

A Review on Generation of CRC Error Detection Code Using C Programming in Computer Network

Ms Aphasana Mulla¹, Ms Wrushali Deshmukh²

Lecturer, Department of Electronics and Telecommunication Bharati Vidyapeeth's Institute of Technology, Navi Mumbai, India^{1,2}

Abstract: In today's world of computer networking, it is necessary to transmit and receive the error free data through any noisy channel in communication system. Because of the advancement in the data transmission the sources of noise and interference has also increased. Lots of efforts have been made by communication engineers to meet the demand for more reliable and efficient techniques for error detection in the received data. To detect the errors in the computer networking various techniques are used. This review paper delivers various error detection code generation technique like CRC being used using C programming.

Keywords: Error detection, Cyclic Redundancy Check (CRC), Parity check method.

I. INTRODUCTION

When the receiver's information does not match with the sender's information then error occurs.. An error correcting code (ECC) OR Forward error correction code (FEC) is a process of adding redundant data, or parity data, to a message, such that it can be detected when errors are introduced during the process of data transmission by a receiver. Various error detection methods exist in the communication system.

The most common error detecting scheme being employed are parity bit, CRC, VRC and LRC. All these methods are implemented on the second layer of OSI model at Data link layer. The upper layers require error-free transmission between two systems. Almost every application did not work if it receives data with errors. Real time applications like voice and video may not get that much affected and may still function well with some error. Data-link layer uses some error control mechanism to ensure that data bit streams are transmitted with certain level of accuracy.

II. LITERATURE SURVEY

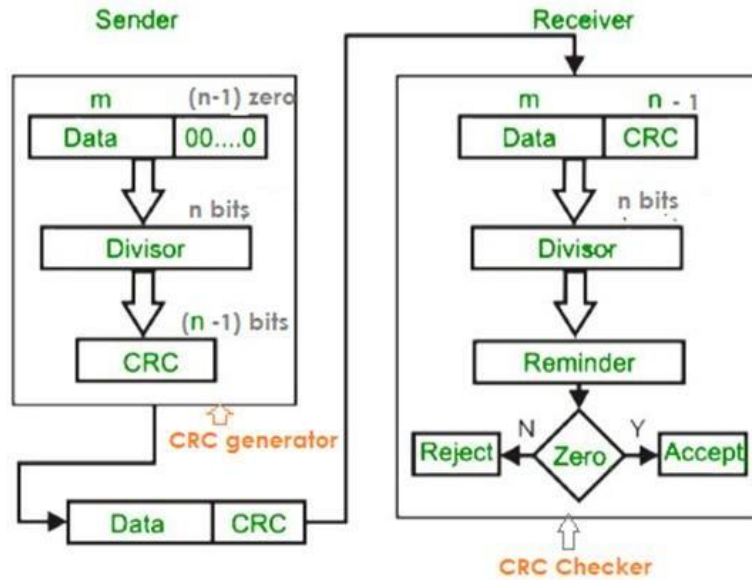
In computer networking error detection can be done with the help of C programming. Error detection codes like VRC, LRC, CRC codes are generated using simulation software like C programming. [1] Various error detection and correction methods are being used to maintain good level of reliability, to protect memory cells using protection codes.

The method used in [2], is based on the hardware and time redundancy, although this technique reduces the number of input and output pins of the combinational logic; it requires additional encoding/decoding circuitry. Process digital data transmission in communication can run safe premises but also there is an error [3] [4] . Error result in changes to the content of data transferred. There is a wide - range logic to detect and correct the error[5]. Error-detecting code can be generated with simulation tools like C programming[6].

III. METHODS

Error detection code can be generated by the channel encoder with CRC method using C programming

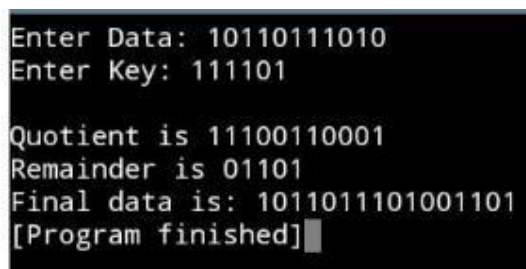
CRC: Cyclic redundancy check - CRC is based on binary division. In CRC, a sequence of redundant bits, called cyclic redundancy check bits, are appended to the end of data unit so that the resulting data unit becomes exactly divisible by a second, predetermined binary number. At the destination, the incoming data unit is divided by the same number. If at this step there is no remainder, the data unit is assumed to be correct and is therefore accepted. A remainder indicates that the data unit has been damaged in transit and therefore must be rejected.



C Programming code for CRC generation

```
#include <stdio.h>
#include <conio.h> #include <string.h> void main() {
int i,j,keylen,msglen;
char input[100], key[30],temp[30],quot[100],rem[30],key1[30]; clrscr();
printf("Enter Data: "); gets(input); printf("Enter Key: "); gets(key); keylen=strlen(key); msglen=strlen(input);
strcpy(key1,key);
for (i=0;i<keylen-1;i++) {
input[msglen+i]='0';
}
for (i=0;i<keylen;i++) temp[i]=input[i];
for (i=0;i<msglen;i++) {
quot[i]=temp[0];
if(quot[i]=='0')
for (j=0;j<keylen;j++) key[j]='0'; else
for (j=0;j<keylen;j++) key[j]=key1[j];
for (j=keylen-1;j>0;j--) {
if(temp[j]==key[j])
rem[j-1]='0'; else
rem[j-1]='1';
}
rem[keylen-1]=input[i+keylen]; strcpy(temp,rem);
}
strcpy(rem,temp); printf("\nQuotient is "); for (i=0;i<msglen;i++) printf("%c",quot[i]); printf("\nRemainder is "); for
(i=0;i<keylen-1;i++) printf("%c",rem[i]); printf("\nFinal data is: "); for (i=0;i<msglen;i++) printf("%c",input[i]);
for (i=0;i<keylen-1;i++) printf("%c",rem[i]); getch();
}
```

IV. RESULTS



Simulation output for CRC

V. CONCLUSION

This paper generates. generates error- detecting code for CRC method using C programming With help of these code channel decoder detects errors present in received message So, error probability in the received message becomes very less.

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