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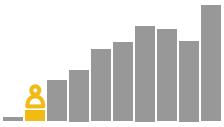
Campaign: Python Developer - Junior Domain(s): Python 3 Language: English Date: Dec 20, 2022

BETTER THAN
1%
of professionals



RANK 2 / 2
DURATION 0h35 / 0h50
SCORE 120 / 870 (14%)

Python 3 120 / 870pts (14%)

BETTER THAN **1%** of professionals

Language knowledge		120 / 241pts
Problem solving		0 / 440pts
Reliability		0 / 189pts

Access detailed report

Question 1: Object instantiation

Python 3 | 00:45 / 00:45 | 1x (21 sec) | 0 / 20 pts

The candidate ran out of time for this question. Their answer was automatically submitted at the end of the preset time.

Question

How does one create a new instance `point` of the following object:

```
class Point():
    def __init__(self, x, y):
        self.x = x
        self.y = y
    def __eq__(self, other):
        return (self.x, self.y) == (other.x, other.y)
```

Answer

- `point = new Point(x, y)`
- `point = Point(point, x, y)`
- **`point = Point(x, y)`**

Result

Incorrect answer
Language knowledge ~~+20pts~~

Question 2: For loop

Python 3 | 00:35 / 00:35 | 20 / 20 pts

The candidate ran out of time for this question. Their answer was automatically submitted at the end of the preset time.

Question

How would you iterate over the following list: `arr = [1, 2, 3, 4, 5]`?

Answer

- (●) `for n in arr:`
- ( ) `for n : arr:`
- ( ) `foreach n of arr:`

Result

Correct answer
Language knowledge +20pts

Question 3: Existence of key in a dict

Python 3 | 01:00 / 01:00 | 0 / 40 pts

The candidate ran out of time for this question. Their answer was automatically submitted at the end of the preset time.

Question

Which of these instructions can you use to check if the key `"Bob"` is present in the `phonebook` dictionary?

Answer

- [ ] `"Bob" in phonebook`
- [ ] `phonebook["Bob"] is not None`
- [x] `phonebook["Bob"] != None`
- [ ] `phonebook.Bob != None`
- [ ] `phonebook.contains("Bob")`

Result

Incorrect answer
Language knowledge ~~+40pts~~

Question 4: Execution order

Python 3 | 01:00 / 01:00 | 0 / 40 pts

The candidate ran out of time for this question. Their answer was automatically submitted at the end of the preset time.

Question

The code below is in a file called `file.py`. If you run the `python3 file.py` command, in what order will the code blocks be executed?

```
#code block A - start
# ...
#code block A - end

def main():
    #code block B - start
    # ...
    #code block B - end

if __name__ == '__main__':
    main()

#code block C - start
# ...
#code block C - end
```

Answer

- (○) A then B then C
- (◉) only B is executed
- (○) A then B
- (○) A then C then B
- (○) A then C

Result

Incorrect answer
Language knowledge ~~+40pts~~

Question 5: Correction

Python 3 | 01:08 / 05:00 | 100 / 100 pts

Question

The following `factorial` function written by your colleague Fred is supposed to return the factorial of a number, but it is broken.

Fix the `factorial` function.

As a reminder: `factorial(n) = 1 * 2 * 3 * ... * n`

Answer

```python
# Python code below
# Use print("messages...") to debug your solution.

def factorial(n):
    if n == 0:
        return 1
    else:
        return n * factorial(n-1)
```

▶ Watch code playback

Result

The factorial function works again
Language knowledge +100pts

Question 6: Summer Sales

Python 3 | 03:03 / 15:00 | 0 / 300 pts

Question

It's almost the Summer Sales!

You work for a shop that wishes to give a discount of `discount%` to the most expensive item purchased by a given customer during the sales period. Only one product can benefit from the discount.

You are tasked by the shop owner to implement the function `calculate_total_price(prices, discount)` which takes the list of prices of the products purchased by a customer and the percentage `discount` as parameters and returns the total purchase price as an integer (rounded down if the total is a float number).

Constraints:
0 ≤ `discount` ≤ 100 0 < price of a product < 100000 0 < number of products < 100

Answer

```python
import sys
import math
from contextlib import redirect_stdout


def calculate_total_price(prices, discount):
    # Write your code here
    # To debug: print("Debug messages...", file=sys.stderr, flush=True)
    if(discount<=100 and discount>=0):

    return -1


# Ignore and do not change the code below
def main():
    # pylint: disable = C, W
    discount = int(input())
    n = int(input())
    prices = [int(i) for i in input().split()]
    with redirect_stdout(sys.stderr):
        price = calculate_total_price(prices, discount)
    print(price)


if __name__ == "__main__":
    main()
# Ignore and do not change the code above
```

Watch code playback

Result

- Simple sum
  Problem solving ~~+35pts~~
- Good sale
  Problem solving ~~+35pts~~
- Large discount
  Problem solving ~~+35pts~~
- Correct rouding
  Reliability ~~+35pts~~
- One item free
  Problem solving ~~+35pts~~
- No sales
  Problem solving ~~+35pts~~
- Big purchase
  Problem solving ~~+30pts~~
- Same price
  Reliability ~~+30pts~~
- One item only
  Reliability ~~+30pts~~

Question 7: Approximation of π

Python 3 | 12:00 / 12:00 | 4x (1 min) | 0 / 200 pts

The candidate ran out of time for this question. Their answer was automatically submitted at the end of the preset time.

