

# EECE 7205-Assignment1

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## 1 Counting Sort

```
#include <iostream>

int findMax(int* data, int limit){

    int max = data[0];
    for(int i=0; i<limit; i++){
        if(data[i] > max){
            max = data[i];
        }
    }
    return max;
}

void sort(int* data, int limit){

    int largest = findMax(data, limit);

    /*
       Loop 1: Create an array with limit - the largest element
    */
    int _counts[largest+1] = {0};

    /*
       Loop 2
    */
    for(int i=0; i<limit; i++){
        _counts[data[i]]+=1;
    }

    /*
       Loop 3
    */
}
```

```

for(int i=2; i<=largest; i++){
    _counts[i] += _counts[i-1];
}

int B[limit] = {0};
for(int j=limit-1; j>=0; j--){
    B[_counts[data[j]]] = data[j];
    _counts[data[j]] = data[j] - 1;
}

std::cout<<"\nSorted Array:";
for(int i=0; i<limit; i++){
    std::cout<<B[i] << "\t";
}

std::cout<<"\n";
}

int main( int argc, char* argv[] )
{

    int A [] = {20, 18, 5, 7, 16, 10, 9, 3, 12, 14, 0};
    int limit = 11;

    std::cout<<"Input Array: ";
    for( int i = 0; i < limit; i++ ){
        std::cout<<A[i] << "\t";
    }

    sort(A, limit);

    return 0;
}

```