22AIE203 –

Data structures and algorithms -2

Lab 6

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Code:

```
def countingSort(arr, exp1):
    n = len(arr)
    output = [0] * (n)
    count = [0] * (10)
    for i in range(0, n):
        index = arr[i] // exp1
        count[index % 10] += 1
    for i in range(1, 10):
        count[i] += count[i - 1]
    i = n - 1
    while i >= 0:
        index = arr[i] // exp1
        output[count[index % 10] - 1] = arr[i]
        count[index % 10] -= 1
        i -= 1
    i = 0
    for i in range(0, len(arr)):
        arr[i] = output[i]
    print("Array after counting sort iteration: ", arr)

def radixSort(arr):
    max1 = max(arr)
    exp = 1
    while max1 / exp >= 1:
        countingSort(arr, exp)
        exp *= 10

arr = [432, 8, 530, 90, 88, 231, 11, 45, 677, 199]
radixSort(arr)
print("\nSorted Array:", arr)
```

Output :

```
SA 2/LABSHEET/LAB 6/radix.py"
Array after counting sort iteration:  [530, 90, 231, 11, 432, 45, 677, 8, 88, 199]
Array after counting sort iteration:  [8, 11, 530, 231, 432, 45, 677, 88, 90, 199]
Array after counting sort iteration:  [8, 11, 45, 88, 90, 199, 231, 432, 530, 677]

Sorted Array: [8, 11, 45, 88, 90, 199, 231, 432, 530, 677]
```