上 海 交 通 大 学 试 卷（ A 卷）

（ 2021 至 2022学年 第1学期 ）

班级号\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 学号\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 姓名

课程名称 CS1602计算导论 成绩

**Python 3** is the only programming language allowed for this course. **100 points in all.**

**(1). Please choose the correct answer: Only one is correct for each question. (2 points each, 40 points.)**

1. class A:

def \_\_init\_\_(self, x, y):

self.x, self.y = x, y

c = set()

a = A(c, 3)

b = a

c.add(1)

a.y, c = 2, set([2])

What will the value of a.x, a.y, b.x, b.y be after executing the codes above ( )

1. {1}, 2, {1}, 2 B. {}, 2, {}, 3 C. {1}, 3, {1}, 3 D. {2}, 3, {2}, 3
2. Assume that the content of file “test.txt” is

Aaaa

Bbbb

Cccc

Dddd

What will result be after executing the following codes ( )

with open(‘test.txt’, ‘r’) as Fin:

next(Fin)

result = []

for line in Fin:

result.append(line.strip())

1. [‘Aaaa’, ‘Bbbb’, ‘Cccc’, ‘Dddd’]
2. [‘Bbbb’, ‘Cccc’, ‘Dddd’]
3. []
4. The code can’t be executed successfully.
5. How many of the following six statements can be executed successfully ( )
   1. X = set((1,))
   2. X = [2, 3] + [4, 5]
   3. C = {(x, 1): [x] for x in range(5)}
   4. D = ‘aaa’ – ‘a’

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 题号 | 1 | 2 | 3 | 4 | 5 |  |  |  |  |  |
| 得分 |  |  |  |  |  |  |  |  |  |  |
| 批阅人(流水阅  卷教师签名处) |  |  |  |  |  |  |  |  |  |  |

**我承诺，我将严格遵守考试纪律。**

**承诺人：**

* 1. Z = set([[1, 2], [3, 4]])
  2. X = (1, 3) + (2, 4)

A. 4 B. 6 C. 5 D. 3

1. What is the output of the program ( )

def distance(a, b):

return abs(a - b)

def fold(seq, func):

if len(seq) == 1:

return seq[0]

else:

return func(seq[0], fold(seq[1:], func))

print(fold([2, 1, 4, 3], distance))

A. 0 B. 1 C. 2 D. 3

1. What is the output of the program ( )

a = [[]] \* 2

b = [[] for i in range(2)]

print(a[0] is a[1])

print(b[0] is b[1])

A. {True, True} B. {True, False} C. {False, True} D. {False, False}

1. How many statements below can be executed without raising an exception ( )
2. def f(seq):
3. for i, j in seq:
4. pass
5. f([])
6. f([1, 2])
7. f([[1, 2], [3, 4]])

A. 0 B. 1 C. 2 D. 3

1. What are the outputs of following expressions ( )

1 > (0 < 1)

(1 > 0) < 1

True is False == False

A. True, False, False B. True, True, False

C. True, False, True D. False, False, False

1. What is the value of new\_string ( )
2. string = “HELLO WORLD”
3. string\_list = list(string)
4. for i in range(len(string\_list)-1, -1, -2):
5. string\_list[i] = ‘\*’
6. new\_string = ‘’.join(string\_list)
7. new\_string.lower()
8. A. “\*E\*L\* \*O\*L\*” B. “\*\*\*\*\*\*\*\*\*\*\*”
9. C. “\*e\*l\* \*o\*l\*” D. “H\*L\*O W\*R\*D”
10. What is the program output ( )

try:

if ‘2’!= 2:

raise ValueError

else:

print(“same”)

except ValueError:

print(“ValueError”)

except NameError:

print(“NameError”)

finally:

print(“finally”)

* 1. same
  2. ValueError, NameError, finally
  3. ValueError, finally
  4. NameError, finally

1. Which one of the following expressions does NOT produce error ( )

A. 1 / 0 or False B. False and 1 / 0 C. False or 1 / 0 D. 1 / 0 or True

1. Which is the correct running result of "SJTU" + "\_nohtyP"[:0:-1] \* 2 ( )
2. A. ‘SJTUPython\_Python\_’ B. ‘SJTUPythonPython’
3. C. ’SJTUPythonSJTUPython’ D. ’SJTUPython\_SJTUPython\_’
4. Read the following function and which is the running of foo(36) ( )

def foo(x: int):

if x <= 1: #

return x

left = 0

right = x

while left <= right:

mid = (left + right) // 2

if mid\*\*2 < x and (mid + 1)\*\*2 >= x:

return mid

elif mid\*\*2 < x:

left = mid + 1

elif mid\*\*2 > x:

right = mid - 1

A. 4 B. 5 C. 6 D. 7

1. What is the output of the following code ( )

A = [[]]\*3

A[0].append(0)

