WP LAB 4 – Python Basics

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Q1) Write a python program to reverse a content a file and store it in another file.

i) Code: l4q1.py

```
filew = open("l4q1write.txt", "w")
with open("l4q1read.txt", "r") as filer:
    datar = filer.read()
dataw = datar[::-1]
filew.write(dataw)
filew.close()
```

ii) Input text file: l4q1read.txt

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iii) Output text file: l4q1write.txt

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Q2)Write a python program to implement binary search with recursion.

i) Code l4q2.py

```
def binary_search(arr, x):
    low = 0
    high = len(arr) - 1
    while low <= high:
        mid = (low + high) // 2
        if arr[mid] < x:
            low = mid + 1
        elif arr[mid] > x:
            high = mid - 1
        else:
            return mid
    return -1
```

```
arr = [5, 6, 89, 152, 600]
x = 89
result = binary_search(arr, x)
if result == -1:
   print("Element is not present in the array")
else:
   print("Element is present at index ", result)
```

ii) Terminal

```
Element is present at index  2
```

Q3)Write a python program to sort words in alphabetical order

i) Code l4q3.py

```
names = ["Adam", "Zuckerberg", "Elon", "Bob", "Sam","Casey"]
names.sort()
print(names)
```

ii)Terminal

```
['Adam', 'Bob', 'Casey', 'Elon', 'Sam', 'Zuckerberg']
```

Q4)Write a Python class to get all possible unique subsets from a set of distinct integers Input:[4,5,6] Output : [[], [6], [5], [5, 6], [4], [4, 6], [4, 5], [4, 5, 6]]

i)Code l4q4.py

```
class py_solution:
   def sub_sets(self, sset):
      return self.subsetsRecur([], sorted(sset))

   def subsetsRecur(self, current, sset):
      if sset:
         return self.subsetsRecur(current, sset[1:]) + self.subsetsRecur(current + [sset[0]], sset[1:])
      return [current]

print(py_solution().sub_sets([4,5,6]))
```

ii)Terminal

```
[[], [6], [5], [5, 6], [4], [4, 6], [4, 5], [4, 5, 6]]
```

Q5)Write a Python class to find a pair of elements (indices of the two numbers) from a given array whose sum equals a specific target number. Input: numbers= [10,20,10,40,50,60,70], target=50 Output: 3, 4

i)Code l4q5.py

```
def twoSum(arr, target):
   n = len(arr)
   for i in range(n):
      for j in range(i + 1, n):
         if arr[i] + arr[j] == target:
            return i, j
   return None
```

```
if __name__ == "__main__":
    arr = [10, 20, 10, 40, 50, 60, 70]
    target = 50
    result = twoSum(arr, target)
    if result:
        print(f"Indices: {result}")
    else:
        print("No solution found")
```

ii)Terminal

```
Indices: (0, 3)
```

Q6)Write a Python class to implement pow(x, n)

i)Code l4q6.py

```
def power(x, n):
    pow = 1
    for i in range(n):
        pow = pow * x
    return pow

if __name__ == '__main__':
    x = 2
    n = 3
    print(power(x, n))
```

ii)Terminal

```
8
```

Q7)Write a Python class which has two methods get_String and print_String. The get_String accept a string from the user and print_String print the string in uppercase.

i) Code l4q7.py

```
class StringClass():
    def __init__(self):
        self.str1 = ""

    def get_String(self):
        self.str1 = input()

    def print_String(self):
        print(self.str1.upper())

str1 = StringClass()
str1.get_String()
str1.print_String()
```

ii)Terminal

```
hello world
HELLO WORLD
```