

CSE101 2018-19 Final Exam

École polytechnique

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This examination is in three parts.

*The questions in **Part 1** are multiple-choice, and must be answered **on this paper**, which **must be handed in** at the end of the exam.*

*The questions in **Part 2** and **Part 3** should be answered in a separate booklet.*

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Part 1: Multiple choice questions (20 points)

Give your answers to these questions by **clearly circling** the selected answer on **this paper**, which must be handed in.

In this part, each **correct answer** will be awarded **1 point**.

However, each **incorrect answer** will result in a deduction of **1/3 points**.

✗ Question 1.1

```
1 n = '1' + '2'
```

What is the value of `n`?

- A. '3'
- ☒ B. '12'
- C. '1 2'
- D. The code causes a runtime error

✗ Question 1.2

```
1 def f(x):  
2     if x == 'one':  
3         return 1  
4     elif x == 'two':  
5         return 2  
6  
7 y = f('zero')
```

What is the value of `y`?

- A. 'zero'
- B. 0
- C. The code causes a runtime error
- ☒ D. None

Question 1.3

```
1 s = 1 + None
```

What is the value of `s`?

- ☒ A. None
- ☒ B. 1
- C. '1'
- ☒ D. The code causes a runtime error

✗ Question 1.4

```
1 seq = ['a', 'b', 'c', 'd']
2 elt = s.pop()
3 tup = (seq, elt)
```

seq.pop()
tup = (elt, seq)

What is the value of tup?

- A. ('a', ['b', 'c', 'd'])
B. ('d', ['a', 'b', 'c'])
C. (['b', 'c', 'd'], 'a')
D. (None, ['b', 'c', 'd'])

✗ Question 1.5

```
1 d = {1:'a', 2:'b', 3:'c'}
2 s = [ 2*x for x in d.items() ]
```

What is the value of s?

- A. [2, 4, 6]
B. ['aa', 'bb', 'cc']
C. [(1, 'a', 1, 'a'), (2, 'b', 2, 'b'), (3, 'c', 3, 'c')]
D. The code causes a runtime error

✗ Question 1.6

```
1 x = (1.0, 23) + (3.4, -17)
```

What is the value of x?

- A. The code causes a runtime error
B. (4.4, -6)
C. (1.0, 23, 3.4, -17)
D. (4.4, 6)

✗ Question 1.7

```
1 x = 'good' < 'goofy'
```

What is the value of x?

- A. False
B. True
C. None
D. The code causes a runtime error

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Question 1.8

```
1 squares = [i**2 for i in range(0,-10)]
2 pos = squares.index(9)
```

What is the value of pos?

- A. 3
- B. 2
- ☒ C. The code causes a runtime error
- ☐ D. None

Question 1.9

```
1 s = 'qwertyô'
2 t = s[3:7:2]
```

What is the value of t?

- A. The code causes a runtime error
- ☒ B. 'ry'
- C. 'wry'
- D. ''

Question 1.10

```
1 s = 'superfluous'
2 t = s[::-2]
```

What is the value of t?

- A. 'superfluo'
- B. 'sprlo'
- ☒ C. 'solrps'
- D. ''

Question 1.11

```
1 phrase = ' s p a c e \n'
2 s = phrase.strip()
```

What is the value of s?

- A. ' s p a c e '
- B. 'space'
- C. None
- ☒ D. 's p a c e '

~~Q~~ Question 1.12

```
1 class Thing:
2     def __init__(self,x):
3         self.x = x
4
5 (thing_1, thing_2) = (Thing(3), Thing(3))
```

What is the value of the expression `thing_1 == thing_2`?

- A. True
- ☒ B. False
- C. None
- D. This comparison causes a runtime error

~~Q~~ Question 1.13

```
1 s = 'yes;no;;yes;maybe;'
2 parts = s.split(';')
```

What is the value of `parts`?

- A. ['yes', 'no', 'yes', 'maybe']
- B. ['yes', 'no', '', 'yes', 'maybe']
- C. ['yes', 'no;;yes', 'maybe']
- ☒ D. ['yes', 'no', '', 'yes', 'maybe', '']

~~Q~~ Question 1.14

```
1 def absolute_value(x):
2     if x < 0:
3         return -x
4     return x
5
6 y = absolute_value('-1')
```

What is the value of `y`?

- A. None
- B. '1'
- C. '-1'
- ☒ D. This code causes a runtime error

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Question 1.15

```
1 t = [x**2 for x in range(6)]  
2 s = [sum(t[:i]) for i in range(6)]
```

What is the value of s?

- ☒ A. [0, 0, 1, 5, 14, 30]
- ☐ B. [30, 30, 29, 25, 16]
- ☐ C. [0, 1, 5, 14, 30]
- ☐ D. [30, 29, 25, 16, 5]

Question 1.16

```
1 def f(x):  
2     if x < 0:  
3         return -x  
4     else if x == 0:  
5         return -1  
6     else:  
7         return 2*x  
8  
9 y = f(f(f(f(0))))
```

What is the value of y?

- ☐ A. -1
- ☐ B. 0
- ☐ C. 4

☒ D. The code contains a syntax error

Question 1.17

```
1 x = [1, 2, 4]  
2 x = x.insert(-2, 3)
```

What is the value of x?

- ☒ A. [1, 2, 3, 4]
- ☐ B. [1, 2, 4, -2]
- ☐ C. None

☐ D. The code causes a runtime error

Question 1.18

```
1 (x, z) = (5, 3)
2
3 def cube_minus_1(x):
4     x = x**3
5     z = 1
6     return x - z
7
8 y = cube_minus_1(x)
9
10 t = (x, y, z)
```

What is the value of t?

- ☒ A. (125, 124, 1)
- ☐ B. (125, 124, 3)
- ☐ C. (5, 121, 3)
- ☐ D. (5, 124, 3)

Question 1.19

```
1 ok = 25 in [i**2 for i in range(5)]
```

What is the value of ok?

- ☐ A. The code contains a syntax error
- ☐ B. True
- ☒ C. False
- ☐ D. The code causes a runtime error

Question 1.20

```
1 s = ' and '.join('again')
```

What is the value of s?

- ☐ A. ' and again'
- ☐ B. 'again and '
- ☒ C. "a and g and a and i and n"
- ☐ D. 'again'

