
File Edit Selection View Go Run Terminal Help
cn1.cpp - workspace (Workspace) - Visual Studio Code
cn1.cpp
My programs > C++ > cn1.cpp > main()
#include <iostream>
using namespace std;
int main()
{
// Message
int mSize;
int message[255];
cout << "Enter the message Size please-> ";
cin >> mSize;
cout << "Enter the message please-> ";
for (int i = 0; i < mSize; i++)
cin >> message[i];
// Generator
int gSize;
int generator[64];
cout << "Enter the generator Size please-> ";
cin >> gSize;
cout << "Enter the generator please-> ";
for (int i = 0; i < gSize; i++)
cin >> generator[i];
if (!(generator[0] == 1 &&
generator[gSize - 1] == 1))
{
cerr << "\nERROR: MSB and LSB of the Generator must be 1\n";
return -1;
}
cout << "\nSENDER\n======\n";
cout << "Message is : ";
for (int i = 0; i < mSize; i++)
cout << message[i];
cout << endl<<endl;
cout << "Generator is-> ";
for (int i = 0; i < gSize; i++)
cout << generator[i];
cout << endl<<endl;
// Message + r 0's
int codeword[mSize + (gSize - 1)];
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// Message + r 0's
int codeword[mSize + (gSize - 1)];
for (int i = 0; i < mSize; i++)
codeword[i] = message[i];
for (int i = mSize; i < mSize + (gSize - 1); i++)
codeword[i] = 0;
// Binary Division
int temp[mSize + (gSize - 1)];
for (int i = 0; i < mSize + (gSize - 1); i++)
temp[i] = codeword[i];
for (int i = 0; i < mSize; i++)
{
int j = 0, k = i;
if (temp[k] >= generator[j])
while (j < gSize)
temp[k++] ^= generator[j++];
}
// CRC
int crc[64];
for (int i = 0, j = mSize; i < (gSize - 1); i++, j++)
crc[i] = temp[j];
cout << "CRC: ";
for (int i = 0; i < (gSize - 1); i++)
cout << crc[i];
cout << endl<<endl;
// Codeword + CRC
for (int i = 0, j = mSize; i < (gSize - 1); i++, j++)
codeword[j] = crc[i];
cout << "Transmition Codeword is -> ";
for (int i = 0; i < mSize + (gSize - 1); i++)
cout << codeword[i];
cout << endl<<endl;
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cn1.cpp

My programs > C++ > cn1.cpp > main()

```
  cout << "\nNOISY CHANNEL SIMULATION\n======================\n";
  int nb, n;
  cout << "Enter Number of Bits to Flip please: ";
  cin >> nb;
  if (nb > 0 && nb < mSize + (gSize - 1))
  {
    if (nb == 0)
      cout << "Codeword Not Changed.\n";
    for (int i = 0; i < nb; i++)
    {
      cout << "Enter Bit Position to be Fliped-> ";
