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CS 477

Homework # 4

9/30/2016

**1.** Attached.

**2.** Here is the implemented algorithm. To see it tested, consult the submitted program:

int numberInRange ( int\* data, int arrayMin, int arrayMax, int rangeMin, int rangeMax )

{

//if array or range min > max, no processing needed. Return an error value

if ( rangeMin > rangeMax || arrayMin > arrayMax )

return -1;

//create an array of size 0-max value in data array. Uses std::max\_element method

int maxValue = \*max\_element ( data, data + arrayMax ) ;

int counts[ maxValue ];

//zero out the values in the new array

for ( int i = 0; i <= maxValue; i++ )

counts[i] = 0;

//c[i] will contain the number of elements equal to i in data

for ( int j = 0; j <= arrayMax; j++ )

counts[data[j]]++;

//c[i] will contain the number of elements <= to i in data

for ( int k = 1; k <= maxValue; k++ )

counts[k] = counts[k] + counts[k-1];

//the final range will be the number of values <= to rangeMax minus the number of values

//<= rangeMin - 1

return counts[rangeMax] - counts[rangeMin - 1];

}

**3.** Attached.

**5.** Attached.