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CODE

*/\**

*Write the program Hamming code for a given*

*input message (sender side and receiver side).*

*\*/*

#include <iostream>

#include <cmath>

using *namespace* std;

*int* main()

{

    cout << "----------SENDER SIDE----------";

*int* m, r;

    do

    {

        cout << "\nEnter no. of data bits: ";

        cin >> m;

    } while (m <= 0);

*int* message[m]; *//Original Message*

    cout << "\nEnter the binary message: ";

    for (*int* i = m - 1; i >= 0; i--)

        cin >> message[i];

    for (*int* i = 2; i; i++) *//To Calculate no. of redundant bits!*

    {

        if ((*int*)pow(2, i) >= (m + i + 1)) *//2^r >= m+r+1, pow() returns a double value!*

        {

            r = i;

            break;

        }

    }

*int* sentData[m + r];

    for (*int* i = 0, x = 0, j = 0; j < m + r; j++) *//Initialising the data string with the original message at position of the data bits!*

    {

        if ((*int*)pow(2, i) != j + 1)

            sentData[j] = message[x++];

        else

            i++;

    }

    for (*int* i = 0; i < r; i++) *//To calculate the even parity of the parity bits and initialising them into the data string!*

    {

        sentData[(*int*)pow(2, i) - 1] = 0;

        for (*int* j = 1; j <= m + r; j++) *//Calculating even parity of the ith parity bit!*

            if ((j & (*int*)pow(2, i)) == (*int*)pow(2, i))

                sentData[(*int*)pow(2, i) - 1] = sentData[(*int*)pow(2, i) - 1] ^ sentData[j - 1];

    }

    cout << "\nMessage Sent by Sender: ";

    for (*int* i = (m + r - 1); i >= 0; i--) *//Printing the message sent by sender!*

        cout << sentData[i] << " ";

    cout << "\n";

    cout << "\n----------RECIEVER SIDE----------";

*int* recievedData[m + r];

    cout << "\nEnter Recieved Message: "; *//Retrieving the recieved message from user!*

    for (*int* i = m + r - 1; i >= 0; i--)

        cin >> recievedData[i];

*int* c = 0;

    for (*int* i = 0; i < r; i++) *//To check For Errors in the recieved message!*

    {

*int* p = recievedData[(*int*)pow(2, i) - 1];

        for (*int* j = 1; j <= m + r; j++)

            if (j != (*int*)pow(2, i) && (j & (*int*)pow(2, i)) == (*int*)pow(2, i))

                p = p ^ recievedData[j - 1];

        c += (*int*)pow(2, i) \* p;

    }

    if (c != 0) *//Printing the corrected recieved message in case of any error!*

    {

        cout << "\nError in bit " << c << "!";

        recievedData[c - 1] = !recievedData[c - 1];

        cout << "\nThe Corrected Recieved Message: ";

        for (*int* j = m + r - 1; j >= 0; j--)

            cout << recievedData[j] << " ";

        cout << "\n";

    }

    else

        cout << "\nNo Errors Found in the Recieved Message!\n";

    return 0;

}

OUTPUT

Text

Description automatically generated

Code

*/\**

*Write the program IP addressing by taking the*

*IP address as input and print the corresponding*

*class, Net –ID and Host-ID.*

*\*/*

#include <iostream>

using *namespace* std;

*int* main()

{

*int* arr[4];

    cout << "Please enter the IP Address\n";

    for (*int* i = 0; i < 4; i++)

        cin >> arr[i];

    cout << "\nYou Have Entered\n";

    for (*int* i = 0; i < 4; i++)

    {

        cout << arr[i];

        if (i < 3)

        {

            cout << ".";

        }

    }

    cout << endl;

    cout << "\nDetermining Class\n";

    if ((arr[0] > 0) && (arr[0] <= 127))

    {

        cout << "class A\n";

        cout << "\n\nNet-ID\n";

        for (*int* i = 0; i < 3; i++)

        {

            cout << arr[i];

            if (i < 2)

                cout << ".";

        }

        cout << "\n\nHost-ID\n";

        cout << arr[3];

    }

    if ((arr[0] > 127) && (arr[0] <= 191))

    {

        cout << "class B\n";

        cout << "\n\nNet-ID\n";

        for (*int* i = 0; i < 2; i++)

            cout << arr[i] << ".";

        cout << "\n\nHost-ID\n";

        cout << arr[2] << "." << arr[3];

        cout << endl;

    }

    if ((arr[0] > 191) && (arr[0] <= 223))

    {

        cout << "class C\n";

        cout << "\n\nNet-ID\n";

        for (*int* i = 0; i < 3; i++)

            cout << arr[i] << ".";

        cout << "\n\nHost-ID\n";

        cout << arr[3];

        cout << endl;

    }

    if ((arr[0] > 223) && (arr[0] <= 239))

    {

        cout << "class D\n";

        cout << "No Net-ID And Host-ID\n";

    }

    if ((arr[0] > 239) && (arr[0] <= 255))

    {

        cout << "class E\n";

        cout << "No Net-ID And Host-ID\n";

    }

}

OUTPUT

Text

Description automatically generated