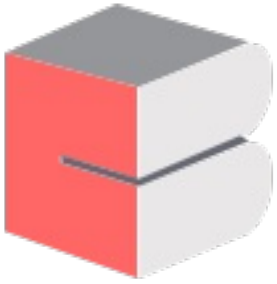

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Machine Learning Online

Assignment - 1 Let’s Revise Python

Questions For Practice

Part-I Coding Questions

Solve the problems in Python Contest on HackerBlocks

Part-II Thinking Questions

1. Write a Function to calculate length of a list and sort in in reverse

order.

2. Implement QuickSort on List (using fewer lines of code).

3. which will create a list:

    - `some_list = list()`
    - `some_list = list([1, 2, 3])`
    - `some_list = [1, 2, 3]`
    - `some_list = list(1, 2, 3)`

4. let a list be `s = [1, 3, 2, 1, 5, 3, 9]`. use `min(s)`, `max(s)`, `sum(s)`.
   also calculate the average of the list.

5. use `import random` and call `random.shuffle(some_list)` to shuffle the contents of the list `some_list`.

6. print the last 3 elements of a list without using for loops.

7. let `some_list = [1, 2, 3, 6, 5, 1, 7, 3]`. what is the output of:

- `some_list[:-1]`
- `some_list[-4:-2]`
- `some_list[2:-3]`

7. Let this section of code

```
    def extendList(val, list=[]):
        list.append(val)
        return list

    list1 = extendList(10)
    list2 = extendList(123,[])
    list3 = extendList('a')

    print "list1 = %s" % list1
    print "list2 = %s" % list2
    print "list3 = %s" % list3
```

> *What should be the output?*

> *Why is it different?*

> *How to fix this?*

.

8. given some code using classes:

```
    class A():
        x = 1

    a = A()
    print a.x
```

```
    b = [A()] * 10

    for ix in b:
        print ix.x

    b[2].x = 5

    for ix in b:
        print ix.x
```

> *Why is output different from expected?*

> *How can we fix this problem?*

.

9. use `sorted` in lists. consider the code below:

```
class Obj:
    def __init__(self, a=0, b=1):
        self.a = a
        self.b = b

if __name__ == "__main__":
    objects = [Obj(1, 2), Obj(5, 4), Obj(7, 3),
               Obj(11, 42), Obj(8, 0), Obj(5, 9)]
```

> *Sort the above list of objects using*

> *a as key*
>
> *b as key*

.

10. List and string slicing

```
s = "This is introduction to python for web development"

# Obtain each word of the string in a list.
```

.

11. Print Pyramid patterns using for and while loops

> *@*

> *@@*

> *@@@*

> *@@@@*

> *@@@@@*

.

12. What will the following code print

```
some_string = "abacdaegakialaop"
print some_string.split('a', 2)
```

END OF ASSIGNMENT |

Solution : QuickSort Problem

```
def quicksort(arr):
    if len(arr) <= 1:
        return arr
    pivot = arr[len(arr) // 2]
    left = [x for x in arr if x < pivot]
    middle = [x for x in arr if x == pivot]
    right = [x for x in arr if x > pivot]
    return quicksort(left) + middle + quicksort(right)

print(quicksort([3,6,8,10,1,2,1]))
```

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