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COURSE : CSE1004
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SLOT : D2
DUE ON : 28-JAN-2020

Parity Check:

```c
#include<stdio.h>
int main()
{
    int arr1[4];
    int arr2[5];
    int i;
    for(i=0;i<4;i++)
    {
        scanf("%d",&arr1[i]);

    }
    int count0=0;
    int count1=0;
    for(i=0;i<4;i++) {
        if(arr1[i]==0) {
            count0++;
        }
        else if(arr1[i]==1) {
            count1++;
        }
    }
    int parity;
    if(count1%2==0)
    {
        parity=0;
    }
    else if(count1%2==1) {
        parity=1;
    }
    for(i=0;i<4;i++) {
        arr2[i]=arr1[i];

    }
    arr2[4]=parity;
    int arr3[5];
    for(i=0;i<4;i++) {
        scanf("%d",&arr3[i]); }
    int count2=0;
    int count3=0;
    for(i=0;i<4;i++) {
        if(arr3[i]==0) {
            count2++;
        }
        else if(arr3[i]==1) {
            count3++;
        }
    }
```

```
    int parity2;
    if(count3%2==0)
    {
        parity2=0;
    }
    else if(count3%2==1)
    {
        parity2=1;
    }
    arr3[4]=parity2;
    if(arr2[4]!=arr3[4])
    {
        printf("There is error in message");
    }
    else if(arr2[4]==arr3[4])
    {
        printf("There should be no error in message");

    }
}
```

```
root@goorm:/workspace/code_in_c/src# gcc main.c
root@goorm:/workspace/code_in_c/src# ./a.out
1
0
1
1
0
1
0
1
There is error in messageroot@goorm:/workspace/code_in_c/src#
```

Cyclic Redundancy Check:

```
#include<stdio.h>
int main()
{
    printf("Enter the code bit to be sent to reciever\n");
    int code[4];
    int i;
    for(i=0;i<4;i++)
    {
        scanf("%d",&code[i]);
    }
    printf("Enter the message to be sent\n");
    int data[4];
    for(i=0;i<4;i++)
    {
        scanf("%d",&data[i]);
    }
    int data1[7];
    for(i=0;i<4;i++)
    {
        data1[i]=data[i];

    }
    data1[4]=data1[5]=data1[6]=0;
    for(i=0;i<4;i++)
    {
        if(data1[i]==0)
        {
            data1[i]=data1[i]^0;
            data1[i+1]=data1[i+1]^0;
            data1[i+2]=data1[i+2]^0;
            data1[i+3]=data1[i+3]^0;
        }
        else
        {
            data1[i]=data1[i]^code[0];
            data1[i+1]=data1[i+1]^code[1];
            data1[i+2]=data1[i+2]^code[2];
            data1[i+3]=data1[i+3]^code[3];

        }
    }
    for(i=0;i<4;i++)
    {
        data1[i]=data[i]; }
    printf("Enter the recieved message:\n"); int data2[7];
    for(i=0;i<7;i++)
```

```
    {
        scanf("%d",&data2[i]);

    }
    for(i=0;i<4;i++)
    {
        if(data2[i]==0)
        {
            data2[i]=data2[i]^0;
            data2[i+1]=data2[i+1]^0;
            data2[i+2]=data2[i+2]^0;
            data2[i+3]=data2[i+3]^0;

        }
        else
        {
            data2[i]=data2[i]^code[0];
            data2[i+1]=data2[i+1]^code[1];
            data2[i+2]=data2[i+2]^code[2];
            data2[i+3]=data2[i+3]^code[3];
        }
    } if(data2[4]==0&&data2[5]==0&data2[6]==0)
    {
        printf("There is no error");
    }
    else
    {
        printf("There exists error");
    }
}
```

```
root@goorm:/workspace/code_in_c/src# ./a.out
Enter the code bit to be sent to reciever
1
0
1
0
Enter the message to be sent
1
0
1
0
Enter the recieved message:
1
0
0
1
1
1
1
There exists errorroot@goorm:/workspace/code_in_c/src#
```

Hamming Code:

```c
#include<stdio.h>
int main()
{
    int data[4];
    int i;
    printf("Enter the data word to be sent:\n ");
    for(i=0;i<4;i++)
    {
        scanf("%d",&data[i]);

    }
    printf("Enter the recieve data bit:\n");
    int datarec[7];
    for(i=0;i<7;i++)
    {
        scanf("%d",&datarec[i]);
    }
    int r1,r2,r4,c;
    r1=datarec[0]^datarec[2]^datarec[4]^datarec[6];
    r2=datarec[1]^datarec[2]^datarec[5]^datarec[6];
    r4=datarec[3]^datarec[4]^datarec[5]^datarec[6];
    c=4*r4+2*r2+r1;
    if(c==0)
    {
        printf("there is no error");
    }
    else
    {
        printf("There exists an error at %d position",c);

    }
}
```

```
root@goorm:/workspace/code_in_c/src# ./a.out
Enter the data word to be sent:
 0
1
1
0
Enter the recieve data bit:
0
1
0
0
0
1
1
There exists an error at 3 positionroot@goorm:/workspace/code_in_c/src#
```