, 6, 7]

(C) [3, 5, 6, 6]

(D) [3, 5, 6, 6, 7, 8]

(E) [2, 4, 5, 6, 6, 7]

14. (1 point) Consider the following program:

```python
def fix(s):
    a=list(s)
    a.sort()
    return ''.join(a)

x=["one","two","eleven","twelve"]
s1=fix(x[0]+x[-1])
s2=fix(x[1]+x[-2])

if s1<s2:
    x.sort()
elif s1>s2:
    x.reverse()
else:
    x.append("six")
```

What is the **value** of x after this program is executed?

(A) ['one', 'two', 'eleven', 'twelve']

(B) ['eleven', 'one', 'twelve', 'two']

(C) ['one', 'two', 'eleven', 'twelve', 'six']

(D) ['two', 'twelve', 'one', 'eleven', 'six']

(E) ['twelve', 'eleven', 'two', 'one']

15. (1 point) Consider the following incomplete function.

```
def ismultiple(m,n):
    if ???:
        return False
    else:
        return True
```

The function is intended to return True if the input parameter m is a multiple of parameter n and False otherwise. For example, `ismultiple(4,2)` should return `True`, but `ismultiple(5,3)` should return `False`. What should replace the three question marks to complete the function?

(A) `(n % m) == 0`

(B) `(m // n) != 0`

(C) `(m % n) != 0`

(D) `(n // m) == 0`

16. (1 point) Evaluate the following expression:

`len("ABCD"[0:3])`

What value is produced?

(A) 4

(B) 2

(C) 1

(D) 3

17. (1 point) Evaluate the following expression:

`[1,2]*len("3")`

What value is produced?

(A) `[1,2]`

(B) `[1,2,1,2,1,2]`

(C) `[1,2,3]`

(D) `[1,2,1]`

18. (1 point) Consider the following program:

```
i=3
x=2
while i < 7:
    x+=i
    i+=2
```

What is the **value** of `x` after this program is executed?

(A) `10`

(B) `11`

(C) `14`

(D) `12`

(E) `13`

19. (1 point) Consider the following program:

```
s="TRIS %i"
t="ISEU"
x=s % len(t)
```

What is the **type** of x after this program is executed?

(A) Boolean

(B) Float

(C) String

(D) None

(E) Integer

20. (1 point) Consider the following program.

```
kay = 2
wart = 3

def knight(kay,wart):
    wart += 2
    kay += 3
    return wart + kay

kay = knight(wart, kay) + knight(kay, wart)
```

After it is run, what is the final **value** of kay?

(A) None of the other answers are correct.

(B) 3

(C) 5

(D) 2

21. (1 point) Consider the following program:

```
a=["merlin","sir agravaine","king pellinore"]
b=[ ]
for i in range(1,3):
    b.append(a[0-i].title())
```

What is the **value** of b after this program is executed?

(A) ['Merlin', 'King Pellinore', 'Sir Agravaine']

(B) ['Sir Agravaine', 'King Pellinore']

(C) ['King Pellinore', 'Sir Agravaine']

(D) [ ]

(E) ['King Pellinore', 'Sir Agravaine', 'Merlin']

22. (1 point) Consider the following program.

```
x=[]
for j in range(0,5):
    if (j%4)==0:
        x.append("-")
    if (j%5)==0:
        x.append("*")
```

After it is run, what is the final **value** of x?

(A) ["-","*","-"]

(B) ["-","*","*"]

(C) None of the other answers are correct.

(D) ["-","-","*"]

(E) ["-","*"]

23. (1 point) Consider the following program:

```
a=3
b=4
if a!=b:
    a=b
elif a==4:
    a=5
else:
    b=a
```

What is the **value** of a after this program is executed?

(A) 4

(B) 3

(C) 7

(D) 5

(E) None of the other answers are correct.

24. (1 point) Consider the following program.

```
def artificing(s):
    return s+"%i" % 2
    return s*2
    return s
```

```
s=artificing("MERLIN")
```

After it is run, what is the final **value** of s?

(A) 0

(B) "MERLIN2"

(C) "MERLINMERLIN"

(D) None

(E) "MERLIN%i"

25. (1 point) How can the following mathematical equation be implemented as a Python expression? Assume a, b, and cos have already been defined.

$$a^b \cos(a - b)$$

(A) `(a**b)cos(a-b)`

(B) `(a**b)*cos(a-b)`

(C) None of the other answers are correct.

(D) `(b^a)cos(a-b)`

(E) `(a^b)*cos(a-b)`

26. (1 point) Consider the following program:

```
a=["A","C","C","I","O"]
a.sort()
a[0]=a[-1]
x=""
for e in a:
    x=x+e
```

What is the **value** of x after this program is executed?

(A) `"ACCOA"`

(B) None of the other answers are correct.

(C) `"OCCIO"`

(D) `"ICCOI"`

(E) `"ACCIA"`

27. (1 point) Consider the following program:

```
x=0
for i in range(4,10):
    if i%3==0:
        x+=3
    elif i%2==0:
        x+=2
    else:
        x+=1
```

What is the **value** of x after this program is executed?

(A) 10

(B) 13

(C) 11

(D) 12

(E) 14

28. (1 point) Consider the following Python program.

```
e=[1,3,5,7,9,11]
d=[0,0,0]
for i in range(0,len(e)):
    d[i%3]+=e[i]
x=d[2]
```

After it is run, what is the final **value** of x?

(A) 7

(B) 0

(C) 8

(D) 16

(E) 12

29. (1 point) Consider the following program:

```
x=str(1.2)*2
```

What is the **value** of x after this program is executed?

(A) None of the other answers are correct.

(B) "1.2*2"

(C) "2.4"

(D) 2.4

(E) "1.21.2"

30. (1 point) What is the result of the following expression?

```
[ 1, 2, 3 ] * 3
```

 (A) (3, 6, 9)

 (B) [3.0, 6.0, 9.0]

 (C) [1.0, 2.0, 3.0, 1.0, 2.0, 3.0, 1.0, 2.0, 3.0]

 (D) [3, 6, 9]

 (E) [1, 2, 3, 1, 2, 3, 1, 2, 3]

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CS101 midterm1

- **Be sure to enter your <u>NetID</u> and <u>the code below</u> on your Scantron**.

- Do not turn this page until instructed to do so.

- There are 30 questions, worth 1 point each.

- Each question has only **one** correct answer.

- You must not communicate with other students during this test.

- No books, notes, or electronic devices are permitted.

- This is a 60-minute exam.

- There are several different versions of this exam.

1. Fill in your information:

Full Name: _____

UIN (Student Number): _____

NetID: _____

2. Fill in the following answers on the Scantron form:

92. A

93. A

94. B

95. E

96. A

1. (1 point) Consider the following Python program.

```python
e=[1,3,5,7,9,11]
d=[0,0,0]
for i in range(0,len(e)):
    d[i%3]+=e[i]
x=d[1]
```

After it is run, what is the final **value** of x?

(A) 8

(B) 0

(C) 12

(D) 3

(E) 16

2. (1 point) Consider the following program:

```
x=3
a=7
if (a%3)==2:
    x=x**2
elif(a%3)==1:
    x=x**1
else:
    x=x**0
```

What is the **value** of x after this program is executed?

(A) 7

(B) 3

(C) 1

(D) None of the other answers are correct.

(E) 9

3. (1 point) Consider the following program:

```
pi="3.14159"
e="2.71828"
x=(float(e)**float(pi)-float(pi)) == 20
```

What is the **type** of x after this program is executed?

(A) Float

(B) Boolean

(C) Integer

(D) None

(E) String

4. (1 point) Consider the following program:

```
a=3
b=4
if a!=b:
    a=b
elif a==4:
    a=5
else:
    b=a
```

What is the **value** of a after this program is executed?

(A) 3

(B) 4

(C) 5

(D) None of the other answers are correct.

(E) 7

5. (1 point) Consider the following program:

```
i=2
x=3
while i < 7:
    x+=i
    i+=2
```

What is the **value** of x after this program is executed?

(A) 15

(B) 14

(C) 12

(D) 11

(E) 13

6. (1 point) Consider the following program:

```
x=[1,2,3]
def f(a):
    s=""
    a.reverse()
    for i in a:
        s+=str(i)
    return s

x.append(f(x))
```

What is the **value** of x after this program is executed?

(A) [3, 2, 1]

(B) [1, 2, 3, 6]

(C) [1, 2, 3, '321']

(D) [3, 2, 1, '321']

(E) [1, 2, 3]

7. (1 point) Consider the following program.

```
x=[]
for j in range(0,5):
    if (j%3)==0:
        x.append("-")
    if (j%4)==0:
        x.append("*")
```

After it is run, what is the final **value** of x?

(A) ["-","*","-","*"]

(B) ["*","-","*"]

(C) ["-","*"]

(D) None of the other answers are correct.

(E) ["*","-","*"]

8. (1 point) Consider the following program:

```
s="ECTOR"
t="GAWAIN"
x=(len(s)+len(t)) < 4 and s in t
```

What is the **type** of x after this program is executed?

(A) Float

(B) Boolean

(C) Integer

(D) String

(E) None

9. (1 point) Consider the following program:

```
s="TRIS %i"
t="ISEU"
x=len(s) % len(t[2:-1])
```

What is the **type** of x after this program is executed?

(A) None

(B) Boolean

(C) String

(D) Integer

(E) Float

10. (1 point) Consider the following incomplete program.

```
sum=0
???:
    sum=sum+i
```

The program is intended to sum all of the integers between 1 and 100 (inclusive). What should replace the three question marks to complete the program?

(A) `for i in range(1,101)`

(B) `while i in range(100)`

(C) `while i<=100`

(D) `for i in range(0,100)`

11. (1 point) Consider the following program:

```
a=["A","C","C","I","O"]
a.sort()
a[0]=a[-1]
x=""
for e in a:
    x=x+e
```

What is the **value** of x after this program is executed?

(A) None of the other answers are correct.

(B) `"ACCOA"`

(C) `"OCCIO"`

(D) `"ACCIA"`

(E) `"ICCOI"`

12. (1 point) Consider the following program.

```python
kay = 2
wart = 3

def knight(kay,wart):
    wart += 2
    kay += 3
    return wart + kay

wart = knight(kay, kay) + knight(wart, wart)
```

After it is run, what is the final **value** of `wart`?

(A) 2

(B) None of the other answers are correct.

(C) 3

(D) 5

13. (1 point) Consider the following incomplete Python program.

```python
s="".join(["1","0","2","1"])
x=0
for i in range(len(s)-1):
    x+=int(???)
```

What should replace the three question marks so the resulting value of `x` is 33?

(A) `s[i:i+1]`

(B) `s[i+1:i+2]`

(C) `s[i:i-1]`

(D) `s[i:i+2]`

10

14. (1 point) Consider the following program:

```
a=["merlin","sir agravaine","king pellinore"]
b=[ ]
for i in range(0,3):
    b.append(a[0-i].title())
```

What is the **value** of b after this program is executed?

(A) ['King Pellinore', 'Sir Agravaine', 'Merlin']

(B) ['Sir Agravaine', 'King Pellinore']

(C) [ ]

(D) ['Merlin', 'King Pellinore', 'Sir Agravaine']

(E) ['King Pellinore', 'Sir Agravaine']

15. (1 point) Consider the following incomplete function.

```
def ismultiple(m,n):
    if ???:
        return False
    else:
        return True
```

The function is intended to return True if the input parameter m is a multiple of parameter n and False otherwise. For example, `ismultiple(4,2)` should return `True`, but `ismultiple(5,3)` should return `False`. What should replace the three question marks to complete the function?

(A) (m // n) != 0

(B) (m % n) != 0

(C) (n % m) == 0

(D) (n // m) == 0

16. (1 point) Consider the following program.

```
x=0
i=1
while(i*i)<=9:
    x=x+(i*i)
    i=i+1
```

After it is run, what is the final **value** of x?

(A) 30

(B) 4

(C) 14

(D) 3

(E) 5

17. (1 point) Evaluate the following expression:

```
len("ABCD"[0:3])
```

What value is produced?

(A) 3

(B) 1

(C) 4

(D) 2

12

18. (1 point) Evaluate the following expression:

`[1,2]*len("3")`

What value is produced?

(A) `[1,2,1]`

(B) `[1,2]`

(C) `[1,2,3]`

(D) `[1,2,1,2,1,2]`

19. (1 point) For this problem, you should compose a function which accomplishes a given task using the available code blocks arranged in the correct functional order. *We ignore indentation for this problem.*

`find_max` should accept a `list` and return the value of the maximum item in the `list`. (`None` is always the lowest value in any numeric comparison, so you may use it as an initializer.)

```
def find_max(my_list):

1 max_val = i

2 max_val = None

3 for i in range(len(my_list)):

4 if i > max_val:

5 max_val = my_list[i]

6 return max_val

7 for i in range(my_list):

8 if my_list[i] > max_val:

9 print(max_val)
```

(A) 3, 2, 8, 5, 9

(B) 2, 3, 4, 1, 6

(C) 2, 7, 4, 5, 6

(D) 2, 3, 8, 5, 6

(E) 2, 3, 8, 1, 6

20. (1 point) Consider the following program:

```
s="G+R+A+I+L"
x=s.split("+")[1:-2]
```

What is the **value** of x after this program is executed?

(A) `False`

(B) `'RAI'`

(C) `['R','A']`

(D) `None`

(E) `3`

21. (1 point) Consider the following program:

```
s="Calvin"
i=0
x=-1
while i<len(s):
    if s[i]=='b':
        x=i
    i+=1
```

What is the **value** of x after this program is executed?

(A) `3`

(B) `5`

(C) `0`

(D) `6`

(E) `-1`

22. (1 point) What is the result of the following expression?

```
[ 1, 2, 3 ] * 3
```

(A) [3, 6, 9]

(B) [1, 2, 3, 1, 2, 3, 1, 2, 3]

(C) [3.0, 6.0, 9.0]

(D) [1.0, 2.0, 3.0, 1.0, 2.0, 3.0, 1.0, 2.0, 3.0]

(E) (3, 6, 9)

23. (1 point) Consider the following program.

```
def artificing(s):
    return s+"%i" % 2
    return s*2
    return s

s=artificing("MERLIN")
```

After it is run, what is the final **value** of s?

(A) "MERLIN%i"

(B) 0

(C) None

(D) "MERLINMERLIN"

(E) "MERLIN2"

24. (1 point) Consider the following program:

```
x=[1,2,3,4,5,6,7,8,9]
x=x[2:-2]
i=1
while i <= 3:
    x[i]+=1
    i+=1
```

What is the **value** of x after this program is executed?

(A) [2, 4, 5, 5, 7, 7]

(B) [3, 5, 7, 7]

(C) [3, 5, 6, 7, 7, 8]

(D) [2, 4, 5, 6, 7, 7]

(E) [3, 5, 6, 7, 7]

25. (1 point) Consider the following program.

```
s="ABCBA"
x=0
y=len(s)-1
while s[x]==s[y] and x<=y:
    x+=1
    y-=1
```

After it is run, what is the final **value** of x?

(A) 2

(B) 0

(C) 4

(D) 3

(E) 1

26. (1 point) Consider the following program:

```python
def fix(s):
    a=list(s)
    a.sort()
    return ''.join(a)

x=["one","two","eleven","twelve"]
s1=fix(x[0]+x[-1])
s2=fix(x[1]+x[-2])

if s1<s2:
    x.sort()
elif s1==s2:
    x.reverse()
else:
    x.append("six")
```

What is the **value** of x after this program is executed?

(A) ['one', 'two', 'eleven', 'twelve']

(B) ['twelve', 'eleven', 'two', 'one']

(C) ['two', 'twelve', 'one', 'eleven', 'six']

(D) ['eleven', 'one', 'twelve', 'two']

(E) ['one', 'two', 'eleven', 'twelve', 'six']

27. (1 point) Consider the following program:

```
x="KING ARTHUR-MORGANA LEFAY-SIR BEDIVERE".split("-")
y=x
y.reverse()
```

What is the **value** of x after this program is executed?

(A) None

(B) ['KING', 'ARTHUR-MORGANA', 'LEFAY-SIR', 'BEDIVERE']

(C) ['KING ARTHUR', 'MORGANA LEFAY', 'SIR BEDIVERE']

(D) ['BEDIVERE', 'LEFAY-SIR', 'ARTHUR-MORGANA', 'KING']

(E) ['SIR BEDIVERE', 'MORGANA LEFAY', 'KING ARTHUR']

28. (1 point)

```
x=str(3)+"str(3)"
```

What is the **value** of x after this program is executed?

(A) "33"

(B) "333"

(C) 33

(D) None of the other answers are correct.

(E) "3str(3)"

29. (1 point) Consider the following program:

```
x=0
for i in range(2,8):
    if i%3==0:
        x+=3
    elif i%2==0:
        x+=2
    else:
        x+=1
```

What is the **value** of x after this program is executed?

(A) 14

(B) 10

(C) 12

(D) 13

(E) 11

30. (1 point) How can the following mathematical equation be implemented as a Python expression? Assume a, b, and cos have already been defined.

$$a^b \cos(a - b)$$

(A) (a^b)*cos(a-b)

(B) (a**b)cos(a-b)

(C) None of the other answers are correct.

(D) (b^a)cos(a-b)

(E) (a**b)*cos(a-b)

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CS101
midterm1

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1. Fill in your information:

Full Name: _____

UIN (Student Number): _____

NetID: _____

2. Fill in the following answers on the Scantron form:

92. B

93. A

94. B

95. A

96. B

1. (1 point) For this problem, you should compose a function which accomplishes a given task using the available code blocks arranged in the correct functional order. *We ignore indentation for this problem.*

find_max should accept a `list` and return the value of the maximum item in the `list`. (`None` is always the lowest value in any numeric comparison, so you may use it as an initializer.)

```
def find_max(my_list):

1 max_val = i

2 max_val = None

3 for i in range(len(my_list)):

4 if i > max_val:

5 max_val = my_list[i]

6 return max_val

7 for i in range(my_list):

8 if my_list[i] > max_val:

9 print(max_val)
```

(A) 2, 3, 4, 1, 6

(B) 2, 3, 8, 5, 6

(C) 3, 2, 8, 5, 9

(D) 2, 7, 4, 5, 6

(E) 2, 3, 8, 1, 6

2. (1 point) Consider the following Python program.

```python
e=[1,3,5,7,9,11]
d=[0,0,0]
for i in range(0,len(e)):
    d[i%3]+=e[i]
x=d[2]
```

After it is run, what is the final **value** of x?

(A) 8

(B) 7

(C) 0

(D) 16

(E) 12

3. (1 point) Consider the following program:

```python
x=[1,2,3,4,5,6,7,8,9]
x=x[2:-2]
i=1
while i < 3:
    x[i]+=1
    i+=1
```

What is the **value** of x after this program is executed?

(A) [3, 5, 6, 6, 7]

(B) [3, 5, 6, 6, 7, 8]

(C) [2, 4, 5, 5, 6, 7]

(D) [2, 4, 5, 6, 6, 7]

(E) [3, 5, 6, 6]

4. (1 point) Consider the following program.

```
s="ABCBA"
x=0
y=len(s)-1
while s[x]==s[y] and x<=y:
    x+=1
    y-=1
```

After it is run, what is the final **value** of x?

  (A) 3

  (B) 0

  (C) 4

  (D) 1

  (E) 2

5. (1 point) Consider the following program:

```
a=["merlin","sir agravaine","king pellinore"]
b=[ ]
for i in range(0,3):
    b.append(a[0-i].title())
```

What is the **value** of b after this program is executed?

  (A) [ ]

  (B) ['Sir Agravaine', 'King Pellinore']

  (C) ['King Pellinore', 'Sir Agravaine', 'Merlin']

  (D) ['Merlin', 'King Pellinore', 'Sir Agravaine']

  (E) ['King Pellinore', 'Sir Agravaine']

6. (1 point) Consider the following program:

```python
def fix(s):
    a=list(s)
    a.sort()
    return ''.join(a)

x=["one","two","eleven","twelve"]
s1=fix(x[0]+x[-1])
s2=fix(x[1]+x[-2])

if s1==s2:
    x.sort()
elif s1<s2:
    x.reverse()
else:
    x.append("six")
```

What is the **value** of x after this program is executed?

(A) ['two', 'twelve', 'one', 'eleven', 'six']

(B) ['one', 'two', 'eleven', 'twelve', 'six']

(C) ['one', 'two', 'eleven', 'twelve']

(D) ['twelve', 'eleven', 'two', 'one']

(E) ['eleven', 'one', 'twelve', 'two']

7. (1 point) Consider the following program.

```
x=[]
for j in range(0,5):
    if (j%4)==0:
        x.append("-")
    if (j%5)==0:
        x.append("*")
```

After it is run, what is the final **value** of x?

(A) `["-","-","*"]`

(B) `["-","*","*"]`

(C) None of the other answers are correct.

(D) `["-","*"]`

(E) `["-","*","-"]`

8. (1 point) Consider the following program:

```
s="-B-O-R-S-"
x=s.split("-")[2:-2]
```

What is the **value** of x after this program is executed?

(A) `None`

(B) `''`

(C) `['O', 'R']`

(D) `False`

(E) `'ORS'`

6

9. (1 point) Consider the following program:

```
x="KING ARTHUR-MORGANA LEFAY-SIR BEDIVERE".split("-")
y=x[:]
y.reverse()
```

What is the **value** of x after this program is executed?

(A) ['KING', 'ARTHUR-MORGANA', 'LEFAY-SIR', 'BEDIVERE']

(B) None

(C) ['SIR BEDIVERE', 'MORGANA LEFAY', 'KING ARTHUR']

(D) ['KING ARTHUR', 'MORGANA LEFAY', 'SIR BEDIVERE']

(E) ['BEDIVERE', 'LEFAY-SIR', 'ARTHUR-MORGANA', 'KING']

10. (1 point) Consider the following program:

```
i=2
x=3
while i < 7:
    x+=i
    i+=2
```

What is the **value** of x after this program is executed?

(A) 14

(B) 11

(C) 13

(D) 12

(E) 15

11. (1 point) Consider the following program:

```
s="ECTOR"
t="GAWAIN"
x=(len(s)/(len(t)-1))+1
```

What is the **type** of x after this program is executed?

(A) Boolean

(B) Float

(C) String

(D) None

(E) Integer

12. (1 point) Evaluate the following expression:

```
[1,2]+[len("3")]
```

What value is produced?

(A) [1,2,1,2,1,2]

(B) [1,2,"3"]

(C) [1,2,3]

(D) [1,2,1]

13. (1 point) Consider the following program:

```
x=0
for i in range(4,10):
    if i%3==0:
        x+=3
    elif i%2==0:
        x+=2
    else:
        x+=1
```

What is the **value** of x after this program is executed?

(A) 12

(B) 14

(C) 10

(D) 13

(E) 11

14. (1 point) Consider the following program.

```
kay = 2
wart = 3

def knight(kay,wart):
    wart += 2
    kay += 3
    return wart + kay

kay = knight(wart, kay) + knight(kay, wart)
```

After it is run, what is the final **value** of kay?

(A) 5

(B) 3

(C) None of the other answers are correct.

(D) 2

15. (1 point) Consider the following program:

```
s="TRIS %i"
t="ISEU"
x=len(s) % len(t[2:-1])
```

What is the **type** of x after this program is executed?

(A) Float

(B) None

(C) String

(D) Boolean

(E) Integer

16. (1 point) Consider the following program.

```
x=0
i=1
while(i*i)<=9:
    x=x+(i*i)
    i=i+1
```

After it is run, what is the final **value** of x?

(A) 14

(B) 5

(C) 30

(D) 3

(E) 4

17. (1 point) Consider the following program:

```
a=3
b=4
if a!=b:
    a=b
elif a==4:
    a=5
else:
    b=a
```

What is the **value** of a after this program is executed?

(A) None of the other answers are correct.

(B) 3

(C) 4

(D) 5

(E) 7

18. (1 point) Consider the following program:

```
x=[1,2,3]
def f(a):
    s=""
    a.append(4)
    for i in a:
        s+=str(i)
    return s

x.append(f(x))
```

What is the **value** of x after this program is executed?

(A) [1, 2, 3, 10]

(B) [1, 2, 3, '123']

(C) [1, 2, 3, '1234']

(D) [1, 2, 3, 4, '1234']

(E) [1, 2, 3]

19. (1 point) How can the following mathematical equation be implemented as a Python expression? Assume a, b, and cos have already been defined.

$$a^b \cos(a - b)$$

(A) (a^b)*cos(a-b)

(B) (a**b)*cos(a-b)

(C) (b^a)cos(a-b)

(D) (a**b)cos(a-b)

(E) None of the other answers are correct.

20. (1 point) What is the result of the following expression?

```
[ 1, 2, 3 ] * 3.0
```

 (A) `[1.0, 2.0, 3.0, 1.0, 2.0, 3.0, 1.0, 2.0, 3.0]`

 (B) `[1, 2, 3, 1, 2, 3, 1, 2, 3]`

 (C) `[3.0, 6.0, 9.0]`

 (D) `None of the above.`

 (E) `[3, 6, 9]`

21. (1 point) Consider the following program:

```
s="Calvin"
i=0
x=-1
while i<len(s):
    if s[i]=='b':
        x=i
    i+=1
```

What is the **value** of x after this program is executed?

 (A) `3`

 (B) `5`

 (C) `6`

 (D) `0`

 (E) `-1`

22. (1 point) Consider the following program.

```
def artificing(s):
    return s*2
    return s+"%i" % 2
    return s
```

```
s=artificing("MERLIN")
```

After it is run, what is the final **value** of s?

(A) `"MERLINMERLIN"`

(B) `"MERLIN"`

(C) `"MERLIN2"`

(D) `12`

(E) `None`

23. (1 point) Consider the following incomplete function.

```
def ismultiple(m,n):
    if ???:
        return False
    else:
        return True
```

The function is intended to return True if the input parameter m is a multiple of parameter n and False otherwise. For example, `ismultiple(4,2)` should return `True`, but `ismultiple(5,3)` should return `False`. What should replace the three question marks to complete the function?

(A) `(m // n) != 0`

(B) `(m % n) != 0`

(C) `(n // m) == 0`

(D) `(n % m) == 0`

24. (1 point) Consider the following incomplete Python program.

```
s="".join(["1","0","2","1"])
x=0
for i in range(len(s)-1):
    x+=int(???)
```

What should replace the three question marks so the resulting value of x is 33?

 (A) `s[i:i+2]`

 (B) `s[i:i+1]`

 (C) `s[i+1:i+2]`

 (D) `s[i:i-1]`

25. (1 point) Consider the following incomplete program.

```
sum=0
for i in range(0,100):
    ???
```

The program is intended to sum all of the integers between 1 and 100 (inclusive). What should replace the three question marks to complete the program?

 (A) `sum+1=sum`

 (B) `sum=sum+i`

 (C) `sum=sum+1`

 (D) `sum=sum+i+1`

26. (1 point)

`x=str(3)+"str(3)"`

What is the **value** of x after this program is executed?

(A) `"33"`

(B) `"333"`

(C) `33`

(D) `"3str(3)"`

(E) None of the other answers are correct.

27. (1 point) Evaluate the following expression:

`len("ABCDE"[1:4])`

What value is produced?

(A) 3

(B) 5

(C) 1

(D) 4

28. (1 point) Consider the following program:

```
a=["S","T","U","P","E","F","Y"]
a=a[0:4]
a.sort()
x=""
for e in a:
    x=e+x
```

What is the **value** of x after this program is executed?

(A) "UTSP"

(B) None of the other answers are correct.

(C) "PUST"

(D) "STUP"

(E) "PSTU"

18

29. (1 point) Consider the following program:

```
x=3
a=7
if (a%3)==2:
    x=x**2
elif(a%3)==1:
    x=x**1
else:
    x=x**0
```

What is the **value** of x after this program is executed?

(A) None of the other answers are correct.

(B) 1

(C) 3

(D) 7

(E) 9

30. (1 point) Consider the following program:

```
pi="3.14159"
e="2.71828"
x=pi*len(e)+pi
```

What is the **type** of x after this program is executed?

(A) Float

(B) None

(C) String

(D) Boolean

(E) Integer

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- There are several different versions of this exam.

1. Fill in your information:

Full Name: _____

UIN (Student Number): _____

NetID: _____

2. Fill in the following answers on the Scantron form:

92. C

93. A

94. B

95. B

96. C

1. (1 point) For this problem, you should compose a function which accomplishes a given task using the available code blocks arranged in the correct functional order. *We ignore indentation for this problem.*

`find_max` should accept a `list` and return the value of the maximum item in the `list`. (`None` is always the lowest value in any numeric comparison, so you may use it as an initializer.)

```
def find_max(my_list):

1 max_val = i

2 max_val = None

3 for i in range(len(my_list)):

4 if i > max_val:

5 max_val = my_list[i]

6 return max_val

7 for i in range(my_list):

8 if my_list[i] > max_val:

9 print(max_val)
```

(A) 2, 3, 8, 5, 6

(B) 2, 3, 8, 1, 6

(C) 2, 3, 4, 1, 6

(D) 2, 7, 4, 5, 6

(E) 3, 2, 8, 5, 9

2. (1 point) Consider the following program:

```python
def fix(s):
    a=list(s)
    a.sort()
    return ''.join(a)

x=["one","two","eleven","twelve"]
s1=fix(x[0]+x[-1])
s2=fix(x[1]+x[-2])

if s1<s2:
    x.sort()
elif s1==s2:
    x.reverse()
else:
    x.append("six")
```

What is the **value** of x after this program is executed?

(A) ['twelve', 'eleven', 'two', 'one']

(B) ['one', 'two', 'eleven', 'twelve']

(C) ['two', 'twelve', 'one', 'eleven', 'six']

(D) ['one', 'two', 'eleven', 'twelve', 'six']

(E) ['eleven', 'one', 'twelve', 'two']

3. (1 point) Consider the following incomplete Python program.

```python
s="".join(["1","0","2","1"])
x=0
for i in range(len(s)-1):
    x+=int(???)
```

What should replace the three question marks so the resulting value of x is 33?

(A) s[i:i+2]

(B) s[i+1:i+2]

(C) s[i:i+1]

(D) s[i:i-1]

4. (1 point) Consider the following program:

```python
x=[1,2,3,4,5,6,7,8,9]
x=x[2:-2]
i=1
while i <= 3:
    x[i]+=1
    i+=1
```

What is the **value** of x after this program is executed?

(A) [2, 4, 5, 5, 7, 7]

(B) [3, 5, 6, 7, 7]

(C) [3, 5, 7, 7]

(D) [2, 4, 5, 6, 7, 7]

(E) [3, 5, 6, 7, 7, 8]

5. (1 point) Consider the following program.

```
x=[]
for j in range(0,5):
    if (j%4)==0:
        x.append("-")
    if (j%5)==0:
        x.append("*")
```

After it is run, what is the final **value** of x?

(A) ["-","*"]

(B) None of the other answers are correct.

(C) ["-","*","-"]

(D) ["-","-","*"]

(E) ["-","*","*"]

6. (1 point) How can the following mathematical equation be implemented as a Python expression? Assume a, b, and sin have already been defined.

$$a \sin(a^b - b)$$

(A) `a*sin(b^a - b)`

(B) `a*sin(a^b - b)`

(C) `a*sin(a**b - b)`

(D) None of the other answers are correct.

(E) `a sin(a**b - b)`

7. (1 point) Evaluate the following expression:

```
len("ABCD"[0:3])
```

What value is produced?

(A) 3

(B) 1

(C) 2

(D) 4

8. (1 point) Consider the following program:

```
x=[1,2,3]
def f(a):
    s=""
    a.reverse()
    for i in a:
        s+=str(i)
    return s

x.append(f(x))
```

What is the **value** of x after this program is executed?

(A) [3, 2, 1, '321']

(B) [3, 2, 1]

(C) [1, 2, 3]

(D) [1, 2, 3, '321']

(E) [1, 2, 3, 6]

9. (1 point) Consider the following program:

```
x=3
a=7
if (a%3)==2:
    x=x**2
elif(a%3)==1:
    x=x**1
else:
    x=x**0
```

What is the **value** of x after this program is executed?

(A) 7

(B) None of the other answers are correct.

(C) 3

(D) 1

(E) 9

10. (1 point) Evaluate the following expression:

```
[1,2]+[len("3")]
```

What value is produced?

(A) [1,2,"3"]

(B) [1,2,1,2,1,2]

(C) [1,2,3]

(D) [1,2,1]

11. (1 point) Consider the following program.

```
s="ABCBA"
x=0
y=len(s)-1
while s[x]==s[y] and x<=y:
    x+=1
    y-=1
```

After it is run, what is the final **value** of x?

(A) 1

(B) 0

(C) 3

(D) 2

(E) 4

12. (1 point) Consider the following program:

```
a=["merlin","sir agravaine","king pellinore"]
b=[ ]
for i in range(1,3):
    b.append(a[0-i].title())
```

What is the **value** of b after this program is executed?

(A) [ ]

(B) ['King Pellinore', 'Sir Agravaine', 'Merlin']

(C) ['Sir Agravaine', 'King Pellinore']

(D) ['King Pellinore', 'Sir Agravaine']

(E) ['Merlin', 'King Pellinore', 'Sir Agravaine']

13. (1 point) Consider the following program:

```
a=["S","T","U","P","E","F","Y"]
a=a[0:4]
a.sort()
x=""
for e in a:
    x=e+x
```

What is the **value** of x after this program is executed?

(A) "PUST"

(B) None of the other answers are correct.

(C) "UTSP"

(D) "STUP"

(E) "PSTU"

14. (1 point) Consider the following program.

```python
kay = 2
wart = 3

def knight(kay,wart):
    wart += 2
    kay += 3
    return wart + kay

wart = knight(kay, kay) + knight(wart, wart)
```

After it is run, what is the final **value** of `wart`?

(A) None of the other answers are correct.

(B) 3

(C) 5

(D) 2

15. (1 point) Consider the following program:

```python
s="TRIS %i"
t="ISEU"
x=len(s) % len(t[2:-1])
```

What is the **type** of `x` after this program is executed?

(A) Boolean

(B) None

(C) String

(D) Integer

(E) Float

16. (1 point) Consider the following program:

```
s="ECTOR"
t="GAWAIN"
x=(len(s)+len(t)) < 4 and s in t
```

What is the **type** of x after this program is executed?

(A) String

(B) Float

(C) Boolean

(D) Integer

(E) None

17. (1 point) What is the result of the following expression?

```
[ 1, 2, 3 ] * 3.0
```

(A) None of the above.

(B) [3, 6, 9]

(C) [3.0, 6.0, 9.0]

(D) [1.0, 2.0, 3.0, 1.0, 2.0, 3.0, 1.0, 2.0, 3.0]

(E) [1, 2, 3, 1, 2, 3, 1, 2, 3]

18. (1 point) Consider the following program:

```
x=0
for i in range(2,7):
    if i%3==0:
        x+=3
    elif i%2==0:
        x+=2
    else:
        x+=1
```

What is the **value** of x after this program is executed?

(A) 14

(B) 11

(C) 10

(D) 12

(E) 13

19. (1 point) Consider the following Python program.

```
e=[1,3,5,7,9,11]
d=[0,0,0]
for i in range(0,len(e)):
    d[i%3]+=e[i]
x=d[2]
```

After it is run, what is the final **value** of x?

