UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
DEHRADUN

DAA LAB - 2

Inplace - QuickSort Algorithm

MTECH-COMPUTER SCIENCE
ENGINEERING
CYBER SECURITY AND FORENSICS

Name: Jigesh Sheoran
SAP ID: 590025428

Title: : Implement an algorithm for Quick Sort

Implementation: Language used : Python

inplace-quicksort.py ●

Users > sheoraninfosec > Documents > Masters UPES > DAA > Lab3 > inplace-quicksort.py > ...

```python
1    # Author: Jigesh Sheoran
2    # SAPID: 590025428
3
4    def partition(arr, low, high):
5        pivot = arr[high]
6        i = low - 1
7
8        for j in range(low, high):
9            if arr[j] <= pivot:   #elements <= pivot go left
10               i += 1
11               arr[i], arr[j] = arr[j], arr[i]   #swap9
12
13       arr[i + 1], arr[high] = arr[high], arr[i + 1]
14       return i + 1
15
16   def quick_sort(arr, low, high):
17       if low < high:
18           pi = partition(arr, low, high)   #
19
20           quick_sort(arr, low, pi - 1)
21           quick_sort(arr, pi + 1, high)
22
23
24   #user input
25   arr = list(map(int, input("Enter numbers separated by space: ").split()))
26
27   print("Original Array:", arr)
28   quick_sort(arr, 0, len(arr) - 1)
29   print("Sorted Array:", arr)
30
```

Output:

```
PROBLEMS    OUTPUT    DEBUG CONSOLE    TERMINAL    PORTS                    >_ zsh  + ∨  ⬚  🗑

 /usr/local/bin/python3 "/Users/sheoraninfosec/Documents/Masters UPES/DAA/Lab3/inplace-quicksort.py"
● sheoraninfosec@Jigeshs-MacBook-Air / % /usr/local/bin/python3 "/Users/sheo
 raninfosec/Documents/Masters UPES/DAA/Lab3/inplace-quicksort.py"
 Enter numbers separated by space: 34 21 4 1 11 56 43 91 387 564 32
 Original Array: [34, 21, 4, 1, 11, 56, 43, 91, 387, 564, 32]
 Sorted Array: [1, 4, 11, 21, 32, 34, 43, 56, 91, 387, 564]
○ sheoraninfosec@Jigeshs-MacBook-Air / % █
```

—------------------------------END OF DOCUMENT —-----------------------------

JIGESH SHEORAN
590025428
M.Tech CSE