1. **A C Program To Check Parity Of Number**

#include<stdio.h>

int main()

{

int parity=0,num;

printf("enter the number");

scanf("%d",&num);

while(num) //LOOP WILL OPERATE UNTIL NUMBER BECOMES 0..BY RIGHT SHIFTING AGAIN & AGAIN

{

if(num&1) //....MAKE (num & 1)..&..extract 1 bit from 8 bit number..if that 1bit is 1

then ...parity changes...else if that particular bit is 0 found...then parity did not changes...

parity=!parity;

num=num>>1; //after checking 1st bit...check the next bit to that bit which is already checked...in the same 8 bit number...by shifting 1 right ..//

}

if(parity == 1) //1 is representing that parity is odd..//

printf("parity is odd");

else

printf("parity is even");//0 is representing that parity is even..//

return 0;

}

**2. C program to implement Checksum**

#include<stdio.h>

#include<math.h>

int sender(int arr[], int n) {

    int checksum, sum = 0, i;

    printf("\n\*\*\*\*SENDER SIDE\*\*\*\*\n");

    for(i = 0; i < n; i++)

        sum += arr[i];

    printf("SUM IS: %d", sum);

    checksum = ~sum; // 1's complement of sum

    printf("\nCHECKSUM IS: %d", checksum);

    return checksum;

}

void receiver(int arr[], int n, int sch) {

    int checksum, sum = 0, i;

    printf("\n\n\*\*\*\*RECEIVER SIDE\*\*\*\*\n");

    for(i = 0; i < n; i++)

        sum += arr[i];

    printf("SUM IS: %d", sum);

    sum = sum + sch;

    checksum = ~sum; // 1's complement of sum

    printf("\nCHECKSUM IS: %d", checksum);

}

int main() {

    int n, sch;

    printf("\nENTER SIZE OF THE STRING: ");

    scanf("%d", &n);

    int arr[10]; // You can set this to a fixed size, e.g., 10

    if(n > 10) {

        printf("Error: Size exceeds limit.\n");

        return -1;

    }

    printf("ENTER THE ELEMENTS OF THE ARRAY TO CALCULATE CHECKSUM:\n");

    for(int i = 0; i < n; i++) {

        scanf("%d", &arr[i]);

    }

    sch = sender(arr, n);

    receiver(arr, n, sch);

    return 0;

}

**3.** **C program to implement CRC**

#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();

}