(A) 16

(B) 7

(C) 8

(D) 0

(E) 12

20. (1 point) Consider the following program:

```
s="-B-O-R-S-"
x=s.split("-")[2:-2]
```

What is the **value** of x after this program is executed?

(A) ''

(B) 'ORS'

(C) None

(D) ['O', 'R']

(E) False

13

21. (1 point) Consider the following incomplete program.

```
sum=0
???:
    sum=sum+i
```

The program is intended to sum all of the integers between 1 and 100 (inclusive). What should replace the three question marks to complete the program?

(A) `while i<=100`

(B) `for i in range(0,100)`

(C) `while i in range(100)`

(D) `for i in range(1,101)`

22. (1 point) Consider the following incomplete function.

```
def ismultiple(m,n):
    if ???:
        return False
    else:
        return True
```

The function is intended to return True if the input parameter m is a multiple of parameter n and False otherwise. For example, `ismultiple(4,2)` should return `True`, but `ismultiple(5,3)` should return `False`. What should replace the three question marks to complete the function?

(A) `(m // n) != 0`

(B) `(n // m) == 0`

(C) `(n % m) == 0`

(D) `(m % n) != 0`

23. (1 point)

```
x=str(3)+"str(3)"
```

What is the **value** of x after this program is executed?

(A) `"33"`

(B) None of the other answers are correct.

(C) `"333"`

(D) `"3str(3)"`

(E) `33`

24. (1 point) Consider the following program.

```
def artificing(s):
    return s+"%i" % 2
    return s*2
    return s

s=artificing("MERLIN")
```

After it is run, what is the final **value** of s?

(A) `"MERLIN%i"`

(B) `None`

(C) `0`

(D) `"MERLIN2"`

(E) `"MERLINMERLIN"`

25. (1 point) Consider the following program:

```
pi="3.14159"
e="2.71828"
x=pi*len(e)+pi
```

What is the **type** of x after this program is executed?

(A) Integer

(B) None

(C) Float

(D) Boolean

(E) String

26. (1 point) Consider the following program:

```
i=2
x=3
while i < 7:
    x+=i
    i+=2
```

What is the **value** of x after this program is executed?

(A) 12

(B) 13

(C) 15

(D) 14

(E) 11

27. (1 point) Consider the following program:

```
a=3
b=4
if a!=b:
    a=b
elif a==4:
    a=5
else:
    b=a
```

What is the **value** of a after this program is executed?

(A) 5

(B) None of the other answers are correct.

(C) 4

(D) 3

(E) 7

28. (1 point) Consider the following program:

```
x="KING ARTHUR-MORGANA LEFAY-SIR BEDIVERE".split("-")
y=x
y.reverse()
```

What is the **value** of x after this program is executed?

(A) None

(B) ['BEDIVERE', 'LEFAY-SIR', 'ARTHUR-MORGANA', 'KING']

(C) ['KING ARTHUR', 'MORGANA LEFAY', 'SIR BEDIVERE']

(D) ['SIR BEDIVERE', 'MORGANA LEFAY', 'KING ARTHUR']

(E) ['KING', 'ARTHUR-MORGANA', 'LEFAY-SIR', 'BEDIVERE']

29. (1 point) Consider the following program.

```
x=1
i=0
while(x*x)<=9:
    i=i+(x*x)
    x=x+1
```

After it is run, what is the final **value** of x?

(A) 4

(B) 3

(C) 5

(D) 30

(E) 14

30. (1 point) Consider the following program:

```
s="Calvin"
i=0
x=-1
while i<len(s):
    if s[i]=='b':
        x=i
    i+=1
```

What is the **value** of x after this program is executed?

(A) 0

(B) -1

(C) 5

(D) 3

(E) 6

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CS101
midterm1

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1. Fill in your information:

Full Name: _____

UIN (Student Number): _____

NetID: _____

2. Fill in the following answers on the Scantron form:

92. D

93. A

94. B

95. C

96. D

1. (1 point) Consider the following program:

```
pi="3.14159"
e="2.71828"
x=(float(e)**float(pi)-float(pi)) == 20
```

What is the **type** of x after this program is executed?

(A) None

(B) Float

(C) Integer

(D) Boolean

(E) String

2. (1 point) Consider the following program:

```
s="TRIS %i"
t="ISEU"
x=s % len(t)
```

What is the **type** of x after this program is executed?

(A) String

(B) None

(C) Integer

(D) Boolean

(E) Float

3. (1 point) Evaluate the following expression:

```
[1,2]*len("3")
```

What value is produced?

   (A) `[1,2,3]`

   (B) `[1,2]`

   (C) `[1,2,1]`

   (D) `[1,2,1,2,1,2]`

4. (1 point) Consider the following program:

```
s="Calvin"
i=0
x=-1
while i<len(s):
    if s[i]=='b':
        x=i
    i+=1
```

What is the **value** of `x` after this program is executed?

   (A) `0`

   (B) `6`

   (C) `-1`

   (D) `3`

   (E) `5`

5. (1 point) Consider the following program:

```
x=[2,3,4,5,6,7,8,9]
x=x[2:-2]
i=1
while i <= 3:
    x[i]+=1
    i+=1
```

What is the **value** of x after this program is executed?

(A) [4, 6, 7]

(B) [2, 4, 6, 6]

(C) [4, 6, 7, 7]

(D) [4, 6, 7, 8]

(E) [3, 4, 6, 7, 8]

6. (1 point) Consider the following program.

```
x=[]
for j in range(0,5):
    if (j%2)==0:
        x.append("-")
    if (j%5)==0:
        x.append("*")
```

After it is run, what is the final **value** of x?

(A) ["-","*","-"]

(B) ["*","-","*","*"]

(C) ["-","*","-","-"]

(D) ["-","-","*"]

(E) None of the other answers are correct.

7. (1 point)

```
x=str(3)+"str(3)"
```

What is the **value** of x after this program is executed?

(A) "333"

(B) "33"

(C) "3str(3)"

(D) 33

(E) None of the other answers are correct.

5

8. (1 point) Consider the following program:

```python
x=[1,2,3]
def f(a):
    s=""
    a.reverse()
    for i in a:
        s+=str(i)
    return s

x.append(f(x))
```

What is the **value** of x after this program is executed?

(A) [1, 2, 3]

(B) [3, 2, 1]

(C) [3, 2, 1, '321']

(D) [1, 2, 3, '321']

(E) [1, 2, 3, 6]

9. (1 point) Consider the following program:

```
x=0
for i in range(2,7):
    if i%3==0:
        x+=3
    elif i%2==0:
        x+=2
    else:
        x+=1
```

What is the **value** of x after this program is executed?

(A) 11

(B) 13

(C) 10

(D) 12

(E) 14

10. (1 point) Consider the following program:

```
i=2
x=3
while i < 7:
    x+=i
    i+=2
```

What is the **value** of x after this program is executed?

(A) 12

(B) 11

(C) 15

(D) 13

(E) 14

11. (1 point) Consider the following program.

```
x=1
i=0
while(x*x)<=9:
    i=i+(x*x)
    x=x+1
```

After it is run, what is the final **value** of x?

(A) 4

(B) 30

(C) 3

(D) 5

(E) 14

12. (1 point) Consider the following program:

```
s="-B-O-R-S-"
x=s.split("-")[2:-2]
```

What is the **value** of x after this program is executed?

(A) 'ORS'

(B) ['O', 'R']

(C) False

(D) ''

(E) None

13. (1 point) Consider the following program.

```
s="ABCBA"
x=0
y=len(s)-1
while s[x]==s[y] and x<=y:
    x+=1
    y-=1
```

After it is run, what is the final **value** of x?

(A) 3

(B) 1

(C) 2

(D) 4

(E) 0

14. (1 point) Consider the following program.

```
kay = 2
wart = 3

def knight(kay,wart):
    wart += 2
    kay += 3
    return wart + kay

wart = knight(kay, kay) + knight(wart, wart)
```

After it is run, what is the final **value** of wart?

(A) 5

(B) 3

(C) 2

(D) None of the other answers are correct.

15. (1 point) Consider the following program:

```
x=3
a=5
if (a%3)==2:
    x=x**3
elif(a%3)==1:
    x=x**2
else:
    x=x**1
```

What is the **value** of x after this program is executed?

(A) 27

(B) None of the other answers are correct.

(C) 1

(D) 9

(E) 3

16. (1 point) Consider the following incomplete function.

```
def isdivisible(m,n):
    if ???:
        return False
    else:
        return True
```

The function is intended to return True if the input parameter m is evenly divisible by the parameter n and False otherwise. For example, `isdivisible(4,2)` should return `True`, but `isdivisible(5,3)` should return `False`. What should replace the three question marks to complete the function?

(A) `(n // m) == 0`

(B) `(m // n) != 0`

(C) `(n % m) == 0`

(D) `(m % n) != 0`

17. (1 point) Consider the following Python program.

```
e=[1,3,5,7,9,11]
d=[0,0,0]
for i in range(0,len(e)):
    d[i%3]+=e[i]
x=d[2]
```

After it is run, what is the final **value** of x?

(A) 0

(B) 7

(C) 12

(D) 16

(E) 8

18. (1 point) Consider the following incomplete program.

```
sum=0
for i in range(0,100):
    ???
```

The program is intended to sum all of the integers between 1 and 100 (inclusive). What should replace the three question marks to complete the program?

(A) `sum=sum+i+1`

(B) `sum=sum+1`

(C) `sum+1=sum`

(D) `sum=sum+i`

19. (1 point) Evaluate the following expression:

```
len("ABCD"[0:3])
```

What value is produced?

(A) 2

(B) 3

(C) 1

(D) 4

20. (1 point) Consider the following program:

```
x="KING ARTHUR-MORGANA LEFAY-SIR BEDIVERE".split("-")
y=x
x=y.reverse()
```

What is the **value** of x after this program is executed?

(A) ['BEDIVERE', 'LEFAY-SIR', 'ARTHUR-MORGANA', 'KING']

(B) ['SIR BEDIVERE', 'MORGANA LEFAY', 'KING ARTHUR']

(C) None

(D) ['KING', 'ARTHUR-MORGANA', 'LEFAY-SIR', 'BEDIVERE']

(E) ['KING ARTHUR', 'MORGANA LEFAY', 'SIR BEDIVERE']

21. (1 point) Consider the following program:

```
a=3
b=4
if a!=b:
    a=b
elif a==4:
    a=5
else:
    b=a
```

What is the **value** of a after this program is executed?

(A) 4

(B) 7

(C) None of the other answers are correct.

(D) 3

(E) 5

22. (1 point) Consider the following program:

```
a=["merlin","sir agravaine","king pellinore"]
b=[ ]
for i in range(0,3):
    b.append(a[0-i].title())
```

What is the **value** of b after this program is executed?

(A) ['Merlin', 'King Pellinore', 'Sir Agravaine']

(B) ['Sir Agravaine', 'King Pellinore']

(C) [ ]

(D) ['King Pellinore', 'Sir Agravaine', 'Merlin']

(E) ['King Pellinore', 'Sir Agravaine']

23. (1 point) Consider the following program:

```
a=["A","C","C","I","O"]
a.sort()
a[0]=a[-1]
x=""
for e in a:
    x=x+e
```

What is the **value** of x after this program is executed?

(A) "ACCIA"

(B) "ICCOI"

(C) "ACCOA"

(D) "OCCIO"

(E) None of the other answers are correct.

24. (1 point) Consider the following incomplete Python program.

```
s="".join(["1","0","2","1"])
x=0
for i in range(len(s)-1):
    x+=int(???)
```

What should replace the three question marks so the resulting value of x is 33?

(A) `s[i+1:i+2]`

(B) `s[i:i+2]`

(C) `s[i:i-1]`

(D) `s[i:i+1]`

25. (1 point) How can the following mathematical equation be implemented as a Python expression? Assume a, b, and cos have already been defined.

$$a^b \cos(a - b)$$

(A) `(a^b)*cos(a-b)`

(B) `(a**b)*cos(a-b)`

(C) `(a**b)cos(a-b)`

(D) `(b^a)cos(a-b)`

(E) None of the other answers are correct.

26. (1 point) For this problem, you should compose a function which accomplishes a given task using the available code blocks arranged in the correct functional order. *We ignore indentation for this problem.*

`find_max` should accept a `list` and return the value of the maximum item in the `list`. (`None` is always the lowest value in any numeric comparison, so you may use it as an initializer.)

```
def find_max(my_list):

1 max_val = i

2 max_val = None

3 for i in range(len(my_list)):

4 if i > max_val:

5 max_val = my_list[i]

6 return max_val

7 for i in range(my_list):

8 if my_list[i] > max_val:

9 print(max_val)
```

  (A) 2, 3, 8, 5, 6

  (B) 2, 3, 4, 1, 6

  (C) 2, 3, 8, 1, 6

  (D) 2, 7, 4, 5, 6

  (E) 3, 2, 8, 5, 9

27. (1 point) Consider the following program:

```
def fix(s):
    a=list(s)
    a.sort()
    return ''.join(a)

x=["one","two","eleven","twelve"]
s1=fix(x[0]+x[-1])
s2=fix(x[1]+x[-2])

if s1==s2:
    x.sort()
elif s1<s2:
    x.reverse()
else:
    x.append("six")
```

What is the **value** of x after this program is executed?

(A) ['two', 'twelve', 'one', 'eleven', 'six']

(B) ['twelve', 'eleven', 'two', 'one']

(C) ['one', 'two', 'eleven', 'twelve', 'six']

(D) ['one', 'two', 'eleven', 'twelve']

(E) ['eleven', 'one', 'twelve', 'two']

18

28. (1 point) Consider the following program:

```
s="ECTOR"
t="GAWAIN"
x=(len(s)+len(t)) < 4 and s in t
```

What is the **type** of x after this program is executed?

(A) String

(B) Boolean

(C) Integer

(D) None

(E) Float

29. (1 point) Consider the following program.

```
def artificing(s):
    return s*2
    return s+"%i" % 2
    return s
```

```
s=artificing("MERLIN")
```

After it is run, what is the final **value** of s?

(A) "MERLINMERLIN"

(B) "MERLIN2"

(C) None

(D) 12

(E) "MERLIN"

30. (1 point) What is the result of the following expression?

[1, 2, 3] * 3

 (A) [1.0, 2.0, 3.0, 1.0, 2.0, 3.0, 1.0, 2.0, 3.0]

 (B) [3, 6, 9]

 (C) [3.0, 6.0, 9.0]

 (D) (3, 6, 9)

 (E) [1, 2, 3, 1, 2, 3, 1, 2, 3]

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CS101
midterm1

- **Be sure to enter your <u>NetID</u> and <u>the code below</u> on your Scantron**.

- Do not turn this page until instructed to do so.

- There are 30 questions, worth 1 point each.

- Each question has only **one** correct answer.

- You must not communicate with other students during this test.

- No books, notes, or electronic devices are permitted.

- This is a 60-minute exam.

- There are several different versions of this exam.

1. Fill in your information:

Full Name: _____

UIN (Student Number): _____

NetID: _____

2. Fill in the following answers on the Scantron form:

92. E

93. A

94. B

95. D

96. E

1. (1 point)

```
x=str(3)+"str(3)"
```

What is the **value** of x after this program is executed?

  (A) `"3str(3)"`

  (B) None of the other answers are correct.

  (C) `"33"`

  (D) `"333"`

  (E) `33`

2. (1 point) Consider the following program:

```
a=["merlin","sir agravaine","king pellinore"]
b=[ ]
for i in range(0,4):
    b.append(a[0-i].title())
```

What is the **value** of b after this program is executed?

  (A) `['Merlin', 'Sir Agravaine', 'King Pellinore', 'Merlin']`

  (B) `[ ]`

  (C) `['Merlin', 'King Pellinore', 'Sir Agravaine']`

  (D) `['King Pellinore', 'Sir Agravaine', 'Merlin']`

  (E) `['Merlin', 'King Pellinore', 'Sir Agravaine', 'Merlin']`

3. (1 point) Consider the following program:

```
s="Hobbes"
i=0
x=-1
while i<len(s):
    if s[i]=='b':
        x=i
    i+=1
```

What is the **value** of x after this program is executed?

(A) -1

(B) 3

(C) 5

(D) 2

(E) 4

4. (1 point) Consider the following program:

```
x=2
a=6
if (a%3)==2:
    x=x**3
elif(a%3)==1:
    x=x**2
else:
    x=x**1
```

What is the **value** of x after this program is executed?

(A) 8

(B) None of the other answers are correct.

(C) 4

(D) 2

(E) 16

4. (1 point) Consider the following program:

```
x=2
a=6
if (a%3)==2:
    x=x**3
elif(a%3)==1:
    x=x**2
else:
    x=x**1
```

What is the **value** of x after this program is executed?

(A) 8

(B) None of the other answers are correct.

(C) 4

(D) 2

(E) 16

5. (1 point) Consider the following Python program.

```
e=[1,3,5,7,9,11]
d=[0,0,0]
for i in range(0,len(e)):
    d[i%3]+=e[i]
x=d[2]
```

After it is run, what is the final **value** of x?

(A) 8

(B) 7

(C) 16

(D) 12

(E) 0

6. (1 point) Consider the following program.

```
s="ABCBA"
x=0
y=len(s)-1
while s[x]==s[y] and x<=y:
    x+=1
    y-=1
```

After it is run, what is the final **value** of x?

(A) 3

(B) 4

(C) 0

(D) 1

(E) 2

7. (1 point) Consider the following program:

```
i=3
x=2
while i < 7:
    x+=i
    i+=2
```

What is the **value** of x after this program is executed?

(A) 11

(B) 13

(C) 10

(D) 12

(E) 14

8. (1 point) Consider the following program:

```
s="ECTOR"
t="GAWAIN"
x=(len(s)/(len(t)-1))+1
```

What is the **type** of x after this program is executed?

(A) None

(B) String

(C) Boolean

(D) Integer

(E) Float

9. (1 point) Evaluate the following expression:

`len("ABCD"[0:3])`

What value is produced?

(A) 1

(B) 4

(C) 2

(D) 3

10. (1 point) Consider the following program.

```
x=[]
for j in range(0,5):
    if (j%4)==0:
        x.append("-")
    if (j%5)==0:
        x.append("*")
```

After it is run, what is the final **value** of x?

(A) `["-","*","*"]`

(B) None of the other answers are correct.

(C) `["-","*","-"]`

(D) `["-","-","*"]`

(E) `["-","*"]`

11. (1 point) Consider the following program:

```python
def fix(s):
    a=list(s)
    a.sort()
    return ''.join(a)

x=["one","two","eleven","twelve"]
s1=fix(x[0]+x[-1])
s2=fix(x[1]+x[-2])

if s1<s2:
    x.sort()
elif s1>s2:
    x.reverse()
else:
    x.append("six")
```

What is the **value** of x after this program is executed?

(A) ['one', 'two', 'eleven', 'twelve']

(B) ['eleven', 'one', 'twelve', 'two']

(C) ['one', 'two', 'eleven', 'twelve', 'six']

(D) ['twelve', 'eleven', 'two', 'one']

(E) ['two', 'twelve', 'one', 'eleven', 'six']

12. (1 point) Consider the following program.

```
x=0
i=1
while(i*i)<=9:
    x=x+(i*i)
    i=i+1
```

After it is run, what is the final **value** of x?

(A) 14

(B) 3

(C) 5

(D) 30

(E) 4

13. (1 point) Consider the following program:

```
s="-B-O-R-S-"
x=s.split("-")[2:-2]
```

What is the **value** of x after this program is executed?

(A) 'ORS'

(B) ''

(C) ['O', 'R']

(D) False

(E) None

14. (1 point) Consider the following incomplete program.

```
sum=0
for i in range(0,100):
    ???
```

The program is intended to sum all of the integers between 1 and 100 (inclusive). What should replace the three question marks to complete the program?

(A) `sum+1=sum`

(B) `sum=sum+1`

(C) `sum=sum+i`

(D) `sum=sum+i+1`

15. (1 point) Consider the following program:

```
a=3
b=4
if a==3:
    a=b
elif a==4:
    a=5
else:
    b=a
```

What is the **value** of a after this program is executed?

(A) 4

(B) None of the other answers are correct.

(C) 5

(D) 3

(E) 7

16. (1 point) Consider the following program:

```
a=["A","C","C","I","O"]
a.sort()
a[0]=a[-1]
x=""
for e in a:
    x=x+e
```

What is the **value** of x after this program is executed?

(A) `"ICCOI"`

(B) `"ACCIA"`

(C) `"OCCIO"`

(D) None of the other answers are correct.

(E) `"ACCOA"`

17. (1 point) How can the following mathematical equation be implemented as a Python expression? Assume a, b, and sin have already been defined.

$$a \sin(a^b - b)$$

(A) `a*sin(a^b - b)`

(B) `a*sin(a**b - b)`

(C) `a*sin(b^a - b)`

(D) `a sin(a**b - b)`

(E) None of the other answers are correct.

18. (1 point) Consider the following program.

```
kay = 2
wart = 3

def knight(kay,wart):
    wart += 2
    kay += 3
    return wart + kay

kay = knight(wart, kay) + knight(kay, wart)
```

After it is run, what is the final **value** of `kay`?

(A) None of the other answers are correct.

(B) 5

(C) 2

(D) 3

19. (1 point) Consider the following program:

```
pi="3.14159"
e="2.71828"
x=pi*len(e)+pi
```

What is the **type** of `x` after this program is executed?

(A) Integer

(B) None

(C) Float

(D) Boolean

(E) String

20. (1 point) Evaluate the following expression:

`[1,2]*len("3")`

What value is produced?

(A) `[1,2,3]`

(B) `[1,2,1]`

(C) `[1,2,1,2,1,2]`

(D) `[1,2]`

21. (1 point) For this problem, you should compose a function which accomplishes a given task using the available code blocks arranged in the correct functional order. *We ignore indentation for this problem.*

`find_max` should accept a `list` and return the value of the maximum item in the `list`. (`None` is always the lowest value in any numeric comparison, so you may use it as an initializer.)

```
def find_max(my_list):

1 max_val = i

2 max_val = None

3 for i in range(len(my_list)):

4 if i > max_val:

5 max_val = my_list[i]

6 return max_val

7 for i in range(my_list):

8 if my_list[i] > max_val:

9 print(max_val)
```

 (A) 2, 3, 8, 5, 6

 (B) 2, 7, 4, 5, 6

 (C) 3, 2, 8, 5, 9

 (D) 2, 3, 8, 1, 6

 (E) 2, 3, 4, 1, 6

22. (1 point) What is the result of the following expression?

```
[ 1, 2, 3 ] * 3
```

(A) [3.0, 6.0, 9.0]

(B) (3, 6, 9)

(C) [3, 6, 9]

(D) [1.0, 2.0, 3.0, 1.0, 2.0, 3.0, 1.0, 2.0, 3.0]

(E) [1, 2, 3, 1, 2, 3, 1, 2, 3]

23. (1 point) Consider the following program:

```
x=0
for i in range(2,8):
    if i%3==0:
        x+=3
    elif i%2==0:
        x+=2
    else:
        x+=1
```

What is the **value** of x after this program is executed?

(A) 12

(B) 13

(C) 10

(D) 11

(E) 14

24. (1 point) Consider the following program:

```
x=[1,2,3,4,5,6,7,8,9]
x=x[2:-2]
i=1
while i < 3:
    x[i]+=1
    i+=1
```

What is the **value** of x after this program is executed?

(A) [3, 5, 6, 6]

(B) [2, 4, 5, 5, 6, 7]

(C) [3, 5, 6, 6, 7]

(D) [2, 4, 5, 6, 6, 7]

(E) [3, 5, 6, 6, 7, 8]

25. (1 point) Consider the following program:

```
x=[1,2,3]
def f(a):
    s=""
    a.reverse()
    for i in a:
        s+=str(i)
    return s

x.append(f(x))
```

What is the **value** of x after this program is executed?

(A) [1, 2, 3, '321']

(B) [3, 2, 1, '321']

(C) [3, 2, 1]

(D) [1, 2, 3, 6]

(E) [1, 2, 3]

26. (1 point) Consider the following program.

```
def artificing(s):
    return s+"%i" % 2
    return s*2
    return s
```

```
s=artificing("MERLIN")
```

After it is run, what is the final **value** of s?

(A) `"MERLIN2"`

(B) `None`

(C) `"MERLIN%i"`

(D) `0`

(E) `"MERLINMERLIN"`

27. (1 point) Consider the following incomplete function.

```
def isdivisible(m,n):
    if ???:
        return False
    else:
        return True
```

The function is intended to return True if the input parameter m is evenly divisible by the parameter n and False otherwise. For example, `isdivisible(4,2)` should return `True`, but `isdivisible(5,3)` should return `False`. What should replace the three question marks to complete the function?

(A) `(n % m) == 0`

(B) `(m // n) != 0`

(C) `(m % n) != 0`

(D) `(n // m) == 0`

28. (1 point) Consider the following incomplete Python program.

```python
s="".join(["0","1","2","1"])
x=0
for i in range(len(s)-1):
    x+=int(???)
```

What should replace the three question marks so the resulting value of x is 34?

(A) `s[i:i+2]`

(B) `s[i:i-1]`

(C) `s[i+1:i+2]`

(D) `s[i:i+1]`

29. (1 point) Consider the following program:

```python
x="KING ARTHUR-MORGANA LEFAY-SIR BEDIVERE".split("-")
y=x
y.reverse()
```

What is the **value** of x after this program is executed?

(A) `['KING ARTHUR', 'MORGANA LEFAY', 'SIR BEDIVERE']`

(B) `['SIR BEDIVERE', 'MORGANA LEFAY', 'KING ARTHUR']`

(C) `['BEDIVERE', 'LEFAY-SIR', 'ARTHUR-MORGANA', 'KING']`

(D) `None`

(E) `['KING', 'ARTHUR-MORGANA', 'LEFAY-SIR', 'BEDIVERE']`

30. (1 point) Consider the following program:

```
s="TRIS %i"
t="ISEU"
x=s % len(t)
```

What is the **type** of x after this program is executed?

(A) Float

(B) Boolean

(C) Integer

(D) None

(E) String

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CS101 midterm1

- **Be sure to enter your <u>NetID</u> and <u>the code below</u> on your Scantron**.

- Do not turn this page until instructed to do so.

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- Each question has only **one** correct answer.

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- No books, notes, or electronic devices are permitted.

- This is a 60-minute exam.

- There are several different versions of this exam.

1. Fill in your information:

Full Name: _____

UIN (Student Number): _____

NetID: _____

2. Fill in the following answers on the Scantron form:

92. A

93. B

94. B

95. A

96. C

1. (1 point) Consider the following program.

```
def artificing(s):
    return s*2
    return s+"%i" % 2
    return s

s=artificing("MERLIN")
```

After it is run, what is the final **value** of s?

(A) None

(B) "MERLINMERLIN"

(C) 12

(D) "MERLIN2"

(E) "MERLIN"

2. (1 point) Consider the following program:

```
s="-B-O-R-S-"
x=s.split("-")[2:-2]
```

What is the **value** of x after this program is executed?

(A) ''

(B) 'ORS'

(C) False

(D) None

(E) ['O', 'R']

3. (1 point) Consider the following incomplete function.

```
def ismultiple(m,n):
    if ???:
        return False
    else:
        return True
```

The function is intended to return True if the input parameter m is a multiple of parameter n and False otherwise. For example, `ismultiple(4,2)` should return `True`, but `ismultiple(5,3)` should return `False`. What should replace the three question marks to complete the function?

(A) `(n // m) == 0`

(B) `(m % n) != 0`

(C) `(n % m) == 0`

(D) `(m // n) != 0`

4. (1 point) Consider the following program:

```
x=2
a=6
if (a%3)==2:
    x=x**3
elif(a%3)==1:
    x=x**2
else:
    x=x**1
```

What is the **value** of x after this program is executed?

(A) None of the other answers are correct.

(B) 4

(C) 2

(D) 16

(E) 8

5. (1 point) How can the following mathematical equation be implemented as a Python expression? Assume a, b, and cos have already been defined.

$$a^b \cos(a - b)$$

(A) None of the other answers are correct.

(B) (a**b)cos(a-b)

(C) (b^a)cos(a-b)

(D) (a**b)*cos(a-b)

(E) (a^b)*cos(a-b)

6. (1 point) Consider the following program:

```
s="TRIS %i"
t="ISEU"
x=s % len(t)
```

What is the **type** of x after this program is executed?

(A) `None`

(B) `Integer`

(C) `Float`

(D) `String`

(E) `Boolean`

7. (1 point) Evaluate the following expression:

```
[1,2]*len("3")
```

What value is produced?

(A) `[1,2,1]`

(B) `[1,2,3]`

(C) `[1,2]`

(D) `[1,2,1,2,1,2]`

8. (1 point) Consider the following incomplete program.

```
sum=0
???:
    sum=sum+i
```

The program is intended to sum all of the integers between 1 and 100 (inclusive). What should replace the three question marks to complete the program?

(A) `for i in range(0,100)`

(B) `while i in range(100)`

(C) `for i in range(1,101)`

(D) `while i<=100`

9. (1 point) Consider the following program:

```
i=3
x=2
while i < 7:
    x+=i
    i+=2
```

What is the **value** of x after this program is executed?

(A) `12`

(B) `14`

(C) `10`

(D) `11`

(E) `13`

10. (1 point) Consider the following program:

```python
def fix(s):
    a=list(s)
    a.sort()
    return ''.join(a)

x=["one","two","eleven","twelve"]
s1=fix(x[0]+x[-1])
s2=fix(x[1]+x[-2])

if s1==s2:
    x.sort()
elif s1<s2:
    x.reverse()
else:
    x.append("six")
```

What is the **value** of x after this program is executed?

(A) ['one', 'two', 'eleven', 'twelve', 'six']

(B) ['one', 'two', 'eleven', 'twelve']

(C) ['twelve', 'eleven', 'two', 'one']

(D) ['eleven', 'one', 'twelve', 'two']

(E) ['two', 'twelve', 'one', 'eleven', 'six']

11. (1 point) Consider the following program:

```
x="KING ARTHUR-MORGANA LEFAY-SIR BEDIVERE".split("-")
y=x
x=y.reverse()
```

What is the **value** of x after this program is executed?

(A) ['SIR BEDIVERE', 'MORGANA LEFAY', 'KING ARTHUR']

(B) ['KING ARTHUR', 'MORGANA LEFAY', 'SIR BEDIVERE']

(C) ['KING', 'ARTHUR-MORGANA', 'LEFAY-SIR', 'BEDIVERE']

(D) ['BEDIVERE', 'LEFAY-SIR', 'ARTHUR-MORGANA', 'KING']

(E) None

12. (1 point) Evaluate the following expression:

```
len("ABCDE"[1:4])
```

What value is produced?

(A) 1

(B) 5

(C) 4

(D) 3

8

13. (1 point) Consider the following Python program.

```
e=[1,3,5,7,9,11]
d=[0,0,0]
for i in range(0,len(e)):
    d[i%3]+=e[i]
x=d[1]
```

After it is run, what is the final **value** of x?

  (A) 3

  (B) 12

  (C) 8

  (D) 16

  (E) 0

14. (1 point) Consider the following program:

```
a=["merlin","sir agravaine","king pellinore"]
b=[ ]
for i in range(0,4):
    b.append(a[0-i].title())
```

What is the **value** of b after this program is executed?

  (A) ['King Pellinore', 'Sir Agravaine', 'Merlin']

  (B) ['Merlin', 'King Pellinore', 'Sir Agravaine', 'Merlin']

  (C) ['Merlin', 'King Pellinore', 'Sir Agravaine']

  (D) ['Merlin', 'Sir Agravaine', 'King Pellinore', 'Merlin']

  (E) [ ]

15. (1 point) Consider the following program:

```
x=[1,2,3]
def f(a):
    s=""
    a.append(4)
    for i in a:
        s+=str(i)
    return s

x.append(f(x))
```

What is the **value** of x after this program is executed?

(A) [1, 2, 3, '1234']

(B) [1, 2, 3, 10]

(C) [1, 2, 3, 4, '1234']

(D) [1, 2, 3, '123']

(E) [1, 2, 3]

16. (1 point) Consider the following program:

```
x=[1,2,3,4,5,6,7,8,9]
x=x[2:-2]
i=1
while i < 3:
    x[i]+=1
    i+=1
```

What is the **value** of x after this program is executed?

(A) [2, 4, 5, 6, 6, 7]

(B) [2, 4, 5, 5, 6, 7]

(C) [3, 5, 6, 6, 7]

(D) [3, 5, 6, 6]

(E) [3, 5, 6, 6, 7, 8]

17. (1 point) Consider the following program.

```
s="BBCAA"
x=0
y=len(s)-1
while s[x]!=s[y] and x<len(s):
    x+=1
    y-=1
```

After it is run, what is the final **value** of x?

(A) 3

(B) 0

(C) 1

(D) 2

(E) 4

18. (1 point) For this problem, you should compose a function which accomplishes a given task using the available code blocks arranged in the correct functional order. *We ignore indentation for this problem.*
`find_max` should accept a `list` and return the value of the maximum item in the `list`. (`None` is always the lowest value in any numeric comparison, so you may use it as an initializer.)

```
def find_max(my_list):

1 max_val = i

2 max_val = None

3 for i in range(len(my_list)):

4 if i > max_val:

5 max_val = my_list[i]

6 return max_val

7 for i in range(my_list):

8 if my_list[i] > max_val:

9 print(max_val)
```

(A) 2, 3, 4, 1, 6

(B) 2, 7, 4, 5, 6

(C) 2, 3, 8, 5, 6

(D) 2, 3, 8, 1, 6

(E) 3, 2, 8, 5, 9

19. (1 point) Consider the following program:

```
a=3
b=4
if a!=b:
    a=b
elif a==4:
    a=5
else:
    b=a
```

What is the **value** of a after this program is executed?

(A) None of the other answers are correct.

(B) 3

(C) 4

(D) 7

(E) 5

20. (1 point) Consider the following program:

```
s="Calvin"
i=0
x=-1
while i<len(s):
    if s[i]=='b':
        x=i
    i+=1
```

What is the **value** of x after this program is executed?

(A) 3

(B) -1

(C) 0

(D) 6

(E) 5

21. (1 point) What is the result of the following expression?

```
[ 1, 2, 3 ] * 3
```

(A) [1.0, 2.0, 3.0, 1.0, 2.0, 3.0, 1.0, 2.0, 3.0]

(B) [1, 2, 3, 1, 2, 3, 1, 2, 3]

(C) [3.0, 6.0, 9.0]

(D) (3, 6, 9)

(E) [3, 6, 9]

22. (1 point) Consider the following incomplete Python program.

```python
s="".join(["0","1","2","1"])
x=0
for i in range(len(s)-1):
    x+=int(???)
```

What should replace the three question marks so the resulting value of x is 34?

(A) `s[i:i+2]`

(B) `s[i:i-1]`

(C) `s[i+1:i+2]`

(D) `s[i:i+1]`

23. (1 point) Consider the following program:

```python
x=0
for i in range(2,8):
    if i%3==0:
        x+=3
    elif i%2==0:
        x+=2
    else:
        x+=1
```

What is the **value** of x after this program is executed?

(A) 14

(B) 12

(C) 13

(D) 10

(E) 11

24. (1 point) Consider the following program.

```
x=0
i=1
while(i*i)<=9:
    x=x+(i*i)
    i=i+1
```

After it is run, what is the final **value** of x?

(A) 3

(B) 5

(C) 4

(D) 30

(E) 14

25. (1 point) Consider the following program:

```
pi="3.14159"
e="2.71828"
x=pi in pi*len(e)
```

What is the **type** of x after this program is executed?

