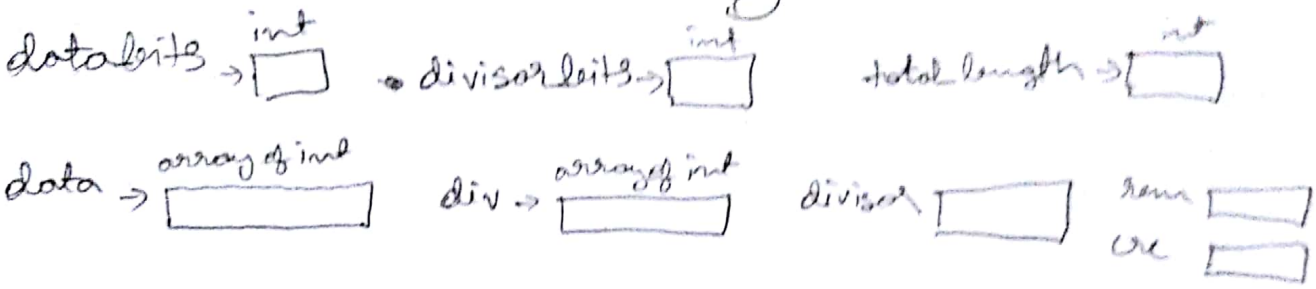
CRC Program Tracing



Enter number of data bits
⇒ datalength = 6
Enter data bits
1
1
0
0
1
1

⇒ data[6] = | 1 | 1 | 0 | 0 | 1 | 1 |

Enter number of bits in divisor
⇒ divisorbits = 4
Enter Divisor bits
1
0
1
1

⇒ divisor[4] = | 1 | 0 | 1 | 1 |

totallength = 6 + 4 − 1 = 9

div[9] = | | | | | | | | | |
rem[9] = | | | | | | | | | |
cr[9] = | | | | | | | | | |

for i = 0 to datalength − 1 ;
div[i] = data[i] = 11001

After appending 0's :- div[] = 110011000

~~Rem = Divider (divisor)~~

rem[ ] = div[ ] = 11001 1000

rem = divide (divisor, rem)

divide (1011, 11001 1000)

Divide function

```
while(true)
{
    for i = 0 to divisor.length // 4 :
```

i=0 ⇒ rem[0] = rem[0] ∧ divisor[0]

rem[0] = 1 ∧ 1 ⇒ 0

i=1 → rem[1] = 1 ∧ 0 ⇒ 1

i=2 → rem[2] = 0 ∧ 1 ⇒ 1

i=3 → rem[3] = 0 ∧ 1 ⇒ 1 ⇒ rem[ ] = 0 1 1 1

```
while (rem[cur] == 0 && cur != rem.length - 1)
```

rem[0] == 0 && 0 != 8 T

cur = 1

rem[1] == 0 F

```
for i = 0 to 4 :
    rem[1] = rem[1] ∧ divisor[0]
```

1 ∧ 1 ⇒ 0

rem[2] = 1 ∧ 0 ⇒ 1

rem[3] = 1 ∧ 1 ⇒ 0

rem[4] = 1 ∧ 1 ⇒ 0 ⇒ rem[ ] = 0 0 1 0 0

```
while(rem[1] == 0 && cur != rem.length - 1) T
```

cur = 2

```
for i = 0 to 4 :
```

rem[2] = 1 ∧ 1 ⇒ 0

rem[3] = 0 ∧ 0 ⇒ 0

rem[4] = 0 ∧ 1 ⇒ 1

rem[5] = 1 ∧ 1 ⇒ 0 rem[ ] = 0 0 0 1 0

```
while ( rem[2] == 0 && cur != rem.length - 1)
```

0 2 != 8 T cur = 3

rem[3] == 0 T

rem[4] == 0 F rem cur = 4

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for i=0 to 4:

rem[4] = rem[4] ^ divisor[0]

rem[5] = 1 ^ 1 => 0

rem[6] = 0 ^ 0 => 0

rem[7] = 0 ^ 1 => 1 rem = 00000011

rem[7] = 0 ^ 1 => 1

while (rem[4] == 0 && cur < rem.length - 1)

0 == 0 && 4 < 8 :) T

cur = 5

rem[5] == 0 T

cur = 6

if (rem.length - cur) < divisor.length)