Question

In this exercise we will calculate an approximation of π (Pi).

The technique is as follows:
Take a random point P at coordinate (x, y) such that `0 # x # 1` and `0 # y # 1`. If `x² + y² # 1`, then the point is inside the quarter disk of radius `1`, otherwise the point is outside.

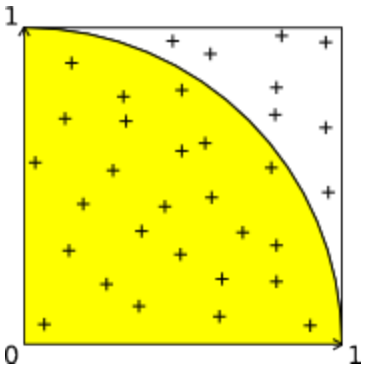


Fig 1. An example using 33 random points.

We know that the probability that the point is inside the quarter disk is equal to `#/4`.

Write the `piApprox(pts)` function who will use the points `pts` to return an approximation of the number float π.
`pts` is a multidimentional list of float.

Input:
Each item in `pts` is a point. A point is represented by an array containing exactly two numbers, respectively, `x` and `y` such that `0 # x # 1` and `0 # y # 1`. `pts` is never None and always contains at least one item.

Answer

```python
# Python code below
# Use print("messages...") to debug your solution.
import random
import math
rands = []
for i in range(0, 100000):
    arr = [random.random(), random.random()]
    rands.append(arr)

print(pi_approx(rands))

def pi_approx(pts):
    # Your code goes here
    if(pts[0]>=0 and pts[0]<=1 and pts[1]>=0 and pts[1]<=1):
        results=pts[0]
    return 0.0
```

Watch code playback

Result

Approximation of π is correct (related to pts)
Problem solving ~~+171pts~~

The point P(1, 0) is inside the quarter disk
Reliability ~~+29pts~~

Question 8: Move towards zero

Python 3 | 14:56 / 15:00 | 5x (5 min) | 0 / 150 pts

The candidate ran out of time for this question. Their answer was automatically submitted at the end of the preset time.

Question

Implement `closest_to_zero` function to return the integer in the array `ints` that is closest to zero. If there are two integers equally close to zero, consider the positive element to be closer to zero (example: if `ints` contains -5 and 5, return 5). If `ints` is `None` or empty, return 0.

Input: integers in `ints` have values ranging from -2147483647 to 2147483647.

Answer

```python
# Python code below
# Use print("messages...") to debug your solution.

def closest_to_zero(ints):
    # Your code goes here
    positive=[]
    for i in ints:
        if(i < 0):
            positive.append(abs(i))

        elif(i==None):
            return 0
        else:
            positive.append(i)
    return positive
```

Watch code playback

Result

The result is correct with a simple data set [7, 5, 9, 1, 4]
Problem solving ~~+64pts~~

- The solution works with 2147483647 or -2147483647
  Reliability ~~+10pts~~
- The solution works when the array contains only negative integers
  Reliability ~~+11pts~~
- When two integers are as close to 0, then the positive wins
  Reliability ~~+11pts~~
- The solution works when the array contains only two equal negative integers
  Reliability ~~+11pts~~
- The solution uses abs()
  Language knowledge ~~+21pts~~
- The solution works with an empty array
  Reliability ~~+11pts~~
- The solution works with a null array
  Reliability ~~+11pts~~

Glossary

Language knowledge

Measuring this skill allows us to determine the candidate's level of experience in the practice of a specific programming language. **This skill is particularly important if, for example, you are looking for a developer who wil have to become quickly operational.**

Design

This measurement gives an indication of the candidate's ability to implement standard solutions to common problems. A developer with a good level of proficiency in this skill will contribute to increase the quality (maintainability, extensibility) of your applications. It does not rely specifically on technology. **This skill is particularly important if, for example, you are looking for a developer who will have to work on the architecture of your applications and to develop long-term solutions.**

Problem solving

This skill corresponds to the candidate's ability to understand and to structure their reasoning in order to find efficient solutions to complex problems. It does not rely specifically on technology. **This skill is particularly important if, for example, you are looking for R&D developers.**

Reliability

Reliability refers to the candidate's ability to achieve solutions that address specific cases. Developers with a high reliability score are likely to create more robust applications (less bugs).