Sumalata
IBMCACS409

Saath

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9) write a Program for error detecting code using CRC - CCITT (16-bits)

```
#include <iostream>
#include <string.h>
using namespace std;
int crc(char *ip, char *op, char *poly,
    int mode)
{
  strcpy(op, ip);
  if (mode) {
  for(int i=1; i< strlen(poly); i++)
    strcat(op, "0");
  cout<<"modified input"<<op<<endl;
  }
  for(int i=0; i< strlen(ip); i++) {
    if(op[i] == '1') {
      for(int j=0; j< strlen(poly); j++) {
        if(op[i+j] == poly[j])
          op[i+j] = '0';
        else
          op[i+j] = '1';
      }
    }
}
```

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```
for(int i=0; i<strlen(op); i++)
    if(op[i] == '1')
        return 0;
    return 1;
}
int main()
{
char ip[50], op[50], recv[50];
char Poly[] = "10001000000100001";
int choice;
cout << "enter the input message in binary:";
cin >> ip;
cout << "generated Polynomial is" << Poly << endl;
crc(ip, op, Poly, 0);
cout << "The checksum is:" << op + strlen(ip) << endl;
cout << "The transmitted message is:" << ip << op +
    strlen(ip) << endl;
cout << "do you want to test error" << endl;
cin >> choice;
if(choice == 1)
{
    int pos, n;
    char cp[50];
    strcmp(cp, op);
cout << "enter the position where to invert
```

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```
error bit " <<endl;
cin >> pos;
cout << "enter bit you wanted to insert " <<endl;
cin >>n;
cp(pos) = n;
if(!strcmp(op, cp))
  { cout << "no error " <<endl; }
else {
cout << " Error occured" <<endl; }
 return 0;
}
else { cout << " " << endl; }
cout << "enter the received message in
  binary " << endl;
cin >> recv;
if (crc(recv, op, poly, 0))
  cout << "no error in data " <<endl;
else
cout << " Error in data transmission has
    occured " <<endl;
 return 0;
}
```