(A) Float

(B) Boolean

(C) None

(D) String

(E) Integer

26. (1 point) Consider the following program:

```
s="ECTOR"
t="GAWAIN"
x=(len(s)+len(t)) < 4 and s in t
```

What is the **type** of x after this program is executed?

(A) Integer

(B) Boolean

(C) Float

(D) None

(E) String

27. (1 point) Consider the following program.

```
kay = 2
wart = 3

def knight(kay,wart):
    wart += 2
    kay += 3
    return wart + kay

wart = knight(kay, kay) + knight(wart, wart)
```

After it is run, what is the final **value** of wart?

(A) None of the other answers are correct.

(B) 3

(C) 2

(D) 5

18

28. (1 point) Consider the following program:

```
a=["A","C","C","I","O"]
a.sort()
a[0]=a[-1]
x=""
for e in a:
    x=x+e
```

What is the **value** of x after this program is executed?

(A) "OCCIO"

(B) "ICCOI"

(C) "ACCIA"

(D) "ACCOA"

(E) None of the other answers are correct.

29. (1 point) Consider the following program:

```
x=str("1"*3)
```

What is the **value** of x after this program is executed?

(A) 3

(B) "111"

(C) 111

(D) "3"

(E) None of the other answers are correct.

30. (1 point) Consider the following program.

```
x=[]
for j in range(0,5):
    if (j%4)==0:
        x.append("-")
    if (j%5)==0:
        x.append("*")
```

After it is run, what is the final **value** of x?

(A) ["-","-","*"]

(B) ["-","*"]

(C) None of the other answers are correct.

(D) ["-","*","-"]

(E) ["-","*","*"]

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CS101
midterm1

- **Be sure to enter your <u>NetID</u> and <u>the code below</u> on your Scantron**.

- Do not turn this page until instructed to do so.

- There are 30 questions, worth 1 point each.

- Each question has only **one** correct answer.

- You must not communicate with other students during this test.

- No books, notes, or electronic devices are permitted.

- This is a 60-minute exam.

- There are several different versions of this exam.

1. Fill in your information:

Full Name: _____

UIN (Student Number): _____

NetID: _____

2. Fill in the following answers on the Scantron form:

92. B

93. B

94. B

95. B

96. D

1. (1 point) Evaluate the following expression:

```
len("ABCD"[0:3])
```

What value is produced?

(A) 3

(B) 4

(C) 1

(D) 2

2. (1 point) Consider the following program:

```
x="KING ARTHUR-MORGANA LEFAY-SIR BEDIVERE".split("-")
y=x
y.reverse()
```

What is the **value** of x after this program is executed?

(A) ['KING', 'ARTHUR-MORGANA', 'LEFAY-SIR', 'BEDIVERE']

(B) ['SIR BEDIVERE', 'MORGANA LEFAY', 'KING ARTHUR']

(C) ['BEDIVERE', 'LEFAY-SIR', 'ARTHUR-MORGANA', 'KING']

(D) None

(E) ['KING ARTHUR', 'MORGANA LEFAY', 'SIR BEDIVERE']

3. (1 point) Consider the following program.

```
s="ABCBA"
x=0
y=len(s)-1
while s[x]==s[y] and x<y:
    x+=1
    y-=1
```

After it is run, what is the final **value** of x?

(A) 0

(B) 3

(C) 4

(D) 1

(E) 2

4. (1 point) Consider the following incomplete Python program.

```
s="".join(["1","0","2","1"])
x=0
for i in range(len(s)-1):
    x+=int(???)
```

What should replace the three question marks so the resulting value of x is 33?

(A) s[i+1:i+2]

(B) s[i:i+1]

(C) s[i:i+2]

(D) s[i:i-1]

5. (1 point) Consider the following program:

```
x=0
for i in range(2,8):
    if i%3==0:
        x+=3
    elif i%2==0:
        x+=2
    else:
        x+=1
```

What is the **value** of x after this program is executed?

(A) 14

(B) 10

(C) 13

(D) 12

(E) 11

6. (1 point) Consider the following program:

```
x=str(1.2)*2
```

What is the **value** of x after this program is executed?

(A) None of the other answers are correct.

(B) "2.4"

(C) 2.4

(D) "1.2*2"

(E) "1.21.2"

7. (1 point) For this problem, you should compose a function which accomplishes a given task using the available code blocks arranged in the correct functional order. *We ignore indentation for this problem.*

`find_max` should accept a `list` and return the value of the maximum item in the `list`. (`None` is always the lowest value in any numeric comparison, so you may use it as an initializer.)

```
def find_max(my_list):
```

1 `max_val = i`

2 `max_val = None`

3 `for i in range(len(my_list)):`

4 `if i > max_val:`

5 `max_val = my_list[i]`

6 `return max_val`

7 `for i in range(my_list):`

8 `if my_list[i] > max_val:`

9 `print(max_val)`

  (A) 2, 3, 4, 1, 6

  (B) 2, 3, 8, 1, 6

  (C) 2, 3, 8, 5, 6

  (D) 3, 2, 8, 5, 9

  (E) 2, 7, 4, 5, 6

8. (1 point) Consider the following program:

```
s="G+R+A+I+L"
x=s.split("+")[1:-2]
```

What is the **value** of x after this program is executed?

 (A) `False`

 (B) `['R','A']`

 (C) `'RAI'`

 (D) `3`

 (E) `None`

9. (1 point) Consider the following incomplete program.

```
sum=0
for i in range(0,100):
    ???
```

The program is intended to sum all of the integers between 1 and 100 (inclusive). What should replace the three question marks to complete the program?

 (A) `sum+1=sum`

 (B) `sum=sum+i+1`

 (C) `sum=sum+1`

 (D) `sum=sum+i`

10. (1 point) Consider the following program:

```
x=3
a=5
if (a%3)==2:
    x=x**3
elif(a%3)==1:
    x=x**2
else:
    x=x**1
```

What is the **value** of x after this program is executed?

(A) 9

(B) 1

(C) None of the other answers are correct.

(D) 3

(E) 27

11. (1 point) Consider the following program:

```
s="TRIS %i"
t="ISEU"
x=len(s) % len(t[2:-1])
```

What is the **type** of x after this program is executed?

(A) None

(B) Boolean

(C) String

(D) Float

(E) Integer

12. (1 point) Consider the following program:

```
pi="3.14159"
e="2.71828"
x=pi in pi*len(e)
```

What is the **type** of x after this program is executed?

(A) String

(B) Float

(C) None

(D) Integer

(E) Boolean

13. (1 point) Consider the following program:

```
i=3
x=2
while i < 7:
    x+=i
    i+=2
```

What is the **value** of x after this program is executed?

(A) 14

(B) 12

(C) 10

(D) 11

(E) 13

14. (1 point) How can the following mathematical equation be implemented as a Python expression? Assume `a`, `b`, and `sin` have already been defined.

$$a \sin(a^b - b)$$

(A) None of the other answers are correct.

(B) `a*sin(a^b - b)`

(C) `a*sin(b^a - b)`

(D) `a sin(a**b - b)`

(E) `a*sin(a**b - b)`

15. (1 point) Consider the following program:

```python
def fix(s):
    a=list(s)
    a.sort()
    return ''.join(a)

x=["one","two","eleven","twelve"]
s1=fix(x[0]+x[-1])
s2=fix(x[1]+x[-2])

if s1<s2:
    x.sort()
elif s1==s2:
    x.reverse()
else:
    x.append("six")
```

What is the **value** of x after this program is executed?

(A) ['eleven', 'one', 'twelve', 'two']

(B) ['two', 'twelve', 'one', 'eleven', 'six']

(C) ['one', 'two', 'eleven', 'twelve']

(D) ['one', 'two', 'eleven', 'twelve', 'six']

(E) ['twelve', 'eleven', 'two', 'one']

16. (1 point) What is the result of the following expression?

[1, 2, 3] * 3

(A) [3.0, 6.0, 9.0]

(B) (3, 6, 9)

(C) [1, 2, 3, 1, 2, 3, 1, 2, 3]

(D) [3, 6, 9]

(E) [1.0, 2.0, 3.0, 1.0, 2.0, 3.0, 1.0, 2.0, 3.0]

17. (1 point) Evaluate the following expression:

[1,2]+[len("3")]

What value is produced?

(A) [1,2,1]

(B) [1,2,3]

(C) [1,2,"3"]

(D) [1,2,1,2,1,2]

18. (1 point) Consider the following program.

```
x=1
i=0
while(x*x)<=9:
    i=i+(x*x)
    x=x+1
```

After it is run, what is the final **value** of x?

(A) 5

(B) 14

(C) 4

(D) 3

(E) 30

19. (1 point) Consider the following program.

```
def artificing(s):
    return s*2
    return s+"%i" % 2
    return s

s=artificing("MERLIN")
```

After it is run, what is the final **value** of s?

(A) "MERLIN"

(B) "MERLIN2"

(C) 12

(D) "MERLINMERLIN"

(E) None

20. (1 point) Consider the following program:

```
x=[1,2,3,4,5,6,7,8,9]
x=x[2:-2]
i=1
while i < 3:
    x[i]+=1
    i+=1
```

What is the **value** of x after this program is executed?

(A) [3, 5, 6, 6, 7, 8]

(B) [3, 5, 6, 6]

(C) [2, 4, 5, 5, 6, 7]

(D) [2, 4, 5, 6, 6, 7]

(E) [3, 5, 6, 6, 7]

21. (1 point) Consider the following program.

```
x=[]
for j in range(0,5):
    if (j%3)==0:
        x.append("-")
    if (j%4)==0:
        x.append("*")
```

After it is run, what is the final **value** of x?

(A) ["-","*"]

(B) None of the other answers are correct.

(C) ["-","*","-","*"]

(D) ["*","-","*"]

(E) ["*","-","*"]

22. (1 point) Consider the following Python program.

```
e=[1,3,5,7,9,11]
d=[0,0,0]
for i in range(0,len(e)):
    d[i%3]+=e[i]
x=d[1]
```

After it is run, what is the final **value** of x?

(A) 12

(B) 8

(C) 16

(D) 3

(E) 0

23. (1 point) Consider the following program:

```
a=3
b=4
if a==3:
    b=a
elif a==4:
    a=5
else:
    a=b
```

What is the **value** of a after this program is executed?

(A) 7

(B) 5

(C) 4

(D) None of the other answers are correct.

(E) 3

24. (1 point) Consider the following program:

```
a=["S","T","U","P","E","F","Y"]
a=a[0:4]
a.sort()
x=""
for e in a:
    x=e+x
```

What is the **value** of x after this program is executed?

(A) None of the other answers are correct.

(B) "PSTU"

(C) "UTSP"

(D) "STUP"

(E) "PUST"

25. (1 point) Consider the following program:

```
s="ECTOR"
t="GAWAIN"
x=(len(s)/(len(t)-1))+1
```

What is the **type** of x after this program is executed?

(A) Float

(B) Boolean

(C) String

(D) Integer

(E) None

26. (1 point) Consider the following program:

```
x=[1,2,3]
def f(a):
    s=""
    a.append(4)
    for i in a:
        s+=str(i)
    return s


x.append(f(x))
```

What is the **value** of x after this program is executed?

(A) [1, 2, 3, 4, '1234']

(B) [1, 2, 3, '1234']

(C) [1, 2, 3, '123']

(D) [1, 2, 3, 10]

(E) [1, 2, 3]

27. (1 point) Consider the following program:

```
a=["merlin","sir agravaine","king pellinore"]
b=[ ]
for i in range(0,3):
    b.append(a[0-i].title())
```

What is the **value** of b after this program is executed?

(A) ['King Pellinore', 'Sir Agravaine', 'Merlin']

(B) ['King Pellinore', 'Sir Agravaine']

(C) ['Sir Agravaine', 'King Pellinore']

(D) [ ]

(E) ['Merlin', 'King Pellinore', 'Sir Agravaine']

28. (1 point) Consider the following incomplete function.

```
def isdivisible(m,n):
    if ???:
        return False
    else:
        return True
```

The function is intended to return True if the input parameter m is evenly divisible by the parameter n and False otherwise. For example, `isdivisible(4,2)` should return `True`, but `isdivisible(5,3)` should return `False`. What should replace the three question marks to complete the function?

(A) (m // n) != 0

(B) (n // m) == 0

(C) (m % n) != 0

(D) (n % m) == 0

29. (1 point) Consider the following program.

```python
kay = 2
wart = 3

def knight(kay,wart):
    wart += 2
    kay += 3
    return wart + kay

kay = knight(wart, kay) + knight(kay, wart)
```

After it is run, what is the final **value** of `kay`?

(A) 5

(B) 3

(C) None of the other answers are correct.

(D) 2

19

30. (1 point) Consider the following program:

```
s="Calvin"
i=0
x=-1
while i<len(s):
    if s[i]=='b':
        x=i
    i+=1
```

What is the **value** of x after this program is executed?

(A) 0

(B) 5

(C) 3

(D) -1

(E) 6

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CS101 midterm1

- **Be sure to enter your <u>NetID</u> and <u>the code below</u> on your Scantron**.

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- There are several different versions of this exam.

1. Fill in your information:

Full Name: _____

UIN (Student Number): _____

NetID: _____

2. Fill in the following answers on the Scantron form:

92. C

93. B

94. B

95. C

96. E

1

1. (1 point) Consider the following incomplete Python program.

```
s="".join(["2","2","0","1"])
x=0
for i in range(len(s)-1):
    x+=int(???)
```

What should replace the three question marks so the resulting value of x is 43?

(A) `s[i+1:i+2]`

(B) `s[i:i+1]`

(C) `s[i:i-1]`

(D) `s[i:i+2]`

2. (1 point) How can the following mathematical equation be implemented as a Python expression? Assume `a`, `b`, and `sin` have already been defined.

$$a\sin(a^b - b)$$

(A) None of the other answers are correct.

(B) `a sin(a**b - b)`

(C) `a*sin(a**b - b)`

(D) `a*sin(a^b - b)`

(E) `a*sin(b^a - b)`

3. (1 point) Consider the following program:

```
x=0
for i in range(2,8):
    if i%3==0:
        x+=3
    elif i%2==0:
        x+=2
    else:
        x+=1
```

What is the **value** of x after this program is executed?

(A) 10

(B) 12

(C) 13

(D) 11

(E) 14

4. (1 point) Consider the following program:

```
s="Hobbes"
i=0
x=-1
while i<len(s):
    if s[i]=='b':
        x=i
    i+=1
```

What is the **value** of x after this program is executed?

(A) 2

(B) 3

(C) -1

(D) 4

(E) 5

5. (1 point) Consider the following Python program.

```
e=[1,3,5,7,9,11]
d=[0,0,0]
for i in range(0,len(e)):
    d[i%3]+=e[i]
x=d[1]
```

After it is run, what is the final **value** of x?

 (A) 0

 (B) 16

 (C) 12

 (D) 3

 (E) 8

6. (1 point) Evaluate the following expression:

```
len("ABCD"[0:3])
```

What value is produced?

 (A) 1

 (B) 2

 (C) 3

 (D) 4

7. (1 point)

```
x=str(3)+"str(3)"
```

What is the **value** of x after this program is executed?

(A) 33

(B) "3str(3)"

(C) "33"

(D) None of the other answers are correct.

(E) "333"

8. (1 point) Consider the following program:

```
s="-B-O-R-S-"
x=s.split("-")[2:-2]
```

What is the **value** of x after this program is executed?

(A) None

(B) ''

(C) ['O', 'R']

(D) 'ORS'

(E) False

9. (1 point) For this problem, you should compose a function which accomplishes a given task using the available code blocks arranged in the correct functional order. *We ignore indentation for this problem.*

find_max should accept a list and return the value of the maximum item in the list. (None is always the lowest value in any numeric comparison, so you may use it as an initializer.)

```
def find_max(my_list):

1 max_val = i

2 max_val = None

3 for i in range(len(my_list)):

4 if i > max_val:

5 max_val = my_list[i]

6 return max_val

7 for i in range(my_list):

8 if my_list[i] > max_val:

9 print(max_val)
```

 (A) 2, 3, 8, 1, 6

 (B) 3, 2, 8, 5, 9

 (C) 2, 3, 8, 5, 6

 (D) 2, 3, 4, 1, 6

 (E) 2, 7, 4, 5, 6

10. (1 point) Consider the following program:

```
s="ECTOR"
t="GAWAIN"
x=(len(s)+len(t)) < 4 and s in t
```

What is the **type** of x after this program is executed?

(A) Integer

(B) Boolean

(C) Float

(D) String

(E) None

11. (1 point) Consider the following program:

```
x=[2,3,4,5,6,7,8,9]
x=x[2:-2]
i=1
while i <= 3:
    x[i]+=1
    i+=1
```

What is the **value** of x after this program is executed?

(A) [3, 4, 6, 7, 8]

(B) [2, 4, 6, 6]

(C) [4, 6, 7, 8]

(D) [4, 6, 7]

(E) [4, 6, 7, 7]

12. (1 point) Consider the following program:

```
def fix(s):
    a=list(s)
    a.sort()
    return ''.join(a)

x=["one","two","eleven","twelve"]
s1=fix(x[0]+x[-1])
s2=fix(x[1]+x[-2])

if s1<s2:
    x.sort()
elif s1==s2:
    x.reverse()
else:
    x.append("six")
```

What is the **value** of x after this program is executed?

(A) ['twelve', 'eleven', 'two', 'one']

(B) ['one', 'two', 'eleven', 'twelve']

(C) ['eleven', 'one', 'twelve', 'two']

(D) ['two', 'twelve', 'one', 'eleven', 'six']

(E) ['one', 'two', 'eleven', 'twelve', 'six']

13. (1 point) Consider the following program.

```
x=[]
for j in range(0,5):
    if (j%3)==0:
        x.append("-")
    if (j%4)==0:
        x.append("*")
```

After it is run, what is the final **value** of x?

(A) ["-","*","-","*"]

(B) None of the other answers are correct.

(C) ["*","-","*"]

(D) ["-","*"]

(E) ["*","-","*"]

14. (1 point) Consider the following program:

```
s="TRIS %i"
t="ISEU"
x=len(s) % len(t[2:-1])
```

What is the **type** of x after this program is executed?

(A) None

(B) Integer

(C) Float

(D) Boolean

(E) String

15. (1 point) Consider the following incomplete function.

```
def ismultiple(m,n):
    if ???:
        return False
    else:
        return True
```

The function is intended to return True if the input parameter m is a multiple of parameter n and False otherwise. For example, `ismultiple(4,2)` should return `True`, but `ismultiple(5,3)` should return `False`. What should replace the three question marks to complete the function?

(A) `(m % n) != 0`

(B) `(n % m) == 0`

(C) `(m // n) != 0`

(D) `(n // m) == 0`

16. (1 point) Consider the following program.

```
def artificing(s):
    return s+"%i" % 2
    return s*2
    return s

s=artificing("MERLIN")
```

After it is run, what is the final **value** of s?

(A) `"MERLINMERLIN"`

(B) `"MERLIN%i"`

(C) `0`

(D) `"MERLIN2"`

(E) `None`

17. (1 point) Consider the following incomplete program.

```
sum=0
???:
    sum=sum+i
```

The program is intended to sum all of the integers between 1 and 100 (inclusive). What should replace the three question marks to complete the program?

(A) `while i<=100`

(B) `for i in range(0,100)`

(C) `for i in range(1,101)`

(D) `while i in range(100)`

18. (1 point) Consider the following program:

```
a=3
b=4
if a==3:
    a=b
elif a==4:
    a=5
else:
    b=a
```

What is the **value** of a after this program is executed?

(A) 5

(B) None of the other answers are correct.

(C) 7

(D) 3

(E) 4

19. (1 point) Consider the following program:

```
a=["merlin","sir agravaine","king pellinore"]
b=[ ]
for i in range(0,3):
    b.append(a[0-i].title())
```

What is the **value** of b after this program is executed?

(A) ['King Pellinore', 'Sir Agravaine']

(B) ['Merlin', 'King Pellinore', 'Sir Agravaine']

(C) ['King Pellinore', 'Sir Agravaine', 'Merlin']

(D) [ ]

(E) ['Sir Agravaine', 'King Pellinore']

20. (1 point) Consider the following program:

```
a=["A","C","C","I","O"]
a.sort()
a[0]=a[-1]
x=""
for e in a:
    x=x+e
```

What is the **value** of x after this program is executed?

(A) "ICCOI"

(B) "OCCIO"

(C) None of the other answers are correct.

(D) "ACCIA"

(E) "ACCOA"

21. (1 point) Consider the following program:

```
x=[1,2,3]
def f(a):
    s=""
    a.append(4)
    for i in a:
        s+=str(i)
    return s

x.append(f(x))
```

What is the **value** of x after this program is executed?

(A) [1, 2, 3]

(B) [1, 2, 3, '1234']

(C) [1, 2, 3, 10]

(D) [1, 2, 3, 4, '1234']

(E) [1, 2, 3, '123']

22. (1 point) Consider the following program.

```
s="ABCBA"
x=0
y=len(s)-1
while s[x]==s[y] and x<=y:
    x+=1
    y-=1
```

After it is run, what is the final **value** of x?

(A) 4

(B) 2

(C) 1

(D) 3

(E) 0

23. (1 point) Consider the following program.

```
kay = 2
wart = 3

def knight(kay,wart):
    wart += 2
    kay += 3
    return wart + kay

wart = knight(kay, kay) + knight(wart, wart)
```

After it is run, what is the final **value** of wart?

(A) 3

(B) 5

(C) None of the other answers are correct.

(D) 2

24. (1 point) Consider the following program:

```
i=2
x=3
while i < 7:
    x+=i
    i+=2
```

What is the **value** of x after this program is executed?

(A) 12

(B) 13

(C) 14

(D) 11

(E) 15

25. (1 point) Consider the following program:

```
pi="3.14159"
e="2.71828"
x=pi*len(e)+pi
```

What is the **type** of x after this program is executed?

(A) Boolean

(B) Float

(C) Integer

(D) String

(E) None

26. (1 point) Evaluate the following expression:

`[1,2]*len("3")`

What value is produced?

(A) `[1,2,1]`

(B) `[1,2,1,2,1,2]`

(C) `[1,2]`

(D) `[1,2,3]`

27. (1 point) Consider the following program.

```
x=1
i=0
while(x*x)<=9:
    i=i+(x*x)
    x=x+1
```

After it is run, what is the final **value** of x?

(A) 3

(B) 5

(C) 14

(D) 30

(E) 4

28. (1 point) Consider the following program:

```
x="KING ARTHUR-MORGANA LEFAY-SIR BEDIVERE".split("-")
y=x[:]
y.reverse()
```

What is the **value** of x after this program is executed?

(A) ['KING ARTHUR', 'MORGANA LEFAY', 'SIR BEDIVERE']

(B) ['KING', 'ARTHUR-MORGANA', 'LEFAY-SIR', 'BEDIVERE']

(C) None

(D) ['BEDIVERE', 'LEFAY-SIR', 'ARTHUR-MORGANA', 'KING']

(E) ['SIR BEDIVERE', 'MORGANA LEFAY', 'KING ARTHUR']

29. (1 point) Consider the following program:

```
x=2
a=6
if (a%3)==2:
    x=x**3
elif(a%3)==1:
    x=x**2
else:
    x=x**1
```

What is the **value** of x after this program is executed?

(A) 2

(B) 8

(C) 4

(D) 16

(E) None of the other answers are correct.

30. (1 point) What is the result of the following expression?

[1, 2, 3] * 3

  (A) (3, 6, 9)

  (B) [1, 2, 3, 1, 2, 3, 1, 2, 3]

  (C) [3.0, 6.0, 9.0]

  (D) [1.0, 2.0, 3.0, 1.0, 2.0, 3.0, 1.0, 2.0, 3.0]

  (E) [3, 6, 9]

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CS101
midterm1

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1. Fill in your information:

Full Name: _____

UIN (Student Number): _____

NetID: _____

2. Fill in the following answers on the Scantron form:

92. D

93. B

94. B

95. D

96. A

1. (1 point) Consider the following program:

```
x=[1,2,3,4,5,6,7,8,9]
x=x[2:-2]
i=1
while i <= 3:
    x[i]+=1
    i+=1
```

What is the **value** of x after this program is executed?

(A) [3, 5, 6, 7, 7, 8]

(B) [3, 5, 6, 7, 7]

(C) [3, 5, 7, 7]

(D) [2, 4, 5, 5, 7, 7]

(E) [2, 4, 5, 6, 7, 7]

2. (1 point) Evaluate the following expression:

```
[1,2]*len("3")
```

What value is produced?

(A) [1,2,1]

(B) [1,2,1,2,1,2]

(C) [1,2]

(D) [1,2,3]

2

3. (1 point) Consider the following program.

```
s="ABCBA"
x=0
y=len(s)-1
while s[x]==s[y] and x<y:
    x+=1
    y-=1
```

After it is run, what is the final **value** of x?

(A) 2

(B) 1

(C) 0

(D) 3

(E) 4

4. (1 point) Consider the following program:

```
s="ECTOR"
t="GAWAIN"
x=len(str(s.isupper()))-t.find("A")
```

What is the **type** of x after this program is executed?

(A) Boolean

(B) None

(C) Float

(D) Integer

(E) String

5. (1 point) Consider the following program:

```
x=str("1"*3)
```

What is the **value** of x after this program is executed?

(A) "3"

(B) "111"

(C) 111

(D) 3

(E) None of the other answers are correct.

6. (1 point) Consider the following incomplete Python program.

```
s="".join(["1","0","2","1"])
x=0
for i in range(len(s)-1):
    x+=int(???)
```

What should replace the three question marks so the resulting value of x is 33?

(A) s[i:i+1]

(B) s[i:i+2]

(C) s[i:i-1]

(D) s[i+1:i+2]

7. (1 point) For this problem, you should compose a function which accomplishes a given task using the available code blocks arranged in the correct functional order. *We ignore indentation for this problem.*

`find_max` should accept a `list` and return the value of the maximum item in the `list`. (`None` is always the lowest value in any numeric comparison, so you may use it as an initializer.)

```
def find_max(my_list):

1 max_val = i

2 max_val = None

3 for i in range(len(my_list)):

4 if i > max_val:

5 max_val = my_list[i]

6 return max_val

7 for i in range(my_list):

8 if my_list[i] > max_val:

9 print(max_val)
```

(A) 3, 2, 8, 5, 9

(B) 2, 3, 8, 5, 6

(C) 2, 3, 8, 1, 6

(D) 2, 7, 4, 5, 6

(E) 2, 3, 4, 1, 6

8. (1 point) How can the following mathematical equation be implemented as a Python expression? Assume `a`, `b`, and `sin` have already been defined.

$$a \sin(a^b - b)$$

(A) `a*sin(a**b - b)`

(B) `a*sin(b^a - b)`

(C) `a*sin(a^b - b)`

(D) None of the other answers are correct.

(E) `a sin(a**b - b)`

9. (1 point) Consider the following program.

```
x=0
i=1
while(i*i)<=9:
    x=x+(i*i)
    i=i+1
```

After it is run, what is the final **value** of `x`?

(A) 3

(B) 4

(C) 5

(D) 30

(E) 14

10. (1 point) Consider the following program:

```
s="TRIS %i"
t="ISEU"
x=s % len(t)
```

What is the **type** of x after this program is executed?

(A) None

(B) Float

(C) Boolean

(D) String

(E) Integer

11. (1 point) Consider the following program:

```
x=[1,2,3]
def f(a):
    s=""
    a.append(4)
    for i in a:
        s+=str(i)
    return s


x.append(f(x))
```

What is the **value** of x after this program is executed?

 (A) [1, 2, 3]

 (B) [1, 2, 3, 4, '1234']

 (C) [1, 2, 3, '1234']

 (D) [1, 2, 3, '123']

 (E) [1, 2, 3, 10]

12. (1 point) Consider the following program:

```
s="G+R+A+I+L"
x=s.split("+")[1:-2]
```

What is the **value** of x after this program is executed?

 (A) 'RAI'

 (B) ['R','A']

 (C) False

 (D) None

 (E) 3

13. (1 point) What is the result of the following expression?

```
[ 1, 2, 3 ] * 3
```

 (A) (3, 6, 9)

 (B) [1.0, 2.0, 3.0, 1.0, 2.0, 3.0, 1.0, 2.0, 3.0]

 (C) [1, 2, 3, 1, 2, 3, 1, 2, 3]

 (D) [3.0, 6.0, 9.0]

 (E) [3, 6, 9]

14. (1 point) Consider the following program:

```
a=3
b=4
if a==3:
    a=b
elif a==4:
    a=5
else:
    b=a
```

What is the **value** of a after this program is executed?

 (A) 3

 (B) 4

 (C) 7

 (D) 5

 (E) None of the other answers are correct.

15. (1 point) Consider the following program:

```
pi="3.14159"
e="2.71828"
x=pi in pi*len(e)
```

What is the **type** of x after this program is executed?

(A) None

(B) String

(C) Boolean

(D) Integer

(E) Float

16. (1 point) Consider the following incomplete program.

```
sum=0
for i in range(0,100):
    ???
```

The program is intended to sum all of the integers between 1 and 100 (inclusive). What should replace the three question marks to complete the program?

(A) sum+1=sum

(B) sum=sum+i+1

(C) sum=sum+i

(D) sum=sum+1

17. (1 point) Consider the following program:

```
i=3
x=2
while i < 7:
    x+=i
    i+=2
```

What is the **value** of x after this program is executed?

(A) 10

(B) 12

(C) 14

(D) 13

(E) 11

18. (1 point) Consider the following program:

```
a=["S","T","U","P","E","F","Y"]
a=a[0:4]
a.sort()
x=""
for e in a:
    x=e+x
```

What is the **value** of x after this program is executed?

(A) None of the other answers are correct.

(B) "STUP"

(C) "PSTU"

(D) "UTSP"

(E) "PUST"

19. (1 point) Consider the following program.

```
x=[]
for j in range(0,5):
    if (j%2)==0:
        x.append("-")
    if (j%5)==0:
        x.append("*")
```

After it is run, what is the final **value** of x?

(A) ["*","-","*","*"]

(B) ["-","*","-"]

(C) None of the other answers are correct.

(D) ["-","*","-","-"]

(E) ["-","-","*"]

20. (1 point) Evaluate the following expression:

```
len("ABCD"[0:3])
```

What value is produced?

(A) 4

(B) 3

(C) 1

(D) 2

21. (1 point) Consider the following program.

```
kay = 2
wart = 3

def knight(kay,wart):
    wart += 2
    kay += 3
    return wart + kay

wart = knight(kay, kay) + knight(wart, wart)
```

After it is run, what is the final **value** of `wart`?

 (A) None of the other answers are correct.

 (B) 3

 (C) 5

 (D) 2

22. (1 point) Consider the following program:

```
x=2
a=6
if (a%3)==2:
    x=x**3
elif(a%3)==1:
    x=x**2
else:
    x=x**1
```

What is the **value** of x after this program is executed?

(A) 4

(B) 2

(C) None of the other answers are correct.

(D) 8

(E) 16

23. (1 point) Consider the following incomplete function.

```
def ismultiple(m,n):
    if ???:
        return False
    else:
        return True
```

The function is intended to return True if the input parameter m is a multiple of parameter n and False otherwise. For example, `ismultiple(4,2)` should return `True`, but `ismultiple(5,3)` should return `False`. What should replace the three question marks to complete the function?

(A) `(m % n) != 0`

(B) `(m // n) != 0`

(C) `(n % m) == 0`

(D) `(n // m) == 0`

24. (1 point) Consider the following program:

```
x=0
for i in range(2,7):
    if i%3==0:
        x+=3
    elif i%2==0:
        x+=2
    else:
        x+=1
```

What is the **value** of x after this program is executed?

(A) 11

(B) 12

(C) 14

(D) 13

(E) 10

25. (1 point) Consider the following program.

```
def artificing(s):
    return s*2
    return s+"%i" % 2
    return s
```

```
s=artificing("MERLIN")
```

After it is run, what is the final **value** of s?

(A) `None`

(B) `"MERLINMERLIN"`

(C) `"MERLIN2"`

(D) `"MERLIN"`

(E) `12`

26. (1 point) Consider the following Python program.

```
e=[1,3,5,7,9,11]
d=[0,0,0]
for i in range(0,len(e)):
    d[i%3]+=e[i]
x=d[1]
```

After it is run, what is the final **value** of x?

(A) `12`

(B) `3`

(C) `16`

(D) `8`

(E) `0`

27. (1 point) Consider the following program:

```
x="KING ARTHUR-MORGANA LEFAY-SIR BEDIVERE".split("-")
y=x
y.reverse()
```

What is the **value** of x after this program is executed?

(A) ['KING ARTHUR', 'MORGANA LEFAY', 'SIR BEDIVERE']

(B) None

(C) ['KING', 'ARTHUR-MORGANA', 'LEFAY-SIR', 'BEDIVERE']

(D) ['SIR BEDIVERE', 'MORGANA LEFAY', 'KING ARTHUR']

(E) ['BEDIVERE', 'LEFAY-SIR', 'ARTHUR-MORGANA', 'KING']

28. (1 point) Consider the following program:

```
s="Hobbes"
i=0
x=-1
while i<len(s):
    if s[i]=='b':
         x=i
    i+=1
```

What is the **value** of x after this program is executed?

(A) 2

(B) 4

(C) -1

(D) 3

(E) 5

29. (1 point) Consider the following program:

```python
def fix(s):
    a=list(s)
    a.sort()
    return ''.join(a)

x=["one","two","eleven","twelve"]
s1=fix(x[0]+x[-1])
s2=fix(x[1]+x[-2])

if s1<s2:
    x.sort()
elif s1>s2:
    x.reverse()
else:
    x.append("six")
```

What is the **value** of x after this program is executed?

(A) ['one', 'two', 'eleven', 'twelve', 'six']

(B) ['one', 'two', 'eleven', 'twelve']

(C) ['eleven', 'one', 'twelve', 'two']

(D) ['twelve', 'eleven', 'two', 'one']

(E) ['two', 'twelve', 'one', 'eleven', 'six']

30. (1 point) Consider the following program:

```
a=["merlin","sir agravaine","king pellinore"]
b=[ ]
for i in range(0,3):
    b.append(a[0-i].title())
```

What is the **value** of b after this program is executed?

(A) ['King Pellinore', 'Sir Agravaine', 'Merlin']

(B) ['King Pellinore', 'Sir Agravaine']

(C) [ ]

(D) ['Sir Agravaine', 'King Pellinore']

(E) ['Merlin', 'King Pellinore', 'Sir Agravaine']

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CS101
midterm1

- **Be sure to enter your <u>NetID</u> and <u>the code below</u> on your Scantron**.

- Do not turn this page until instructed to do so.

- There are 30 questions, worth 1 point each.

- Each question has only **one** correct answer.

- You must not communicate with other students during this test.

- No books, notes, or electronic devices are permitted.

- This is a 60-minute exam.

- There are several different versions of this exam.

1. Fill in your information:

Full Name: _____

UIN (Student Number): _____

NetID: _____

2. Fill in the following answers on the Scantron form:

92. E

93. B

94. B

95. E

96. B

1. (1 point) What is the result of the following expression?

