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/*************************************************************
* AUTHOR     : Amirarsalan Valipour & Ali Eshghi
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* LAB #1     : Random Number Generator
* CLASS      : CS 1C
* SECTION    : MW - 5 pm - 7 pm
* DUE DATE   : 1/13/2020
*************************************************************/

#include "Header.h"


int main()
{
    //CONSTANTS

    const int  PROMPT = 14;
    const int  asNum  = 1;
    const char PROGRAMMER[50] = "Amirarsalan Valipour & ALi Eshghi";
    const char CLASS[5]       = "CS1B";
    const char SECTION[25]    = "MW: 5p - 7p";
    const char asType = 'A';
    const char asName[50] = "Random Number Generator";



    //VARIABLES

    num integer;                //Calc & Out - Random Integer
    num intAr[AR_SIZE];         //Calc & Out - Random Integer Array
    num sumAr[AR_SIZE];         //Calc & Out - Total Value Array
    num sortedIntAr[AR_SIZE];   //Calc & Out - Sorted Integer Array
    num reverseIntAr[AR_SIZE];  //Calc & Out - Reversed Numbers Array

    num sum;    //Calc & Out - Total Values
    num i;      //Calc - LCV
    num j;      //Calc - LCV
    num temp;   //Calc - Temporary Value
    num k;
    num strLen;
    num intNum;
    num strSum;

    convert ss;

    string s;

    std::string textNum;


    //INITIALAZATION
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sum = 0;
strSum = 0;


//PRINT HEADER

cout << left;
cout << endl;
cout << "************************************************************";
cout << "\n* PROGRAMMED BY : " << PROGRAMMER;
cout << "\n* " << setw(PROMPT) << "CLASS"   << ": " << CLASS;
cout << "\n* " << setw(PROMPT) << "SECTION" << ": " << SECTION;
cout << "\n* ";

if (toupper(asType) == 'L')
{
    cout << "LAB #" << setw(8);
}

else
{
    cout << "ASSIGNMENT #" << setw(1);
}

cout << asNum << " : " << asName;
cout << "\n************************************************************";
cout << "**\n\n";
cout << right;


cout << "Generating RANDOM integers...\n";


//PROCESSING

srand(time(NULL));  //time seed


//generates 16 random number

for(i = 0; i < 16; i++)
{
    integer = rand() % 99 + 1;

    intAr[i] = integer;

    cout << integer << endl;
}

cout << endl;
```

```
//bubble sort the array

for(int i = 0; i < AR_SIZE; i++)
{
    for(j = 0; j < AR_SIZE; j++)
    {
        if(intAr[j] > intAr[j+1])
        {
            temp       = intAr[j];

            intAr[j]   = intAr[j+1];

            intAr[j+1] = temp;
        }
    }
}


//initialize sorted numbers in another array

cout << "Sorting...\n";

for(i = 0; i < AR_SIZE; i++)
{
    sortedIntAr[i] = intAr[i];

    cout << sortedIntAr[i];

    cout << endl;
}

cout << endl;


//Reversing the numbers

cout << "Reversing Each Integer: \n";


for(i = 0; i < AR_SIZE; i++)
{
    k = sortedIntAr[i];

    ss << k;

    ss >> s;

    if(s.length() == 1)
    {
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        cout << s;
        cout << endl;
    }

    else if(s.length() == 2)
    {
        if(s[1] == '0')
        {
            cout << s[0];
            cout << endl;
        }

        else
        {
            cout << s[1];
            cout << s[0];
            cout << endl;
        }

    }

    ss.clear();
    s.clear();
}
cout << endl << endl;



//find the sum of the random numbers and store them

cout << "Total of Each Integers: \n";

for(i = 0; i < AR_SIZE; i++)
{
    k = sortedIntAr[i];

    ss << k;

    ss >> s;

    if(s.length() == 1)
    {
        cout << s;
        cout << endl;
    }

    else if(s.length() == 2)
    {
        for(i = 0; i < s.length(); ++i)
        {
            int a = charToInt(s[i]);
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```
                strSum = strSum + a;

            }

            cout << strSum;
            cout << endl;
            strSum = 0;
        }

        ss.clear();
        s.clear();
    }


    cout << endl << endl;

    return 0;
}
```