      cin >> n;
      if (n > 0 && n < mSize + (gSize - 1))
        codeword[n - 1] = codeword[n - 1] == 0 ? 1 : 0;
      else
        cout << "Invalid Position. Codeword Not Changed.\n";
    }
  }
  else
    cout << "Invalid Request. Codeword Not Changed.\n";

  cout << "\nRECEIVER\n========\n";
  cout << "Received Codeword is-> ";
  for (int i = 0; i < mSize + (gSize - 1); i++)
    cout << codeword[i];
  cout << endl<<endl;

                                                    // Binary Division

  int temp2[mSize + (gSize - 1)];
  for (int i = 0; i < mSize + (gSize - 1); i++)
    temp2[i] = codeword[i];
  for (int i = 0; i < mSize; i++)
  {
    int j = 0, k = i;
    if (temp2[k] >= generator[j])
      while (j < gSize)
        temp2[k++] ^= generator[j++];
  }

                                                    // Remainder
```


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for (int i = 0; i < mSize; i++)
{
int j = 0, k = i;
if (temp2[k] >= generator[j])
while (j < gSize)
temp2[k++] ^= generator[j++];
}
// Remainder
int rem[64];
for (int i = mSize, j = 0; i < mSize + (gSize - 1); i++, j++)
rem[j] = temp2[i];
cout << "Remainder: ";
for (int i = 0; i < (gSize - 1); i++)
cout << rem[i];
cout << endl<<endl;
// Checking Error
int flag = false;
for (int i = 0; i < (gSize - 1); i++)
if (rem[i] != 0)
flag = true;
// Declare Result
cout << endl;
if (!flag)
cout << "TRANSMISSION OK!" << endl;
else
cout << "TRANSMISSION ERROR DETECTED!" << endl;
return 0;
}
0 0
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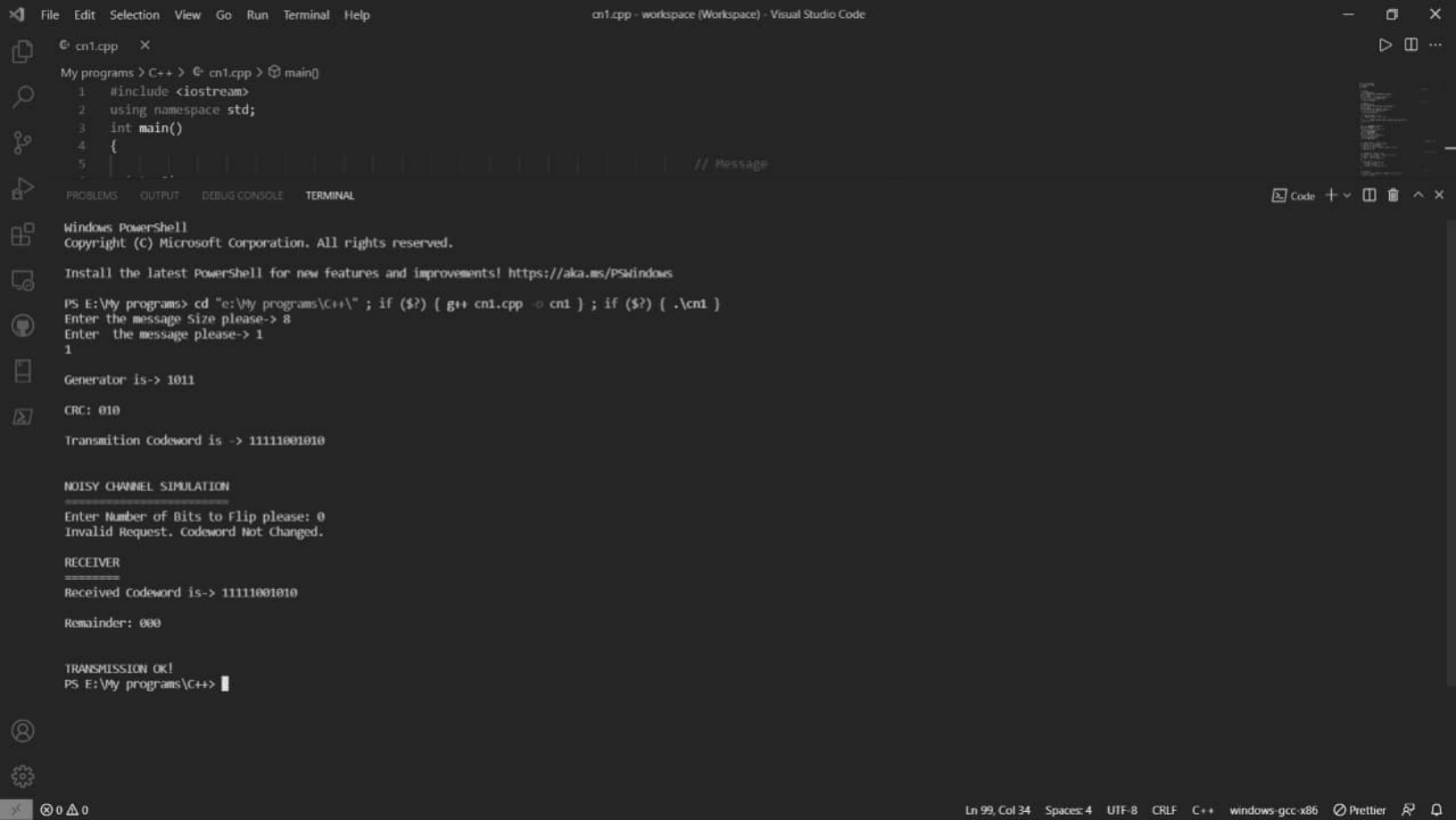
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#include <iostream>
using namespace std;
int main()
{
// Message
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
Code
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.
Install the latest PowerShell for new features and improvements! https://aka.ms/PSWindows
PS E:\My programs> cd "e:\My programs\C++\" ; if ($?) { g++ cn1.cpp -o cn1 } ; if ($?) { .\cn1 }
Enter the message Size please-> 8
Enter the message please-> 1
1
Generator is-> 1011
CRC: 010
Transmition Codeword is -> 11111001010
NOISY CHANNEL SIMULATION
Enter Number of Bits to Flip please: 0
Invalid Request. Codeword Not Changed.
RECEIVER
Received Codeword is-> 11111001010
Remainder: 000
TRANSMISSION OK!
