Aim: Error detection using CRC (16 bit)

Program:

```
import java.util.*;
class Main{
  int n;
  public void main (String[] args)
{
  Scanner in = new Scanner(System.in);
      Main ob = new Main();
String code, copy, rec, zero = "0000000000000000";
System.out.println("Enter message");
code = in.nextLine();
n = code.length();
  copy = code;
  code += zero;
  code = ob.divide(code);
  System.out.println("Message =" + copy);
  copy = copy.substring(0, n) + code.substring(n);
  System.out.println("CRC=");
  System.out.println(code.substring(n));
  System.out.println("transmitted frame is" + copy);
  System.out.println("Enter received data");
  rec = in.nextLine();
  if (zero.equals(ob.divide(rec).substring(n)))
    System.out.println("Correct bits received");
  else
    System.out.println("Received frame contain error");
  in.close();
}
```

```
public String divide(String s)
{ int i,j;
  char k;
  String div = "10001000000100001";
  for(i=0; i<n; i++)
  { k = s.charAt(i);
    for(j=0; j<17; j++)
    {
      if(k == '1')
      { if(s.charAt(i+j) != div.charAt(j))
        s = s.substring(0,i+j) + "1" + s.substring(i+j+1);
        else
        s = s.substring(0,i+j) + "0" + s.substring(i+j+1);
      }
    }
    return s;
  }
}
```

Output:

Enter message

10001000100011

Message = 10001000100011

CRC = 00010010000010000

Transmitted frame is 10001000100011000100100000010000

Enter received data

10001000100011000100100000010000

Correct bits recieved