# ABSTRACT

Binary information "bits" are at the heart of modern communications. All information can be represented as blocks of stream of bits. Modern communication networks are designed to carry bits and therefore they can handle any type of information

CRC is the most powerful error detection more than parity bit and check sum method, cause it can be used to detect single bit error, two bits error and burst error.

CRC calculation require a divisor which called sometimes "Generator polynomial" or "poly".

The width of poly is very important as dominate the whole calculation, typically width of 8 or 16 or 32 are chosen so as to simplify implementation on modern computers.

The width of the poly is actual one bit more on most significant bit.

Any transmitted message T is attached with remainder after dividing the original message this remainder called CRC.

The receiver divide the received message into some poly that used at the transmitter the remainder must be zero, which means that there is no error at received message.

تجريد

المعلومات الثنائية تعتبر القلب النابض للاتصالات الحديثة , بحيث يتم تمثيل جميع المعلومات عن طريق حزم أو خانات ثنائية متسلسلة.

صممت شبكات الاتصال الحديثة لحمل الثنائيات , ومن المعلوم سلفا أنها تحمل أي نوع من المعلومات .

تعتبر الدالة الدورية لاكتشاف الأخطاء هي الطريفة المثلى لاكتشاف الأخطاء مقارنة باختبار التكافؤ واختبار المجموع ويعزى ذلك لإمكانيتها لاكتشاف الأخطاء المفردة والأخطاء الزوجية والأخطاء المتعددة .

ولحساب أداء الدالة الدورية لاكتشاف الأخطاء نقوم باختيار " قاسم " أو ما يسمى أحيانا بالدوال متعددة الحدود

عرض الدوال متعددة الحدود هام جدا كمتحكم في الحساب الكلى مثلا عرض 8 أو 16 أو 32 خانة ثنائية والتي تم اختيارها لتبسيط تمثيلها على أجهزة الكمبيوتر الحديثة .

عرض الدالة متعددة الحدود يزيد بخانة واحدة بالخانة المعنوية العليا

يجب أن نعلم الآن أن أي رسالة مرسلة T يتم إلحاق المتبقي بها بعد إجراء القسمة على الرسالة الأصلية وهذا المتبقي يعرف بالدالة الدورية لاكتشاف الأخطاء

يقوم المستقبل بقسمة الرسالة على الدالة متعددة الحدود التي تم استخدامها بالمرسل , يجب أن يكون المتبقي صفرا وإذا لم يكن كذلك فان ذلك يعنى وجود خطا بالرسالة المستقبلة

# *DEDICATION*

*To my Father and Mother*

*To my Brother and Sisters*

*And to all lovely people who met me during my life…*

*And familiar to me ...*

*Who have shown me the right path of future…*

*To* NILE VALLEY UNIVERSITY *family*

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**Table of Contents**

Abstract i
تجريد ii
Dedication iii
Acknowledgement iv

Table of Contents v
List of Tables vii
List of Figures viii
List of Abbreviations ix

**Chapter one**

**Literature Review**

1.1 Introduction 1
1.2 Parity Bits 2
1.2.1 Error Detection Capability 3
1.2.2 Typical Error Modes 4
1.2.3 Practical use in (RS232) 4
1.3 Check Sum 5
1.3.1 Error Detection Capability 6
1.3.2 Intermission :Classes of Errors 7
1.4 Cyclic Redundancy Check 7
1.5 Objectives 8
1.6 Methodology 8

**Chapter Two**

**Cyclic Codes and CRC Calculations**

2.1 Cyclic Codes 9
2.1.1 Definition 9
2.1.2 Cyclic Redundancy Check Codes 9
2.1.3 Polynomial Representation of Binary Words 10
2.2 Encoding as Computation of Remainder in polynomial Division 11
2.3 Decoding as Polynomial Division 12
2.4 Error detection 13
2.4.1 Effective Ness of Error Detection 13
2.4.2 Error Detection Implementation in Real System 15
2.5 Typical Calculation 16
2.5.1 Typical CRC Calculation at The Transmitter 17
2.5.2 CRC Calculatio20n at Receiver 18

