3. Write a C program to implement on a data set characters the three CRC polynomials – CRC 12, CRC 16, and CRC CCIP.

// program for Cyclic Redundancy Check

```
#include <stdio.h>
int main() {
    int data[50], div[16], rem[16];
    int datalen = 0, divlen = 0;

    // Input data
    printf("Enter the data (0s and 1s): ");
    char ch;
    while ((ch = getchar()) != '\n')
        data[datalen++] = ch - '0';

    // Input divisor
    printf("Enter the divisor (0s and 1s): ");
    while ((ch = getchar()) != '\n')
        div[divlen++] = ch - '0';

    // Append zeros to data for CRC
    for (int i = 0; i < divlen - 1; i++)
        data[datalen + i] = 0;

    // Initialize remainder with the first part of the data
    for (int i = 0; i < divlen; i++)
        rem[i] = data[i];

    // Perform division
    for (int i = divlen; i <= datalen + divlen - 1; i++) {
        if (rem[0] == 1) {
```

```
            for (int j = 1; j < divlen; j++)
                rem[j - 1] = rem[j] ^ div[j];
        } else {
            for (int j = 1; j < divlen; j++)
                rem[j - 1] = rem[j];
        }
        rem[divlen - 1] = data[i];
    }

    // Combine remainder with data for the final message
    for (int i = 0; i < divlen - 1; i++)
        data[datalen + i] = rem[i];

    // Display final data
 printf("The data to be sent is: ");
    for (int i = 0; i < datalen + divlen - 1; i++)
        printf("%d", data[i]);
    printf("\n");

    return 0;
}
```

OUTPUT:

Enter the data(0s and 1s): 10101111

Enter the divisor(0s and 1s): 1011

The data to be sent is:10101111110