COMPUTER NETWORKS PRACTICAL FILE

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SUBJECT: COMPUTER NETWORKS

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Computer Networks Practicals

HTML Practical

Q1 Write a HTML program to design a form which should allow to enter your personal data. (text field, password field, e-mail, lists, radio-buttons, checkboxes, submit options)

Code:

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width">
    <title> Document</title>
</head>
<body>
    <h2>Personal Details</h2>
    <form action=" " method="get">
        <label for="fname">First Name:
        </label><br>
        <input type="text" id="fname"
        name="fname"><br>
        <label for="lname">Last Name:
        </label><br>
        <input type=text" id="lname"
        name="lname"><br>
        <label for="psswd">Password:
        </label><br>
        <input type="Password" id="psswd"
        name="psswd"><br>
        <label for="email">E-mail id:
        </label><br>
```

```
        <input type="email" id="email"
        name="email"><br>
        <label for="gender">Gender:
        </label><br>
        <input type="radio" id="gender"
        name="gender">Male<br>
        <input type="radio" id="gender"
        name="gender">Female<br>
        <label for="inte">Interest:
        </label><br>
        <input type="checkbox" id="inte"
        name="inte">Playing sports<br>
        <input type="checkbox" id="inte"
        name="inte">Cooking<br>
        <input type="checkbox" id="inte"
        name="inte">Sketching<br>
        <input type="checkbox" id="inte"
        name="inte">Movies and Songs<br>
        <input type="checkbox" id="inte"
        name="inte">Dancing<br>
        <br>
        <input type="submit" value="submit">
        </form>
</body>
</html>
```

Output:

Personal Details

First Name:

Last Name:

Password:

E-mail id:

Gender:

- Male
- Female

Interest:

- Playing sports
- Cooking
- Sketching
- Movies and Songs
- Dancing

submit

Personal Details

First Name:
sanya
Last Name:
jain
Password:
•••••••
E-mail id:
abc@gmail.com
Gender:
- ○ Male
- ◉ Female

Interest:
- ☐ Playing sports
- ☑ Cooking
- ☑ Sketching
- ☐ Movies and Songs
- ☐ Dancing

submit

Q2 Write html code to generate following output

(basically nested list)

Code:

```html
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Document</title>
</head>
<body>
    <h2>Nested List</h2>
    <ul>
        <li>coffee</li>
        <li>tea
            <ul>
                <li>Black Tea</li>
                <li>Green Tea</li>
            </ul>
        </li>
        <li>Milk</li>
    </ul>
</body>
</html>
```

Output:

Q3 Design a html form to take the information of a customer visiting a departmental store such as name, contact phone no, preferred days of purchasing, favourite item, suggestions

etc. One should provide button to submit as well as Reset the form contents.

Code:

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Document</title>
</head>
<body>
    <h1>Customer Information</h1>
    <form action=" " method="get">
        <label for="fname">First Name:
        </label><br>
        <input type="text" id="fname"
        name="fname"><br>
        <label for="lname">Last Name:
        </label><br>
        <input type=text" id="lname"
        name="lname"><br>
        <label for="gender">Gender:
        </label><br>
        <input type="radio" id="gender"
        name="gender">Male<br>
        <input type="radio" id="gender"
        name="gender">Female<br>
        <label for="phn">Phone Number:
```

```
26          </label><br>
27          <input type="number" id="phn"
28          name="phn"><br>
29          <label for="days">Preffered days of Purchasing:
30          </label><br>
31          <input type="checkbox" id="days"
32          name="days">Monday<br>
33          <input type="checkbox" id="days"
34          name="days">Tuesday<br>
35          <input type="checkbox" id="days"
36          name="days">Wednesday<br>
37          <input type="checkbox" id="days"
38          name="days">Thursday<br>
39          <input type="checkbox" id="days"
40          name="days">Friday<br>
41          <input type="checkbox" id="days"
42          name="days">Saturday<br>
43          <input type="checkbox" id="days"
44          name="days">Sunday<br>
45          <br>
46          <label for="email">E-mail id:
47          </label><br>
48          <input type="email" id="email"
49          name="email"><br>
50          <h3>Item List</h3>
```

```
        <ol>
            <li>Make-ups</li>
            <li>Clothing</li>
            <li>Jewellary</li>
            <li>Footwear</li>
            <li>Accessories</li>
            <li>Handbags</li>
        </ol>
        <label for="fav">Your Favourites from the list:
        </label><br>
        <input type="checkbox" id="fav"
        name="fav">1
        <input type="checkbox" id="fav"
        name="fav">2
        <input type="checkbox" id="fav"
        name="fav">3
        <input type="checkbox" id="fav"
        name="fav">4
        <input type="checkbox" id="fav"
        name="fav">5
        <input type="checkbox" id="fav"
        name="fav">6
        <br>
        <br>
        <label for="sug">Suggestions:
        </label><br>
        <input type="text" id="sug"
        name="sug"><br>
        <br>
        <input type="submit" value="submit">
        <input type="reset" value="reset">
        </form>
</body>
</html>
```