`[ 1, 2, 3 ] * 3`

  (A) (3, 6, 9)

  (B) [3.0, 6.0, 9.0]

  (C) [1, 2, 3, 1, 2, 3, 1, 2, 3]

  (D) [1.0, 2.0, 3.0, 1.0, 2.0, 3.0, 1.0, 2.0, 3.0]

  (E) [3, 6, 9]

2. (1 point) Consider the following Python program.

```
e=[1,3,5,7,9,11]
d=[0,0,0]
for i in range(0,len(e)):
    d[i%3]+=e[i]
x=d[2]
```

After it is run, what is the final **value** of x?

  (A) 0

  (B) 16

  (C) 8

  (D) 7

  (E) 12

3. (1 point) Consider the following program:

```
x="KING ARTHUR-MORGANA LEFAY-SIR BEDIVERE".split("-")
y=x
x=y.reverse()
```

What is the **value** of x after this program is executed?

 (A) ['KING ARTHUR', 'MORGANA LEFAY', 'SIR BEDIVERE']

 (B) ['KING', 'ARTHUR-MORGANA', 'LEFAY-SIR', 'BEDIVERE']

 (C) ['BEDIVERE', 'LEFAY-SIR', 'ARTHUR-MORGANA', 'KING']

 (D) ['SIR BEDIVERE', 'MORGANA LEFAY', 'KING ARTHUR']

 (E) None

4. (1 point) Evaluate the following expression:

```
[1,2]+[len("3")]
```

What value is produced?

 (A) [1,2,"3"]

 (B) [1,2,3]

 (C) [1,2,1]

 (D) [1,2,1,2,1,2]

3

5. (1 point) Consider the following program:

```
a=["A","C","C","I","O"]
a.sort()
a[0]=a[-1]
x=""
for e in a:
    x=x+e
```

What is the **value** of x after this program is executed?

(A) None of the other answers are correct.

(B) `"ACCOA"`

(C) `"ICCOI"`

(D) `"ACCIA"`

(E) `"OCCIO"`

6. (1 point) Consider the following incomplete function.

```
def isdivisible(m,n):
    if ???:
        return False
    else:
        return True
```

The function is intended to return True if the input parameter m is evenly divisible by the parameter n and False otherwise. For example, `isdivisible(4,2)` should return `True`, but `isdivisible(5,3)` should return `False`. What should replace the three question marks to complete the function?

(A) (m % n) != 0

(B) (n % m) == 0

(C) (m // n) != 0

(D) (n // m) == 0

7. (1 point) Consider the following program.

```
x=[]
for j in range(0,5):
    if (j%4)==0:
        x.append("-")
    if (j%5)==0:
        x.append("*")
```

After it is run, what is the final **value** of x?

(A) `["-","-","*"]`

(B) `["-","*"]`

(C) None of the other answers are correct.

(D) `["-","*","*"]`

(E) `["-","*","-"]`

8. (1 point) Consider the following program:

```
x=2
a=6
if (a%3)==2:
    x=x**3
elif(a%3)==1:
    x=x**2
else:
    x=x**1
```

What is the **value** of x after this program is executed?

(A) 4

(B) 8

(C) None of the other answers are correct.

(D) 16

(E) 2

9. (1 point) Consider the following program:

```
x=[1,2,3,4,5,6,7,8,9]
x=x[2:-2]
i=1
while i <= 3:
    x[i]+=1
    i+=1
```

What is the **value** of x after this program is executed?

(A) [2, 4, 5, 6, 7, 7]

(B) [3, 5, 6, 7, 7]

(C) [3, 5, 6, 7, 7, 8]

(D) [2, 4, 5, 5, 7, 7]

(E) [3, 5, 7, 7]

10. (1 point) Consider the following program:

```
x=[1,2,3]
def f(a):
    s=""
    a.append(4)
    for i in a:
        s+=str(i)
    return s


x.append(f(x))
```

What is the **value** of x after this program is executed?

(A) [1, 2, 3, 4, '1234']

(B) [1, 2, 3, 10]

(C) [1, 2, 3, '1234']

(D) [1, 2, 3]

(E) [1, 2, 3, '123']

11. (1 point) Consider the following program:

```python
def fix(s):
    a=list(s)
    a.sort()
    return ''.join(a)

x=["one","two","eleven","twelve"]
s1=fix(x[0]+x[-1])
s2=fix(x[1]+x[-2])

if s1<s2:
    x.sort()
elif s1==s2:
    x.reverse()
else:
    x.append("six")
```

What is the **value** of x after this program is executed?

(A) ['one', 'two', 'eleven', 'twelve']

(B) ['eleven', 'one', 'twelve', 'two']

(C) ['twelve', 'eleven', 'two', 'one']

(D) ['two', 'twelve', 'one', 'eleven', 'six']

(E) ['one', 'two', 'eleven', 'twelve', 'six']

12. (1 point) Consider the following incomplete program.

```
sum=0
for i in range(0,100):
    ???
```

The program is intended to sum all of the integers between 1 and 100 (inclusive). What should replace the three question marks to complete the program?

(A) `sum=sum+1`

(B) `sum+1=sum`

(C) `sum=sum+i`

(D) `sum=sum+i+1`

13. (1 point) Consider the following program:

```
s="Hobbes"
i=0
x=-1
while i<len(s):
    if s[i]=='b':
        x=i
    i+=1
```

What is the **value** of `x` after this program is executed?

(A) 2

(B) 4

(C) 5

(D) -1

(E) 3

14. (1 point) For this problem, you should compose a function which accomplishes a given task using the available code blocks arranged in the correct functional order. *We ignore indentation for this problem.*

find_max should accept a list and return the value of the maximum item in the list. (None is always the lowest value in any numeric comparison, so you may use it as an initializer.)

```
def find_max(my_list):

1 max_val = i

2 max_val = None

3 for i in range(len(my_list)):

4 if i > max_val:

5 max_val = my_list[i]

6 return max_val

7 for i in range(my_list):

8 if my_list[i] > max_val:

9 print(max_val)
```

(A) 2, 3, 8, 5, 6

(B) 2, 3, 8, 1, 6

(C) 2, 7, 4, 5, 6

(D) 3, 2, 8, 5, 9

(E) 2, 3, 4, 1, 6

15. (1 point) Evaluate the following expression:

`len("ABCD"[0:3])`

What value is produced?

(A) 3

(B) 2

(C) 4

(D) 1

16. (1 point) Consider the following program:

```
s="ECTOR"
t="GAWAIN"
x=(len(s)+len(t)) < 4 and s in t
```

What is the **type** of x after this program is executed?

(A) None

(B) Boolean

(C) Integer

(D) String

(E) Float

17. (1 point) Consider the following program:

```
a=3
b=4
if a==3:
    a=b
elif a==4:
    a=5
else:
    b=a
```

What is the **value** of a after this program is executed?

(A) 5

(B) None of the other answers are correct.

(C) 7

(D) 4

(E) 3

18. (1 point) Consider the following program:

```
a=["merlin","sir agravaine","king pellinore"]
b=[ ]
for i in range(1,3):
    b.append(a[0-i].title())
```

What is the **value** of b after this program is executed?

 (A) ['Sir Agravaine', 'King Pellinore']

 (B) ['King Pellinore', 'Sir Agravaine']

 (C) ['Merlin', 'King Pellinore', 'Sir Agravaine']

 (D) ['King Pellinore', 'Sir Agravaine', 'Merlin']

 (E) [ ]

19. (1 point) Consider the following program.

```
kay = 2
wart = 3

def knight(kay,wart):
    wart += 2
    kay += 3
    return wart + kay

wart = knight(kay, kay) + knight(wart, wart)
```

After it is run, what is the final **value** of `wart`?

 (A) None of the other answers are correct.

 (B) 2

 (C) 5

 (D) 3

20. (1 point) Consider the following program:

```
s="-B-O-R-S-"
x=s.split("-")[2:-2]
```

What is the **value** of x after this program is executed?

(A) `False`

(B) `None`

(C) `'ORS'`

(D) `''`

(E) `['O', 'R']`

21. (1 point) How can the following mathematical equation be implemented as a Python expression? Assume a, b, and cos have already been defined.

$$a^b \cos(a - b)$$

(A) `(b^a)cos(a-b)`

(B) `(a**b)cos(a-b)`

(C) None of the other answers are correct.

(D) `(a^b)*cos(a-b)`

(E) `(a**b)*cos(a-b)`

22. (1 point) Consider the following program:

```
x=str(1.2)*2
```

What is the **value** of x after this program is executed?

  (A) "1.21.2"

  (B) 2.4

  (C) None of the other answers are correct.

  (D) "1.2*2"

  (E) "2.4"

23. (1 point) Consider the following program:

```
i=3
x=2
while i < 7:
    x+=i
    i+=2
```

What is the **value** of x after this program is executed?

  (A) 14

  (B) 10

  (C) 11

  (D) 13

  (E) 12

24. (1 point) Consider the following program.

```
s="ABCBA"
x=0
y=len(s)-1
while s[x]==s[y] and x<=y:
    x+=1
    y-=1
```

After it is run, what is the final **value** of x?

(A) 0

(B) 3

(C) 1

(D) 2

(E) 4

25. (1 point) Consider the following program:

```
s="TRIS %i"
t="ISEU"
x=len(s) % len(t[2:-1])
```

What is the **type** of x after this program is executed?

(A) None

(B) Integer

(C) Float

(D) Boolean

(E) String

26. (1 point) Consider the following program.

```
x=0
i=1
while(i*i)<=9:
    x=x+(i*i)
    i=i+1
```

After it is run, what is the final **value** of x?

(A) 4

(B) 14

(C) 3

(D) 5

(E) 30

27. (1 point) Consider the following program:

```
x=0
for i in range(4,10):
    if i%3==0:
        x+=3
    elif i%2==0:
        x+=2
    else:
        x+=1
```

What is the **value** of x after this program is executed?

(A) 12

(B) 11

(C) 13

(D) 14

(E) 10

28. (1 point) Consider the following program:

```
pi="3.14159"
e="2.71828"
x=pi in pi*len(e)
```

What is the **type** of x after this program is executed?

(A) Float

(B) None

(C) String

(D) Integer

(E) Boolean

29. (1 point) Consider the following incomplete Python program.

```
s="".join(["2","2","0","1"])
x=0
for i in range(len(s)-1):
    x+=int(???)
```

What should replace the three question marks so the resulting value of x is 43?

(A) `s[i+1:i+2]`

(B) `s[i:i-1]`

(C) `s[i:i+1]`

(D) `s[i:i+2]`

30. (1 point) Consider the following program.

```
def artificing(s):
    return s*2
    return s+"%i" % 2
    return s
```
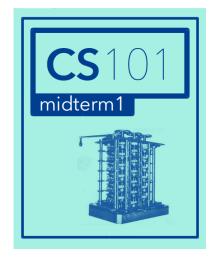
```
s=artificing("MERLIN")
```

After it is run, what is the final **value** of s?

(A) `"MERLIN"`

(B) `12`

(C) `"MERLINMERLIN"`

(D) `None`

(E) `"MERLIN2"`

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CS101

midterm1

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1. Fill in your information:

Full Name: _____

UIN (Student Number): _____

NetID: _____

2. Fill in the following answers on the Scantron form:

92. A

93. C

94. B

95. B

96. E

1. (1 point) Consider the following program.

```
kay = 2
wart = 3

def knight(kay,wart):
    wart += 2
    kay += 3
    return wart + kay

wart = knight(kay, kay) + knight(wart, wart)
```

After it is run, what is the final **value** of `wart`?

  (A) 3

  (B) 5

  (C) 2

  (D) None of the other answers are correct.

2. (1 point) Consider the following incomplete program.

```
sum=0
???:
    sum=sum+i
```

The program is intended to sum all of the integers between 1 and 100 (inclusive). What should replace the three question marks to complete the program?

  (A) `while i<=100`

  (B) `for i in range(1,101)`

  (C) `while i in range(100)`

  (D) `for i in range(0,100)`

3. (1 point) What is the result of the following expression?

`[ 1, 2, 3 ] * 3.0`

(A) `[3, 6, 9]`

(B) `[3.0, 6.0, 9.0]`

(C) `None of the above.`

(D) `[1, 2, 3, 1, 2, 3, 1, 2, 3]`

(E) `[1.0, 2.0, 3.0, 1.0, 2.0, 3.0, 1.0, 2.0, 3.0]`

4. (1 point) How can the following mathematical equation be implemented as a Python expression? Assume `a`, `b`, and `sin` have already been defined.

$$a \sin(a^b - b)$$

(A) `a*sin(a**b - b)`

(B) `a*sin(a^b - b)`

(C) None of the other answers are correct.

(D) `a sin(a**b - b)`

(E) `a*sin(b^a - b)`

5. (1 point) Consider the following program:

```
s="ECTOR"
t="GAWAIN"
x=(len(s)/(len(t)-1))+1
```

What is the **type** of x after this program is executed?

(A) Integer

(B) Float

(C) String

(D) None

(E) Boolean

6. (1 point) Consider the following program:

```
i=2
x=3
while i < 7:
    x+=i
    i+=2
```

What is the **value** of x after this program is executed?

(A) 13

(B) 14

(C) 12

(D) 11

(E) 15

7. (1 point) Consider the following program.

```
x=0
i=1
while(i*i)<=9:
    x=x+(i*i)
    i=i+1
```

After it is run, what is the final **value** of x?

  (A) 14

  (B) 4

  (C) 5

  (D) 3

  (E) 30

8. (1 point) Evaluate the following expression:

```
len("ABCDE"[1:4])
```

What value is produced?

  (A) 3

  (B) 4

  (C) 5

  (D) 1

9. (1 point) Consider the following program:

```
x=3
a=7
if (a%3)==2:
    x=x**2
elif(a%3)==1:
    x=x**1
else:
    x=x**0
```

What is the **value** of **x** after this program is executed?

(A) None of the other answers are correct.

(B) 3

(C) 1

(D) 9

(E) 7

10. (1 point) Consider the following program:

```python
a=["A","C","C","I","O"]
a.sort()
a[0]=a[-1]
x=""
for e in a:
    x=x+e
```

What is the **value** of x after this program is executed?

(A) `"ACCIA"`

(B) `"ACCOA"`

(C) None of the other answers are correct.

(D) `"OCCIO"`

(E) `"ICCOI"`

11. (1 point) Consider the following program:

```python
def fix(s):
    a=list(s)
    a.sort()
    return ''.join(a)

x=["one","two","eleven","twelve"]
s1=fix(x[0]+x[-1])
s2=fix(x[1]+x[-2])

if s1<s2:
    x.sort()
elif s1>s2:
    x.reverse()
else:
    x.append("six")
```

What is the **value** of x after this program is executed?

(A) ['one', 'two', 'eleven', 'twelve', 'six']

(B) ['eleven', 'one', 'twelve', 'two']

(C) ['two', 'twelve', 'one', 'eleven', 'six']

(D) ['twelve', 'eleven', 'two', 'one']

(E) ['one', 'two', 'eleven', 'twelve']

12. (1 point) Consider the following program.

```
def artificing(s):
    return s*2
    return s+"%i" % 2
    return s

s=artificing("MERLIN")
```

After it is run, what is the final **value** of s?

(A) `12`

(B) `"MERLINMERLIN"`

(C) `"MERLIN"`

(D) `"MERLIN2"`

(E) `None`

13. (1 point) Consider the following program:

```
x=0
for i in range(4,10):
    if i%3==0:
        x+=3
    elif i%2==0:
        x+=2
    else:
        x+=1
```

What is the **value** of x after this program is executed?

(A) 11

(B) 12

(C) 13

(D) 14

(E) 10

14. (1 point) Consider the following program.

```
x=[]
for j in range(0,5):
    if (j%4)==0:
        x.append("-")
    if (j%5)==0:
        x.append("*")
```

After it is run, what is the final **value** of x?

(A) ["-","*"]

(B) None of the other answers are correct.

(C) ["-","-","*"]

(D) ["-","*","*"]

(E) ["-","*","-"]

15. (1 point) Consider the following program:

```
x="KING ARTHUR-MORGANA LEFAY-SIR BEDIVERE".split("-")
y=x
y.reverse()
```

What is the **value** of x after this program is executed?

(A) ['KING ARTHUR', 'MORGANA LEFAY', 'SIR BEDIVERE']

(B) ['KING', 'ARTHUR-MORGANA', 'LEFAY-SIR', 'BEDIVERE']

(C) ['SIR BEDIVERE', 'MORGANA LEFAY', 'KING ARTHUR']

(D) None

(E) ['BEDIVERE', 'LEFAY-SIR', 'ARTHUR-MORGANA', 'KING']

16. (1 point) Consider the following program:

```
s="TRIS %i"
t="ISEU"
x=s % len(t)
```

What is the **type** of x after this program is executed?

(A) `None`

(B) `String`

(C) `Float`

(D) `Integer`

(E) `Boolean`

17. (1 point) Consider the following incomplete function.

```
def ismultiple(m,n):
    if ???:
        return False
    else:
        return True
```

The function is intended to return True if the input parameter m is a multiple of parameter n and False otherwise. For example, `ismultiple(4,2)` should return `True`, but `ismultiple(5,3)` should return `False`. What should replace the three question marks to complete the function?

(A) `(m // n) != 0`

(B) `(n % m) == 0`

(C) `(m % n) != 0`

(D) `(n // m) == 0`

18. (1 point) Consider the following program:

```
s="G+R+A+I+L"
x=s.split("+")[1:-2]
```

What is the **value** of x after this program is executed?

(A) 3

(B) False

(C) 'RAI'

(D) ['R','A']

(E) None

19. (1 point) Consider the following program:

```
s="Hobbes"
i=0
x=-1
while i<len(s):
    if s[i]=='b':
        x=i
    i+=1
```

What is the **value** of x after this program is executed?

(A) 2

(B) -1

(C) 5

(D) 4

(E) 3

13

20. (1 point) Consider the following program:

```python
x=[1,2,3]
def f(a):
    s=""
    a.reverse()
    for i in a:
        s+=str(i)
    return s

x.append(f(x))
```

What is the **value** of x after this program is executed?

(A) [1, 2, 3, '321']

(B) [3, 2, 1, '321']

(C) [3, 2, 1]

(D) [1, 2, 3, 6]

(E) [1, 2, 3]

21. (1 point) Consider the following program:

```
pi="3.14159"
e="2.71828"
x=(float(e)**float(pi)-float(pi)) == 20
```

What is the **type** of x after this program is executed?

(A) Integer

(B) String

(C) Boolean

(D) Float

(E) None

22. (1 point) Evaluate the following expression:

```
[1,2]+[len("3")]
```

What value is produced?

(A) [1,2,1]

(B) [1,2,3]

(C) [1,2,"3"]

(D) [1,2,1,2,1,2]

23. (1 point) For this problem, you should compose a function which accomplishes a given task using the available code blocks arranged in the correct functional order. *We ignore indentation for this problem.*

find_max should accept a list and return the value of the maximum item in the list. (None is always the lowest value in any numeric comparison, so you may use it as an initializer.)

```
def find_max(my_list):

1 max_val = i

2 max_val = None

3 for i in range(len(my_list)):

4 if i > max_val:

5 max_val = my_list[i]

6 return max_val

7 for i in range(my_list):

8 if my_list[i] > max_val:

9 print(max_val)
```

(A) 2, 3, 8, 1, 6

(B) 3, 2, 8, 5, 9

(C) 2, 3, 4, 1, 6

(D) 2, 3, 8, 5, 6

(E) 2, 7, 4, 5, 6

24. (1 point) Consider the following Python program.

```
e=[1,3,5,7,9,11]
d=[0,0,0]
for i in range(0,len(e)):
    d[i%3]+=e[i]
x=d[2]
```

After it is run, what is the final **value** of x?

(A) 7

(B) 8

(C) 12

(D) 16

(E) 0

25. (1 point) Consider the following program:

```
x=str(1.2)*2
```

What is the **value** of x after this program is executed?

(A) "1.2*2"

(B) "2.4"

(C) 2.4

(D) "1.21.2"

(E) None of the other answers are correct.

26. (1 point) Consider the following program:

```
a=3
b=4
if a==3:
    b=a
elif a==4:
    a=5
else:
    a=b
```

What is the **value** of a after this program is executed?

(A) 5

(B) 7

(C) 4

(D) None of the other answers are correct.

(E) 3

27. (1 point) Consider the following incomplete Python program.

```
s="".join(["2","2","0","1"])
x=0
for i in range(len(s)-1):
    x+=int(???)
```

What should replace the three question marks so the resulting value of x is 43?

(A) s[i:i-1]

(B) s[i:i+1]

(C) s[i:i+2]

(D) s[i+1:i+2]

28. (1 point) Consider the following program:

```
a=["merlin","sir agravaine","king pellinore"]
b=[ ]
for i in range(1,3):
    b.append(a[0-i].title())
```

What is the **value** of b after this program is executed?

(A) [ ]

(B) ['Merlin', 'King Pellinore', 'Sir Agravaine']

(C) ['King Pellinore', 'Sir Agravaine', 'Merlin']

(D) ['Sir Agravaine', 'King Pellinore']

(E) ['King Pellinore', 'Sir Agravaine']

29. (1 point) Consider the following program.

```
s="ABCBA"
x=0
y=len(s)-1
while s[x]==s[y] and x<y:
    x+=1
    y-=1
```

After it is run, what is the final **value** of x?

(A) 1

(B) 4

(C) 2

(D) 3

(E) 0

30. (1 point) Consider the following program:

```
x=[1,2,3,4,5,6,7,8,9]
x=x[2:-2]
i=1
while i < 3:
    x[i]+=1
    i+=1
```

What is the **value** of x after this program is executed?

(A) [3, 5, 6, 6]

(B) [2, 4, 5, 6, 6, 7]

(C) [3, 5, 6, 6, 7]

(D) [3, 5, 6, 6, 7, 8]

(E) [2, 4, 5, 5, 6, 7]

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CS101 midterm1

- **Be sure to enter your <u>NetID</u> and <u>the code below</u> on your Scantron**.

- Do not turn this page until instructed to do so.

- There are 30 questions, worth 1 point each.

- Each question has only **one** correct answer.

- You must not communicate with other students during this test.

- No books, notes, or electronic devices are permitted.

- This is a 60-minute exam.

- There are several different versions of this exam.

1. Fill in your information:

Full Name: _____

UIN (Student Number): _____

NetID: _____

2. Fill in the following answers on the Scantron form:

92. B

93. C

94. B

95. C

96. A

1. (1 point) Consider the following program:

```
x=2
a=6
if (a%3)==2:
    x=x**3
elif(a%3)==1:
    x=x**2
else:
    x=x**1
```

What is the **value** of x after this program is executed?

 (A) 16

 (B) 8

 (C) 2

 (D) None of the other answers are correct.

 (E) 4

2. (1 point) Consider the following program:

```
s="TRIS %i"
t="ISEU"
x=len(s) % len(t[2:-1])
```

What is the **type** of x after this program is executed?

 (A) String

 (B) Integer

 (C) Float

 (D) None

 (E) Boolean

3. (1 point) For this problem, you should compose a function which accomplishes a given task using the available code blocks arranged in the correct functional order. *We ignore indentation for this problem.*

find_max should accept a list and return the value of the maximum item in the list. (None is always the lowest value in any numeric comparison, so you may use it as an initializer.)

```
def find_max(my_list):

1 max_val = i

2 max_val = None

3 for i in range(len(my_list)):

4 if i > max_val:

5 max_val = my_list[i]

6 return max_val

7 for i in range(my_list):

8 if my_list[i] > max_val:

9 print(max_val)
```

(A) 3, 2, 8, 5, 9

(B) 2, 3, 8, 1, 6

(C) 2, 7, 4, 5, 6

(D) 2, 3, 4, 1, 6

(E) 2, 3, 8, 5, 6

4. (1 point) Consider the following program:

```
x=[2,3,4,5,6,7,8,9]
x=x[2:-2]
i=1
while i <= 3:
    x[i]+=1
    i+=1
```

What is the **value** of x after this program is executed?

(A) [3, 4, 6, 7, 8]

(B) [4, 6, 7, 8]

(C) [4, 6, 7, 7]

(D) [2, 4, 6, 6]

(E) [4, 6, 7]

5. (1 point) Consider the following program.

```
def artificing(s):
    return s*2
    return s+"%i" % 2
    return s

s=artificing("MERLIN")
```

After it is run, what is the final **value** of s?

(A) 12

(B) "MERLIN2"

(C) "MERLIN"

(D) None

(E) "MERLINMERLIN"

6. (1 point) Consider the following program:

```
i=3
x=2
while i < 7:
    x+=i
    i+=2
```

What is the **value** of x after this program is executed?

(A) 10

(B) 13

(C) 11

(D) 14

(E) 12

7. (1 point) Consider the following incomplete Python program.

```python
s="".join(["2","2","0","1"])
x=0
for i in range(len(s)-1):
    x+=int(???)
```

What should replace the three question marks so the resulting value of x is 43?

(A) `s[i:i+1]`

(B) `s[i:i-1]`

(C) `s[i:i+2]`

(D) `s[i+1:i+2]`

8. (1 point) Consider the following program:

```python
s="ECTOR"
t="GAWAIN"
x=len(str(s.isupper()))-t.find("A")
```

What is the **type** of x after this program is executed?

(A) `Float`

(B) `Integer`

(C) `Boolean`

(D) `None`

(E) `String`

9. (1 point) Consider the following program:

```python
def fix(s):
    a=list(s)
    a.sort()
    return ''.join(a)

x=["one","two","eleven","twelve"]
s1=fix(x[0]+x[-1])
s2=fix(x[1]+x[-2])

if s1<s2:
    x.sort()
elif s1==s2:
    x.reverse()
else:
    x.append("six")
```

What is the **value** of x after this program is executed?

(A) ['two', 'twelve', 'one', 'eleven', 'six']

(B) ['one', 'two', 'eleven', 'twelve', 'six']

(C) ['twelve', 'eleven', 'two', 'one']

(D) ['one', 'two', 'eleven', 'twelve']

(E) ['eleven', 'one', 'twelve', 'two']

10. (1 point) Consider the following program.

```
kay = 2
wart = 3

def knight(kay,wart):
    wart += 2
    kay += 3
    return wart + kay

kay = knight(wart, kay) + knight(kay, wart)
```

After it is run, what is the final **value** of `kay`?

(A) 3

(B) 5

(C) None of the other answers are correct.

(D) 2

11. (1 point) Consider the following program:

```
pi="3.14159"
e="2.71828"
x=pi in pi*len(e)
```

What is the **type** of `x` after this program is executed?

(A) String

(B) Boolean

(C) Integer

(D) None

(E) Float

8

12. (1 point) Consider the following Python program.

```
e=[1,3,5,7,9,11]
d=[0,0,0]
for i in range(0,len(e)):
    d[i%3]+=e[i]
x=d[1]
```

After it is run, what is the final **value** of x?

(A) 16

(B) 12

(C) 0

(D) 8

(E) 3

13. (1 point) Consider the following program:

```
a=3
b=4
if a==3:
    a=b
elif a==4:
    a=5
else:
    b=a
```

What is the **value** of a after this program is executed?

(A) 4

(B) 5

(C) None of the other answers are correct.

(D) 7

(E) 3

14. (1 point) Consider the following program:

```
s="Calvin"
i=0
x=-1
while i<len(s):
    if s[i]=='b':
        x=i
    i+=1
```

What is the **value** of x after this program is executed?

(A) 6

(B) 3

(C) 5

(D) 0

(E) -1

15. (1 point) Consider the following program:

```
x="KING ARTHUR-MORGANA LEFAY-SIR BEDIVERE".split("-")
y=x[:]
y.reverse()
```

What is the **value** of x after this program is executed?

(A) ['BEDIVERE', 'LEFAY-SIR', 'ARTHUR-MORGANA', 'KING']

(B) ['KING', 'ARTHUR-MORGANA', 'LEFAY-SIR', 'BEDIVERE']

(C) ['SIR BEDIVERE', 'MORGANA LEFAY', 'KING ARTHUR']

(D) ['KING ARTHUR', 'MORGANA LEFAY', 'SIR BEDIVERE']

(E) None

16. (1 point) Consider the following program:

```
s="-B-O-R-S-"
x=s.split("-")[2:-2]
```

What is the **value** of x after this program is executed?

(A) `None`

(B) `'ORS'`

(C) `False`

(D) `''`

(E) `['O', 'R']`

17. (1 point) Consider the following program.

```
s="ABCBA"
x=0
y=len(s)-1
while s[x]==s[y] and x<y:
    x+=1
    y-=1
```

After it is run, what is the final **value** of x?

(A) `2`

(B) `0`

(C) `3`

(D) `1`

(E) `4`

18. (1 point) Consider the following program.

```
x=[]
for j in range(0,5):
    if (j%4)==0:
        x.append("-")
    if (j%5)==0:
        x.append("*")
```

After it is run, what is the final **value** of x?

(A) ["-","*","*"]

(B) None of the other answers are correct.

(C) ["-","*","-"]

(D) ["-","*"]

(E) ["-","-","*"]

19. (1 point) Consider the following incomplete function.

```
def isdivisible(m,n):
    if ???:
        return False
    else:
        return True
```

The function is intended to return True if the input parameter m is evenly divisible by the parameter n and False otherwise. For example, isdivisible(4,2) should return True, but isdivisible(5,3) should return False. What should replace the three question marks to complete the function?

(A) (n // m) == 0

(B) (n % m) == 0

(C) (m % n) != 0

(D) (m // n) != 0

20. (1 point) Consider the following incomplete program.

```
sum=0
???:
    sum=sum+i
```

The program is intended to sum all of the integers between 1 and 100 (inclusive). What should replace the three question marks to complete the program?

(A) `for i in range(0,100)`

(B) `while i in range(100)`

(C) `while i<=100`

(D) `for i in range(1,101)`

21. (1 point) Evaluate the following expression:

`len("ABCD"[0:3])`

What value is produced?

(A) 2

(B) 1

(C) 3

(D) 4

22. (1 point) How can the following mathematical equation be implemented as a Python expression? Assume a, b, and sin have already been defined.

$$a \sin(a^b - b)$$

(A) a*sin(b^a - b)

(B) a sin(a**b - b)

(C) a*sin(a**b - b)

(D) a*sin(a^b - b)

(E) None of the other answers are correct.

23. (1 point) Consider the following program:

```
x=0
for i in range(4,10):
    if i%3==0:
        x+=3
    elif i%2==0:
        x+=2
    else:
        x+=1
```

What is the **value** of x after this program is executed?

(A) 10

(B) 14

(C) 12

(D) 11

(E) 13

15

24. (1 point) Evaluate the following expression:

`[1,2]*len("3")`

What value is produced?

(A) `[1,2,1,2,1,2]`

(B) `[1,2,3]`

(C) `[1,2]`

(D) `[1,2,1]`

25. (1 point) What is the result of the following expression?

`[ 1, 2, 3 ] * 3.0`

(A) `[3.0, 6.0, 9.0]`

(B) `[1.0, 2.0, 3.0, 1.0, 2.0, 3.0, 1.0, 2.0, 3.0]`

(C) `None of the above.`

(D) `[3, 6, 9]`

(E) `[1, 2, 3, 1, 2, 3, 1, 2, 3]`

26. (1 point) Consider the following program:

```
a=["S","T","U","P","E","F","Y"]
a=a[0:4]
a.sort()
x=""
for e in a:
    x=e+x
```

What is the **value** of x after this program is executed?

(A) None of the other answers are correct.

(B) "UTSP"

(C) "STUP"

(D) "PSTU"

(E) "PUST"

27. (1 point) Consider the following program:

```
a=["merlin","sir agravaine","king pellinore"]
b=[ ]
for i in range(0,4):
    b.append(a[0-i].title())
```

What is the **value** of b after this program is executed?

(A) [ ]

(B) ['Merlin', 'King Pellinore', 'Sir Agravaine']

(C) ['King Pellinore', 'Sir Agravaine', 'Merlin']

(D) ['Merlin', 'King Pellinore', 'Sir Agravaine', 'Merlin']

(E) ['Merlin', 'Sir Agravaine', 'King Pellinore', 'Merlin']

28. (1 point) Consider the following program.

```
x=0
i=1
while(i*i)<=9:
    x=x+(i*i)
    i=i+1
```

After it is run, what is the final **value** of x?

(A) 3

(B) 14

(C) 30

(D) 5

(E) 4

29. (1 point) Consider the following program:

```
x=[1,2,3]
def f(a):
    s=""
    a.reverse()
    for i in a:
        s+=str(i)
    return s

x.append(f(x))
```

What is the **value** of x after this program is executed?

(A) [1, 2, 3]

(B) [1, 2, 3, '321']

(C) [3, 2, 1]

(D) [1, 2, 3, 6]

(E) [3, 2, 1, '321']

30. (1 point)

```
x=str(3)+"str(3)"
```

What is the **value** of x after this program is executed?

(A) 33

(B) "3str(3)"

(C) "33"

(D) "333"

(E) None of the other answers are correct.

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CS101
midterm1

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- This is a 60-minute exam.

- There are several different versions of this exam.

1. Fill in your information:

Full Name: _____

UIN (Student Number): _____

NetID: _____

2. Fill in the following answers on the Scantron form:

92. C

93. C

94. B

95. D

96. B

1. (1 point) Consider the following program.

```
s="ABCBA"
x=0
y=len(s)-1
while s[x]==s[y] and x<y:
    x+=1
    y-=1
```

After it is run, what is the final **value** of x?

(A) 4

(B) 0

(C) 2

(D) 1

(E) 3

2. (1 point) Consider the following program:

```
x=0
for i in range(2,8):
    if i%3==0:
        x+=3
    elif i%2==0:
        x+=2
    else:
        x+=1
```

What is the **value** of x after this program is executed?

(A) 10

(B) 14

(C) 12

(D) 11

(E) 13

3. (1 point) For this problem, you should compose a function which accomplishes a given task using the available code blocks arranged in the correct functional order. *We ignore indentation for this problem.*

find_max should accept a `list` and return the value of the maximum item in the `list`. (`None` is always the lowest value in any numeric comparison, so you may use it as an initializer.)

```
def find_max(my_list):

1 max_val = i

2 max_val = None

3 for i in range(len(my_list)):

4 if i > max_val:

5 max_val = my_list[i]

6 return max_val

7 for i in range(my_list):

8 if my_list[i] > max_val:

9 print(max_val)
```

(A) 2, 3, 4, 1, 6

(B) 2, 7, 4, 5, 6

(C) 3, 2, 8, 5, 9

(D) 2, 3, 8, 1, 6

(E) 2, 3, 8, 5, 6

4. (1 point) Consider the following incomplete Python program.

```python
s="".join(["0","1","2","1"])
x=0
for i in range(len(s)-1):
    x+=int(???)
```

What should replace the three question marks so the resulting value of x is 34?

(A) `s[i:i+2]`

(B) `s[i+1:i+2]`

(C) `s[i:i+1]`

(D) `s[i:i-1]`

5. (1 point) Consider the following program:

```python
x=[1,2,3]
def f(a):
    s=""
    a.reverse()
    for i in a:
        s+=str(i)
    return s

x.append(f(x))
```

What is the **value** of x after this program is executed?

(A) `[1, 2, 3, '321']`

(B) `[3, 2, 1]`

(C) `[3, 2, 1, '321']`

(D) `[1, 2, 3, 6]`

(E) `[1, 2, 3]`

6. (1 point) Consider the following program:

```
a=3
b=4
if a==3:
    b=a
elif a==4:
    a=5
else:
    a=b
```

What is the **value** of a after this program is executed?

(A) 5

(B) 4

(C) None of the other answers are correct.