8 - 6 < 4 T

return 00000011 to rem. in CNC generator

CNC Generator

for i=0 to 9:

crc[i] = div[i] ^ rem[i]

crc[0] = 1 ^ 0 => 1

[1] = 1 ^ 0 => 1

[2] = 0 ^ 0 => 0

[3] = 0 ^ 0 => 0

[4] = 1 ^ 0 => 1

[5] = 1 ^ 0 => 1

[6] = 0 ^ 1 => 1

[7] = 0 ^ 1 => 1

[8] = 0 ^ 0 => 0

CRC code: 110011110

Error Detection

Enter CRC code of 9 bits : 1
1
0
0
1
1
1
1
1

CRC[9] = 1100111111

rem[9] = CNC[9] = 1100111111

rem = divide(divisor, rem) // 1011, 1100111111

// Perform division calling divide func.

if returned rem != 0

    then "Error detected"

if i == 8:

    then "No error"

Here rem = 1 for 1100111111

Hence "Error is detected

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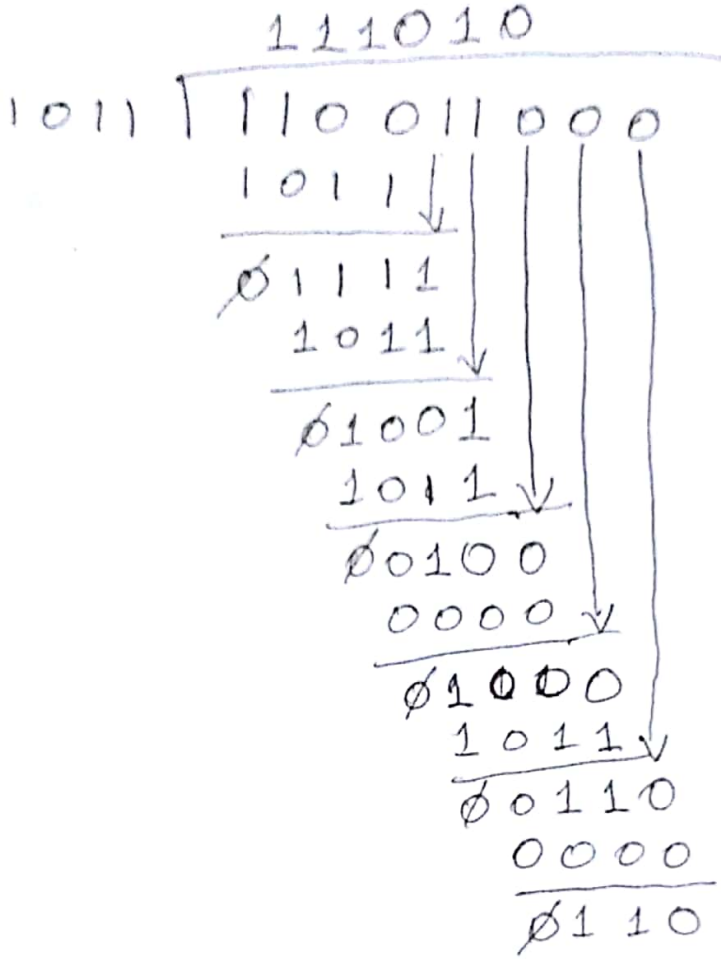
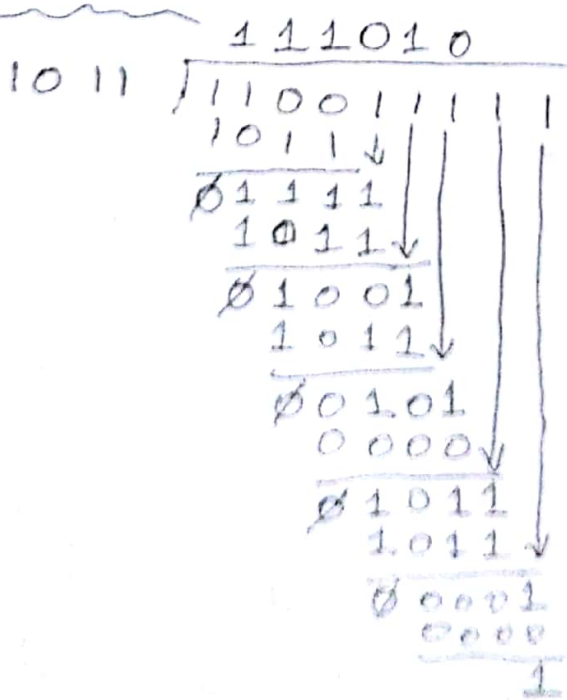
CNC Generator.



Message to be transmitted 1 1 0 0 1 1 1 1 0

Error Detection



Here remainder 1 is returned

Cross check of answer

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