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#include <iostream>
using std::cout;          //        program uses cout
using std::cin;           //        program uses cin
using std::endl;          //        program uses endl

void display( unsigned );       //        prototype of the function display

//        prototype of the function packCharacters
unsigned int packCharacters(unsigned int, char );

int main()       //        function main begins program execution
{
        unsigned int a = 0;
        char ch;

        //        prompt the user and read a character from the user
        cout << endl << "A program to pack characters to an integer.";
        cout << endl << endl << "Enter your choice of a character :  ";
        cin >> ch;

        //        add the character to the number
        a = packCharacters( a, ch );

        //        prompt and read one more character from the user
        cout << endl << endl << "Enter your choice of one more character :  ";
        cin >> ch;

        //        add the character to the existing number
        a = packCharacters( a, ch );

        return 0;        // indicate program executed successfully
}       // end of function, main

//        display bits of an integer value
void display( unsigned val)
{
        const int SHIFT = 8 * sizeof( unsigned ) - 1;
        const unsigned MASK = 1 << SHIFT;

        //        display bits
        for ( unsigned i = 1; i <= SHIFT + 1; i++ )
        {
                cout << ( val & MASK ? '1' : '0');
                val <<=1 ;

                if ( i % 8 == 0 )        //        output a space after 8 bits
                        cout << ' ';
        }       //        end for
}       //        end function display

//        returns the integer that was added by the character
unsigned int packCharacters(unsigned int number, char myChar)
{
        //        display the initial stage
        cout << endl << "\nThe number in bits form at the beginning is "
                << endl << number << " =\t";
        display( number );

        //        shift the bits of the number by 8 positions
        number <<= 8;

        //        display the number after shifting
        cout << endl << "\nThe number in bits form after shifting is "
                << endl << number << " =\t";
        display( number );

        //        shift the bits of the number by 8 positions
        number = number|myChar;

        //        display the number at the end
        cout << endl << "\nThe number in bits form after assigning is "
                << endl << number << " =\t";
        display( number );

        return number;//        return the number
}       //        end function packCharacters
```

Comment