A[1] += [0]

A[2] = A[2] + [0]

print(A)

A. [[0], [0], [0]] B. [[0, 0, 0], [0, 0, 0], [0, 0, 0]]

C. [[0, 0], [0, 0], [0, 0, 0]] D. [[0, 0, 0], [0, 0], [0, 0]]

1. What is the output of following code ( )

def f(a):

return lambda x : x + a

a = 1

g = f(a)

h = lambda x : x + a

a = 2

print(g(0), h(0))

A.1 1

B. 1 2

C. 2 2

D. Raise an error when calling g(0): NameError: name ‘a’ is not defined

1. How many of the following statements can correctly create a set object in Python ( )

a = set(1, 2, 3)

a = set([1, 2, 3])

a = {1, [2], 3}

a = {1, ([2],), 3}

A. 0 B. 1 C. 2 D. 3

1. Given the following code, what will the program output ( )

a, b = 5, 1

b, a = a+1, b-a+1

a = b = a+1

print(a, b)

A. -2 -2 B. 3 3 C. -3 -2 D. None of the above

1. Given the following code

L1 = ["SJTU", "abcdefg", [0]]

Which of the following codes will cause an ERROR ( )

* 1. d = {i:len(i) for i in L1}
  2. L2 = [i[-5:] for i in L1]
  3. L2 = [i[5:] for i in L1]
  4. L2 = L1[::-1]

1. The return value of expression 1+4\*3/2\*\*4 is ( )

A. 2 B. 1279.0 C. 1 D. 1.75

1. Given the following code

L = ["SJTU", "Avracadavra", "ADU"]

Which of the following codes will NOT return `'SJTU'` ( )

* 1. L.sort(reverse=True)[0]
  2. sorted(L)[-1]
  3. L[2].replace("AD", "SJT")
  4. ''.join(L[::5])

1. The output of the code below is ( )

dt = {'1': (lambda x,y: x + y),

'2': (lambda x,y: x - y),

'3': (lambda x,y: x \* y),

'4': (lambda x,y: x \*\* y)

}

keylist= ['1', '3', '2', '4', '1', '2']

x = keylist[-1]

print(x, dt[x](10, 3))

A. 2 7 B. 1 13 C. 3 30 D. 4 3000

**Problem 2 (15pts)**

Given a m \* n matrix of distinct numbers, return all lucky numbers in the matrix in any order. A lucky number is an element of the matrix such that it is the minimum element in its row and maximum in its column. The input is a nested list and the output should a list of all the luck numbers

def get\_luck\_number(matrix=[[1]]):

**Problem 3 (15pts)**

Given the string s, return the size of the longest substring containing each vowel an even number of times. That is, 'a', 'e', 'i', 'o', and 'u' must appear an even number of times.

**Input:** s = "eleetminicoworoep"

**Output:** 13

**Explanation:** The longest substring is "leetminicowor" which contains two each of the vowels: **e**, **i** and **o** and zero of the vowels: **a** and **u**.

def longest\_vowel(s):

**Problem 4 (15pts)**

Given a list of integers arr and two integers k and threshold. Return the number of sub-arrays of size k and average greater than or equal to threshold.

**Input:** arr = [2,2,2,2,5,5,5,8], k = 3, threshold = 4

**Output:** 3

**Explanation:** Sub-arrays [2,5,5],[5,5,5] and [5,5,8] have averages 4, 5 and 6 respectively. All other sub-arrays of size 3 have averages less than 4 (the threshold).

def number\_array(arr, k, t):

**Problem 5 (15pts)**

Given an integer n. No-Zero integer is a positive integer which **doesn't contain any 0** in its decimal representation.

Return a list of two integers [A, B] where:

* A and B are No-Zero integers.
* A + B = n

It's guaranteed that there is at least one valid solution. If there are many valid solutions you can return any of them.

**Example 1: Input:** n = 2 **Output:** [1,1]

**Explanation:** A = 1, B = 1. A + B = n and both A and B don't contain any 0 in their decimal representation.

**Example 2: Input:** n = 11 **Output:** [2,9]

def non\_zero(n):