(D) 3

(E) 7

7. (1 point) How can the following mathematical equation be implemented as a Python expression? Assume a, b, and sin have already been defined.

$$a \sin(a^b - b)$$

(A) `a*sin(a^b - b)`

(B) `a*sin(b^a - b)`

(C) `a sin(a**b - b)`

(D) None of the other answers are correct.

(E) `a*sin(a**b - b)`

8. (1 point) Consider the following program.

```
x=0
i=1
while(i*i)<=9:
    x=x+(i*i)
    i=i+1
```

After it is run, what is the final **value** of x?

  (A) 3

  (B) 30

  (C) 4

  (D) 14

  (E) 5

9. (1 point) Consider the following program.

```
x=[]
for j in range(0,5):
    if (j%2)==0:
        x.append("-")
    if (j%5)==0:
        x.append("*")
```

After it is run, what is the final **value** of x?

  (A) ["-","-","*"]

  (B) ["-","*","-"]

  (C) ["-","*","-","-"]

  (D) ["*","-","*","*"]

  (E) None of the other answers are correct.

10. (1 point) Consider the following program:

```
s="-B-O-R-S-"
x=s.split("-")[2:-2]
```

What is the **value** of x after this program is executed?

(A) `None`

(B) `'ORS'`

(C) `''`

(D) `['O', 'R']`

(E) `False`

11. (1 point) Consider the following incomplete function.

```
def ismultiple(m,n):
    if ???:
        return False
    else:
        return True
```

The function is intended to return True if the input parameter m is a multiple of parameter n and False otherwise. For example, `ismultiple(4,2)` should return `True`, but `ismultiple(5,3)` should return `False`. What should replace the three question marks to complete the function?

(A) `(n % m) == 0`

(B) `(n // m) == 0`

(C) `(m % n) != 0`

(D) `(m // n) != 0`

12. (1 point) Consider the following program:

```
s="Hobbes"
i=0
x=-1
while i<len(s):
    if s[i]=='b':
        x=i
    i+=1
```

What is the **value** of x after this program is executed?

(A) 5

(B) 3

(C) 2

(D) 4

(E) -1

13. (1 point) Consider the following program:

```
a=["S","T","U","P","E","F","Y"]
a=a[0:4]
a.sort()
x=""
for e in a:
    x=e+x
```

What is the **value** of x after this program is executed?

(A) "UTSP"

(B) "PSTU"

(C) None of the other answers are correct.

(D) "PUST"

(E) "STUP"

14. (1 point) Evaluate the following expression:

```
[1,2]*len("3")
```

What value is produced?

(A) [1,2,1,2,1,2]

(B) [1,2]

(C) [1,2,3]

(D) [1,2,1]

15. (1 point) Consider the following program:

```
x=[1,2,3,4,5,6,7,8,9]
x=x[2:-2]
i=1
while i < 3:
    x[i]+=1
    i+=1
```

What is the **value** of x after this program is executed?

(A) [3, 5, 6, 6, 7, 8]

(B) [3, 5, 6, 6]

(C) [2, 4, 5, 6, 6, 7]

(D) [2, 4, 5, 5, 6, 7]

(E) [3, 5, 6, 6, 7]

16. (1 point) Consider the following program.

```
kay = 2
wart = 3

def knight(kay,wart):
    wart += 2
    kay += 3
    return wart + kay

kay = knight(wart, kay) + knight(kay, wart)
```

After it is run, what is the final **value** of kay?

(A) 5

(B) 2

(C) 3

(D) None of the other answers are correct.

17. (1 point) Consider the following program:

```
x=3
a=7
if (a%3)==2:
    x=x**2
elif(a%3)==1:
    x=x**1
else:
    x=x**0
```

What is the **value** of x after this program is executed?

(A) 7

(B) None of the other answers are correct.

(C) 9

(D) 3

(E) 1

18. (1 point) Consider the following program:

```
s="TRIS %i"
t="ISEU"
x=len(s) % len(t[2:-1])
```

What is the **type** of x after this program is executed?

(A) String

(B) None

(C) Boolean

(D) Float

(E) Integer

13

19. (1 point) What is the result of the following expression?

```
[ 1, 2, 3 ] * 3
```

 (A) (3, 6, 9)

 (B) [1.0, 2.0, 3.0, 1.0, 2.0, 3.0, 1.0, 2.0, 3.0]

 (C) [3, 6, 9]

 (D) [3.0, 6.0, 9.0]

 (E) [1, 2, 3, 1, 2, 3, 1, 2, 3]

20. (1 point) Consider the following program:

```
i=3
x=2
while i < 7:
    x+=i
    i+=2
```

What is the **value** of x after this program is executed?

 (A) 14

 (B) 11

 (C) 13

 (D) 12

 (E) 10

21. (1 point) Consider the following incomplete program.

```
sum=0
???:
    sum=sum+i
```

The program is intended to sum all of the integers between 1 and 100 (inclusive). What should replace the three question marks to complete the program?

(A) `while i<=100`

(B) `for i in range(0,100)`

(C) `for i in range(1,101)`

(D) `while i in range(100)`

22. (1 point) Consider the following program:

```
x=str("1"*3)
```

What is the **value** of `x` after this program is executed?

(A) `"111"`

(B) None of the other answers are correct.

(C) `111`

(D) `3`

(E) `"3"`

23. (1 point) Consider the following Python program.

```
e=[1,3,5,7,9,11]
d=[0,0,0]
for i in range(0,len(e)):
    d[i%3]+=e[i]
x=d[1]
```

After it is run, what is the final **value** of x?

(A) 12

(B) 0

(C) 3

(D) 8

(E) 16

24. (1 point) Consider the following program:

```
s="ECTOR"
t="GAWAIN"
x=(len(s)/(len(t)-1))+1
```

What is the **type** of x after this program is executed?

(A) Boolean

(B) None

(C) String

(D) Float

(E) Integer

25. (1 point) Consider the following program:

```python
def fix(s):
    a=list(s)
    a.sort()
    return ''.join(a)

x=["one","two","eleven","twelve"]
s1=fix(x[0]+x[-1])
s2=fix(x[1]+x[-2])

if s1<s2:
    x.sort()
elif s1>s2:
    x.reverse()
else:
    x.append("six")
```

What is the **value** of x after this program is executed?

(A) ['one', 'two', 'eleven', 'twelve']

(B) ['one', 'two', 'eleven', 'twelve', 'six']

(C) ['two', 'twelve', 'one', 'eleven', 'six']

(D) ['twelve', 'eleven', 'two', 'one']

(E) ['eleven', 'one', 'twelve', 'two']

26. (1 point) Consider the following program:

```
a=["merlin","sir agravaine","king pellinore"]
b=[ ]
for i in range(0,4):
    b.append(a[0-i].title())
```

What is the **value** of b after this program is executed?

(A) ['Merlin', 'Sir Agravaine', 'King Pellinore', 'Merlin']

(B) ['King Pellinore', 'Sir Agravaine', 'Merlin']

(C) [ ]

(D) ['Merlin', 'King Pellinore', 'Sir Agravaine', 'Merlin']

(E) ['Merlin', 'King Pellinore', 'Sir Agravaine']

27. (1 point) Consider the following program.

```
def artificing(s):
    return s+"%i" % 2
    return s*2
    return s

s=artificing("MERLIN")
```

After it is run, what is the final **value** of s?

(A) 0

(B) "MERLINMERLIN"

(C) None

(D) "MERLIN2"

(E) "MERLIN%i"

28. (1 point) Evaluate the following expression:

`len("ABCDE"[1:4])`

What value is produced?

(A) 4

(B) 5

(C) 1

(D) 3

29. (1 point) Consider the following program:

```
x="KING ARTHUR-MORGANA LEFAY-SIR BEDIVERE".split("-")
y=x
y.reverse()
```

What is the **value** of x after this program is executed?

(A) `['KING', 'ARTHUR-MORGANA', 'LEFAY-SIR', 'BEDIVERE']`

(B) `['SIR BEDIVERE', 'MORGANA LEFAY', 'KING ARTHUR']`

(C) `None`

(D) `['KING ARTHUR', 'MORGANA LEFAY', 'SIR BEDIVERE']`

(E) `['BEDIVERE', 'LEFAY-SIR', 'ARTHUR-MORGANA', 'KING']`

30. (1 point) Consider the following program:

```
pi="3.14159"
e="2.71828"
x=pi*len(e)+pi
```

What is the **type** of x after this program is executed?

(A) None

(B) Boolean

(C) Float

(D) Integer

(E) String

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CS101
midterm1

- **Be sure to enter your <u>NetID</u> and <u>the code below</u> on your Scantron**.

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- There are 30 questions, worth 1 point each.

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- No books, notes, or electronic devices are permitted.

- This is a 60-minute exam.

- There are several different versions of this exam.

1. Fill in your information:

Full Name: _____

UIN (Student Number): _____

NetID: _____

2. Fill in the following answers on the Scantron form:

92. D

93. C

94. B

95. E

96. C

1. (1 point) Consider the following program:

```
x=0
for i in range(2,7):
    if i%3==0:
        x+=3
    elif i%2==0:
        x+=2
    else:
        x+=1
```

What is the **value** of x after this program is executed?

(A) 10

(B) 13

(C) 14

(D) 12

(E) 11

2. (1 point) Consider the following program.

```
s="BBCAA"
x=0
y=len(s)-1
while s[x]!=s[y] and x<len(s):
    x+=1
    y-=1
```

After it is run, what is the final **value** of x?

(A) 1

(B) 4

(C) 2

(D) 0

(E) 3

3. (1 point) What is the result of the following expression?

```
[ 1, 2, 3 ] * 3.0
```

(A) [1, 2, 3, 1, 2, 3, 1, 2, 3]

(B) [3.0, 6.0, 9.0]

(C) [3, 6, 9]

(D) [1.0, 2.0, 3.0, 1.0, 2.0, 3.0, 1.0, 2.0, 3.0]

(E) None of the above.

4. (1 point) Consider the following program:

```
x=3
a=7
if (a%3)==2:
    x=x**2
elif(a%3)==1:
    x=x**1
else:
    x=x**0
```

What is the **value** of x after this program is executed?

(A) 9

(B) 7

(C) 1

(D) None of the other answers are correct.

(E) 3

5. (1 point) Consider the following program:

```python
def fix(s):
    a=list(s)
    a.sort()
    return ''.join(a)

x=["one","two","eleven","twelve"]
s1=fix(x[0]+x[-1])
s2=fix(x[1]+x[-2])

if s1<s2:
    x.sort()
elif s1>s2:
    x.reverse()
else:
    x.append("six")
```

What is the **value** of x after this program is executed?

(A) ['eleven', 'one', 'twelve', 'two']

(B) ['twelve', 'eleven', 'two', 'one']

(C) ['two', 'twelve', 'one', 'eleven', 'six']

(D) ['one', 'two', 'eleven', 'twelve']

(E) ['one', 'two', 'eleven', 'twelve', 'six']

6. (1 point) Consider the following program.

```
x=[]
for j in range(0,5):
    if (j%4)==0:
        x.append("-")
    if (j%5)==0:
        x.append("*")
```

After it is run, what is the final **value** of x?

(A) ["-","*","*"]

(B) ["-","-","*"]

(C) ["-","*","-"]

(D) ["-","*"]

(E) None of the other answers are correct.

7. (1 point) Consider the following program:

```
x=[1,2,3,4,5,6,7,8,9]
x=x[2:-2]
i=1
while i < 3:
    x[i]+=1
    i+=1
```

What is the **value** of x after this program is executed?

(A) [3, 5, 6, 6, 7]

(B) [3, 5, 6, 6]

(C) [2, 4, 5, 6, 6, 7]

(D) [3, 5, 6, 6, 7, 8]

(E) [2, 4, 5, 5, 6, 7]

8. (1 point) Consider the following program:

```
s="Hobbes"
i=0
x=-1
while i<len(s):
    if s[i]=='b':
        x=i
    i+=1
```

What is the **value** of x after this program is executed?

(A) 4

(B) 5

(C) 3

(D) -1

(E) 2

9. (1 point) Evaluate the following expression:

```
len("ABCDE"[1:4])
```

What value is produced?

(A) 1

(B) 3

(C) 4

(D) 5

10. (1 point) Consider the following program.

```
kay = 2
wart = 3

def knight(kay,wart):
    wart += 2
    kay += 3
    return wart + kay

wart = knight(kay, kay) + knight(wart, wart)
```

After it is run, what is the final **value** of `wart`?

  (A) 3

  (B) 2

  (C) 5

  (D) None of the other answers are correct.

11. (1 point) Consider the following program:

```
x=str(1.2)*2
```

What is the **value** of `x` after this program is executed?

  (A) `"1.21.2"`

  (B) None of the other answers are correct.

  (C) `"1.2*2"`

  (D) `2.4`

  (E) `"2.4"`

12. (1 point) Consider the following program:

```
a=["merlin","sir agravaine","king pellinore"]
b=[ ]
for i in range(0,3):
    b.append(a[0-i].title())
```

What is the **value** of b after this program is executed?

(A) ['Sir Agravaine', 'King Pellinore']

(B) ['King Pellinore', 'Sir Agravaine', 'Merlin']

(C) ['Merlin', 'King Pellinore', 'Sir Agravaine']

(D) ['King Pellinore', 'Sir Agravaine']

(E) [ ]

13. (1 point) Consider the following incomplete Python program.

```
s="".join(["1","0","2","1"])
x=0
for i in range(len(s)-1):
    x+=int(???)
```

What should replace the three question marks so the resulting value of x is 33?

(A) s[i+1:i+2]

(B) s[i:i-1]

(C) s[i:i+2]

(D) s[i:i+1]

14. (1 point) Consider the following program:

```
s="-B-O-R-S-"
x=s.split("-")[2:-2]
```

What is the **value** of x after this program is executed?

(A) ''

(B) ['O', 'R']

(C) False

(D) None

(E) 'ORS'

15. (1 point) Consider the following program:

```
x=[1,2,3]
def f(a):
    s=""
    a.append(4)
    for i in a:
        s+=str(i)
    return s

x.append(f(x))
```

What is the **value** of x after this program is executed?

(A) [1, 2, 3, '123']

(B) [1, 2, 3, 4, '1234']

(C) [1, 2, 3, '1234']

(D) [1, 2, 3]

(E) [1, 2, 3, 10]

16. (1 point) How can the following mathematical equation be implemented as a Python expression? Assume a, b, and sin have already been defined.

$$a \sin(a^b - b)$$

(A) `a*sin(b^a - b)`

(B) `a*sin(a**b - b)`

(C) `a sin(a**b - b)`

(D) None of the other answers are correct.

(E) `a*sin(a^b - b)`

17. (1 point) Consider the following program:

```
x="KING ARTHUR-MORGANA LEFAY-SIR BEDIVERE".split("-")
y=x[:]
y.reverse()
```

What is the **value** of x after this program is executed?

(A) `['BEDIVERE', 'LEFAY-SIR', 'ARTHUR-MORGANA', 'KING']`

(B) `['KING ARTHUR', 'MORGANA LEFAY', 'SIR BEDIVERE']`

(C) `None`

(D) `['SIR BEDIVERE', 'MORGANA LEFAY', 'KING ARTHUR']`

(E) `['KING', 'ARTHUR-MORGANA', 'LEFAY-SIR', 'BEDIVERE']`

18. (1 point) Consider the following program:

```
pi="3.14159"
e="2.71828"
x=pi*len(e)+pi
```

What is the **type** of x after this program is executed?

(A) String

(B) Integer

(C) None

(D) Float

(E) Boolean

19. (1 point) Consider the following program.

```
x=0
i=1
while(i*i)<=9:
    x=x+(i*i)
    i=i+1
```

After it is run, what is the final **value** of x?

(A) 5

(B) 30

(C) 3

(D) 4

(E) 14

20. (1 point) Consider the following incomplete function.

```
def isdivisible(m,n):
    if ???:
        return False
    else:
        return True
```

The function is intended to return True if the input parameter m is evenly divisible by the parameter n and False otherwise. For example, `isdivisible(4,2)` should return `True`, but `isdivisible(5,3)` should return `False`. What should replace the three question marks to complete the function?

(A) `(n % m) == 0`

(B) `(m % n) != 0`

(C) `(n // m) == 0`

(D) `(m // n) != 0`

21. (1 point) Consider the following program:

```
a=3
b=4
if a==3:
    b=a
elif a==4:
    a=5
else:
    a=b
```

What is the **value** of a after this program is executed?

(A) 5

(B) None of the other answers are correct.

(C) 4

(D) 7

(E) 3

22. (1 point) Consider the following program.

```
def artificing(s):
    return s*2
    return s+"%i" % 2
    return s
```

```
s=artificing("MERLIN")
```

After it is run, what is the final **value** of s?

(A) `"MERLINMERLIN"`

(B) `"MERLIN2"`

(C) `12`

(D) `"MERLIN"`

(E) `None`

23. (1 point) For this problem, you should compose a function which accomplishes a given task using the available code blocks arranged in the correct functional order. *We ignore indentation for this problem.*

find_max should accept a list and return the value of the maximum item in the list. (None is always the lowest value in any numeric comparison, so you may use it as an initializer.)

```
def find_max(my_list):
```

```
1 max_val = i
```

```
2 max_val = None
```

```
3 for i in range(len(my_list)):
```

```
4 if i > max_val:
```

```
5 max_val = my_list[i]
```

```
6 return max_val
```

```
7 for i in range(my_list):
```

```
8 if my_list[i] > max_val:
```

```
9 print(max_val)
```

(A) 2, 7, 4, 5, 6

(B) 2, 3, 8, 1, 6

(C) 2, 3, 8, 5, 6

(D) 3, 2, 8, 5, 9

(E) 2, 3, 4, 1, 6

24. (1 point) Evaluate the following expression:

`[1,2]+[len("3")]`

What value is produced?

(A) `[1,2,"3"]`

(B) `[1,2,1,2,1,2]`

(C) `[1,2,1]`

(D) `[1,2,3]`

25. (1 point) Consider the following program:

```
i=3
x=2
while i < 7:
    x+=i
    i+=2
```

What is the **value** of `x` after this program is executed?

(A) `13`

(B) `14`

(C) `11`

(D) `10`

(E) `12`

26. (1 point) Consider the following incomplete program.

```
sum=0
???:
    sum=sum+i
```

The program is intended to sum all of the integers between 1 and 100 (inclusive). What should replace the three question marks to complete the program?

(A) `for i in range(1,101)`

(B) `while i<=100`

(C) `while i in range(100)`

(D) `for i in range(0,100)`

27. (1 point) Consider the following program:

```
a=["A","C","C","I","O"]
a.sort()
a[0]=a[-1]
x=""
for e in a:
    x=x+e
```

What is the **value** of x after this program is executed?

(A) `"ICCOI"`

(B) `"OCCIO"`

(C) None of the other answers are correct.

(D) `"ACCOA"`

(E) `"ACCIA"`

28. (1 point) Consider the following Python program.

```
e=[1,3,5,7,9,11]
d=[0,0,0]
for i in range(0,len(e)):
    d[i%3]+=e[i]
x=d[1]
```

After it is run, what is the final **value** of x?

(A) 16

(B) 12

(C) 3

(D) 0

(E) 8

29. (1 point) Consider the following program:

```
s="TRIS %i"
t="ISEU"
x=s % len(t)
```

What is the **type** of x after this program is executed?

(A) Boolean

(B) Float

(C) String

(D) None

(E) Integer

20

30. (1 point) Consider the following program:

```
s="ECTOR"
t="GAWAIN"
x=len(str(s.isupper()))-t.find("A")
```

What is the **type** of x after this program is executed?

(A) Boolean

(B) String

(C) None

(D) Integer

(E) Float

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1. Fill in your information:

Full Name: _____

UIN (Student Number): _____

NetID: _____

2. Fill in the following answers on the Scantron form:

92. E

93. C

94. B

95. A

96. D

1. (1 point) Consider the following program:

```
a=["S","T","U","P","E","F","Y"]
a=a[0:4]
a.sort()
x=""
for e in a:
    x=e+x
```

What is the **value** of x after this program is executed?

(A) "PUST"

(B) "UTSP"

(C) "PSTU"

(D) "STUP"

(E) None of the other answers are correct.

2. (1 point) Consider the following program:

```
x=str(1.2)*2
```

What is the **value** of x after this program is executed?

(A) "2.4"

(B) 2.4

(C) None of the other answers are correct.

(D) "1.2*2"

(E) "1.21.2"

3. (1 point) Consider the following program:

```
s="TRIS %i"
t="ISEU"
x=len(s) % len(t[2:-1])
```

What is the **type** of x after this program is executed?

(A) None

(B) Boolean

(C) String

(D) Float

(E) Integer

4. (1 point) Consider the following program:

```
a=["merlin","sir agravaine","king pellinore"]
b=[ ]
for i in range(0,4):
    b.append(a[0-i].title())
```

What is the **value** of b after this program is executed?

(A) ['King Pellinore', 'Sir Agravaine', 'Merlin']

(B) ['Merlin', 'King Pellinore', 'Sir Agravaine']

(C) ['Merlin', 'Sir Agravaine', 'King Pellinore', 'Merlin']

(D) ['Merlin', 'King Pellinore', 'Sir Agravaine', 'Merlin']

(E) [ ]

5. (1 point) Consider the following program:

```
x=0
for i in range(2,8):
    if i%3==0:
        x+=3
    elif i%2==0:
        x+=2
    else:
        x+=1
```

What is the **value** of x after this program is executed?

  (A) 13

  (B) 10

  (C) 12

  (D) 14

  (E) 11

6. (1 point) Consider the following program:

```
x="KING ARTHUR-MORGANA LEFAY-SIR BEDIVERE".split("-")
y=x
x=y.reverse()
```

What is the **value** of x after this program is executed?

  (A) ['KING', 'ARTHUR-MORGANA', 'LEFAY-SIR', 'BEDIVERE']

  (B) ['SIR BEDIVERE', 'MORGANA LEFAY', 'KING ARTHUR']

  (C) ['KING ARTHUR', 'MORGANA LEFAY', 'SIR BEDIVERE']

  (D) ['BEDIVERE', 'LEFAY-SIR', 'ARTHUR-MORGANA', 'KING']

  (E) None

7. (1 point) Consider the following program:

```
s="G+R+A+I+L"
x=s.split("+")[1:-2]
```

What is the **value** of x after this program is executed?

(A) 3

(B) False

(C) 'RAI'

(D) ['R','A']

(E) None

8. (1 point) How can the following mathematical equation be implemented as a Python expression? Assume a, b, and sin have already been defined.

$$a \sin(a^b - b)$$

(A) a*sin(a^b - b)

(B) None of the other answers are correct.

(C) a sin(a**b - b)

(D) a*sin(b^a - b)

(E) a*sin(a**b - b)

9. (1 point) Consider the following incomplete function.

```python
def ismultiple(m,n):
    if ???:
        return False
    else:
        return True
```

The function is intended to return True if the input parameter m is a multiple of parameter n and False otherwise. For example, `ismultiple(4,2)` should return `True`, but `ismultiple(5,3)` should return `False`. What should replace the three question marks to complete the function?

(A) `(n // m) == 0`

(B) `(n % m) == 0`

(C) `(m % n) != 0`

(D) `(m // n) != 0`

10. (1 point) Consider the following Python program.

```python
e=[1,3,5,7,9,11]
d=[0,0,0]
for i in range(0,len(e)):
    d[i%3]+=e[i]
x=d[1]
```

After it is run, what is the final **value** of x?

(A) 12

(B) 0

(C) 16

(D) 8

(E) 3

11. (1 point) Consider the following program.

```
x=1
i=0
while(x*x)<=9:
    i=i+(x*x)
    x=x+1
```

After it is run, what is the final **value** of x?

(A) 30

(B) 4

(C) 3

(D) 14

(E) 5

12. (1 point) Consider the following program:

```
x=[1,2,3]
def f(a):
    s=""
    a.append(4)
    for i in a:
        s+=str(i)
    return s

x.append(f(x))
```

What is the **value** of x after this program is executed?

(A) [1, 2, 3, '1234']

(B) [1, 2, 3, '123']

(C) [1, 2, 3, 10]

(D) [1, 2, 3, 4, '1234']

(E) [1, 2, 3]

8

13. (1 point) Consider the following program.

```python
def artificing(s):
    return s+"%i" % 2
    return s*2
    return s
```

```python
s=artificing("MERLIN")
```

After it is run, what is the final **value** of s?

(A) 0

(B) None

(C) "MERLIN%i"

(D) "MERLIN2"

(E) "MERLINMERLIN"

14. (1 point) For this problem, you should compose a function which accomplishes a given task using the available code blocks arranged in the correct functional order. *We ignore indentation for this problem.*

find_max should accept a `list` and return the value of the maximum item in the `list`. (`None` is always the lowest value in any numeric comparison, so you may use it as an initializer.)

```
def find_max(my_list):

1 max_val = i

2 max_val = None

3 for i in range(len(my_list)):

4 if i > max_val:

5 max_val = my_list[i]

6 return max_val

7 for i in range(my_list):

8 if my_list[i] > max_val:

9 print(max_val)
```

(A) 3, 2, 8, 5, 9

(B) 2, 3, 8, 1, 6

(C) 2, 3, 4, 1, 6

(D) 2, 7, 4, 5, 6

(E) 2, 3, 8, 5, 6

15. (1 point) Consider the following program.

```
s="BBCAA"
x=0
y=len(s)-1
while s[x]!=s[y] and x<len(s):
    x+=1
    y-=1
```

After it is run, what is the final **value** of x?

(A) 4

(B) 1

(C) 3

(D) 2

(E) 0

16. (1 point) Consider the following incomplete program.

```
sum=0
for i in range(0,100):
    ???
```

The program is intended to sum all of the integers between 1 and 100 (inclusive). What should replace the three question marks to complete the program?

(A) sum=sum+i

(B) sum=sum+i+1

(C) sum=sum+1

(D) sum+1=sum

11

17. (1 point) Consider the following program:

```
x=[2,3,4,5,6,7,8,9]
x=x[2:-2]
i=1
while i <= 3:
    x[i]+=1
    i+=1
```

What is the **value** of x after this program is executed?

(A) [4, 6, 7]

(B) [2, 4, 6, 6]

(C) [4, 6, 7, 7]

(D) [4, 6, 7, 8]

(E) [3, 4, 6, 7, 8]

18. (1 point) Consider the following program:

```
pi="3.14159"
e="2.71828"
x=(float(e)**float(pi)-float(pi)) == 20
```

What is the **type** of x after this program is executed?

(A) Float

(B) Integer

(C) String

(D) None

(E) Boolean

19. (1 point) Consider the following program.

```
x=[]
for j in range(0,5):
    if (j%2)==0:
        x.append("-")
    if (j%5)==0:
        x.append("*")
```

After it is run, what is the final **value** of x?

(A) ["-","*","-"]

(B) ["*","-","*","*"]

(C) ["-","*","-","-"]

(D) ["-","-","*"]

(E) None of the other answers are correct.

20. (1 point) Evaluate the following expression:

```
[1,2]*len("3")
```

What value is produced?

(A) [1,2,3]

(B) [1,2,1]

(C) [1,2,1,2,1,2]

(D) [1,2]

21. (1 point) Consider the following program:

```
s="Calvin"
i=0
x=-1
while i<len(s):
    if s[i]=='b':
        x=i
    i+=1
```

What is the **value** of x after this program is executed?

  (A) 5

  (B) 6

  (C) -1

  (D) 0

  (E) 3

22. (1 point) Consider the following incomplete Python program.

```
s="".join(["0","1","2","1"])
x=0
for i in range(len(s)-1):
    x+=int(???)
```

What should replace the three question marks so the resulting value of x is 34?

  (A) s[i:i-1]

  (B) s[i+1:i+2]

  (C) s[i:i+2]

  (D) s[i:i+1]

14

23. (1 point) Consider the following program:

```
a=3
b=4
if a!=b:
    a=b
elif a==4:
    a=5
else:
    b=a
```

What is the **value** of a after this program is executed?

(A) 3

(B) 5

(C) 7

(D) 4

(E) None of the other answers are correct.

24. (1 point) Consider the following program:

```
i=3
x=2
while i < 7:
    x+=i
    i+=2
```

What is the **value** of x after this program is executed?

  (A) 10

  (B) 12

  (C) 14

  (D) 11

  (E) 13

25. (1 point) Evaluate the following expression:

```
len("ABCD"[0:3])
```

What value is produced?

  (A) 2

  (B) 1

  (C) 4

  (D) 3

26. (1 point) Consider the following program:

```python
def fix(s):
    a=list(s)
    a.sort()
    return ''.join(a)

x=["one","two","eleven","twelve"]
s1=fix(x[0]+x[-1])
s2=fix(x[1]+x[-2])

if s1<s2:
    x.sort()
elif s1>s2:
    x.reverse()
else:
    x.append("six")
```

What is the **value** of x after this program is executed?

(A) ['eleven', 'one', 'twelve', 'two']

(B) ['one', 'two', 'eleven', 'twelve', 'six']

(C) ['two', 'twelve', 'one', 'eleven', 'six']

(D) ['twelve', 'eleven', 'two', 'one']

(E) ['one', 'two', 'eleven', 'twelve']

27. (1 point) What is the result of the following expression?

```
[ 1, 2, 3 ] * 3.0
```

(A) [1, 2, 3, 1, 2, 3, 1, 2, 3]

(B) [1.0, 2.0, 3.0, 1.0, 2.0, 3.0, 1.0, 2.0, 3.0]

(C) [3.0, 6.0, 9.0]

(D) None of the above.

(E) [3, 6, 9]

28. (1 point) Consider the following program.

```
kay = 2
wart = 3

def knight(kay,wart):
    wart += 2
    kay += 3
    return wart + kay

kay = knight(wart, kay) + knight(kay, wart)
```

After it is run, what is the final **value** of kay?

(A) None of the other answers are correct.

(B) 5

(C) 3

(D) 2

18

29. (1 point) Consider the following program:

```
s="ECTOR"
t="GAWAIN"
x=(len(s)/(len(t)-1))+1
```

What is the **type** of x after this program is executed?

(A) Boolean

(B) Integer

(C) String

(D) Float

(E) None

30. (1 point) Consider the following program:

```
x=2
a=6
if (a%3)==2:
    x=x**3
elif(a%3)==1:
    x=x**2
else:
    x=x**1
```

What is the **value** of x after this program is executed?

(A) 16

(B) None of the other answers are correct.

(C) 8

(D) 4

(E) 2

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CS101
midterm1

- **Be sure to enter your <u>NetID</u> and <u>the code below</u> on your Scantron**.

- Do not turn this page until instructed to do so.

- There are 30 questions, worth 1 point each.

- Each question has only **one** correct answer.

- You must not communicate with other students during this test.

- No books, notes, or electronic devices are permitted.

- This is a 60-minute exam.

- There are several different versions of this exam.

1. **Fill in your information:**

   Full Name: _____

   UIN (Student Number): _____

   NetID: _____

2. **Fill in the following answers on the Scantron form:**

   92. A

   93. D

   94. B

   95. C

   96. B

1. (1 point) Consider the following Python program.

```
e=[1,3,5,7,9,11]
d=[0,0,0]
for i in range(0,len(e)):
    d[i%3]+=e[i]
x=d[2]
```

After it is run, what is the final **value** of x?

  (A) 16

  (B) 0

  (C) 7

  (D) 12

  (E) 8

2. (1 point) Consider the following program:

```
s="TRIS %i"
t="ISEU"
x=s % len(t)
```

What is the **type** of x after this program is executed?

  (A) None

  (B) String

  (C) Integer

  (D) Float

  (E) Boolean

3. (1 point) Consider the following program:

```
i=2
x=3
while i < 7:
    x+=i
    i+=2
```

What is the **value** of x after this program is executed?

(A) 12

(B) 15

(C) 11

(D) 14

(E) 13

4. (1 point) Evaluate the following expression:

`[1,2]+[len("3")]`

What value is produced?

(A) `[1,2,3]`

(B) `[1,2,1,2,1,2]`

(C) `[1,2,"3"]`

(D) `[1,2,1]`

5. (1 point) Consider the following program:

```
s="ECTOR"
t="GAWAIN"
x=(len(s)+len(t)) < 4 and s in t
```

What is the **type** of x after this program is executed?

(A) Boolean

(B) Float

(C) String

(D) None

(E) Integer

6. (1 point) What is the result of the following expression?

```
[ 1, 2, 3 ] * 3
```

(A) (3, 6, 9)

(B) [3, 6, 9]

(C) [3.0, 6.0, 9.0]

(D) [1, 2, 3, 1, 2, 3, 1, 2, 3]

(E) [1.0, 2.0, 3.0, 1.0, 2.0, 3.0, 1.0, 2.0, 3.0]

7. (1 point) Consider the following program:

```
a=["S","T","U","P","E","F","Y"]
a=a[0:4]
a.sort()
x=""
for e in a:
    x=e+x
```

What is the **value** of x after this program is executed?

(A) `"PSTU"`

(B) `"PUST"`

(C) `"STUP"`

(D) `"UTSP"`

(E) None of the other answers are correct.

8. (1 point) Consider the following program:

```
s="G+R+A+I+L"
x=s.split("+")[1:-2]
```

What is the **value** of x after this program is executed?

(A) `False`

(B) `3`

(C) `'RAI'`

(D) `['R','A']`

(E) `None`

9. (1 point) Consider the following incomplete program.

```
sum=0
for i in range(0,100):
    ???
```

The program is intended to sum all of the integers between 1 and 100 (inclusive). What should replace the three question marks to complete the program?

(A) `sum=sum+i+1`

(B) `sum+1=sum`

(C) `sum=sum+i`

(D) `sum=sum+1`

10. (1 point) Consider the following program:

```
x=[1,2,3]
def f(a):
    s=""
    a.reverse()
    for i in a:
        s+=str(i)
    return s

x.append(f(x))
```

What is the **value** of x after this program is executed?

(A) [3, 2, 1]

(B) [1, 2, 3, 6]

(C) [1, 2, 3, '321']

(D) [3, 2, 1, '321']

(E) [1, 2, 3]

11. (1 point) Consider the following program:

```
s="Hobbes"
i=0
x=-1
while i<len(s):
    if s[i]=='b':
        x=i
    i+=1
```

What is the **value** of x after this program is executed?

(A) -1

(B) 2

(C) 4

(D) 3

(E) 5

12. (1 point) Consider the following incomplete Python program.

```
s="".join(["1","0","2","1"])
x=0
for i in range(len(s)-1):
    x+=int(???)
```

What should replace the three question marks so the resulting value of x is 33?

(A) s[i:i+2]

(B) s[i:i+1]

(C) s[i:i-1]

(D) s[i+1:i+2]

13. (1 point) Consider the following program:

```
x=2
a=6
if (a%3)==2:
    x=x**3
elif(a%3)==1:
    x=x**2
else:
    x=x**1
```

What is the **value** of x after this program is executed?

(A) 2

(B) 4

(C) None of the other answers are correct.

(D) 16

(E) 8

14. (1 point) Consider the following program.

```
s="ABCBA"
x=0
y=len(s)-1
while s[x]==s[y] and x<=y:
    x+=1
    y-=1
```

After it is run, what is the final **value** of x?

(A) 4

(B) 2

(C) 1

(D) 0

(E) 3

15. (1 point) Evaluate the following expression:

```
len("ABCDE"[1:4])
```

What value is produced?

