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FACULTY

PUNITHA K

SUBJECT

COMPUTER NETWORKS

LAB

EXPERIMENT 3

Q ❓ A Bit Stream 10011101110110 is transmitted using the standard CRC method. The generator polynomial is x3+1.

1. What is the actual bit string transmitted?
2. Suppose the third bit from the left is inverted during transmission. How will the receiver detect this error?

Code 💻

```
#include <stdio.h>
#include <string.h>

#define N strlen(gen_poly)

char data[28];
char check_value[28] = {0}; // Initialize to zero
char gen_poly[10];
int data_length,i,j;

void XOR() {
    for(j = 1; j < N; j++) {
        check_value[j] = (( check_value[j] ==
gen_poly[j]) ? '0' : '1');
    }
}

void crc() {
    for(i = 0; i < N; i++) {
        check_value[i] = data[i];
    }
    do {
        if(check_value[0] == '1') {
```

```
            XOR();
        }
        for(j = 0; j < N - 1; j++) {
            check_value[j] = check_value[j+1];
        }
        check_value[j] = data[i++];
    } while(i <= data_length + N - 1);
}

void receiver() {
    printf("Enter the received data: ");
    fgets(data, sizeof(data), stdin); // Use
fgets() instead of scanf()
    printf("\n-----------------------------\n");
    printf("Data received: %s", data);
    crc();
    for(i = 0; (i < N - 1) && (check_value[i] !=
'1'); i++);
        if(i < N - 1) {
            printf("\nError detected\n\n");
        }
        else {
            printf("\nNo error detected\n\n");
        }
}

int main() {
    printf("\nEnter data to be transmitted: ");
    fgets(data, sizeof(data), stdin); // Use
fgets() instead of scanf()
    printf("\n Enter the Generating polynomial:
");
```

```
    fgets(gen_poly, sizeof(gen_poly), stdin); //
Use fgets() instead of scanf()
    data_length = strlen(data);
    for(i = data_length; i < data_length + N - 1;
i++) {
        data[i] = '0';
    }

printf("\n----------------------------------------
");
    printf("\n Data padded with n-1 zeros : %s",
data);

printf("\n----------------------------------------
");
    crc();
    printf("\nCRC or Check value is : %s",
check_value);
    for(i = data_length; i < data_length + N - 1;
i++) {
        data[i] = check_value[i-data_length];
    }

printf("\n----------------------------------------
");
    printf("\n Final data to be sent : %s", data);

printf("\n----------------------------------------
\n");
    receiver();
    return 0;
}
```

Output 👀

```
student@hostserver42:~/Desktop/Shaad$ gcc crc.c
student@hostserver42:~/Desktop/Shaad$ ./a.out

Enter data to be transmitted: 10011101110110

 Enter the Generating polynomial: 1001

---------------------------------------
 Data padded with n-1 zeros : 10011101110110
0000
---------------------------------------
CRC or Check value is : 1101
---------------------------------------
 Final data to be sent : 10011101110110
1101
---------------------------------------
Enter the received data: 10111101110110

----------------------------
Data received: 10111101110110

Error detected
```