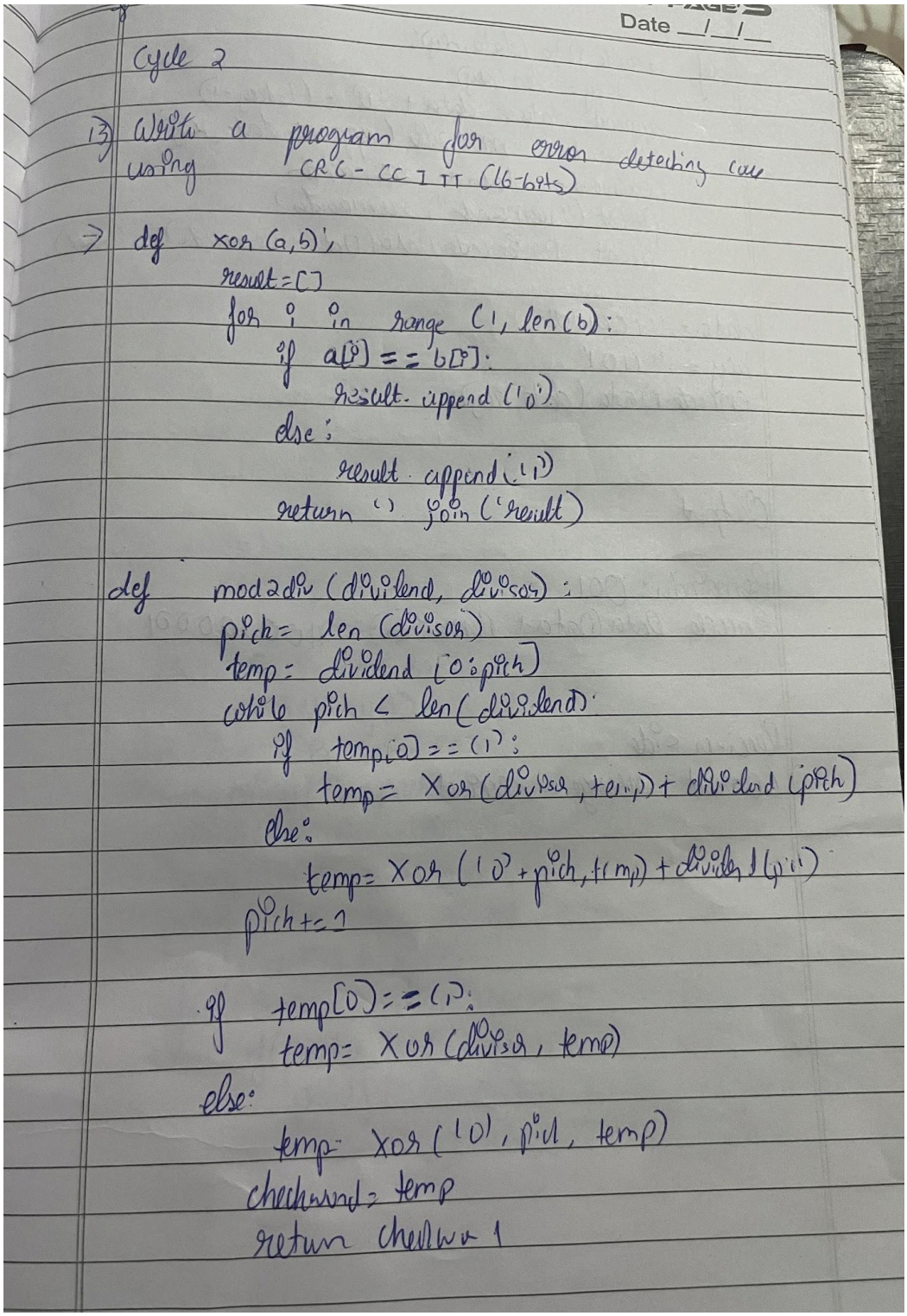
PART-B

Program 14

Write a program for error detecting code using CRC-CCITT (16-bits).