**Chapter Three**

**Circuit Design**

3.1 Digital Logic 19
3.1.1 Parallel in Serial Out Shift Register 19
3.1.2 CRC Circuit Design 26
3.2 CRC Long Division Implementation 28
3.3 Circuit Interface 31
3.3.1 Using The Power Source 31
3.3.2 Parallel Port 32
3.3.2.1 Addressing Port 33

**Chapter Four**

**Software**

4.1 C++ program Literature 37
4.2 Control Function in Program 37

4.2.1 Clock 37
4.2.2 Reset 38
4.2.3 Load 38
4.2.4 Shift 38
4.3 C++ Program 43

**Chapter Five**

**Conclusion and Results**

5.1 Conclusion 50
5.2 Results 51
5.2.1 First 51
5.2.2 Second 56
5.2.3 Error Control Depend on Results 57
5.3 Obtained Results 58

**Appendix**

SN74LS04-(Hex Inverters) 59
SN74LS08-(Quadruple 2-Input Positive-AND Gates) 64
SN74LS32-(Quadruple 2-Input Positive-Or Gates) 69
SN74LS86-(Quadruple 2-Input exclusive-Or Gates) 74
SN74LS174-(Hex D Flip-Flops With Clear) 79
Standardized Polynomial Codes 87
References 89

**List of Tables**

Table page
(3.1) : Not gate truth table 20
(3.2) : And gate truth table 21
(3.3) : Or gate truth table 21
(3.4) : D flip flop truth table 22
(3.5) : Real division implementation in CRC circuit 30

(3.6) : Power supply voltage depend on wire color 32
(3.7) : Data register bits connected to LPT pins 34
(3.8) : Status register bits connected to LPT pins 35
(3.9) : control register bits connected to LPT pins 36
(3.10) : Address of LPT 36

## List of Figures


| Figure | page |
|---|---|
| (1.1) : XOR of data bits leads to even parity | 2 |
| (1.2) : Serial line signal :empty line , start bit ,7 data bits 'parity , stop bit (empty line) | 5 |
| (2.1) : Encoding and decoding information block diagram | 16 |
| (3.1) : Not gate block diagram | 20 |
| (3.2) : 74LS04 : 6 inverter chip | 20 |
| (3.3) : And gate block diagram | 20 |
| (3.4) : 74LS08 : (4-2 in and gate ) chip | 20 |
| (3.5) : Or gate block diagram | 21 |
| (3.6) : 74LS42 : (4-2 in or gate ) chip | 21 |
| (3.7) : D flip flop block diagram | 22 |
| (3.8) : 74LS174 (6 D type flip flop ) chip | 22 |
| (3.9) : Parallel in serial out shift register design using practical chips | 24 |
| (3.11): Parallel in serial out shift register design from typical circuit | 25 |
| (3.12): CRC Circuit design | 26 |
| (3.13): CRC Circuit design using practical chips | 27 |
| (3.14): CRC Circuit from typical design | 27 |
| (3.15): CRC Block diagram implementation | 28 |
| (3.16): power supply connector used to feed circuit with Vcc | 32 |
| (3.17): Lab link cable used for LPT interface | 33 |
| (4.1) : Flow chart for C++ program | 39 |
| (5.1) : program interface | 51 |
| (5.2) : main menu screen | 52 |
| (5.3) : sending data to encrypt | 53 |
| (5.4) : typical circuit result to encrypt data | 54 |
| (5.6) : sending data to check | 55 |
| (5.7) : typical circuit results to decrypt data | 56 |

## List of Abbreviation

| | |
|---|---|
| **ARQ** | Automatic retransmission request |
| **ASYNC** | a synchronization |
| **BER** | bit error rate |
| **CRC** | Cyclic redundancy check |
| **FCS** | Frame check sequence |
| **FEC** | Forward error correction |
| **IP** | Internet protocol |
| **LED** | Light emitting diode |
| **LPT** | Line printer terminal |
| **LSB** | Least significant bit |
| **MSB** | Most significant bit |
| **TCP** | Transmission control protocol |
| **UDP** | User data gram protocol |
| **XOR** | Exclusive or |