- **Be sure to enter your NetID and the code below 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:

Zone 1

1/1. (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. ★

```
['R','A']
```

D. `None`

E. `False`

Solution.

1/2. (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. `None`

C. ★

```
['O', 'R']
```

D. `False`

E. `'ORS'`

Solution.

2/1. (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. `Integer`

C. ★ `Boolean`

D. `Float`

E. `None`

Solution.

2/2. (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. `String`

B. ★ `Integer`

C. `Boolean`

D. `Float`

E. `None`

Solution.

2/3. (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. `Boolean`

D. ★

`Float`

E. `None`

Solution.

3/1. (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. `Integer`

C. `Boolean`

D. `Float`

E. `None`

Solution.

3/2. (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. `Boolean`

D. `Float`

E. `None`

Solution.

4/1. (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. `5`

D. ★ None of the other answers are correct.

Solution.

4/2. (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. `2`

B. `3`

C. `5`

D. ★ None of the other answers are correct.

Solution.

5/1. (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. `"MERLIN"`

B. ★

`"MERLINMERLIN"`

C. `"MERLIN2"`

D. `12`

E. `None`

Solution.

5/2. (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. `"MERLIN%i"`

B. ★

`"MERLIN2"`

C. `"MERLINMERLIN"`

D. `0`

E. `None`

Solution.

6/1. (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. `0`

B. `1`

C. ★

`2`

D. `3`

E. `4`

Solution.

6/2. (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. `0`

B. `1`

C. `2`

D. ★

`3`

E. `4`

Solution.

6/3. (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. `0`

B. `1`

C. ★

`2`

D. `3`

E. `4`

Solution.

7/1. (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.

Solution.

7/2. (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.

Solution.

7/3. (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.

Solution.

8/1. (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. `4`

E. `3`

Solution.

8/2. (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. `14`

B. `5`

C. `3`

D. `30`

E. ★

```
4
```

Solution.

9/1. (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+2]
```

B. `s[i:i+1]`

C. `s[i:i-1]`

D. `s[i+1:i+2]`

Solution.

9/2. (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+2]
```

B. `s[i:i+1]`

C. `s[i:i-1]`

D. `s[i+1:i+2]`

Solution.

9/3. (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]`

Solution.

10/1. (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[1]
```

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

A. `3`

B. `0`

C. `16`

D. `8`

E. ★

`12`

Solution.

10/2. (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. `7`

B. `0`

C. `12`

D. `8`

E. ★

`16`

Solution.

11/1. (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`

Solution.

11/2. (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. `(n % m) == 0`

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

C. ★

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

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

Solution.

12/1. (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. `for i in range(0,100)`

B. `while i<=100`

C. ★

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

D. `while i in range(100)`

Solution.

12/2. (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+1=sum`

C. `sum=sum+i`

D. ★

```
sum=sum+i+1
```

Solution.

13/1. (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. 3, 2, 8, 5, 9

C. ★ 2, 3, 8, 5, 6

D. 2, 7, 4, 5, 6

E. 2, 3, 8, 1, 6

Solution.

14/1. (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,"3"]`

D. `[1,2,1,2,1,2]`

Solution.

14/2. (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]`

Solution.

15/1. (1 point) Evaluate the following expression:

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

What value is produced?

A. 1

B. 2

C. ★ 3

D. 4

Solution.

15/2. (1 point) Evaluate the following expression:

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

What value is produced?

A. 1

B. 5

C. ★ 3

D. 4

Solution.

16/1. (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. `7`

E. None of the other answers are correct.

Solution.

16/2. (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. `5`

D. `7`

E. None of the other answers are correct.

Solution.

16/3. (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. `7`

E. None of the other answers are correct.

Solution.

17/1. (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. `"ACCIA"`

D. `"ICCOI"`

E. None of the other answers are correct.

Solution.

17/2. (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. ★

   `"UTSP"`

C. `"STUP"`

D. `"PUST"`

E. None of the other answers are correct.

Solution.

18/1. (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. `3`

E. None of the other answers are correct.

Solution.

18/2. (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. ★

`"1.21.2"`

D. `"1.2*2"`

E. None of the other answers are correct.

Solution.

18/3. (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. `"333"`

E. None of the other answers are correct.

Solution.

19/1. (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. `9`

C. ★

`27`

D. `1`

E. None of the other answers are correct.

Solution.

19/2. (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. `4`

B. `16`

C. `8`

D. ★

`2`

E. None of the other answers are correct.

Solution.

19/3. (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. `7`

D. ★

`3`

E. None of the other answers are correct.

Solution.

20/1. (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. `['SIR BEDIVERE', 'MORGANA LEFAY', 'KING ARTHUR']`

B. ★

`['KING ARTHUR', 'MORGANA LEFAY', 'SIR BEDIVERE']`

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

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

E. `None`

Solution.

20/2. (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. ★

`['SIR BEDIVERE', 'MORGANA LEFAY', 'KING ARTHUR']`

B. `['KING ARTHUR', 'MORGANA LEFAY', 'SIR BEDIVERE']`

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

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

E. `None`

Solution.

20/3. (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. `['SIR BEDIVERE', 'MORGANA LEFAY', 'KING ARTHUR']`

B. `['KING ARTHUR', 'MORGANA LEFAY', 'SIR BEDIVERE']`

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

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

E. ★