Code and Output:



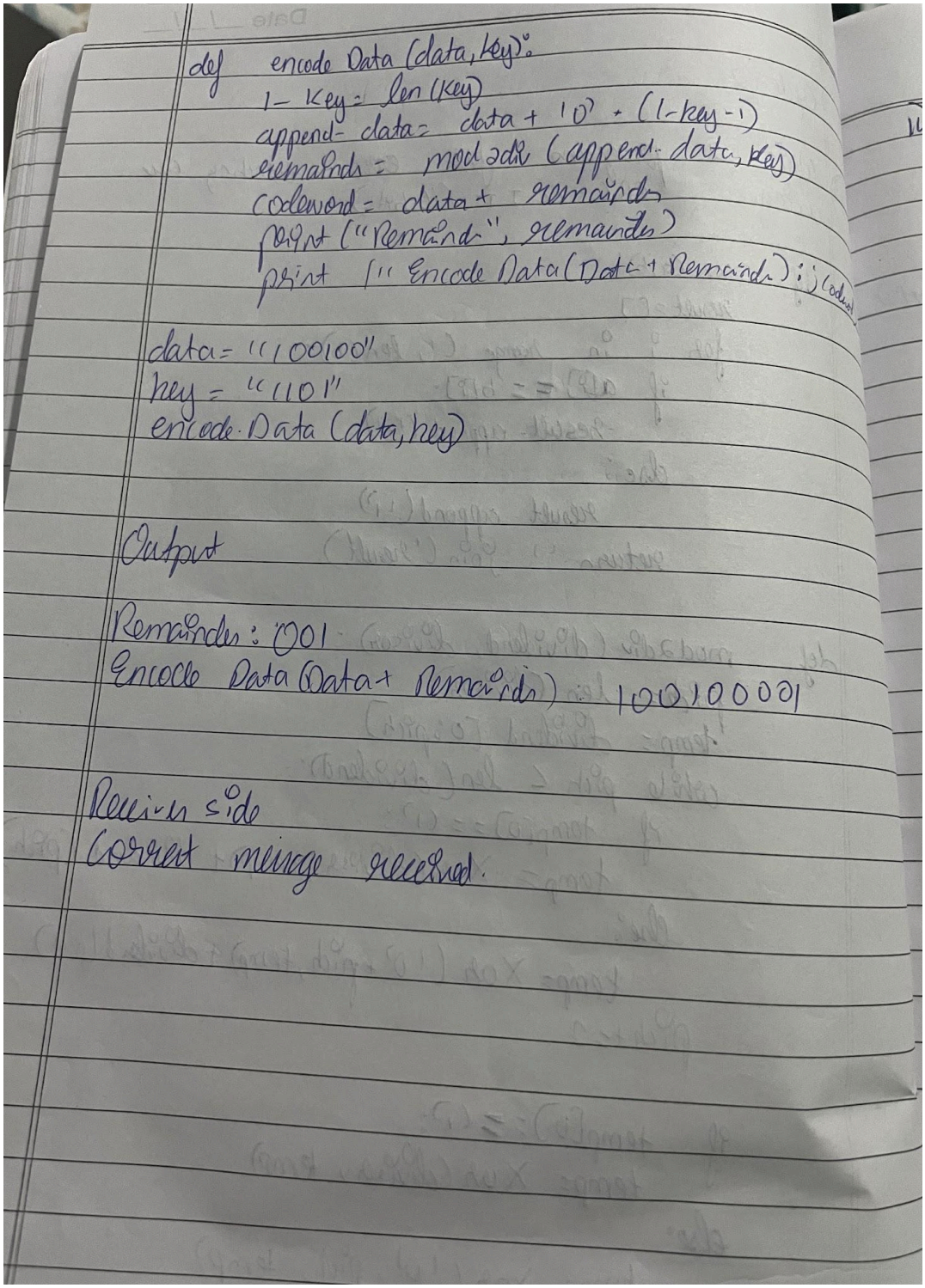
```
Cycle 2

13) Write a program for error detecting code
using CRC-CCITT (16-bits)

def xor(a,b):
    result=[]
    for i in range(1, len(b)):
        if a[i]==b[i]:
            result.append('0')
        else:
            result.append('1')
    return ''.join(result)

def mod2div(dividend, divisor):
    pick= len(divisor)
    temp= dividend[0:pick]
    while pick < len(dividend):
        if temp[0]=='1':
            temp= xor(divisor, temp)+ dividend[pick]
        else:
            temp= xor('0'*pick, temp)+ dividend[pick]
        pick+=1

    if temp[0]=='1':
        temp= xor(divisor, temp)
    else:
        temp= xor('0'*pick, temp)
    checkword= temp
    return checkword
```



```
def encodeData(data, key):
    l_key = len(key)
    append_data = data + '0' * (l_key - 1)
    remainder = mod2div(append_data, key)
    codeword = data + remainder
    print("Remainder", remainder)
    print("Encode Data (Data + Remainder):", codeword)

data = "100100"
key = "1101"
encodeData(data, key)
```

Output

Remainder : 001
Encode Data (Data + Remainder) : 100100001

Receiver side
Correct message received.