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#include <iostream>
#include <cstdio>

using namespace std;
int curCount = 0;
int mode = 0;
int getMax(int arr[],int sizeo){//O(n)
        int mx = arr[0];
        for(int i = 1;i < sizeo;i++){
                if(arr[i] > mx)
                        mx = arr[i];
        }
        return mx;
}
void countSort(int arr[],int n, int exp){

        int output[n];//output array
        int i , count[10] = {0};
        //store occurences in our counting arrya
        for(i = 0;i<n;i++){//O(n)
                count[(arr[i]/exp)%10]++;
        }
        //add previous entries
        for(i = 1;i<10;i++){
                count[i] += count[i-1];
        }
        for(i = n-1;i>=0;i--){
                output[count[(arr[i]/exp)%10]-1] = arr[i];
                count[(arr[i]/exp)%10]--;
        }
        for(i = 0;i < n;i++){
                arr[i] = output[i];
        }
}

void radixSort(int arr[],int sizeo){
        //get max number for the largetst number of counting array
        int m = getMax(arr,sizeo);
        for (int exp = 1;m/exp > 0;exp*= 10){//loop through eveyr n umber
                countSort(arr,sizeo,exp);//exp is the current factor of 10 that divides
into digits
        }
}
int main(){

        int amount;
        printf("Please input the amount of numbers youll input: ");
        cin >> amount;
        int * arrayo = new int[amount];

        for(int i =0;i<amount;i++){
                cin >> arrayo[i];
        }

        int sizeo = amount;
        printf("This is our unsorted array : \n");
        for(int i =0;i < sizeo;i++){//output sorted array
                cout << arrayo[i] << " ";
        }
        radixSort(arrayo,sizeo);
        printf("\nThis is our sorted array : \n");

        int prevMode = -1;
        int prevCount =-1 ;
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        int possmode = arrayo[0];
        int possCount = 1;
        for(int i = 0;i<sizeo;i++){
                cout << arrayo[i] << " ";
        }
        cout <<endl;
        for(int i =1;i < sizeo;i++){//output sorted array
                printf("prevMode = %d while arrao[%d] = %d\n",prevMode,i,arrayo[i]);
                if(possmode != arrayo[i] || (i ==sizeo-1 && possmode!= arrayo[i])){
                        if(prevCount < possCount){
                                prevMode = possmode;
                                prevCount = possCount;
                        }
                        possmode = arrayo[i];
                        possCount = 1;
                }
                if(possmode == arrayo[i])
                        possCount++;
        }
        printf("This is prevMode : %d\n",prevMode);
        //now that the array is sorted we analyze it
        cout<<endl;
        return 0;
}
```