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/*****
*      Author:  Jessica Schuler
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*      Filename:  A1.cpp
*
*      Overview:
*          This program takes a user input and converts that number to
*          a hexadecimal and binary number.  It also shows the min and
*          max numbers, signed and unsigned, for short, long, and int.
*      Input:
*          The user will input thier favorite number.
*      Output:
*          The program will output the users number converted to
*          hexadecimal and binary.  If will also show the min and max
*          numbers, signed and unsigned, for short, long, and int.
*
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#include<iostream>
#include<climits>
#include<limits>
#include<bitset>

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using namespace std;//I used this so I didn't have to type std:: in front of
everything!

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int main()
{

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    //I defined my variables here.
    short int shrt_min = SHRT_MIN;
    short int shrt_max = SHRT_MAX;
    unsigned short int ushrt_max = USHRT_MAX;
    unsigned short int ushrt_min = 0;
    int int_min = INT_MIN;
    int int_max = INT_MAX;
    unsigned int uint_max = UINT_MAX;
    unsigned int uint_min = 0;
    long int long_min = LONG_MIN;
    long int long_max = LONG_MAX;
    unsigned long int ulong_max = ULONG_MAX;
    unsigned long int ulong_min = 0;
    int input_number = input_number;

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    //This is where the user enters a number and it is converted to hex and binary.
    cout<<"Enter your favorite number now!:";
    cin>>input_number;
    cout<<"This number converted to a hexadecimal is:"<<hex<<input_number<<endl;
    cout<<"This number converted to binary is:"<<bitset<8>(input_number)<<endl;

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    cout<<endl;//I put in these blank lines to group output to make more readable.

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    //this starts the unsigned short min group
    cout<<"The unsigned short minimum number is(in decimal,hexadecimal,octal):"<<
    dec<<ushrt_min<<endl;
    cout<<"Overflow of unsigned short minimum number:"<<dec<<(short)(ushrt_min-
    1)<<endl;

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    cout<<endl;

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    //this starts the unsigned short max group

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cout<<"The unsigned short maximum number is(in
    decimal):"<<dec<<ushrt_max<<endl;
cout<<"(in hexadecimal):"<<hex<<ushrt_max<<endl;
cout<<"(in Octal):"<<oct<<ushrt_max<<endl;
cout<<"Overflow of unsigned short max number + 1
    :"<<dec<<(short) (ushrt_max+1)<<endl;

cout<<endl;

//this starts the signed short min group
cout<<"The signed short minimum number is(in decimal):"<<dec<<shrt_min<<endl;
cout<<"(in hexadecimal):"<<hex<<shrt_min<<endl;
    cout<<"(in Octal):"<<oct<<shrt_min<<endl;
cout<<"Overflow of signed short min number + 1 :"<<dec<<(short) (shrt_min-
    1)<<endl;

cout<<endl;

//this starts the signed short max group
cout<<"The signed short maximum number is(in decimal):"<<dec<<shrt_max<<endl;
cout<<"(in hexadecimal):"<<hex<<shrt_max<<endl;
cout<<"(in Octal):"<<oct<<shrt_max<<endl;
cout<<"Overflow of signed short maximum
    number:"<<dec<<(short) (shrt_max+1)<<endl;

cout<<endl;

//this starts the unsigned long min group
cout<<"The unsigned long minimum number is(in decimal,hexadecimal,octal):"<<
dec<<ulong_min<<endl;
cout<<"Overflow of unsigned long minimum number:"<<dec<<(long) (ulong_min-
    1)<<endl;

cout<<endl;

//this starts the unsigned long max group
cout<<"The unsigned long maximum number is(in decimal):"<<dec<<ulong_max<<endl;
cout<<"(in hexadecimal):"<<hex<<ulong_max<<endl;
cout<<"(in Octal):"<<oct<<ulong_max<<endl;
cout<<"Overflow of unsigned long maximum
    number:"<<dec<<(long) (ulong_max+1)<<endl;

cout<<endl;

//this starts the signed long min group
cout<<"The signed long minimum number is(in decimal):"<<dec<<long_min<<endl;
cout<<"(in hexadecimal):"<<hex<<long_min<<endl;
cout<<"(in Octal):"<<oct<<long_min<<endl;
cout<<"Overflow of signed long minimum number:"<<dec<<(long) (long_min-1)<<endl;

cout<<endl;

//this starts the signed long max number
cout<<"The signed long maximum number is(in decimal):"<<dec<<long_max<<endl;
cout<<"(in hexadecimal):"<<hex<<long_max<<endl;
cout<<"(in Octal):"<<oct<<long_max<<endl;
cout<<"Overflow of signed long maximum number:"<<dec<<(long) (long_max+1)<<endl;

cout<<endl;

```

```

//this starts the unsigned int min group
cout<<"The unsigned int minimum number is(in
    decimal,hexadecimal,octal):"<<dec<<
uint_min<<endl;
cout<<"Overflow of unsigned int minimum number:"<<dec<<(int)(uint_min-1)<<endl;

cout<<endl;

//this starts the unsigned int max group
cout<<"The unsigned int maximum number is(in decimal):"<<dec<<uint_max<<endl;
cout<<"(in hexadecimal):"<<hex<<uint_max<<endl;
cout<<"(in Octal):"<<oct<<uint_max<<endl;
cout<<"Overflow of unsigned int maximum number:"<<dec<<(int)(uint_max+1)<<endl;

cout<<endl;

//this starts the signed int min group
cout<<"The signed int minimum number is(in decimal):"<<dec<<int_min<<endl;
cout<<"(in hexadecimal):"<<hex<<int_min<<endl;
cout<<"(in Octal):"<<oct<<int_min<<endl;
cout<<"Overflow of signed int minimum number:"<<dec<<(int)(int_min-1)<<endl;

cout<<endl;

//this starts the signed int max group
cout<<"The signed int maximum number is(in decimal):"<<dec<<int_max<<endl;
cout<<"(in hexadecimal):"<<hex<<int_max<<endl;
cout<<"(in Octal):"<<oct<<int_max<<endl;
cout<<"Overflow of signed int maximum number:"<<dec<<(int)(int_max+1)<<endl;

return 0;

}

```