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\* Lab Report 1

\* Question 1

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#include <iostream>

using namespace std;

int\* ArrayAllocator(int size);

int FunctionMode(int\* arr, int size, int\* val);

int main()

{

int size, val, frequency;

const int min = 0, max = 9;

//Do while loop to input a valid array size

do

{

cout << "Enter the size of an array (5-50): ";

cin >> size;

} while (size < 5 or size > 50);

//Call array allocator function

int \*arr = ArrayAllocator(size);

//Random integers with the seed of 6000

srand(6000);

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

{

\*(arr + i) = rand() % (max - min + 1) + min;

cout << \*(arr + i) << " ";

}

cout << endl << endl;

//Call funtion mode to find frequency of an integer

frequency = FunctionMode(arr, size, &val);

if (frequency != -1)

{

cout << "Frequency: " << frequency << endl;

cout << "Value: " << val << endl;

}

else

{

cout << "There is no mode for this array." << endl;

}

delete[] arr;

return 0;

}

int\* ArrayAllocator(int size)

{

//Create and return the new array

int\* ptr = new int[size];

return ptr;

}

int FunctionMode(int\* arr, int size, int\* val)

{

int count, highcount = 0;

//Loop for the possible integers in the array

for (int i = 0; i <= 9; i++)

{

count = 0;

//Loop to count how many times integer i appears in the array

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

{

if (\*(arr + j) == i)

{

count++;

}

}

//If the count for that integer is higher than the previous, replace the frequency

if (count > highcount)

{

highcount = count;

\*val = i;

}

}

//If an integer appears more than once, return that frequency

if (highcount > 1)

{

return highcount;

}

//If an integer does not appear more than once, return -1

else

{

return -1;

}

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