PS E:\My programs\C++>
0 0
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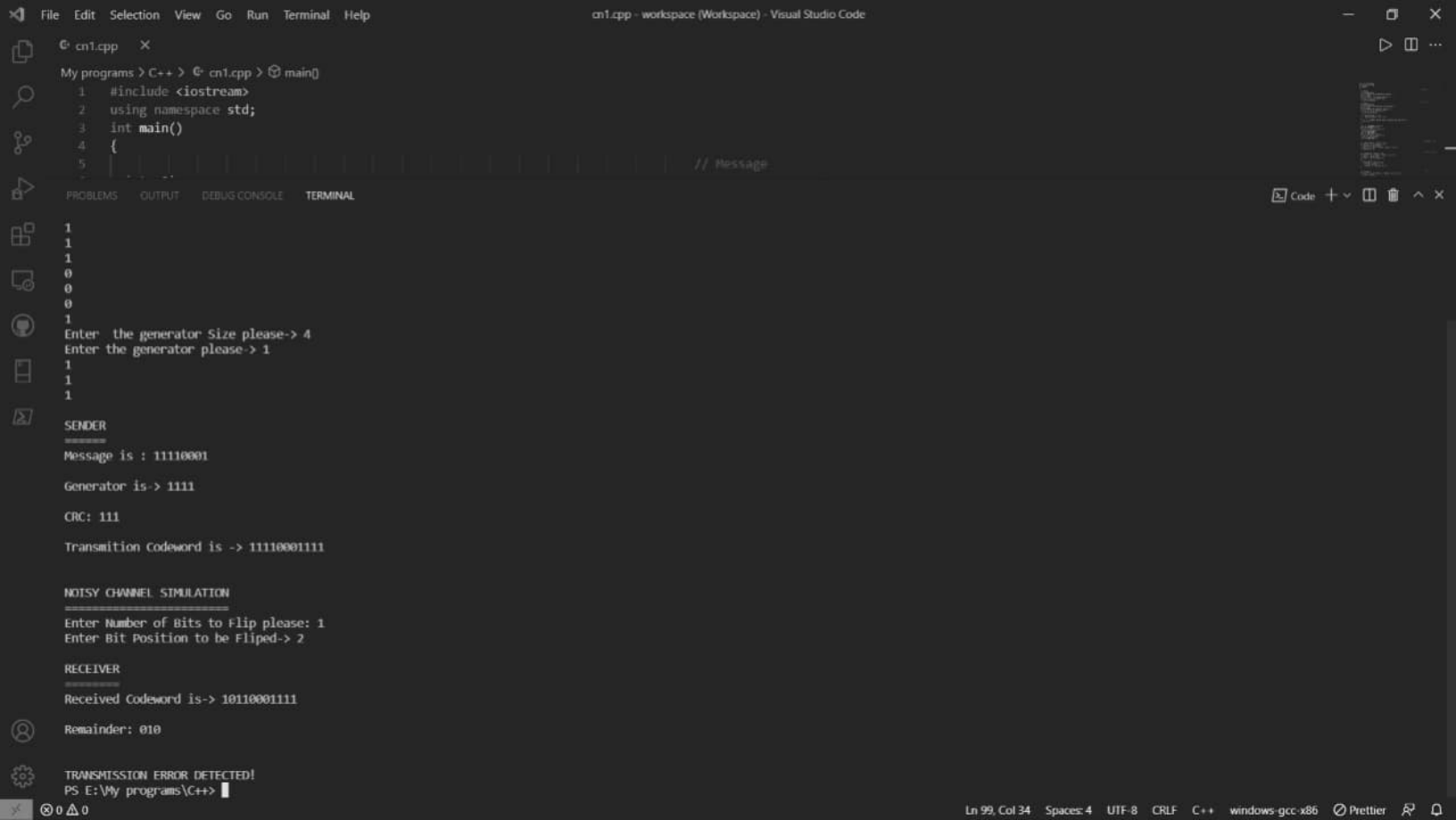
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#include <iostream>
using namespace std;
int main()
{
// Message
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
Code
1
1
1
0
0
0
1
Enter the generator Size please-> 4
Enter the generator please-> 1
1
1
1
SENDER
======
Message is : 11110001
Generator is-> 1111
CRC: 111
Transmition Codeword is -> 11110001111
NOISY CHANNEL SIMULATION
========================
Enter Number of Bits to Flip please: 1
Enter Bit Position to be Fliped-> 2
RECEIVER
========
Received Codeword is-> 10110001111
Remainder: 010
TRANSMISSION ERROR DETECTED!
PS E:\My programs\C++>
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