(A) 3

(B) 4

(C) 5

(D) 1

16. (1 point) Consider the following program:

```
x=0
for i in range(2,7):
    if i%3==0:
        x+=3
    elif i%2==0:
        x+=2
    else:
        x+=1
```

What is the **value** of x after this program is executed?

  (A) 11

  (B) 13

  (C) 10

  (D) 14

  (E) 12

17. (1 point) Consider the following program:

```
x=str(1.2)*2
```

What is the **value** of x after this program is executed?

  (A) None of the other answers are correct.

  (B) 2.4

  (C) "1.2*2"

  (D) "2.4"

  (E) "1.21.2"

18. (1 point) Consider the following program.

```
x=[]
for j in range(0,5):
    if (j%4)==0:
        x.append("-")
    if (j%5)==0:
        x.append("*")
```

After it is run, what is the final **value** of x?

(A) None of the other answers are correct.

(B) ["-","*"]

(C) ["-","-","*"]

(D) ["-","*","*"]

(E) ["-","*","-"]

19. (1 point) Consider the following program:

```
a=3
b=4
if a==3:
    b=a
elif a==4:
    a=5
else:
    a=b
```

What is the **value** of a after this program is executed?

(A) 5

(B) 7

(C) 4

(D) None of the other answers are correct.

(E) 3

20. (1 point) Consider the following program.

```
def artificing(s):
    return s*2
    return s+"%i" % 2
    return s
```

```
s=artificing("MERLIN")
```

After it is run, what is the final **value** of s?

(A) "MERLINMERLIN"

(B) "MERLIN2"

(C) 12

(D) "MERLIN"

(E) None

21. (1 point) Consider the following incomplete function.

```
def ismultiple(m,n):
    if ???:
        return False
    else:
        return True
```

The function is intended to return True if the input parameter m is a multiple of parameter n and False otherwise. For example, `ismultiple(4,2)` should return `True`, but `ismultiple(5,3)` should return `False`. What should replace the three question marks to complete the function?

(A) (m // n) != 0

(B) (n // m) == 0

(C) (m % n) != 0

(D) (n % m) == 0

22. (1 point) Consider the following program:

```
x="KING ARTHUR-MORGANA LEFAY-SIR BEDIVERE".split("-")
y=x[:]
y.reverse()
```

What is the **value** of x after this program is executed?

(A) ['KING ARTHUR', 'MORGANA LEFAY', 'SIR BEDIVERE']

(B) ['KING', 'ARTHUR-MORGANA', 'LEFAY-SIR', 'BEDIVERE']

(C) ['SIR BEDIVERE', 'MORGANA LEFAY', 'KING ARTHUR']

(D) None

(E) ['BEDIVERE', 'LEFAY-SIR', 'ARTHUR-MORGANA', 'KING']

23. (1 point) Consider the following program:

```
x=[2,3,4,5,6,7,8,9]
x=x[2:-2]
i=1
while i <= 3:
    x[i]+=1
    i+=1
```

What is the **value** of x after this program is executed?

(A) [4, 6, 7]

(B) [2, 4, 6, 6]

(C) [4, 6, 7, 7]

(D) [4, 6, 7, 8]

(E) [3, 4, 6, 7, 8]

24. (1 point) Consider the following program.

```
x=1
i=0
while(x*x)<=9:
    i=i+(x*x)
    x=x+1
```

After it is run, what is the final **value** of x?

(A) 3

(B) 4

(C) 5

(D) 30

(E) 14

25. (1 point) Consider the following program:

```python
def fix(s):
    a=list(s)
    a.sort()
    return ''.join(a)

x=["one","two","eleven","twelve"]
s1=fix(x[0]+x[-1])
s2=fix(x[1]+x[-2])

if s1==s2:
    x.sort()
elif s1<s2:
    x.reverse()
else:
    x.append("six")
```

What is the **value** of x after this program is executed?

(A) ['one', 'two', 'eleven', 'twelve', 'six']

(B) ['twelve', 'eleven', 'two', 'one']

(C) ['two', 'twelve', 'one', 'eleven', 'six']

(D) ['eleven', 'one', 'twelve', 'two']

(E) ['one', 'two', 'eleven', 'twelve']

26. (1 point) For this problem, you should compose a function which accomplishes a given task using the available code blocks arranged in the correct functional order. *We ignore indentation for this problem.*

`find_max` should accept a `list` and return the value of the maximum item in the `list`. (`None` is always the lowest value in any numeric comparison, so you may use it as an initializer.)

```
def find_max(my_list):

1 max_val = i

2 max_val = None

3 for i in range(len(my_list)):

4 if i > max_val:

5 max_val = my_list[i]

6 return max_val

7 for i in range(my_list):

8 if my_list[i] > max_val:

9 print(max_val)
```

(A) 2, 3, 4, 1, 6

(B) 2, 7, 4, 5, 6

(C) 2, 3, 8, 1, 6

(D) 2, 3, 8, 5, 6

(E) 3, 2, 8, 5, 9

27. (1 point) Consider the following program.

```
kay = 2
wart = 3

def knight(kay,wart):
    wart += 2
    kay += 3
    return wart + kay

kay = knight(wart, kay) + knight(kay, wart)
```

After it is run, what is the final **value** of kay?

(A) None of the other answers are correct.

(B) 2

(C) 5

(D) 3

28. (1 point) Consider the following program:

```
a=["merlin","sir agravaine","king pellinore"]
b=[ ]
for i in range(0,4):
    b.append(a[0-i].title())
```

What is the **value** of b after this program is executed?

(A) ['Merlin', 'King Pellinore', 'Sir Agravaine']

(B) ['Merlin', 'Sir Agravaine', 'King Pellinore', 'Merlin']

(C) [ ]

(D) ['Merlin', 'King Pellinore', 'Sir Agravaine', 'Merlin']

(E) ['King Pellinore', 'Sir Agravaine', 'Merlin']

29. (1 point) How can the following mathematical equation be implemented as a Python expression? Assume a, b, and cos have already been defined.

$$a^b \cos(a - b)$$

(A) None of the other answers are correct.

(B) (a^b)*cos(a-b)

(C) (a**b)cos(a-b)

(D) (a**b)*cos(a-b)

(E) (b^a)cos(a-b)

30. (1 point) Consider the following program:

```
pi="3.14159"
e="2.71828"
x=pi in pi*len(e)
```

What is the **type** of x after this program is executed?

(A) Boolean

(B) Integer

(C) None

(D) String

(E) Float

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- There are several different versions of this exam.

1. Fill in your information:

Full Name: _____

UIN (Student Number): _____

NetID: _____

2. Fill in the following answers on the Scantron form:

92. B

93. D

94. B

95. D

96. C

1. (1 point) Consider the following program:

```
s="ECTOR"
t="GAWAIN"
x=(len(s)/(len(t)-1))+1
```

What is the **type** of x after this program is executed?

(A) Float

(B) Boolean

(C) Integer

(D) String

(E) None

2. (1 point) Consider the following program:

```
x=0
for i in range(2,7):
    if i%3==0:
        x+=3
    elif i%2==0:
        x+=2
    else:
        x+=1
```

What is the **value** of x after this program is executed?

(A) 14

(B) 10

(C) 11

(D) 13

(E) 12

3. (1 point) Consider the following program:

```
a=["merlin","sir agravaine","king pellinore"]
b=[ ]
for i in range(0,3):
    b.append(a[0-i].title())
```

What is the **value** of b after this program is executed?

(A) ['Merlin', 'King Pellinore', 'Sir Agravaine']

(B) ['King Pellinore', 'Sir Agravaine', 'Merlin']

(C) ['Sir Agravaine', 'King Pellinore']

(D) [ ]

(E) ['King Pellinore', 'Sir Agravaine']

4. (1 point) For this problem, you should compose a function which accomplishes a given task using the available code blocks arranged in the correct functional order. *We ignore indentation for this problem.*

find_max should accept a list and return the value of the maximum item in the list. (None is always the lowest value in any numeric comparison, so you may use it as an initializer.)

```
def find_max(my_list):

1 max_val = i

2 max_val = None

3 for i in range(len(my_list)):

4 if i > max_val:

5 max_val = my_list[i]

6 return max_val

7 for i in range(my_list):

8 if my_list[i] > max_val:

9 print(max_val)
```

(A) 2, 3, 8, 1, 6

(B) 2, 3, 4, 1, 6

(C) 2, 3, 8, 5, 6

(D) 2, 7, 4, 5, 6

(E) 3, 2, 8, 5, 9

5. (1 point) Consider the following program:

```
i=2
x=3
while i < 7:
    x+=i
    i+=2
```

What is the **value** of x after this program is executed?

  (A) 13

  (B) 12

  (C) 14

  (D) 15

  (E) 11

6. (1 point) Consider the following program:

```
x=str("1"*3)
```

What is the **value** of x after this program is executed?

  (A) None of the other answers are correct.

  (B) "3"

  (C) 111

  (D) 3

  (E) "111"

7. (1 point) What is the result of the following expression?

```
[ 1, 2, 3 ] * 3.0
```

 (A) None of the above.

 (B) [1, 2, 3, 1, 2, 3, 1, 2, 3]

 (C) [3.0, 6.0, 9.0]

 (D) [1.0, 2.0, 3.0, 1.0, 2.0, 3.0, 1.0, 2.0, 3.0]

 (E) [3, 6, 9]

8. (1 point) Consider the following program:

```
x=[1,2,3]
def f(a):
    s=""
    a.reverse()
    for i in a:
        s+=str(i)
    return s

x.append(f(x))
```

What is the **value** of x after this program is executed?

 (A) [1, 2, 3, 6]

 (B) [1, 2, 3]

 (C) [3, 2, 1]

 (D) [3, 2, 1, '321']

 (E) [1, 2, 3, '321']

9. (1 point) Consider the following program.

```
s="ABCBA"
x=0
y=len(s)-1
while s[x]==s[y] and x<y:
    x+=1
    y-=1
```

After it is run, what is the final **value** of x?

(A) 0

(B) 3

(C) 1

(D) 4

(E) 2

10. (1 point) Consider the following program:

```
s="TRIS %i"
t="ISEU"
x=len(s) % len(t[2:-1])
```

What is the **type** of x after this program is executed?

(A) Float

(B) None

(C) String

(D) Boolean

(E) Integer

7

11. (1 point) Consider the following program:

```
x=[1,2,3,4,5,6,7,8,9]
x=x[2:-2]
i=1
while i <= 3:
    x[i]+=1
    i+=1
```

What is the **value** of x after this program is executed?

(A) [3, 5, 6, 7, 7, 8]

(B) [2, 4, 5, 5, 7, 7]

(C) [3, 5, 6, 7, 7]

(D) [3, 5, 7, 7]

(E) [2, 4, 5, 6, 7, 7]

12. (1 point) Consider the following program:

```
a=["A","C","C","I","O"]
a.sort()
a[0]=a[-1]
x=""
for e in a:
    x=x+e
```

What is the **value** of x after this program is executed?

(A) "ICCOI"

(B) None of the other answers are correct.

(C) "ACCIA"

(D) "ACCOA"

(E) "OCCIO"

13. (1 point) Consider the following incomplete program.

```
sum=0
for i in range(0,100):
    ???
```

The program is intended to sum all of the integers between 1 and 100 (inclusive). What should replace the three question marks to complete the program?

(A) sum=sum+i

(B) sum=sum+i+1

(C) sum+1=sum

(D) sum=sum+1

14. (1 point) Consider the following program.

```
x=1
i=0
while(x*x)<=9:
    i=i+(x*x)
    x=x+1
```

After it is run, what is the final **value** of x?

(A) 3

(B) 14

(C) 4

(D) 30

(E) 5

15. (1 point) Consider the following program:

```
pi="3.14159"
e="2.71828"
x=pi in pi*len(e)
```

What is the **type** of x after this program is executed?

(A) Integer

(B) String

(C) None

(D) Boolean

(E) Float

16. (1 point) Consider the following incomplete function.

```
def isdivisible(m,n):
    if ???:
        return False
    else:
        return True
```

The function is intended to return True if the input parameter m is evenly divisible by the parameter n and False otherwise. For example, `isdivisible(4,2)` should return `True`, but `isdivisible(5,3)` should return `False`. What should replace the three question marks to complete the function?

(A) `(m % n) != 0`

(B) `(n // m) == 0`

(C) `(n % m) == 0`

(D) `(m // n) != 0`

17. (1 point) Consider the following incomplete Python program.

```
s="".join(["1","0","2","1"])
x=0
for i in range(len(s)-1):
    x+=int(???)
```

What should replace the three question marks so the resulting value of `x` is 33?

(A) `s[i:i-1]`

(B) `s[i:i+1]`

(C) `s[i:i+2]`

(D) `s[i+1:i+2]`

18. (1 point) Consider the following program:

```
s="Hobbes"
i=0
x=-1
while i<len(s):
    if s[i]=='b':
        x=i
    i+=1
```

What is the **value** of x after this program is executed?

(A) 3

(B) -1

(C) 2

(D) 4

(E) 5

19. (1 point) Evaluate the following expression:

```
len("ABCDE"[1:4])
```

What value is produced?

(A) 1

(B) 4

(C) 5

(D) 3

20. (1 point) Evaluate the following expression:

`[1,2]+[len("3")]`

What value is produced?

(A) `[1,2,1,2,1,2]`

(B) `[1,2,"3"]`

(C) `[1,2,3]`

(D) `[1,2,1]`

21. (1 point) How can the following mathematical equation be implemented as a Python expression? Assume `a`, `b`, and `sin` have already been defined.

$$a \sin(a^b - b)$$

(A) `a*sin(a**b - b)`

(B) `a sin(a**b - b)`

(C) `a*sin(b^a - b)`

(D) `a*sin(a^b - b)`

(E) None of the other answers are correct.

22. (1 point) Consider the following program:

```python
def fix(s):
    a=list(s)
    a.sort()
    return ''.join(a)

x=["one","two","eleven","twelve"]
s1=fix(x[0]+x[-1])
s2=fix(x[1]+x[-2])

if s1<s2:
    x.sort()
elif s1>s2:
    x.reverse()
else:
    x.append("six")
```

What is the **value** of x after this program is executed?

(A) ['eleven', 'one', 'twelve', 'two']

(B) ['one', 'two', 'eleven', 'twelve']

(C) ['one', 'two', 'eleven', 'twelve', 'six']

(D) ['two', 'twelve', 'one', 'eleven', 'six']

(E) ['twelve', 'eleven', 'two', 'one']

23. (1 point) Consider the following program.

```
kay = 2
wart = 3

def knight(kay,wart):
    wart += 2
    kay += 3
    return wart + kay

kay = knight(wart, kay) + knight(kay, wart)
```

After it is run, what is the final **value** of `kay`?

(A) 5

(B) 2

(C) None of the other answers are correct.

(D) 3

24. (1 point) Consider the following program.

```
def artificing(s):
    return s+"%i" % 2
    return s*2
    return s
```

```
s=artificing("MERLIN")
```

After it is run, what is the final **value** of s?

(A) `"MERLIN2"`

(B) `"MERLIN%i"`

(C) `"MERLINMERLIN"`

(D) `0`

(E) `None`

25. (1 point) Consider the following program:

```
x=3
a=7
if (a%3)==2:
    x=x**2
elif(a%3)==1:
    x=x**1
else:
    x=x**0
```

What is the **value** of x after this program is executed?

(A) None of the other answers are correct.

(B) 7

(C) 3

(D) 1

(E) 9

26. (1 point) Consider the following program:

```
x="KING ARTHUR-MORGANA LEFAY-SIR BEDIVERE".split("-")
y=x
x=y.reverse()
```

What is the **value** of x after this program is executed?

(A) ['SIR BEDIVERE', 'MORGANA LEFAY', 'KING ARTHUR']

(B) ['KING', 'ARTHUR-MORGANA', 'LEFAY-SIR', 'BEDIVERE']

(C) ['KING ARTHUR', 'MORGANA LEFAY', 'SIR BEDIVERE']

(D) None

(E) ['BEDIVERE', 'LEFAY-SIR', 'ARTHUR-MORGANA', 'KING']

27. (1 point) Consider the following program:

```
a=3
b=4
if a!=b:
    a=b
elif a==4:
    a=5
else:
    b=a
```

What is the **value** of a after this program is executed?

(A) None of the other answers are correct.

(B) 3

(C) 4

(D) 5

(E) 7

28. (1 point) Consider the following program.

```
x=[]
for j in range(0,5):
    if (j%2)==0:
        x.append("-")
    if (j%5)==0:
        x.append("*")
```

After it is run, what is the final **value** of x?

(A) ["*","-","*","*"]

(B) ["-","*","-","-"]

(C) ["-","-","*"]

(D) None of the other answers are correct.

(E) ["-","*","-"]

29. (1 point) Consider the following program:

```
s="G+R+A+I+L"
x=s.split("+")[1:-2]
```

What is the **value** of x after this program is executed?

(A) 'RAI'

(B) ['R','A']

(C) None

(D) 3

(E) False

19

30. (1 point) Consider the following Python program.

```python
e=[1,3,5,7,9,11]
d=[0,0,0]
for i in range(0,len(e)):
    d[i%3]+=e[i]
x=d[1]
```

After it is run, what is the final **value** of x?

(A) 0

(B) 16

(C) 3

(D) 8

(E) 12

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- There are 30 questions, worth 1 point each.

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- This is a 60-minute exam.

- There are several different versions of this exam.

1. Fill in your information:

Full Name: _____

UIN (Student Number): _____

NetID: _____

2. Fill in the following answers on the Scantron form:

92. C

93. D

94. B

95. E

96. D

1. (1 point) Evaluate the following expression:

```
len("ABCDE"[1:4])
```

What value is produced?

 (A) 5

 (B) 3

 (C) 1

 (D) 4

2. (1 point) Consider the following program:

```
a=3
b=4
if a==3:
    b=a
elif a==4:
    a=5
else:
    a=b
```

What is the **value** of a after this program is executed?

 (A) 3

 (B) None of the other answers are correct.

 (C) 7

 (D) 4

 (E) 5

3. (1 point) Consider the following program:

```
x=str("1"*3)
```

What is the **value** of x after this program is executed?

(A) 3

(B) "3"

(C) None of the other answers are correct.

(D) 111

(E) "111"

4. (1 point) Consider the following program:

```
x=0
for i in range(2,7):
    if i%3==0:
        x+=3
    elif i%2==0:
        x+=2
    else:
        x+=1
```

What is the **value** of x after this program is executed?

(A) 10

(B) 11

(C) 13

(D) 14

(E) 12

5. (1 point) Consider the following program.

```
s="BBCAA"
x=0
y=len(s)-1
while s[x]!=s[y] and x<len(s):
    x+=1
    y-=1
```

After it is run, what is the final **value** of x?

(A) 0

(B) 1

(C) 4

(D) 3

(E) 2

4

6. (1 point) Consider the following program.

```
kay = 2
wart = 3

def knight(kay,wart):
    wart += 2
    kay += 3
    return wart + kay

wart = knight(kay, kay) + knight(wart, wart)
```

After it is run, what is the final **value** of `wart`?

(A) 5

(B) 3

(C) 2

(D) None of the other answers are correct.

7. (1 point) Consider the following program:

```python
def fix(s):
    a=list(s)
    a.sort()
    return ''.join(a)

x=["one","two","eleven","twelve"]
s1=fix(x[0]+x[-1])
s2=fix(x[1]+x[-2])

if s1<s2:
    x.sort()
elif s1>s2:
    x.reverse()
else:
    x.append("six")
```

What is the **value** of x after this program is executed?

(A) ['twelve', 'eleven', 'two', 'one']

(B) ['one', 'two', 'eleven', 'twelve']

(C) ['one', 'two', 'eleven', 'twelve', 'six']

(D) ['two', 'twelve', 'one', 'eleven', 'six']

(E) ['eleven', 'one', 'twelve', 'two']

6

8. (1 point) Consider the following program:

```
s="ECTOR"
t="GAWAIN"
x=(len(s)/(len(t)-1))+1
```

What is the **type** of x after this program is executed?

(A) None

(B) String

(C) Boolean

(D) Float

(E) Integer

9. (1 point) Consider the following program:

```
i=3
x=2
while i < 7:
    x+=i
    i+=2
```

What is the **value** of x after this program is executed?

(A) 10

(B) 12

(C) 14

(D) 11

(E) 13

10. (1 point) Consider the following program:

```
s="G+R+A+I+L"
x=s.split("+")[1:-2]
```

What is the **value** of x after this program is executed?

(A) ['R','A']

(B) False

(C) None

(D) 3

(E) 'RAI'

11. (1 point) How can the following mathematical equation be implemented as a Python expression? Assume a, b, and sin have already been defined.

$$a \sin(a^b - b)$$

(A) a*sin(a**b - b)

(B) a*sin(a^b - b)

(C) None of the other answers are correct.

(D) a sin(a**b - b)

(E) a*sin(b^a - b)

12. (1 point) Consider the following program.

```
def artificing(s):
    return s+"%i" % 2
    return s*2
    return s
```

```
s=artificing("MERLIN")
```

After it is run, what is the final **value** of s?

 (A) `None`

 (B) `0`

 (C) `"MERLIN%i"`

 (D) `"MERLIN2"`

 (E) `"MERLINMERLIN"`

13. (1 point) Consider the following program:

```
s="TRIS %i"
t="ISEU"
x=len(s) % len(t[2:-1])
```

What is the **type** of x after this program is executed?

 (A) `Float`

 (B) `String`

 (C) `None`

 (D) `Integer`

 (E) `Boolean`

14. (1 point) Consider the following incomplete Python program.

```
s="".join(["2","2","0","1"])
x=0
for i in range(len(s)-1):
    x+=int(???)
```

What should replace the three question marks so the resulting value of x is 43?

(A) `s[i+1:i+2]`

(B) `s[i:i+1]`

(C) `s[i:i+2]`

(D) `s[i:i-1]`

15. (1 point) Consider the following program:

```
s="Hobbes"
i=0
x=-1
while i<len(s):
    if s[i]=='b':
        x=i
    i+=1
```

What is the **value** of x after this program is executed?

(A) -1

(B) 5

(C) 2

(D) 3

(E) 4

16. (1 point) Consider the following program:

```
a=["A","C","C","I","O"]
a.sort()
a[0]=a[-1]
x=""
for e in a:
    x=x+e
```

What is the **value** of x after this program is executed?

(A) `"ACCOA"`

(B) `"ACCIA"`

(C) `"ICCOI"`

(D) None of the other answers are correct.

(E) `"OCCIO"`

17. (1 point) Evaluate the following expression:

`[1,2]+[len("3")]`

What value is produced?

(A) `[1,2,"3"]`

(B) `[1,2,1,2,1,2]`

(C) `[1,2,3]`

(D) `[1,2,1]`

18. (1 point) Consider the following program:

```
a=["merlin","sir agravaine","king pellinore"]
b=[ ]
for i in range(0,3):
    b.append(a[0-i].title())
```

What is the **value** of b after this program is executed?

 (A) ['King Pellinore', 'Sir Agravaine', 'Merlin']

 (B) ['Sir Agravaine', 'King Pellinore']

 (C) ['King Pellinore', 'Sir Agravaine']

 (D) ['Merlin', 'King Pellinore', 'Sir Agravaine']

 (E) [ ]

19. (1 point) Consider the following program:

```python
x=[1,2,3]
def f(a):
    s=""
    a.append(4)
    for i in a:
        s+=str(i)
    return s


x.append(f(x))
```

What is the **value** of x after this program is executed?

(A) `[1, 2, 3, '1234']`

(B) `[1, 2, 3, 4, '1234']`

(C) `[1, 2, 3]`

(D) `[1, 2, 3, 10]`

(E) `[1, 2, 3, '123']`

20. (1 point) Consider the following incomplete function.

```
def ismultiple(m,n):
    if ???:
        return False
    else:
        return True
```

The function is intended to return True if the input parameter m is a multiple of parameter n and False otherwise. For example, `ismultiple(4,2)` should return `True`, but `ismultiple(5,3)` should return `False`. What should replace the three question marks to complete the function?

(A) `(m % n) != 0`

(B) `(n // m) == 0`

(C) `(n % m) == 0`

(D) `(m // n) != 0`

21. (1 point) Consider the following Python program.

```
e=[1,3,5,7,9,11]
d=[0,0,0]
for i in range(0,len(e)):
    d[i%3]+=e[i]
x=d[2]
```

After it is run, what is the final **value** of x?

(A) 16

(B) 7

(C) 0

(D) 12

(E) 8

22. (1 point) For this problem, you should compose a function which accomplishes a given task using the available code blocks arranged in the correct functional order. *We ignore indentation for this problem.*

`find_max` should accept a `list` and return the value of the maximum item in the `list`. (`None` is always the lowest value in any numeric comparison, so you may use it as an initializer.)

```
def find_max(my_list):

1 max_val = i

2 max_val = None

3 for i in range(len(my_list)):

4 if i > max_val:

5 max_val = my_list[i]

6 return max_val

7 for i in range(my_list):

8 if my_list[i] > max_val:

9 print(max_val)
```

(A) 2, 3, 4, 1, 6

(B) 2, 3, 8, 1, 6

(C) 2, 3, 8, 5, 6

(D) 2, 7, 4, 5, 6

(E) 3, 2, 8, 5, 9

23. (1 point) Consider the following program:

```
x="KING ARTHUR-MORGANA LEFAY-SIR BEDIVERE".split("-")
y=x
y.reverse()
```

What is the **value** of x after this program is executed?

(A) ['BEDIVERE', 'LEFAY-SIR', 'ARTHUR-MORGANA', 'KING']

(B) ['SIR BEDIVERE', 'MORGANA LEFAY', 'KING ARTHUR']

(C) ['KING ARTHUR', 'MORGANA LEFAY', 'SIR BEDIVERE']

(D) ['KING', 'ARTHUR-MORGANA', 'LEFAY-SIR', 'BEDIVERE']

(E) None

24. (1 point) Consider the following program.

```
x=0
i=1
while(i*i)<=9:
    x=x+(i*i)
    i=i+1
```

After it is run, what is the final **value** of x?

(A) 14

(B) 30

(C) 3

(D) 5

(E) 4

25. (1 point) Consider the following program.

```
x=[]
for j in range(0,5):
    if (j%2)==0:
        x.append("-")
    if (j%5)==0:
        x.append("*")
```

After it is run, what is the final **value** of x?

(A) ["*","-","*","*"]

(B) ["-","*","-"]

(C) ["-","*","-","-"]

(D) None of the other answers are correct.

(E) ["-","-","*"]

26. (1 point) Consider the following program:

```
x=3
a=7
if (a%3)==2:
    x=x**2
elif(a%3)==1:
    x=x**1
else:
    x=x**0
```

What is the **value** of x after this program is executed?

(A) 7

(B) None of the other answers are correct.

(C) 9

(D) 3

(E) 1

27. (1 point) What is the result of the following expression?

```
[ 1, 2, 3 ] * 3
```

(A) [1.0, 2.0, 3.0, 1.0, 2.0, 3.0, 1.0, 2.0, 3.0]

(B) [1, 2, 3, 1, 2, 3, 1, 2, 3]

(C) [3, 6, 9]

(D) (3, 6, 9)

(E) [3.0, 6.0, 9.0]

28. (1 point) Consider the following program:

```
x=[2,3,4,5,6,7,8,9]
x=x[2:-2]
i=1
while i <= 3:
    x[i]+=1
    i+=1
```

What is the **value** of x after this program is executed?

 (A) [2, 4, 6, 6]

 (B) [4, 6, 7, 8]

 (C) [3, 4, 6, 7, 8]

 (D) [4, 6, 7, 7]

 (E) [4, 6, 7]

29. (1 point) Consider the following incomplete program.

```
sum=0
???:
    sum=sum+i
```

The program is intended to sum all of the integers between 1 and 100 (inclusive). What should replace the three question marks to complete the program?

 (A) `for i in range(1,101)`

 (B) `while i<=100`

 (C) `for i in range(0,100)`

 (D) `while i in range(100)`

30. (1 point) Consider the following program:

```
pi="3.14159"
e="2.71828"
x=pi in pi*len(e)
```

What is the **type** of x after this program is executed?

(A) Boolean

(B) None

(C) String

(D) Float

(E) Integer

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1. Fill in your information:

Full Name: _____

UIN (Student Number): _____

NetID: _____

2. Fill in the following answers on the Scantron form:

92. D

93. D

94. B

95. A

96. E

1. (1 point) Consider the following incomplete program.

```
sum=0
???:
    sum=sum+i
```

The program is intended to sum all of the integers between 1 and 100 (inclusive). What should replace the three question marks to complete the program?

(A) `while i<=100`

(B) `while i in range(100)`

(C) `for i in range(1,101)`

(D) `for i in range(0,100)`

2. (1 point) Consider the following incomplete function.

```
def ismultiple(m,n):
    if ???:
        return False
    else:
        return True
```

The function is intended to return True if the input parameter m is a multiple of parameter n and False otherwise. For example, `ismultiple(4,2)` should return `True`, but `ismultiple(5,3)` should return `False`. What should replace the three question marks to complete the function?

(A) `(n // m) == 0`

(B) `(n % m) == 0`

(C) `(m % n) != 0`

(D) `(m // n) != 0`

3. (1 point) How can the following mathematical equation be implemented as a Python expression? Assume `a`, `b`, and `sin` have already been defined.

$$a \sin(a^b - b)$$

(A) `a*sin(a**b - b)`

(B) `a sin(a**b - b)`

(C) `a*sin(a^b - b)`

(D) None of the other answers are correct.

(E) `a*sin(b^a - b)`

4. (1 point) Consider the following program:

```
x=0
for i in range(4,10):
    if i%3==0:
        x+=3
    elif i%2==0:
        x+=2
    else:
        x+=1
```

What is the **value** of `x` after this program is executed?

(A) 12

(B) 13

(C) 11

(D) 14

(E) 10

5. (1 point) What is the result of the following expression?

```
[ 1, 2, 3 ] * 3.0
```

  (A) [1.0, 2.0, 3.0, 1.0, 2.0, 3.0, 1.0, 2.0, 3.0]

  (B) [3, 6, 9]

  (C) None of the above.

  (D) [3.0, 6.0, 9.0]

  (E) [1, 2, 3, 1, 2, 3, 1, 2, 3]

6. (1 point) Consider the following program:

```
i=3
x=2
while i < 7:
    x+=i
    i+=2
```

What is the **value** of x after this program is executed?

  (A) 10

  (B) 14

  (C) 11

  (D) 13

  (E) 12

7. (1 point) Consider the following program.

```
x=1
i=0
while(x*x)<=9:
    i=i+(x*x)
    x=x+1
```

After it is run, what is the final **value** of x?

(A) 4

(B) 30

(C) 14

(D) 5

(E) 3

8. (1 point) Consider the following program:

```
x=[1,2,3,4,5,6,7,8,9]
x=x[2:-2]
i=1
while i < 3:
    x[i]+=1
    i+=1
```

What is the **value** of x after this program is executed?

(A) [3, 5, 6, 6]

(B) [2, 4, 5, 6, 6, 7]

(C) [2, 4, 5, 5, 6, 7]

(D) [3, 5, 6, 6, 7]

(E) [3, 5, 6, 6, 7, 8]

9. (1 point) Consider the following program:

```
a=["A","C","C","I","O"]
a.sort()
a[0]=a[-1]
x=""
for e in a:
    x=x+e
```

What is the **value** of x after this program is executed?

(A) `"OCCIO"`

(B) None of the other answers are correct.

(C) `"ACCIA"`

(D) `"ACCOA"`

(E) `"ICCOI"`

10. (1 point) Evaluate the following expression:

```
len("ABCD"[0:3])
```

What value is produced?

(A) 1

(B) 3

(C) 2

(D) 4

11. (1 point) Consider the following program:

```
pi="3.14159"
e="2.71828"
x=pi*len(e)+pi
```

What is the **type** of x after this program is executed?

(A) String

(B) Float

(C) Boolean

(D) None

(E) Integer

12. (1 point) Consider the following program:

```python
def fix(s):
    a=list(s)
    a.sort()
    return ''.join(a)

x=["one","two","eleven","twelve"]
s1=fix(x[0]+x[-1])
s2=fix(x[1]+x[-2])

if s1==s2:
    x.sort()
elif s1<s2:
    x.reverse()
else:
    x.append("six")
```

What is the **value** of x after this program is executed?

(A) ['twelve', 'eleven', 'two', 'one']

(B) ['one', 'two', 'eleven', 'twelve', 'six']

(C) ['one', 'two', 'eleven', 'twelve']

(D) ['eleven', 'one', 'twelve', 'two']

(E) ['two', 'twelve', 'one', 'eleven', 'six']

13. (1 point) Consider the following program.

```
s="BBCAA"
x=0
y=len(s)-1
while s[x]!=s[y] and x<len(s):
    x+=1
    y-=1
```

After it is run, what is the final **value** of x?

(A) 0

(B) 2

(C) 3

(D) 4

(E) 1

14. (1 point) Consider the following program:

```
s="ECTOR"
t="GAWAIN"
x=(len(s)/(len(t)-1))+1
```

What is the **type** of x after this program is executed?

(A) Float

(B) Integer

(C) String

(D) None

(E) Boolean

15. (1 point) Consider the following program:

```
s="Hobbes"
i=0
x=-1
while i<len(s):
    if s[i]=='b':
        x=i
    i+=1
```

What is the **value** of x after this program is executed?

(A) 2

(B) 3

(C) 5

(D) 4

(E) -1

16. (1 point) Consider the following program:

```
x=3
a=7
if (a%3)==2:
    x=x**2
elif(a%3)==1:
    x=x**1
else:
    x=x**0
```

What is the **value** of x after this program is executed?

(A) 9

(B) 1

(C) 3

(D) None of the other answers are correct.

(E) 7

17. (1 point) Consider the following program:

```
x=[1,2,3]
def f(a):
    s=""
    a.append(4)
    for i in a:
        s+=str(i)
    return s

x.append(f(x))
```

What is the **value** of x after this program is executed?

(A) [1, 2, 3]

(B) [1, 2, 3, 4, '1234']

(C) [1, 2, 3, 10]

(D) [1, 2, 3, '1234']

(E) [1, 2, 3, '123']

18. (1 point) Consider the following program.

```
kay = 2
wart = 3

def knight(kay,wart):
    wart += 2
    kay += 3
    return wart + kay

kay = knight(wart, kay) + knight(kay, wart)
```

After it is run, what is the final **value** of kay?

(A) 5

(B) 2

(C) 3

(D) None of the other answers are correct.

19. (1 point) Consider the following program:

```
a=3
b=4
if a!=b:
    a=b
elif a==4:
    a=5
else:
    b=a
```

What is the **value** of a after this program is executed?

(A) None of the other answers are correct.

(B) 7

(C) 3

(D) 4

(E) 5

20. (1 point) Consider the following program:

```
s="G+R+A+I+L"
x=s.split("+")[1:-2]
```

What is the **value** of x after this program is executed?

(A) 3

(B) 'RAI'

(C) None

(D) False

(E) ['R','A']

14

21. (1 point) Consider the following program.

```
x=[]
for j in range(0,5):
    if (j%3)==0:
        x.append("-")
    if (j%4)==0:
        x.append("*")
```

After it is run, what is the final **value** of x?

(A) ["-","*","-","*"]

(B) ["*","-","*"]

(C) ["-","*"]

(D) ["*","-","*"]

(E) None of the other answers are correct.

