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...ssignments\131_Assignment_9\Question_2\Question_2.cpp 1
1 // Question_2.cpp : This file contains the 'main' function. Program 2
  execution begins and ends there.
2 ////////////////////////////////////////////////////////////////// 2
  ----- 2
  -----
3 //Name Sai Chaitanya Kilambi
4 //Course CPSC 131 Data Structures, Fall, 2022
5 //Assignment No.9 question:2
6 //Due date 11/2/2022
7 // Purpose:
8 // This program implements Radix sort on an array
9 //----- 2
  -----
10 // list of libraries
11 //
12 //importing the required libraries
13 #include<iostream>
14
15 using namespace std;
16
17
18 //Max Function
19 int getMax(int list[9]) {
20     int mx = list[0];
21     int i;
22     for (i = 1; i < 9; i++)
23         if (list[i] > mx)
24             mx = list[i];
25     return mx;
26 }
27
28 //radix sort function
29 void radixsort(int list[9]) {
30
31     //calling max function
32     int m = getMax(list);
33
34     int exp;
35
36     //sort every digit and cout but pass the exp variable of that number 2
37     (hassong function)
38     for (exp = 1; m / exp > 0; exp *= 10) {
39         int output[9];
40         int i, count[10] = { 0 };
41
42         // Store count of occurrences in count[]
43         for (i = 0; i < 9; i++)
44             count[(list[i] / exp) % 10]++;

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45     // Change count[i] so that count[i] now contains actual position of ↗
      this digit in output[]
46     for (i = 1; i < 10; i++)
47         count[i] += count[i - 1];
48
49     // Build the output array
50     for (i = 9 - 1; i >= 0; i--) {
51         output[count[(list[i] / exp) % 10] - 1] = list[i];
52         count[(list[i] / exp) % 10]--;
53     }
54
55     //copy output into original array
56     for (i = 0; i < 9; i++)
57         list[i] = output[i];
58 }
59 }
60
61 //printing the array
62 void print(int list[9]) {
63     int i;
64     for (i = 0; i < 9; i++)
65         cout<<"\t"<<list[i];
66 }
67
68 //main function
69 int main()
70 {
71     int list[9] = { 199, 200, 077, 045, 015, 278, 066, 9, 100 };
72
73     //printing the elements of the array before sort
74     cout<<"List of numbers before sort: \n";
75     for (int i = 0; i < 9; i++)
76         cout << "\t" << list[i];
77
78     //calling the sort function
79     radixsort(list);
80
81     //printing the elements of the array after sort
82     cout<<"\n\nList of numbers after sort: \n";
83     print(list);
84     cout<<"\n\n";
85     return 0;
86 }
```