```
None
```

Solution.

21/1. (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. `['King Pellinore', 'Sir Agravaine', 'Merlin']`

D. `[ ]`

E. `['Merlin', 'King Pellinore', 'Sir Agravaine']`

Solution.

21/2. (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. `['King Pellinore', 'Sir Agravaine']`

B. `['Sir Agravaine', 'King Pellinore']`

C. `['King Pellinore', 'Sir Agravaine', 'Merlin']`

D. `[ ]`

E. ★

```
['Merlin', 'King Pellinore', 'Sir Agravaine']
```

Solution.

21/3. (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', 'Merlin']`

C. `['King Pellinore', 'Sir Agravaine', 'Merlin']`

D. `[ ]`

E. `['Merlin', 'King Pellinore', 'Sir Agravaine']`

Solution.

22/1. (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. `11`

E. `13`

Solution.

22/2. (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. `11`

E. `13`

Solution.

22/3. (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. `12`

B. `14`

C. `10`

D. ★

`11`

E. `13`

Solution.

23/1. (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)`

Solution.

23/2. (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(b^a - b)`

E. ★

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

Solution.

24/1. (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. `12`

B. `14`

C. ★

```
15
```

D. `11`

E. `13`

Solution.

24/2. (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`

Solution.

25/1. (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. `-1`

B. `2`

C. ★

`3`

D. `4`

E. `5`

Solution.

25/2. (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. `0`

C. `3`

D. `6`

E. `5`

Solution.

26/1. (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. `String`

B. `Integer`

C. ★

`Boolean`

D. `Float`

E. `None`

Solution.

26/2. (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. `Integer`

C. `Boolean`

D. `Float`

E. `None`

Solution.

26/3. (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. `Integer`

C. ★

`Boolean`

D. `Float`

E. `None`

Solution.

27/1. (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, 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]`

Solution.

27/2. (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, 7, 7]`

C. `[3, 5, 6, 7, 7, 8]`

D. `[2, 4, 5, 5, 7, 7]`

E. `[2, 4, 5, 6, 7, 7]`

Solution.

27/3. (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. `[4, 6, 7, 7]`

D. `[3, 4, 6, 7, 8]`

E. `[2, 4, 6, 6]`

Solution.

28/1. (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)`

Solution.

28/2. (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. `[3, 6, 9]`

E. `None of the above.`

Solution.

29/1. (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. `[1, 2, 3, '321']`

C. `[1, 2, 3]`

D. `[3, 2, 1]`

E. `[1, 2, 3, 6]`

Solution.

29/2. (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]`

E. `[1, 2, 3, 10]`

Solution.

30/1. (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. `['twelve', 'eleven', 'two', 'one']`

D. ★

`['one', 'two', 'eleven', 'twelve', 'six']`

E. `['two', 'twelve', 'one', 'eleven', 'six']`

Solution.

30/2. (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. ★

`['twelve', 'eleven', 'two', 'one']`

D. `['one', 'two', 'eleven', 'twelve', 'six']`

E. `['two', 'twelve', 'one', 'eleven', 'six']`

Solution.

30/3. (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. `['twelve', 'eleven', 'two', 'one']`

D. `['one', 'two', 'eleven', 'twelve', 'six']`

E. `['two', 'twelve', 'one', 'eleven', 'six']`

Solution.