22. (1 point) Consider the following Python program.

```
e=[1,3,5,7,9,11]
d=[0,0,0]
for i in range(0,len(e)):
    d[i%3]+=e[i]
x=d[2]
```

After it is run, what is the final **value** of x?

(A) 8

(B) 7

(C) 12

(D) 0

(E) 16

23. (1 point) Consider the following program:

```
x="KING ARTHUR-MORGANA LEFAY-SIR BEDIVERE".split("-")
y=x
y.reverse()
```

What is the **value** of x after this program is executed?

(A) ['KING', 'ARTHUR-MORGANA', 'LEFAY-SIR', 'BEDIVERE']

(B) ['SIR BEDIVERE', 'MORGANA LEFAY', 'KING ARTHUR']

(C) ['KING ARTHUR', 'MORGANA LEFAY', 'SIR BEDIVERE']

(D) None

(E) ['BEDIVERE', 'LEFAY-SIR', 'ARTHUR-MORGANA', 'KING']

24. (1 point) Consider the following program:

```
x=str(1.2)*2
```

What is the **value** of x after this program is executed?

(A) "1.21.2"

(B) None of the other answers are correct.

(C) 2.4

(D) "2.4"

(E) "1.2*2"

16

25. (1 point) Evaluate the following expression:

`[1,2]*len("3")`

What value is produced?

(A) `[1,2,3]`

(B) `[1,2]`

(C) `[1,2,1,2,1,2]`

(D) `[1,2,1]`

26. (1 point) Consider the following incomplete Python program.

```
s="".join(["1","0","2","1"])
x=0
for i in range(len(s)-1):
    x+=int(???)
```

What should replace the three question marks so the resulting value of x is 33?

(A) `s[i:i-1]`

(B) `s[i:i+2]`

(C) `s[i:i+1]`

(D) `s[i+1:i+2]`

27. (1 point) Consider the following program:

```
s="TRIS %i"
t="ISEU"
x=s % len(t)
```

What is the **type** of x after this program is executed?

(A) Float

(B) None

(C) Boolean

(D) Integer

(E) String

28. (1 point) Consider the following program.

```
def artificing(s):
    return s*2
    return s+"%i" % 2
    return s

s=artificing("MERLIN")
```

After it is run, what is the final **value** of s?

(A) None

(B) "MERLIN"

(C) "MERLIN2"

(D) "MERLINMERLIN"

(E) 12

29. (1 point) For this problem, you should compose a function which accomplishes a given task using the available code blocks arranged in the correct functional order. *We ignore indentation for this problem.*

find_max should accept a `list` and return the value of the maximum item in the `list`. (`None` is always the lowest value in any numeric comparison, so you may use it as an initializer.)

```
def find_max(my_list):

1 max_val = i

2 max_val = None

3 for i in range(len(my_list)):

4 if i > max_val:

5 max_val = my_list[i]

6 return max_val

7 for i in range(my_list):

8 if my_list[i] > max_val:

9 print(max_val)
```

(A) 2, 3, 4, 1, 6

(B) 3, 2, 8, 5, 9

(C) 2, 3, 8, 1, 6

(D) 2, 7, 4, 5, 6

(E) 2, 3, 8, 5, 6

30. (1 point) Consider the following program:

```
a=["merlin","sir agravaine","king pellinore"]
b=[ ]
for i in range(0,3):
    b.append(a[0-i].title())
```

What is the **value** of b after this program is executed?

 (A) ['Merlin', 'King Pellinore', 'Sir Agravaine']

 (B) [ ]

 (C) ['King Pellinore', 'Sir Agravaine', 'Merlin']

 (D) ['King Pellinore', 'Sir Agravaine']

 (E) ['Sir Agravaine', 'King Pellinore']

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CS101 midterm1

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- There are 30 questions, worth 1 point each.

- Each question has only **one** correct answer.

- You must not communicate with other students during this test.

- No books, notes, or electronic devices are permitted.

- This is a 60-minute exam.

- There are several different versions of this exam.

1. Fill in your information:

Full Name: _____

UIN (Student Number): _____

NetID: _____

2. Fill in the following answers on the Scantron form:

92. E

93. D

94. B

95. B

96. A

1. (1 point) Consider the following program:

```
pi="3.14159"
e="2.71828"
x=pi in pi*len(e)
```

What is the **type** of x after this program is executed?

(A) None

(B) Integer

(C) Boolean

(D) String

(E) Float

2. (1 point) Consider the following program.

```
s="ABCBA"
x=0
y=len(s)-1
while s[x]==s[y] and x<y:
    x+=1
    y-=1
```

After it is run, what is the final **value** of x?

(A) 2

(B) 4

(C) 3

(D) 0

(E) 1

3. (1 point) Consider the following program:

```
x=[1,2,3,4,5,6,7,8,9]
x=x[2:-2]
i=1
while i < 3:
    x[i]+=1
    i+=1
```

What is the **value** of x after this program is executed?

(A) [3, 5, 6, 6, 7, 8]

(B) [2, 4, 5, 6, 6, 7]

(C) [3, 5, 6, 6, 7]

(D) [3, 5, 6, 6]

(E) [2, 4, 5, 5, 6, 7]

4. (1 point) Evaluate the following expression:

```
[1,2]*len("3")
```

What value is produced?

(A) [1,2,3]

(B) [1,2]

(C) [1,2,1]

(D) [1,2,1,2,1,2]

5. (1 point) Consider the following incomplete function.

```
def isdivisible(m,n):
    if ???:
        return False
    else:
        return True
```

The function is intended to return True if the input parameter m is evenly divisible by the parameter n and False otherwise. For example, `isdivisible(4,2)` should return `True`, but `isdivisible(5,3)` should return `False`. What should replace the three question marks to complete the function?

(A) `(n // m) == 0`

(B) `(m // n) != 0`

(C) `(n % m) == 0`

(D) `(m % n) != 0`

6. (1 point) Evaluate the following expression:

`len("ABCD"[0:3])`

What value is produced?

(A) 4

(B) 2

(C) 3

(D) 1

7. (1 point) How can the following mathematical equation be implemented as a Python expression? Assume `a`, `b`, and `sin` have already been defined.

$$a\sin(a^b - b)$$

(A) `a sin(a**b - b)`

(B) `a*sin(a^b - b)`

(C) `a*sin(b^a - b)`

(D) None of the other answers are correct.

(E) `a*sin(a**b - b)`

8. (1 point) Consider the following program:

```
s="-B-O-R-S-"
x=s.split("-")[2:-2]
```

What is the **value** of `x` after this program is executed?

(A) `None`

(B) `False`

(C) `['O', 'R']`

(D) `''`

(E) `'ORS'`

9. (1 point) Consider the following program.

```
x=[]
for j in range(0,5):
    if (j%3)==0:
        x.append("-")
    if (j%4)==0:
        x.append("*")
```

After it is run, what is the final **value** of x?

(A) ["-","*","-","*"]

(B) ["-","*"]

(C) ["*","-","*"]

(D) None of the other answers are correct.

(E) ["*","-","*"]

10. (1 point) Consider the following program.

```
def artificing(s):
    return s*2
    return s+"%i" % 2
    return s

s=artificing("MERLIN")
```

After it is run, what is the final **value** of s?

(A) 12

(B) "MERLINMERLIN"

(C) None

(D) "MERLIN"

(E) "MERLIN2"

11. (1 point) Consider the following program:

```
i=2
x=3
while i < 7:
    x+=i
    i+=2
```

What is the **value** of x after this program is executed?

(A) 12

(B) 15

(C) 11

(D) 13

(E) 14

12. (1 point) Consider the following incomplete Python program.

```python
s="".join(["2","2","0","1"])
x=0
for i in range(len(s)-1):
    x+=int(???)
```

What should replace the three question marks so the resulting value of x is 43?

(A) `s[i+1:i+2]`

(B) `s[i:i-1]`

(C) `s[i:i+2]`

(D) `s[i:i+1]`

13. (1 point) Consider the following program:

```python
s="ECTOR"
t="GAWAIN"
x=len(str(s.isupper()))-t.find("A")
```

What is the **type** of x after this program is executed?

(A) `Float`

(B) `String`

(C) `Integer`

(D) `Boolean`

(E) `None`

8

14. (1 point) Consider the following program:

```
s="TRIS %i"
t="ISEU"
x=s % len(t)
```

What is the **type** of x after this program is executed?

(A) String

(B) Boolean

(C) Integer

(D) None

(E) Float

15. (1 point) Consider the following program:

```
x=0
for i in range(2,8):
    if i%3==0:
        x+=3
    elif i%2==0:
        x+=2
    else:
        x+=1
```

What is the **value** of x after this program is executed?

(A) 12

(B) 10

(C) 13

(D) 14

(E) 11

16. (1 point)

```
x=str(3)+"str(3)"
```

What is the **value** of x after this program is executed?

(A) "333"

(B) None of the other answers are correct.

(C) "33"

(D) 33

(E) "3str(3)"

17. (1 point) Consider the following Python program.

```
e=[1,3,5,7,9,11]
d=[0,0,0]
for i in range(0,len(e)):
    d[i%3]+=e[i]
x=d[1]
```

After it is run, what is the final **value** of x?

(A) 0

(B) 12

(C) 8

(D) 16

(E) 3

18. (1 point) Consider the following program:

```
a=["merlin","sir agravaine","king pellinore"]
b=[ ]
for i in range(0,4):
    b.append(a[0-i].title())
```

What is the **value** of b after this program is executed?

(A) ['Merlin', 'King Pellinore', 'Sir Agravaine']

(B) ['King Pellinore', 'Sir Agravaine', 'Merlin']

(C) [ ]

(D) ['Merlin', 'Sir Agravaine', 'King Pellinore', 'Merlin']

(E) ['Merlin', 'King Pellinore', 'Sir Agravaine', 'Merlin']

19. (1 point) Consider the following program.

```
x=1
i=0
while(x*x)<=9:
    i=i+(x*x)
    x=x+1
```

After it is run, what is the final **value** of x?

(A) 5

(B) 3

(C) 30

(D) 14

(E) 4

20. (1 point) Consider the following program.

```
kay = 2
wart = 3

def knight(kay,wart):
    wart += 2
    kay += 3
    return wart + kay

kay = knight(wart, kay) + knight(kay, wart)
```

After it is run, what is the final **value** of kay?

(A) 2

(B) 3

(C) None of the other answers are correct.

(D) 5

21. (1 point) Consider the following program:

```
x="KING ARTHUR-MORGANA LEFAY-SIR BEDIVERE".split("-")
y=x[:]
y.reverse()
```

What is the **value** of x after this program is executed?

(A) ['SIR BEDIVERE', 'MORGANA LEFAY', 'KING ARTHUR']

(B) ['BEDIVERE', 'LEFAY-SIR', 'ARTHUR-MORGANA', 'KING']

(C) ['KING', 'ARTHUR-MORGANA', 'LEFAY-SIR', 'BEDIVERE']

(D) None

(E) ['KING ARTHUR', 'MORGANA LEFAY', 'SIR BEDIVERE']

22. (1 point) Consider the following incomplete program.

```
sum=0
for i in range(0,100):
    ???
```

The program is intended to sum all of the integers between 1 and 100 (inclusive). What should replace the three question marks to complete the program?

(A) `sum=sum+1`

(B) `sum+1=sum`

(C) `sum=sum+i`

(D) `sum=sum+i+1`

23. (1 point) Consider the following program:

```
x=3
a=7
if (a%3)==2:
    x=x**2
elif(a%3)==1:
    x=x**1
else:
    x=x**0
```

What is the **value** of x after this program is executed?

(A) 7

(B) 3

(C) 1

(D) 9

(E) None of the other answers are correct.

24. (1 point) Consider the following program:

```
a=3
b=4
if a!=b:
    a=b
elif a==4:
    a=5
else:
    b=a
```

What is the **value** of a after this program is executed?

(A) 5

(B) 3

(C) None of the other answers are correct.

(D) 7

(E) 4

25. (1 point) What is the result of the following expression?

```
[ 1, 2, 3 ] * 3
```

(A) [3, 6, 9]

(B) [3.0, 6.0, 9.0]

(C) (3, 6, 9)

(D) [1.0, 2.0, 3.0, 1.0, 2.0, 3.0, 1.0, 2.0, 3.0]

(E) [1, 2, 3, 1, 2, 3, 1, 2, 3]

26. (1 point) For this problem, you should compose a function which accomplishes a given task using the available code blocks arranged in the correct functional order. *We ignore indentation for this problem.*

`find_max` should accept a `list` and return the value of the maximum item in the `list`. (`None` is always the lowest value in any numeric comparison, so you may use it as an initializer.)

```
def find_max(my_list):

1 max_val = i

2 max_val = None

3 for i in range(len(my_list)):

4 if i > max_val:

5 max_val = my_list[i]

6 return max_val

7 for i in range(my_list):

8 if my_list[i] > max_val:

9 print(max_val)
```

(A) 2, 3, 8, 1, 6

(B) 3, 2, 8, 5, 9

(C) 2, 3, 8, 5, 6

(D) 2, 7, 4, 5, 6

(E) 2, 3, 4, 1, 6

27. (1 point) Consider the following program:

```
a=["S","T","U","P","E","F","Y"]
a=a[0:4]
a.sort()
x=""
for e in a:
    x=e+x
```

What is the **value** of x after this program is executed?

(A) "STUP"

(B) None of the other answers are correct.

(C) "PUST"

(D) "UTSP"

(E) "PSTU"

28. (1 point) Consider the following program:

```
x=[1,2,3]
def f(a):
    s=""
    a.append(4)
    for i in a:
        s+=str(i)
    return s

x.append(f(x))
```

What is the **value** of x after this program is executed?

(A) [1, 2, 3, 10]

(B) [1, 2, 3, '123']

(C) [1, 2, 3]

(D) [1, 2, 3, '1234']

(E) [1, 2, 3, 4, '1234']

29. (1 point) Consider the following program:

```
s="Hobbes"
i=0
x=-1
while i<len(s):
    if s[i]=='b':
        x=i
    i+=1
```

What is the **value** of x after this program is executed?
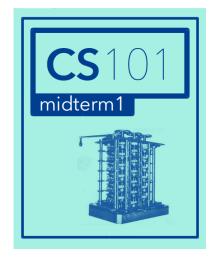
(A) -1

(B) 4

(C) 5

(D) 2

(E) 3

30. (1 point) Consider the following program:

```python
def fix(s):
    a=list(s)
    a.sort()
    return ''.join(a)

x=["one","two","eleven","twelve"]
s1=fix(x[0]+x[-1])
s2=fix(x[1]+x[-2])

if s1<s2:
    x.sort()
elif s1==s2:
    x.reverse()
else:
    x.append("six")
```

What is the **value** of x after this program is executed?

(A) ['twelve', 'eleven', 'two', 'one']

(B) ['two', 'twelve', 'one', 'eleven', 'six']

(C) ['one', 'two', 'eleven', 'twelve']

(D) ['eleven', 'one', 'twelve', 'two']

(E) ['one', 'two', 'eleven', 'twelve', 'six']

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1. Fill in your information:

Full Name: _____

UIN (Student Number): _____

NetID: _____

2. Fill in the following answers on the Scantron form:

92. A

93. E

94. B

95. D

96. D

1. (1 point) Consider the following program.

```
kay = 2
wart = 3

def knight(kay,wart):
    wart += 2
    kay += 3
    return wart + kay

wart = knight(kay, kay) + knight(wart, wart)
```

After it is run, what is the final **value** of `wart`?

(A) None of the other answers are correct.

(B) 2

(C) 3

(D) 5

2. (1 point) Consider the following program:

```
a=["merlin","sir agravaine","king pellinore"]
b=[ ]
for i in range(0,3):
    b.append(a[0-i].title())
```

What is the **value** of b after this program is executed?

(A) [ ]

(B) ['King Pellinore', 'Sir Agravaine']

(C) ['Merlin', 'King Pellinore', 'Sir Agravaine']

(D) ['Sir Agravaine', 'King Pellinore']

(E) ['King Pellinore', 'Sir Agravaine', 'Merlin']

3. (1 point) Consider the following incomplete Python program.

```python
s="".join(["0","1","2","1"])
x=0
for i in range(len(s)-1):
    x+=int(???)
```

What should replace the three question marks so the resulting value of x is 34?

(A) `s[i:i+1]`

(B) `s[i:i-1]`

(C) `s[i:i+2]`

(D) `s[i+1:i+2]`

4. (1 point) Consider the following program:

```python
x=0
for i in range(2,7):
    if i%3==0:
        x+=3
    elif i%2==0:
        x+=2
    else:
        x+=1
```

What is the **value** of x after this program is executed?

(A) 14

(B) 10

(C) 12

(D) 13

(E) 11

5. (1 point) Consider the following program:

```
x=[1,2,3,4,5,6,7,8,9]
x=x[2:-2]
i=1
while i < 3:
    x[i]+=1
    i+=1
```

What is the **value** of x after this program is executed?

(A) [2, 4, 5, 5, 6, 7]

(B) [3, 5, 6, 6, 7, 8]

(C) [3, 5, 6, 6]

(D) [2, 4, 5, 6, 6, 7]

(E) [3, 5, 6, 6, 7]

6. (1 point) Evaluate the following expression:

```
[1,2]*len("3")
```

What value is produced?

(A) [1,2,1]

(B) [1,2]

(C) [1,2,1,2,1,2]

(D) [1,2,3]

7. (1 point) Consider the following program:

```
def fix(s):
    a=list(s)
    a.sort()
    return ''.join(a)

x=["one","two","eleven","twelve"]
s1=fix(x[0]+x[-1])
s2=fix(x[1]+x[-2])

if s1<s2:
    x.sort()
elif s1>s2:
    x.reverse()
else:
    x.append("six")
```

What is the **value** of x after this program is executed?

(A) ['one', 'two', 'eleven', 'twelve', 'six']

(B) ['one', 'two', 'eleven', 'twelve']

(C) ['twelve', 'eleven', 'two', 'one']

(D) ['two', 'twelve', 'one', 'eleven', 'six']

(E) ['eleven', 'one', 'twelve', 'two']

8. (1 point) Consider the following program:

```
i=3
x=2
while i < 7:
    x+=i
    i+=2
```

What is the **value** of x after this program is executed?

(A) 12

(B) 13

(C) 11

(D) 10

(E) 14

9. (1 point) Consider the following program:

```
s="ECTOR"
t="GAWAIN"
x=(len(s)/(len(t)-1))+1
```

What is the **type** of x after this program is executed?

(A) Integer

(B) None

(C) Float

(D) Boolean

(E) String

10. (1 point) How can the following mathematical equation be implemented as a Python expression? Assume `a`, `b`, and `cos` have already been defined.

$$a^b \cos(a - b)$$

(A) `(a**b)*cos(a-b)`

(B) `(a^b)*cos(a-b)`

(C) None of the other answers are correct.

(D) `(a**b)cos(a-b)`

(E) `(b^a)cos(a-b)`

11. (1 point) Consider the following program:

```
a=3
b=4
if a==3:
    a=b
elif a==4:
    a=5
else:
    b=a
```

What is the **value** of a after this program is executed?

(A) 5

(B) 4

(C) 3

(D) 7

(E) None of the other answers are correct.

12. (1 point) For this problem, you should compose a function which accomplishes a given task using the available code blocks arranged in the correct functional order. *We ignore indentation for this problem.*

`find_max` should accept a `list` and return the value of the maximum item in the `list`. (`None` is always the lowest value in any numeric comparison, so you may use it as an initializer.)

```
def find_max(my_list):

1 max_val = i

2 max_val = None

3 for i in range(len(my_list)):

4 if i > max_val:

5 max_val = my_list[i]

6 return max_val

7 for i in range(my_list):

8 if my_list[i] > max_val:

9 print(max_val)
```

  (A) 3, 2, 8, 5, 9

  (B) 2, 3, 8, 5, 6

  (C) 2, 3, 4, 1, 6

  (D) 2, 3, 8, 1, 6

  (E) 2, 7, 4, 5, 6

13. (1 point) Consider the following program:

```
a=["A","C","C","I","O"]
a.sort()
a[0]=a[-1]
x=""
for e in a:
    x=x+e
```

What is the **value** of x after this program is executed?

(A) None of the other answers are correct.

(B) "OCCIO"

(C) "ACCOA"

(D) "ICCOI"

(E) "ACCIA"

14. (1 point) Consider the following program:

```
s="-B-O-R-S-"
x=s.split("-")[2:-2]
```

What is the **value** of x after this program is executed?

(A) 'ORS'

(B) ''

(C) False

(D) None

(E) ['O', 'R']

15. (1 point) Consider the following program:

```
x=3
a=7
if (a%3)==2:
    x=x**2
elif(a%3)==1:
    x=x**1
else:
    x=x**0
```

What is the **value** of x after this program is executed?

(A) 3

(B) 9

(C) None of the other answers are correct.

(D) 1

(E) 7

16. (1 point) Consider the following program:

```
x=str("1"*3)
```

What is the **value** of x after this program is executed?

(A) "111"

(B) None of the other answers are correct.

(C) "3"

(D) 111

(E) 3

17. (1 point) What is the result of the following expression?

```
[ 1, 2, 3 ] * 3.0
```

 (A) [1, 2, 3, 1, 2, 3, 1, 2, 3]

 (B) [3, 6, 9]

 (C) [3.0, 6.0, 9.0]

 (D) [1.0, 2.0, 3.0, 1.0, 2.0, 3.0, 1.0, 2.0, 3.0]

 (E) None of the above.

18. (1 point) Consider the following program.

```
x=[]
for j in range(0,5):
    if (j%3)==0:
        x.append("-")
    if (j%4)==0:
        x.append("*")
```

After it is run, what is the final **value** of x?

 (A) ["*","-","*"]

 (B) ["-","*","-","*"]

 (C) ["-","*"]

 (D) ["*","-","*"]

 (E) None of the other answers are correct.

19. (1 point) Consider the following program.

```
x=0
i=1
while(i*i)<=9:
    x=x+(i*i)
    i=i+1
```

After it is run, what is the final **value** of x?

(A) 5

(B) 30

(C) 4

(D) 14

(E) 3

20. (1 point) Evaluate the following expression:

```
len("ABCDE"[1:4])
```

What value is produced?

(A) 1

(B) 5

(C) 3

(D) 4

21. (1 point) Consider the following incomplete function.

```
def isdivisible(m,n):
    if ???:
        return False
    else:
        return True
```

The function is intended to return True if the input parameter m is evenly divisible by the parameter n and False otherwise. For example, `isdivisible(4,2)` should return `True`, but `isdivisible(5,3)` should return `False`. What should replace the three question marks to complete the function?

(A) `(n % m) == 0`

(B) `(n // m) == 0`

(C) `(m // n) != 0`

(D) `(m % n) != 0`

22. (1 point) Consider the following program:

```
pi="3.14159"
e="2.71828"
x=(float(e)**float(pi)-float(pi)) == 20
```

What is the **type** of x after this program is executed?

(A) `None`

(B) `Integer`

(C) `String`

(D) `Boolean`

(E) `Float`

23. (1 point) Consider the following program:

```
x=[1,2,3]
def f(a):
    s=""
    a.append(4)
    for i in a:
        s+=str(i)
    return s


x.append(f(x))
```

What is the **value** of x after this program is executed?

 (A) [1, 2, 3, '123']

 (B) [1, 2, 3, 10]

 (C) [1, 2, 3, 4, '1234']

 (D) [1, 2, 3]

 (E) [1, 2, 3, '1234']

24. (1 point) Consider the following program:

```
s="Hobbes"
i=0
x=-1
while i<len(s):
    if s[i]=='b':
        x=i
    i+=1
```

What is the **value** of x after this program is executed?

(A) -1

(B) 3

(C) 4

(D) 2

(E) 5

25. (1 point) Consider the following Python program.

```
e=[1,3,5,7,9,11]
d=[0,0,0]
for i in range(0,len(e)):
    d[i%3]+=e[i]
x=d[2]
```

After it is run, what is the final **value** of x?

(A) 12

(B) 8

(C) 0

(D) 7

(E) 16

26. (1 point) Consider the following program.

```
s="BBCAA"
x=0
y=len(s)-1
while s[x]!=s[y] and x<len(s):
    x+=1
    y-=1
```

After it is run, what is the final **value** of x?

(A) 3

(B) 0

(C) 4

(D) 2

(E) 1

27. (1 point) Consider the following program:

```
x="KING ARTHUR-MORGANA LEFAY-SIR BEDIVERE".split("-")
y=x
y.reverse()
```

What is the **value** of x after this program is executed?

(A) ['SIR BEDIVERE', 'MORGANA LEFAY', 'KING ARTHUR']

(B) ['KING', 'ARTHUR-MORGANA', 'LEFAY-SIR', 'BEDIVERE']

(C) None

(D) ['BEDIVERE', 'LEFAY-SIR', 'ARTHUR-MORGANA', 'KING']

(E) ['KING ARTHUR', 'MORGANA LEFAY', 'SIR BEDIVERE']

28. (1 point) Consider the following program.

```
def artificing(s):
    return s+"%i" % 2
    return s*2
    return s

s=artificing("MERLIN")
```

After it is run, what is the final **value** of s?

(A) 0

(B) "MERLIN2"

(C) None

(D) "MERLINMERLIN"

(E) "MERLIN%i"

29. (1 point) Consider the following incomplete program.

```
sum=0
???:
    sum=sum+i
```

The program is intended to sum all of the integers between 1 and 100 (inclusive). What should replace the three question marks to complete the program?

(A) `while i in range(100)`

(B) `for i in range(0,100)`

(C) `for i in range(1,101)`

(D) `while i<=100`

30. (1 point) Consider the following program:

```
s="TRIS %i"
t="ISEU"
x=s % len(t)
```

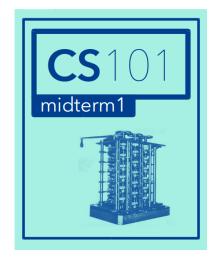What is the **type** of x after this program is executed?

(A) `None`

(B) `Float`

(C) `Boolean`

(D) `String`

(E) `Integer`

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CS101 midterm1

- **Be sure to enter your <u>NetID</u> and <u>the code below</u> on your Scantron**.

- Do not turn this page until instructed to do so.

- There are 30 questions, worth 1 point each.

- Each question has only **one** correct answer.

- You must not communicate with other students during this test.

- No books, notes, or electronic devices are permitted.

- This is a 60-minute exam.

- There are several different versions of this exam.

1. Fill in your information:

Full Name: _____

UIN (Student Number): _____

NetID: _____

2. Fill in the following answers on the Scantron form:

92. B

93. E

94. B

95. E

96. E

1. (1 point) What is the result of the following expression?

```
[ 1, 2, 3 ] * 3.0
```

(A) [3, 6, 9]

(B) None of the above.

(C) [3.0, 6.0, 9.0]

(D) [1, 2, 3, 1, 2, 3, 1, 2, 3]

(E) [1.0, 2.0, 3.0, 1.0, 2.0, 3.0, 1.0, 2.0, 3.0]

2. (1 point) Consider the following program:

```
a=3
b=4
if a==3:
    a=b
elif a==4:
    a=5
else:
    b=a
```

What is the **value** of a after this program is executed?

(A) 3

(B) 4

(C) None of the other answers are correct.

(D) 7

(E) 5

3. (1 point) Evaluate the following expression:

`len("ABCD"[0:3])`

What value is produced?

(A) 3

(B) 2

(C) 1

(D) 4

4. (1 point) Consider the following program:

```python
def fix(s):
    a=list(s)
    a.sort()
    return ''.join(a)

x=["one","two","eleven","twelve"]
s1=fix(x[0]+x[-1])
s2=fix(x[1]+x[-2])

if s1<s2:
    x.sort()
elif s1>s2:
    x.reverse()
else:
    x.append("six")
```

What is the **value** of x after this program is executed?

(A) ['twelve', 'eleven', 'two', 'one']

(B) ['one', 'two', 'eleven', 'twelve', 'six']

(C) ['two', 'twelve', 'one', 'eleven', 'six']

(D) ['one', 'two', 'eleven', 'twelve']

(E) ['eleven', 'one', 'twelve', 'two']

5. (1 point) Consider the following incomplete Python program.

```python
s="".join(["0","1","2","1"])
x=0
for i in range(len(s)-1):
    x+=int(???)
```

What should replace the three question marks so the resulting value of x is 34?

(A) `s[i:i+2]`

(B) `s[i:i+1]`

(C) `s[i+1:i+2]`

(D) `s[i:i-1]`

6. (1 point) Consider the following program:

```python
s="ECTOR"
t="GAWAIN"
x=len(str(s.isupper()))-t.find("A")
```

What is the **type** of x after this program is executed?

(A) `None`

(B) `Boolean`

(C) `Float`

(D) `Integer`

(E) `String`

7. (1 point) Consider the following program:

```
s="Hobbes"
i=0
x=-1
while i<len(s):
    if s[i]=='b':
        x=i
    i+=1
```

What is the **value** of x after this program is executed?

(A) 4

(B) 3

(C) -1

(D) 2

(E) 5

8. (1 point) Consider the following program:

```
i=3
x=2
while i < 7:
    x+=i
    i+=2
```

What is the **value** of x after this program is executed?

(A) 14

(B) 11

(C) 13

(D) 10

(E) 12

9. (1 point) Evaluate the following expression:

`[1,2]*len("3")`

What value is produced?

(A) [1,2]

(B) [1,2,1,2,1,2]

(C) [1,2,3]

(D) [1,2,1]

10. (1 point) Consider the following program:

```
x=[1,2,3,4,5,6,7,8,9]
x=x[2:-2]
i=1
while i <= 3:
    x[i]+=1
    i+=1
```

What is the **value** of x after this program is executed?

(A) [3, 5, 7, 7]

(B) [3, 5, 6, 7, 7]

(C) [2, 4, 5, 6, 7, 7]

(D) [2, 4, 5, 5, 7, 7]

(E) [3, 5, 6, 7, 7, 8]

11. (1 point) Consider the following program.

```
def artificing(s):
    return s+"%i" % 2
    return s*2
    return s
```

```
s=artificing("MERLIN")
```

After it is run, what is the final **value** of s?

(A) `None`

(B) `"MERLIN2"`

(C) `"MERLIN%i"`

(D) `0`

(E) `"MERLINMERLIN"`

12. (1 point) Consider the following incomplete program.

```
sum=0
???:
    sum=sum+i
```

The program is intended to sum all of the integers between 1 and 100 (inclusive). What should replace the three question marks to complete the program?

(A) `for i in range(1,101)`

(B) `for i in range(0,100)`

(C) `while i<=100`

(D) `while i in range(100)`

9

13. (1 point) Consider the following incomplete function.

```
def ismultiple(m,n):
    if ???:
        return False
    else:
        return True
```

The function is intended to return True if the input parameter m is a multiple of parameter n and False otherwise. For example, `ismultiple(4,2)` should return `True`, but `ismultiple(5,3)` should return `False`. What should replace the three question marks to complete the function?

(A) `(n % m) == 0`

(B) `(m // n) != 0`

(C) `(m % n) != 0`

(D) `(n // m) == 0`

14. (1 point) Consider the following program.

```
x=[]
for j in range(0,5):
    if (j%3)==0:
        x.append("-")
    if (j%4)==0:
        x.append("*")
```

After it is run, what is the final **value** of x?

(A) `["*","-","*"]`

(B) `["*","-","*"]`

(C) None of the other answers are correct.

(D) `["-","*"]`

(E) `["-","*","-","*"]`

10

15. (1 point) Consider the following program:

```
s="TRIS %i"
t="ISEU"
x=s % len(t)
```

What is the **type** of x after this program is executed?

(A) None

(B) Boolean

(C) Float

(D) Integer

(E) String

16. (1 point) Consider the following Python program.

```
e=[1,3,5,7,9,11]
d=[0,0,0]
for i in range(0,len(e)):
    d[i%3]+=e[i]
x=d[1]
```

After it is run, what is the final **value** of x?

(A) 3

(B) 16

(C) 8

(D) 0

(E) 12

17. (1 point) How can the following mathematical equation be implemented as a Python expression? Assume a, b, and sin have already been defined.

$$a \sin(a^b - b)$$

(A) `a*sin(a**b - b)`

(B) `a sin(a**b - b)`

(C) `a*sin(b^a - b)`

(D) `a*sin(a^b - b)`

(E) None of the other answers are correct.

18. (1 point) Consider the following program:

```
a=["merlin","sir agravaine","king pellinore"]
b=[ ]
for i in range(1,3):
    b.append(a[0-i].title())
```

What is the **value** of b after this program is executed?

(A) `['King Pellinore', 'Sir Agravaine', 'Merlin']`

(B) `[ ]`

(C) `['King Pellinore', 'Sir Agravaine']`

(D) `['Merlin', 'King Pellinore', 'Sir Agravaine']`

(E) `['Sir Agravaine', 'King Pellinore']`

19. (1 point) Consider the following program:

```
s="-B-O-R-S-"
x=s.split("-")[2:-2]
```

What is the **value** of x after this program is executed?

(A) 'ORS'

(B) ['O', 'R']

(C) None

(D) ''

(E) False

20. (1 point) Consider the following program:

```
pi="3.14159"
e="2.71828"
x=(float(e)**float(pi)-float(pi)) == 20
```

What is the **type** of x after this program is executed?

(A) String

(B) Boolean

(C) Float

(D) None

(E) Integer

21. (1 point) Consider the following program.

```
kay = 2
wart = 3

def knight(kay,wart):
    wart += 2
    kay += 3
    return wart + kay

kay = knight(wart, kay) + knight(kay, wart)
```

After it is run, what is the final **value** of kay?

(A) 3

(B) 2

(C) 5

(D) None of the other answers are correct.

22. (1 point) For this problem, you should compose a function which accomplishes a given task using the available code blocks arranged in the correct functional order. *We ignore indentation for this problem.*

`find_max` should accept a `list` and return the value of the maximum item in the `list`. (`None` is always the lowest value in any numeric comparison, so you may use it as an initializer.)

```
def find_max(my_list):

1 max_val = i

2 max_val = None

3 for i in range(len(my_list)):

4 if i > max_val:

5 max_val = my_list[i]

6 return max_val

7 for i in range(my_list):

8 if my_list[i] > max_val:

9 print(max_val)
```

(A) 2, 3, 8, 1, 6

(B) 2, 3, 8, 5, 6

(C) 2, 3, 4, 1, 6

(D) 3, 2, 8, 5, 9

(E) 2, 7, 4, 5, 6

23. (1 point) Consider the following program:

```
x=0
for i in range(2,8):
    if i%3==0:
        x+=3
    elif i%2==0:
        x+=2
    else:
        x+=1
```

What is the **value** of x after this program is executed?

(A) 10

(B) 14

(C) 12

(D) 13

(E) 11

24. (1 point) Consider the following program.

```
x=0
i=1
while(i*i)<=9:
    x=x+(i*i)
    i=i+1
```

After it is run, what is the final **value** of x?

(A) 4

(B) 14

(C) 5

(D) 30

(E) 3

25. (1 point) Consider the following program:

```
x=str(1.2)*2
```

What is the **value** of x after this program is executed?

(A) "1.21.2"

(B) "2.4"

(C) None of the other answers are correct.

(D) 2.4

(E) "1.2*2"

26. (1 point) Consider the following program:

```
a=["A","C","C","I","O"]
a.sort()
a[0]=a[-1]
x=""
for e in a:
    x=x+e
```

What is the **value** of x after this program is executed?

(A) "ICCOI"

(B) None of the other answers are correct.

