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CYCLE-02

01 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)
```

```
tmp = dividend[0:pick]

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

    else:
        tmp = xor('0' * pick, tmp) +
              dividend[pick]

    pick += 1

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

checkword = tmp
return checkword
```

```
def encodeData(data, Key):
    l_Key = len(Key)

    appended_data = data + '0' * (l_Key-1)
    remainder = mod2div(appended_data,
                        Key)
    print("Modified data:" + str(app-
                        -ended_data))

    codeword = data + remainder
    return codeword

def decodeData(code, Key)
    remainder = mod2div(code, Key)
    rctum remainder

data = "1011101"
print("Dataword: " + str(data))

Key = "1000100000100001"
print("Generating polynomial: "+Key)
```

```
codeword = encodeData(data, key)
print("Transmitted codeword: " +str(
        codeword))
code = input("Enter the transmitted
        codeword")
received_data = int(decodeData(code,
        key))

if received_data == 0:
    print("No Error, Received frame
        is correct")

else:
    print("Error Detected")
```