Checksum implementation using C

ITA5003

Data communication & networking

Submitted by: -

Moeenul Islam

Submitted to: -

Prof. Vani MP

School of Computer Science and Engineering

Vellore Institute of Technology, Vellore

17 December, 2021

```
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
char data[100];

int rightSum(int l)
{
  int sum=0, i=1;
for(;i<l;i=i+2)
    sum=sum + (int)
data[i];   return sum; }

int leftSum(int l)
{
  int sum=0, i=0;
for(;i<l;i=i+2)
    sum=sum + (int)
data[i];   return sum; }

int main()
{
  char buf[100];
  int i, n, op=0, irs=0, ils=0, prs=0, cls=0, wc=0, pls=0, s=0, ocs=0, len=0;
while(op==0)
  {
    printf("*** Checksum Program ***\n\n1. Sender\n2. Receiver\n3. Exit\nEnter
your choice...");     scanf("%d",&n);     switch(n)     {       case 1:
      {
        printf("\nEnter the data to be transmitted ->
");         gets(buf);         gets(data);
len=strlen(data);         if(len%2!=0)         len++;
        irs=rightSum(len);       //initial right
sum         prs=irs%256;          //partial right
sum         cls=irs/256;          //carry to left
sum         ils=cls+leftSum(len);    //initial
left sum         pls=ils%256;          //partial
left sum         wc=ils/256;           //Wrapping
carry         s=pls*256+prs+wc;         ocs =
65535 - s;
        printf("The checksum generated is %X\n", ocs);
      }
break;
case 2:
      {
        char cs[100];
int ch[100];
        printf("\nEnter the data received ->
");         gets(buf);         gets(data);
        printf("\nEnter the received checksum ->
");         gets(cs);         len=strlen(data);
if(len%2!=0)         len++;



        for(i=0;i<strlen(cs);i++)
        {
          if(cs[i]>='0' && cs[i]<='9')
ch[i]=cs[i]-48;
```

```
          else if(cs[i]>='A' && cs[i]<='F')
ch[i]=cs[i]-55;
          else if(cs[i]>='a' && cs[i]<='f')
ch[i]=cs[i]-87;
        }
        irs=rightSum(len) + ch[2]*16 + ch[3];       //initial right
sum         prs=irs%256;          //partial right sum
cls=irs/256;          //carry to left sum
        ils=cls+leftSum(len) + ch[0]*16 + ch[1];    //initial left
sum         pls=ils%256;          //partial left sum
wc=ils/256;           //Wrapping carry         s=pls*256+prs+wc;
ocs = 65535 - s;         if(ocs==0)
        printf("\nThe message is accepted!\n");
else
        printf("\nThe message is rejected!\n");
      }
break;
      case 3: exit(0);
    }
    printf("\nPress 1 to return to main menu or 0 to exit...");
scanf("%d", &i);
    if(i==0)
op=1;
  }
return 0;
}
```