(C) "OCCIO"

(D) "ACCOA"

(E) "ACCIA"

27. (1 point) Consider the following program:

```
x=[1,2,3]
def f(a):
    s=""
    a.append(4)
    for i in a:
        s+=str(i)
    return s


x.append(f(x))
```

What is the **value** of x after this program is executed?

(A) [1, 2, 3, '123']

(B) [1, 2, 3, 4, '1234']

(C) [1, 2, 3, 10]

(D) [1, 2, 3, '1234']

(E) [1, 2, 3]

28. (1 point) Consider the following program.

```
s="ABCBA"
x=0
y=len(s)-1
while s[x]==s[y] and x<=y:
    x+=1
    y-=1
```

After it is run, what is the final **value** of x?

(A) 4

(B) 0

(C) 1

(D) 2

(E) 3

29. (1 point) Consider the following program:

```
x="KING ARTHUR-MORGANA LEFAY-SIR BEDIVERE".split("-")
y=x
y.reverse()
```

What is the **value** of x after this program is executed?

(A) ['SIR BEDIVERE', 'MORGANA LEFAY', 'KING ARTHUR']

(B) ['KING', 'ARTHUR-MORGANA', 'LEFAY-SIR', 'BEDIVERE']

(C) ['KING ARTHUR', 'MORGANA LEFAY', 'SIR BEDIVERE']

(D) None

(E) ['BEDIVERE', 'LEFAY-SIR', 'ARTHUR-MORGANA', 'KING']

30. (1 point) Consider the following program:

```
x=3
a=7
if (a%3)==2:
    x=x**2
elif(a%3)==1:
    x=x**1
else:
    x=x**0
```

What is the **value** of x after this program is executed?

(A) 3

(B) 7

(C) 9

(D) 1

(E) None of the other answers are correct.

This page is intentionally left blank.

- **Be sure to enter your <u>NetID</u> and <u>the code below</u> on your Scantron**.

- Do not turn this page until instructed to do so.

- There are 30 questions, worth 1 point each.

- Each question has only **one** correct answer.

- You must not communicate with other students during this test.

- No books, notes, or electronic devices are permitted.

- This is a 60-minute exam.

- There are several different versions of this exam.

1. Fill in your information:

Full Name: _____

UIN (Student Number): _____

NetID: _____

2. Fill in the following answers on the Scantron form:

92. C

93. E

94. B

95. A

96. A

1. (1 point) Consider the following program:

```
x=[1,2,3]
def f(a):
    s=""
    a.reverse()
    for i in a:
        s+=str(i)
    return s

x.append(f(x))
```

What is the **value** of x after this program is executed?

(A) [3, 2, 1, '321']

(B) [3, 2, 1]

(C) [1, 2, 3]

(D) [1, 2, 3, '321']

(E) [1, 2, 3, 6]

2. (1 point) Consider the following program.

```
s="BBCAA"
x=0
y=len(s)-1
while s[x]!=s[y] and x<len(s):
    x+=1
    y-=1
```

After it is run, what is the final **value** of x?

(A) 3

(B) 4

(C) 0

(D) 1

(E) 2

3. (1 point) Consider the following program:

```
s="TRIS %i"
t="ISEU"
x=s % len(t)
```

What is the **type** of x after this program is executed?

(A) String

(B) Boolean

(C) Float

(D) Integer

(E) None

4. (1 point) Consider the following program:

```
pi="3.14159"
e="2.71828"
x=pi*len(e)+pi
```

What is the **type** of x after this program is executed?

(A) String

(B) Boolean

(C) None

(D) Float

(E) Integer

5. (1 point)

```
x=str(3)+"str(3)"
```

What is the **value** of x after this program is executed?

(A) 33

(B) None of the other answers are correct.

(C) "333"

(D) "33"

(E) "3str(3)"

6. (1 point) Consider the following program:

```
def fix(s):
    a=list(s)
    a.sort()
    return ''.join(a)

x=["one","two","eleven","twelve"]
s1=fix(x[0]+x[-1])
s2=fix(x[1]+x[-2])

if s1<s2:
    x.sort()
elif s1>s2:
    x.reverse()
else:
    x.append("six")
```

What is the **value** of x after this program is executed?

(A) ['one', 'two', 'eleven', 'twelve']

(B) ['two', 'twelve', 'one', 'eleven', 'six']

(C) ['one', 'two', 'eleven', 'twelve', 'six']

(D) ['twelve', 'eleven', 'two', 'one']

(E) ['eleven', 'one', 'twelve', 'two']

7. (1 point) How can the following mathematical equation be implemented as a Python expression? Assume a, b, and cos have already been defined.

$$a^b \cos(a - b)$$

(A) `(b^a)cos(a-b)`

(B) `(a**b)*cos(a-b)`

(C) None of the other answers are correct.

(D) `(a**b)cos(a-b)`

(E) `(a^b)*cos(a-b)`

8. (1 point) Consider the following program.

```
x=0
i=1
while(i*i)<=9:
    x=x+(i*i)
    i=i+1
```

After it is run, what is the final **value** of x?

(A) 5

(B) 3

(C) 14

(D) 30

(E) 4

9. (1 point) Consider the following incomplete Python program.

```python
s="".join(["0","1","2","1"])
x=0
for i in range(len(s)-1):
    x+=int(???)
```

What should replace the three question marks so the resulting value of x is 34?

(A) s[i:i-1]

(B) s[i:i+2]

(C) s[i+1:i+2]

(D) s[i:i+1]

10. (1 point) Consider the following program:

```python
x=[1,2,3,4,5,6,7,8,9]
x=x[2:-2]
i=1
while i <= 3:
    x[i]+=1
    i+=1
```

What is the **value** of x after this program is executed?

(A) [3, 5, 7, 7]

(B) [3, 5, 6, 7, 7, 8]

(C) [2, 4, 5, 6, 7, 7]

(D) [3, 5, 6, 7, 7]

(E) [2, 4, 5, 5, 7, 7]

7

11. (1 point) Consider the following program:

```
a=["merlin","sir agravaine","king pellinore"]
b=[ ]
for i in range(0,4):
    b.append(a[0-i].title())
```

What is the **value** of b after this program is executed?

(A) ['King Pellinore', 'Sir Agravaine', 'Merlin']

(B) ['Merlin', 'King Pellinore', 'Sir Agravaine']

(C) [ ]

(D) ['Merlin', 'King Pellinore', 'Sir Agravaine', 'Merlin']

(E) ['Merlin', 'Sir Agravaine', 'King Pellinore', 'Merlin']

12. (1 point) Consider the following program:

```
s="ECTOR"
t="GAWAIN"
x=(len(s)/(len(t)-1))+1
```

What is the **type** of x after this program is executed?

(A) Integer

(B) Float

(C) String

(D) None

(E) Boolean

13. (1 point) Consider the following Python program.

```
e=[1,3,5,7,9,11]
d=[0,0,0]
for i in range(0,len(e)):
    d[i%3]+=e[i]
x=d[1]
```

After it is run, what is the final **value** of x?

(A) 16

(B) 0

(C) 3

(D) 8

(E) 12

14. (1 point) Consider the following program:

```
s="Calvin"
i=0
x=-1
while i<len(s):
    if s[i]=='b':
        x=i
    i+=1
```

What is the **value** of x after this program is executed?

(A) 0

(B) 5

(C) -1

(D) 3

(E) 6

15. (1 point) Evaluate the following expression:

```
len("ABCDE"[1:4])
```

What value is produced?

(A) 5

(B) 3

(C) 4

(D) 1

16. (1 point) Consider the following incomplete function.

```
def isdivisible(m,n):
    if ???:
        return False
    else:
        return True
```

The function is intended to return True if the input parameter m is evenly divisible by the parameter n and False otherwise. For example, `isdivisible(4,2)` should return `True`, but `isdivisible(5,3)` should return `False`. What should replace the three question marks to complete the function?

(A) `(n // m) == 0`

(B) `(m // n) != 0`

(C) `(n % m) == 0`

(D) `(m % n) != 0`

17. (1 point) Consider the following program:

```
x=0
for i in range(2,7):
    if i%3==0:
        x+=3
    elif i%2==0:
        x+=2
    else:
        x+=1
```

What is the **value** of x after this program is executed?

(A) 11

(B) 14

(C) 12

(D) 10

(E) 13

18. (1 point) What is the result of the following expression?

```
[ 1, 2, 3 ] * 3.0
```

(A) [3, 6, 9]

(B) None of the above.

(C) [3.0, 6.0, 9.0]

(D) [1, 2, 3, 1, 2, 3, 1, 2, 3]

(E) [1.0, 2.0, 3.0, 1.0, 2.0, 3.0, 1.0, 2.0, 3.0]

19. (1 point) Consider the following program:

```
s="-B-O-R-S-"
x=s.split("-")[2:-2]
```

What is the **value** of x after this program is executed?

(A) `False`

(B) `['O', 'R']`

(C) `''`

(D) `'ORS'`

(E) `None`

20. (1 point) Consider the following program.

```
x=[]
for j in range(0,5):
    if (j%3)==0:
        x.append("-")
    if (j%4)==0:
        x.append("*")
```

After it is run, what is the final **value** of x?

(A) `["-","*","-","*"]`

(B) None of the other answers are correct.

(C) `["*","-","*"]`

(D) `["-","*"]`

(E) `["*","-","*"]`

21. (1 point) Consider the following program:

```
i=3
x=2
while i < 7:
    x+=i
    i+=2
```

What is the **value** of x after this program is executed?

(A) 13

(B) 11

(C) 12

(D) 14

(E) 10

22. (1 point) Consider the following program.

```
def artificing(s):
    return s+"%i" % 2
    return s*2
    return s
```

```
s=artificing("MERLIN")
```

After it is run, what is the final **value** of s?

(A) 0

(B) None

(C) "MERLINMERLIN"

(D) "MERLIN%i"

(E) "MERLIN2"

23. (1 point) Consider the following program:

```
x="KING ARTHUR-MORGANA LEFAY-SIR BEDIVERE".split("-")
y=x
y.reverse()
```

What is the **value** of x after this program is executed?

(A) `None`

(B) `['SIR BEDIVERE', 'MORGANA LEFAY', 'KING ARTHUR']`

(C) `['KING', 'ARTHUR-MORGANA', 'LEFAY-SIR', 'BEDIVERE']`

(D) `['BEDIVERE', 'LEFAY-SIR', 'ARTHUR-MORGANA', 'KING']`

(E) `['KING ARTHUR', 'MORGANA LEFAY', 'SIR BEDIVERE']`

24. (1 point) For this problem, you should compose a function which accomplishes a given task using the available code blocks arranged in the correct functional order. *We ignore indentation for this problem.*

`find_max` should accept a `list` and return the value of the maximum item in the `list`. (`None` is always the lowest value in any numeric comparison, so you may use it as an initializer.)

```
def find_max(my_list):

1 max_val = i

2 max_val = None

3 for i in range(len(my_list)):

4 if i > max_val:

5 max_val = my_list[i]

6 return max_val

7 for i in range(my_list):

8 if my_list[i] > max_val:

9 print(max_val)
```

(A) 2, 7, 4, 5, 6

(B) 2, 3, 8, 1, 6

(C) 3, 2, 8, 5, 9

(D) 2, 3, 8, 5, 6

(E) 2, 3, 4, 1, 6

25. (1 point) Consider the following program:

```
x=3
a=5
if (a%3)==2:
    x=x**3
elif(a%3)==1:
    x=x**2
else:
    x=x**1
```

What is the **value** of x after this program is executed?

(A) 9

(B) 3

(C) None of the other answers are correct.

(D) 27

(E) 1

26. (1 point) Consider the following program.

```
kay = 2
wart = 3

def knight(kay,wart):
    wart += 2
    kay += 3
    return wart + kay

wart = knight(kay, kay) + knight(wart, wart)
```

After it is run, what is the final **value** of `wart`?

(A) 2

(B) 5

(C) None of the other answers are correct.

(D) 3

27. (1 point) Consider the following program:

```
a=3
b=4
if a!=b:
    a=b
elif a==4:
    a=5
else:
    b=a
```

What is the **value** of a after this program is executed?

(A) None of the other answers are correct.

(B) 4

(C) 3

(D) 7

(E) 5

28. (1 point) Consider the following incomplete program.

```
sum=0
for i in range(0,100):
    ???
```

The program is intended to sum all of the integers between 1 and 100 (inclusive). What should replace the three question marks to complete the program?

(A) `sum=sum+i`

(B) `sum=sum+1`

(C) `sum=sum+i+1`

(D) `sum+1=sum`

29. (1 point) Evaluate the following expression:

`[1,2]+[len("3")]`

What value is produced?

(A) `[1,2,"3"]`

(B) `[1,2,1,2,1,2]`

(C) `[1,2,1]`

(D) `[1,2,3]`

30. (1 point) Consider the following program:

```
a=["A","C","C","I","O"]
a.sort()
a[0]=a[-1]
x=""
for e in a:
    x=x+e
```

What is the **value** of x after this program is executed?

(A) `"ACCOA"`

(B) None of the other answers are correct.

(C) `"ACCIA"`

(D) `"ICCOI"`

(E) `"OCCIO"`

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CS101

midterm1

- **Be sure to enter your <u>NetID</u> and <u>the code below</u> on your Scantron**.

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- There are 30 questions, worth 1 point each.

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- No books, notes, or electronic devices are permitted.

- This is a 60-minute exam.

- There are several different versions of this exam.

1. Fill in your information:

Full Name: _____

UIN (Student Number): _____

NetID: _____

2. Fill in the following answers on the Scantron form:

92. D

93. E

94. B

95. B

96. B

1. (1 point) For this problem, you should compose a function which accomplishes a given task using the available code blocks arranged in the correct functional order. *We ignore indentation for this problem.*
find_max should accept a list and return the value of the maximum item in the list. (None is always the lowest value in any numeric comparison, so you may use it as an initializer.)

```
def find_max(my_list):

1 max_val = i

2 max_val = None

3 for i in range(len(my_list)):

4 if i > max_val:

5 max_val = my_list[i]

6 return max_val

7 for i in range(my_list):

8 if my_list[i] > max_val:

9 print(max_val)
```

(A) 2, 3, 4, 1, 6

(B) 2, 3, 8, 5, 6

(C) 2, 3, 8, 1, 6

(D) 3, 2, 8, 5, 9

(E) 2, 7, 4, 5, 6

2. (1 point) Evaluate the following expression:

```
len("ABCDE"[1:4])
```

What value is produced?

  (A) 3

  (B) 4

  (C) 5

  (D) 1

3. (1 point) Consider the following program:

```
x=3
a=5
if (a%3)==2:
    x=x**3
elif(a%3)==1:
    x=x**2
else:
    x=x**1
```

What is the **value** of x after this program is executed?

  (A) 1

  (B) 3

  (C) None of the other answers are correct.

  (D) 9

  (E) 27

4. (1 point) Consider the following program.

```
x=[]
for j in range(0,5):
    if (j%4)==0:
        x.append("-")
    if (j%5)==0:
        x.append("*")
```

After it is run, what is the final **value** of x?

(A) ["-","*"]

(B) ["-","*","-"]

(C) None of the other answers are correct.

(D) ["-","*","*"]

(E) ["-","-","*"]

5. (1 point) Consider the following program:

```
x=[1,2,3]
def f(a):
    s=""
    a.reverse()
    for i in a:
        s+=str(i)
    return s

x.append(f(x))
```

What is the **value** of x after this program is executed?

(A) `[1, 2, 3, '321']`

(B) `[1, 2, 3]`

(C) `[3, 2, 1, '321']`

(D) `[1, 2, 3, 6]`

(E) `[3, 2, 1]`

6. (1 point) Consider the following program:

```python
def fix(s):
    a=list(s)
    a.sort()
    return ''.join(a)

x=["one","two","eleven","twelve"]
s1=fix(x[0]+x[-1])
s2=fix(x[1]+x[-2])

if s1==s2:
    x.sort()
elif s1<s2:
    x.reverse()
else:
    x.append("six")
```

What is the **value** of x after this program is executed?

(A) ['one', 'two', 'eleven', 'twelve', 'six']

(B) ['one', 'two', 'eleven', 'twelve']

(C) ['two', 'twelve', 'one', 'eleven', 'six']

(D) ['twelve', 'eleven', 'two', 'one']

(E) ['eleven', 'one', 'twelve', 'two']

7. (1 point) Consider the following program:

```
i=3
x=2
while i < 7:
    x+=i
    i+=2
```

What is the **value** of x after this program is executed?

(A) 12

(B) 11

(C) 13

(D) 14

(E) 10

8. (1 point) Consider the following Python program.

```
e=[1,3,5,7,9,11]
d=[0,0,0]
for i in range(0,len(e)):
    d[i%3]+=e[i]
x=d[1]
```

After it is run, what is the final **value** of x?

(A) 12

(B) 16

(C) 8

(D) 3

(E) 0

9. (1 point) Consider the following program:

```
x=0
for i in range(4,10):
    if i%3==0:
        x+=3
    elif i%2==0:
        x+=2
    else:
        x+=1
```

What is the **value** of x after this program is executed?

(A) 11

(B) 12

(C) 13

(D) 14

(E) 10

10. (1 point) What is the result of the following expression?

```
[ 1, 2, 3 ] * 3
```

(A) [3, 6, 9]

(B) [3.0, 6.0, 9.0]

(C) [1, 2, 3, 1, 2, 3, 1, 2, 3]

(D) [1.0, 2.0, 3.0, 1.0, 2.0, 3.0, 1.0, 2.0, 3.0]

(E) (3, 6, 9)

11. (1 point) Consider the following program:

```
s="G+R+A+I+L"
x=s.split("+")[1:-2]
```

What is the **value** of x after this program is executed?

(A) `False`

(B) `None`

(C) `'RAI'`

(D) `3`

(E) `['R','A']`

12. (1 point) Consider the following incomplete function.

```
def ismultiple(m,n):
    if ???:
        return False
    else:
        return True
```

The function is intended to return True if the input parameter m is a multiple of parameter n and False otherwise. For example, `ismultiple(4,2)` should return `True`, but `ismultiple(5,3)` should return `False`. What should replace the three question marks to complete the function?

(A) `(m // n) != 0`

(B) `(m % n) != 0`

(C) `(n % m) == 0`

(D) `(n // m) == 0`

13. (1 point) Consider the following program:

```
x="KING ARTHUR-MORGANA LEFAY-SIR BEDIVERE".split("-")
y=x
x=y.reverse()
```

What is the **value** of x after this program is executed?

(A) ['KING', 'ARTHUR-MORGANA', 'LEFAY-SIR', 'BEDIVERE']

(B) ['KING ARTHUR', 'MORGANA LEFAY', 'SIR BEDIVERE']

(C) None

(D) ['SIR BEDIVERE', 'MORGANA LEFAY', 'KING ARTHUR']

(E) ['BEDIVERE', 'LEFAY-SIR', 'ARTHUR-MORGANA', 'KING']

14. (1 point) Consider the following incomplete program.

```
sum=0
for i in range(0,100):
    ???
```

The program is intended to sum all of the integers between 1 and 100 (inclusive). What should replace the three question marks to complete the program?

(A) sum=sum+i

(B) sum=sum+1

(C) sum=sum+i+1

(D) sum+1=sum

15. (1 point) Consider the following program:

```
s="ECTOR"
t="GAWAIN"
x=len(str(s.isupper()))-t.find("A")
```

What is the **type** of x after this program is executed?

(A) Float

(B) String

(C) None

(D) Boolean

(E) Integer

16. (1 point) Consider the following program:

```
a=["merlin","sir agravaine","king pellinore"]
b=[ ]
for i in range(0,4):
    b.append(a[0-i].title())
```

What is the **value** of b after this program is executed?

(A) ['Merlin', 'Sir Agravaine', 'King Pellinore', 'Merlin']

(B) ['Merlin', 'King Pellinore', 'Sir Agravaine']

(C) ['King Pellinore', 'Sir Agravaine', 'Merlin']

(D) ['Merlin', 'King Pellinore', 'Sir Agravaine', 'Merlin']

(E) [ ]

17. (1 point) Consider the following program:

```
s="TRIS %i"
t="ISEU"
x=len(s) % len(t[2:-1])
```

What is the **type** of x after this program is executed?

(A) String

(B) Float

(C) Integer

(D) None

(E) Boolean

18. (1 point) Consider the following program:

```
s="Calvin"
i=0
x=-1
while i<len(s):
    if s[i]=='b':
        x=i
    i+=1
```

What is the **value** of x after this program is executed?

(A) -1

(B) 5

(C) 0

(D) 6

(E) 3

19. (1 point) Consider the following program:

```
a=["A","C","C","I","O"]
a.sort()
a[0]=a[-1]
x=""
for e in a:
    x=x+e
```

What is the **value** of x after this program is executed?

(A) "ACCOA"

(B) "OCCIO"

(C) "ICCOI"

(D) "ACCIA"

(E) None of the other answers are correct.

20. (1 point) Consider the following program:

```
a=3
b=4
if a==3:
    b=a
elif a==4:
    a=5
else:
    a=b
```

What is the **value** of a after this program is executed?

(A) 5

(B) None of the other answers are correct.

(C) 3

(D) 4

(E) 7

21. (1 point) How can the following mathematical equation be implemented as a Python expression? Assume a, b, and sin have already been defined.

$$a \sin(a^b - b)$$

(A) `a sin(a**b - b)`

(B) None of the other answers are correct.

(C) `a*sin(a^b - b)`

(D) `a*sin(b^a - b)`

(E) `a*sin(a**b - b)`

22. (1 point) Evaluate the following expression:

`[1,2]*len("3")`

What value is produced?

  (A) `[1,2]`

  (B) `[1,2,1]`

  (C) `[1,2,3]`

  (D) `[1,2,1,2,1,2]`

23. (1 point) Consider the following program.

```
kay = 2
wart = 3

def knight(kay,wart):
    wart += 2
    kay += 3
    return wart + kay

kay = knight(wart, kay) + knight(kay, wart)
```

After it is run, what is the final **value** of `kay`?

  (A) None of the other answers are correct.

  (B) `5`

  (C) `2`

  (D) `3`

24. (1 point) Consider the following program.

```
x=0
i=1
while(i*i)<=9:
    x=x+(i*i)
    i=i+1
```

After it is run, what is the final **value** of x?

(A) 5

(B) 14

(C) 3

(D) 4

(E) 30

25. (1 point) Consider the following incomplete Python program.

```
s="".join(["1","0","2","1"])
x=0
for i in range(len(s)-1):
    x+=int(???)
```

What should replace the three question marks so the resulting value of x is 33?

(A) s[i+1:i+2]

(B) s[i:i+2]

(C) s[i:i-1]

(D) s[i:i+1]

26. (1 point) Consider the following program:

```
x=str(1.2)*2
```

What is the **value** of x after this program is executed?

(A) "1.2*2"

(B) "2.4"

(C) "1.21.2"

(D) 2.4

(E) None of the other answers are correct.

27. (1 point) Consider the following program:

```
x=[1,2,3,4,5,6,7,8,9]
x=x[2:-2]
i=1
while i < 3:
    x[i]+=1
    i+=1
```

What is the **value** of x after this program is executed?

(A) [3, 5, 6, 6, 7]

(B) [3, 5, 6, 6]

(C) [3, 5, 6, 6, 7, 8]

(D) [2, 4, 5, 5, 6, 7]

(E) [2, 4, 5, 6, 6, 7]

28. (1 point) Consider the following program.

```
def artificing(s):
    return s+"%i" % 2
    return s*2
    return s
```

```
s=artificing("MERLIN")
```

After it is run, what is the final **value** of s?

(A) 0

(B) "MERLIN2"

(C) None

(D) "MERLINMERLIN"

(E) "MERLIN%i"

29. (1 point) Consider the following program.

```
s="ABCBA"
x=0
y=len(s)-1
while s[x]==s[y] and x<=y:
    x+=1
    y-=1
```

After it is run, what is the final **value** of x?

(A) 0

(B) 3

(C) 2

(D) 1

(E) 4

30. (1 point) Consider the following program:

```
pi="3.14159"
e="2.71828"
x=pi in pi*len(e)
```

What is the **type** of x after this program is executed?

(A) None

(B) Integer

(C) Float

(D) String

(E) Boolean

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CS 101
midterm1

- **Be sure to enter your <u>NetID</u> and <u>the code below</u> on your Scantron**.

- Do not turn this page until instructed to do so.

- There are 30 questions, worth 1 point each.

- Each question has only **one** correct answer.

- You must not communicate with other students during this test.

- No books, notes, or electronic devices are permitted.

- This is a 60-minute exam.

- There are several different versions of this exam.

1. Fill in your information:

Full Name: _____

UIN (Student Number): _____

NetID: _____

2. Fill in the following answers on the Scantron form:

92. E

93. E

94. B

95. C

96. C

1. (1 point) Consider the following incomplete program.

```
sum=0
for i in range(0,100):
    ???
```

The program is intended to sum all of the integers between 1 and 100 (inclusive). What should replace the three question marks to complete the program?

(A) `sum=sum+i+1`

(B) `sum=sum+i`

(C) `sum=sum+1`

(D) `sum+1=sum`

2. (1 point) Consider the following program:

```
s="-B-O-R-S-"
x=s.split("-")[2:-2]
```

What is the **value** of x after this program is executed?

(A) `['O', 'R']`

(B) `''`

(C) `'ORS'`

(D) `None`

(E) `False`

3. (1 point) Consider the following program:

```
pi="3.14159"
e="2.71828"
x=pi*len(e)+pi
```

What is the **type** of x after this program is executed?

(A) Float

(B) String

(C) Boolean

(D) None

(E) Integer

4. (1 point) Consider the following Python program.

```
e=[1,3,5,7,9,11]
d=[0,0,0]
for i in range(0,len(e)):
    d[i%3]+=e[i]
x=d[2]
```

After it is run, what is the final **value** of x?

(A) 12

(B) 8

(C) 16

(D) 7

(E) 0

5. (1 point) What is the result of the following expression?

```
[ 1, 2, 3 ] * 3
```

   (A) (3, 6, 9)

   (B) [1.0, 2.0, 3.0, 1.0, 2.0, 3.0, 1.0, 2.0, 3.0]

   (C) [3, 6, 9]

   (D) [3.0, 6.0, 9.0]

   (E) [1, 2, 3, 1, 2, 3, 1, 2, 3]

6. (1 point) Consider the following program:

```
i=2
x=3
while i < 7:
    x+=i
    i+=2
```

What is the **value** of x after this program is executed?

   (A) 13

   (B) 11

   (C) 12

   (D) 15

   (E) 14

7. (1 point) How can the following mathematical equation be implemented as a Python expression? Assume `a`, `b`, and `sin` have already been defined.

$$a \sin(a^b - b)$$

(A) `a sin(a**b - b)`

(B) None of the other answers are correct.

(C) `a*sin(a**b - b)`

(D) `a*sin(b^a - b)`

(E) `a*sin(a^b - b)`

8. (1 point) Consider the following program:

```
x="KING ARTHUR-MORGANA LEFAY-SIR BEDIVERE".split("-")
y=x[:]
y.reverse()
```

What is the **value** of `x` after this program is executed?

(A) `['KING ARTHUR', 'MORGANA LEFAY', 'SIR BEDIVERE']`

(B) `['BEDIVERE', 'LEFAY-SIR', 'ARTHUR-MORGANA', 'KING']`

(C) `['SIR BEDIVERE', 'MORGANA LEFAY', 'KING ARTHUR']`

(D) `None`

(E) `['KING', 'ARTHUR-MORGANA', 'LEFAY-SIR', 'BEDIVERE']`

9. (1 point) Evaluate the following expression:

`[1,2]*len("3")`

What value is produced?

(A) `[1,2,3]`

(B) `[1,2]`

(C) `[1,2,1]`

(D) `[1,2,1,2,1,2]`

10. (1 point) Consider the following program:

```
s="ECTOR"
t="GAWAIN"
x=len(str(s.isupper()))-t.find("A")
```

What is the **type** of x after this program is executed?

(A) `String`

(B) `Boolean`

(C) `Integer`

(D) `None`

(E) `Float`

11. (1 point) Consider the following program:

```
a=["merlin","sir agravaine","king pellinore"]
b=[ ]
for i in range(1,3):
    b.append(a[0-i].title())
```

What is the **value** of b after this program is executed?

(A) [ ]

(B) ['King Pellinore', 'Sir Agravaine', 'Merlin']

(C) ['King Pellinore', 'Sir Agravaine']

(D) ['Merlin', 'King Pellinore', 'Sir Agravaine']

(E) ['Sir Agravaine', 'King Pellinore']

12. (1 point) Consider the following program:

```
x=str("1"*3)
```

What is the **value** of x after this program is executed?

(A) None of the other answers are correct.

(B) "3"

(C) 111

(D) 3

(E) "111"

13. (1 point) Evaluate the following expression:

```
len("ABCD"[0:3])
```

What value is produced?

  (A) 2

  (B) 1

  (C) 3

  (D) 4

14. (1 point) Consider the following program:

```
x=[1,2,3]
def f(a):
    s=""
    a.reverse()
    for i in a:
        s+=str(i)
    return s

x.append(f(x))
```

What is the **value** of x after this program is executed?

  (A) [1, 2, 3, 6]

  (B) [3, 2, 1, '321']

  (C) [3, 2, 1]

  (D) [1, 2, 3, '321']

  (E) [1, 2, 3]

15. (1 point) Consider the following program.

```
s="BBCAA"
x=0
y=len(s)-1
while s[x]!=s[y] and x<len(s):
    x+=1
    y-=1
```

After it is run, what is the final **value** of x?

(A) 0

(B) 1

(C) 2

(D) 4

(E) 3

16. (1 point) Consider the following program:

```
x=3
a=5
if (a%3)==2:
    x=x**3
elif(a%3)==1:
    x=x**2
else:
    x=x**1
```

What is the **value** of x after this program is executed?

(A) 1

(B) 9

(C) 3

(D) None of the other answers are correct.

(E) 27

17. (1 point) Consider the following program.

```
def artificing(s):
    return s*2
    return s+"%i" % 2
    return s

s=artificing("MERLIN")
```

After it is run, what is the final **value** of s?

(A) `12`

(B) `"MERLIN"`

(C) `"MERLIN2"`

(D) `"MERLINMERLIN"`

(E) `None`

18. (1 point) Consider the following program:

```
x=0
for i in range(2,7):
    if i%3==0:
        x+=3
    elif i%2==0:
        x+=2
    else:
        x+=1
```

What is the **value** of x after this program is executed?

(A) 11

(B) 12

(C) 14

(D) 10

(E) 13

19. (1 point) Consider the following incomplete function.

```python
def ismultiple(m,n):
    if ???:
        return False
    else:
        return True
```

The function is intended to return True if the input parameter m is a multiple of parameter n and False otherwise. For example, `ismultiple(4,2)` should return `True`, but `ismultiple(5,3)` should return `False`. What should replace the three question marks to complete the function?

(A) `(m // n) != 0`

(B) `(n % m) == 0`

(C) `(n // m) == 0`

(D) `(m % n) != 0`

20. (1 point) Consider the following program:

```python
a=["A","C","C","I","O"]
a.sort()
a[0]=a[-1]
x=""
for e in a:
    x=x+e
```

What is the **value** of x after this program is executed?

(A) None of the other answers are correct.

(B) `"OCCIO"`

(C) `"ACCIA"`

(D) `"ACCOA"`

(E) `"ICCOI"`

13

21. (1 point) Consider the following incomplete Python program.

```python
s="".join(["1","0","2","1"])
x=0
for i in range(len(s)-1):
    x+=int(???)
```

What should replace the three question marks so the resulting value of x is 33?

(A) `s[i:i+2]`

(B) `s[i:i+1]`

(C) `s[i+1:i+2]`

(D) `s[i:i-1]`

22. (1 point) Consider the following program:

```python
a=3
b=4
if a!=b:
    a=b
elif a==4:
    a=5
else:
    b=a
```

What is the **value** of a after this program is executed?

(A) 7

(B) 5

(C) None of the other answers are correct.

(D) 4

(E) 3

23. (1 point) Consider the following program.

```
x=1
i=0
while(x*x)<=9:
    i=i+(x*x)
    x=x+1
```

After it is run, what is the final **value** of x?

(A) 30

(B) 3

(C) 14

(D) 5

(E) 4

24. (1 point) For this problem, you should compose a function which accomplishes a given task using the available code blocks arranged in the correct functional order. *We ignore indentation for this problem.*

`find_max` should accept a `list` and return the value of the maximum item in the `list`. (`None` is always the lowest value in any numeric comparison, so you may use it as an initializer.)

```
def find_max(my_list):

1 max_val = i

2 max_val = None

3 for i in range(len(my_list)):

4 if i > max_val:

5 max_val = my_list[i]

6 return max_val

7 for i in range(my_list):

8 if my_list[i] > max_val:

9 print(max_val)
```

  (A) 2, 3, 8, 5, 6

  (B) 3, 2, 8, 5, 9

  (C) 2, 7, 4, 5, 6

  (D) 2, 3, 4, 1, 6

  (E) 2, 3, 8, 1, 6

25. (1 point) Consider the following program:

```
s="Calvin"
i=0
x=-1
while i<len(s):
    if s[i]=='b':
        x=i
    i+=1
```

What is the **value** of x after this program is executed?

(A) 0

(B) 6

(C) 5

(D) 3

(E) -1

26. (1 point) Consider the following program:

```
x=[1,2,3,4,5,6,7,8,9]
x=x[2:-2]
i=1
while i < 3:
    x[i]+=1
    i+=1
```

What is the **value** of x after this program is executed?

(A) [3, 5, 6, 6]

(B) [2, 4, 5, 6, 6, 7]

(C) [2, 4, 5, 5, 6, 7]

(D) [3, 5, 6, 6, 7]

(E) [3, 5, 6, 6, 7, 8]

27. (1 point) Consider the following program:

```
s="TRIS %i"
t="ISEU"
x=s % len(t)
```

What is the **type** of x after this program is executed?

(A) String

(B) Float

(C) Boolean

(D) None

(E) Integer

28. (1 point) Consider the following program:

```
def fix(s):
    a=list(s)
    a.sort()
    return ''.join(a)

x=["one","two","eleven","twelve"]
s1=fix(x[0]+x[-1])
s2=fix(x[1]+x[-2])

if s1<s2:
    x.sort()
elif s1==s2:
    x.reverse()
else:
    x.append("six")
```

What is the **value** of x after this program is executed?

(A) ['two', 'twelve', 'one', 'eleven', 'six']

(B) ['eleven', 'one', 'twelve', 'two']

(C) ['one', 'two', 'eleven', 'twelve', 'six']

(D) ['twelve', 'eleven', 'two', 'one']

(E) ['one', 'two', 'eleven', 'twelve']

29. (1 point) Consider the following program.

```python
x=[]
for j in range(0,5):
    if (j%2)==0:
        x.append("-")
    if (j%5)==0:
        x.append("*")
```

After it is run, what is the final **value** of x?

(A) ["*","-","*","*"]

(B) ["-","*","-","-"]

(C) None of the other answers are correct.

(D) ["-","-","*"]

(E) ["-","*","-"]

30. (1 point) Consider the following program.

```
kay = 2
wart = 3

def knight(kay,wart):
    wart += 2
    kay += 3
    return wart + kay

kay = knight(wart, kay) + knight(kay, wart)
```

After it is run, what is the final **value** of `kay`?

(A) 2

(B) 5

(C) None of the other answers are correct.

(D) 3

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