Title of the Assignment: Write a program for analysis of quick sort by using

deterministic and randomized variant. Code:

import random

def deterministic\_quick\_sort(arr):

if len(arr) <= 1:

return arr

pivot = arr[0]

lesser = []

equal = []

greater = []

for element in arr:

if element < pivot:

lesser.append(element)

elif element == pivot:

equal.append(element)

else:

greater.append(element)

return deterministic\_quick\_sort(lesser) + equal +

deterministic\_quick\_sort(greater)

def randomized\_quick\_sort(arr):

if len(arr) <= 1:

return arr

pivot = random.choice(arr)

lesser = []

equal = []

greater = []

for element in arr:

if element < pivot:

lesser.append(element)

elif element == pivot:

equal.append(element)

else:

greater.append(element)

return randomized\_quick\_sort(lesser) + equal + randomized\_quick\_sort(greater)

if \_\_name\_\_ == "\_\_main\_\_":

arr = [3, 6, 8, 10, 1, 2, 1]

# Deterministic Quick Sort

sorted\_arr\_deterministic = deterministic\_quick\_sort(arr.copy())

print("Deterministic Quick Sort:")

print(sorted\_arr\_deterministic)

# Randomized Quick Sort

sorted\_arr\_randomized = randomized\_quick\_sort(arr.copy())

print("\nRandomized Quick Sort:")

print(sorted\_arr\_randomized)