#ifndef ZIP\_CODE\_H

#define ZIP\_CODE\_H

/\*  Assignment:     PostNet

    Author:         Ryan Wood

    Date Created:   January 15, 2018

    Requirements:   Calculate a Zip code using the PostNet system, which assigns

                    five zip code digits. Each digit contains five tall or short

                    bars (represented in data as 1 or 0) which map to 5 digits.

                    The digits are a fixed value (7, 4, 2, 1, and 0). For each

                    mapping, of 1 or 0, the value is multiplied. The five digits

                    are then added together to determine the zip code digit.

                    this is repeated for all of the five digits of the zip code.

\*/

/\*ZipCode class header file\*/

#include <string>

using namespace std;

class ZipCode

{

    public:

        /\*  Function:   ZipCode(char[])

            Purpose:    initialzes and calculates a zip code

                        based on the given bar code character array

            Parameters: an array of 25 characters, all of which are 0 or 1

            Return:     a zip code matching the bar code

        \*/

        ZipCode(char[]);

        /\*  Function:   initZipCode(char[])

            Purpose:    initialzes and calculates a zip code

                        based on the given bar code character array

            Parameters: an array of 25 characters, all of which are 0 or 1

        \*/

        void initZipCode(char[]);

        /\*  Function:   getZipCode()

            Purpose:    retrieves the string representation of the zip code

            Return:     the zip code

        \*/

        string getZipCode();

        /\*  Function:   printZipCode()

            Purpose:    prints the zip code to the console

        \*/

        void printZipCode();

    private:

        /\*  Function:   calculateZip()

            Purpose:    This function uses the two-dimensional bar code

                        character array that was created by initZipCode

                        to calculate five zip code digits based on the

                        PostNet system described in the Requirements

                        of this program. Populates the m\_zipCode string

            PostCond:   m\_zipCode is populated with a value

        \*/

        void calculateZip();

        char   m\_barCode[5][5];

        string m\_zipCode;

};

#endif

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                    this is repeated for all of the five digits of the zip code.

\*/

/\*ZipCode class implementation file\*/

#include "ZipCode.h"

#include <iostream>

#include <string>

using namespace std;

ZipCode::ZipCode(char digits[])

{

    initZipCode(digits);

}

void ZipCode::initZipCode(char digits[])

{

    int digitCount = 0;

    int countX     = 0;

    int countY     = 0;

    for(digitCount = 0; digitCount < 25; digitCount++)

    {

        m\_barCode[countX][countY] = digits[digitCount];

        countX++;

        if(countX == 5)

        {

            countY++;

            countX = 0;

        }

    }

    calculateZip();

}

string ZipCode::getZipCode()

{

    return m\_zipCode;

}

void ZipCode::printZipCode()

{

    cout << m\_zipCode;

}

void ZipCode::calculateZip()

{

    int  postNetVal[] = {7, 4, 2, 1, 0};

    int  countX       = 0;

    int  countY       = 0;

    int  product      = 0;

    int  sumProducts  = 0;

    char chZip[5];

    for(countY = 0; countY < 5; countY++)

    {

        sumProducts = 0;

        for(countX = 0; countX < 5; countX++)

        {

            if(m\_barCode[countX][countY] == '1')

            {

                product = postNetVal[countX];

            }

            else

                product = 0;

            sumProducts+= product;

        }//countX loop

        if(sumProducts == 11)

            sumProducts = 0;

        chZip[countY] = char(sumProducts + 48);//ASCII numbers begin at 48 with 0

    }//countY loop

    m\_zipCode = string(chZip);

}

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                    mapping, of 1 or 0, the value is multiplied. The five digits

                    are then added together to determine the zip code digit.

                    this is repeated for all of the five digits of the zip code.

\*/

/\*ZipCode class main test file. Reads the data file and prints the zipcode values\*/

#include "ZipCode.h"

#include <string>

#include <iostream>

#include <fstream>

using namespace std;

ifstream inFile("BarCode.txt");

ofstream outFile("ZipCodes.out");

void processZipCode(char barCode[])

{

    ZipCode zip(barCode);

    string  sZip = zip.getZipCode();

    outFile <<  sZip << endl;

}

void processFile()

{

    int  count = 0;

    int  index = 0;

    char barCode[25];

    char ch;

    while(inFile >> ch)

    {

        if(ch == '\n')

            continue;

        count++;

        if(count == 1)//first digit is not needed

            continue;

        if(count == 27)//last digit is not needed

        {

            count = 0;//each code is 26 chars long

            index = 0;

            processZipCode(barCode);

            continue;

        }

        barCode[index] = ch;

        index++;

    }

}

int main()

{

    /\*char chZip[] = {'1', '0', '1', '0', '0',

                    '1', '0', '1', '0', '0',

                    '0', '1', '0', '1', '0',

                    '1', '1', '0', '0', '0',

                    '0', '1', '0', '0', '1',};

    ZipCode zip(chZip);

    zip.printZipCode();\*/

    processFile();

    outFile.close();

    inFile.close();

    return 0;

}