Output:

First Name:

Last Name:

Gender:

- ○ Male
- ○ Female

Phone Number:

Preffered days of Purchasing:

- ☐ Monday
- ☐ Tuesday
- ☐ Wednesday
- ☐ Thursday
- ☐ Friday
- ☐ Saturday
- ☐ Sunday

E-mail id:

Item List

1. Make-ups
2. Clothing
3. Jewellary
4. Footwear
5. Accessories
6. Handbags

Your Favourites from the list:

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6

Suggestions:

submit reset

First Name:
sanya
Last Name:
jain
Gender:
Male
Female
Phone Number:
1234567891
Preffered days of Purchasing:
Monday
Tuesday
Wednesday
Thursday
Friday
Saturday
Sunday

E-mail id:
abc@gmail.com

Item List

1. Make-ups
2. Clothing
3. Jewellary
4. Footwear
5. Accessories
6. Handbags

Your Favourites from the list:
1 2 3 4 5 6

Suggestions:
none

submit reset

Q4 Design an html form to take the information of an article to be uploaded such as file path, author name, type (technical, literary, general), subject topic etc. One should provide button to submit as well as Reset the form contents

Code:

```html
<html>
<head>

<title> Prog 4 </title>

</head>
<body>

<form>
<fieldset>
<label> Author Name </label>
<input type = "label" name = Anm>

<br><br>

<label> type </label>
<select>
    <option> Technical </option>
    <option> Literary </option>
    <option> General </option>

</select>

<label> Upload Article </label>
<input type = "file" id = "my file" name = "browse" multiple >


</fieldset>
</form>
</body>
</html>
```

Output:

Author Name sanya

type Technical Upload Article Choose Files Computer Networks 1.pdf

Q5 Design an Html document using Table related tags align the images

Code:

```
<!DOCTYPE html>
<html>
<head>
    <title>Prog 5</title>

    <style>
        table, td, tr {
            border: 2px solid black;
            text-align: center;
        }

        table, tr, td {
            border-collapse: collapse;
```

```
        }

        th, td, table {
            padding: 25px;
        }

        tr:hover {
            background-color: yellow;
            text-decoration: underline;
        }
    </style>
</head>
<body>

<table cellspacing="5" cellpadding="5" width="800">
    <tr>
        <td> <img src="7\images/p1.jpg" width="150"
            height="150" alt="Image 1"> </td>
        <td> <img src="7/images/p2.jpeg" alt="Image 2"> </td>
        <td> <img src="7/images/p3.jpg" width="150"
            height="150" alt="Image 3"> </td>
        <td> <img src="7/images/p4.jpg" width="150"
            height="150" alt="Image 4"> </td>
    </tr>
    <tr>
        <td> <img src="7/images/p5.jpg" alt="Image 5"> </td>
        <td colspan="2"><h1><center> Anime </center></h1></td>
        <td> <img src="7/images/p6.jpg"  width="150"
            height="150" alt="Image 6"> </td>
    </tr>
    <tr>
        <td> <img src="7/images/p7.jpeg" height="
            150" alt="Image 7"> </td>
        <td> <img src="7/images/p8.jpeg" alt="Image 8"> </td>
        <td> <img src="7/images/p9.jpg" width="150" heigh="150" alt="Image 9">
</td>
        <td> <img src="7/images/p10.jpeg" alt="Image 10"> </td>
    </tr>
</table>

</body>
</html>
```

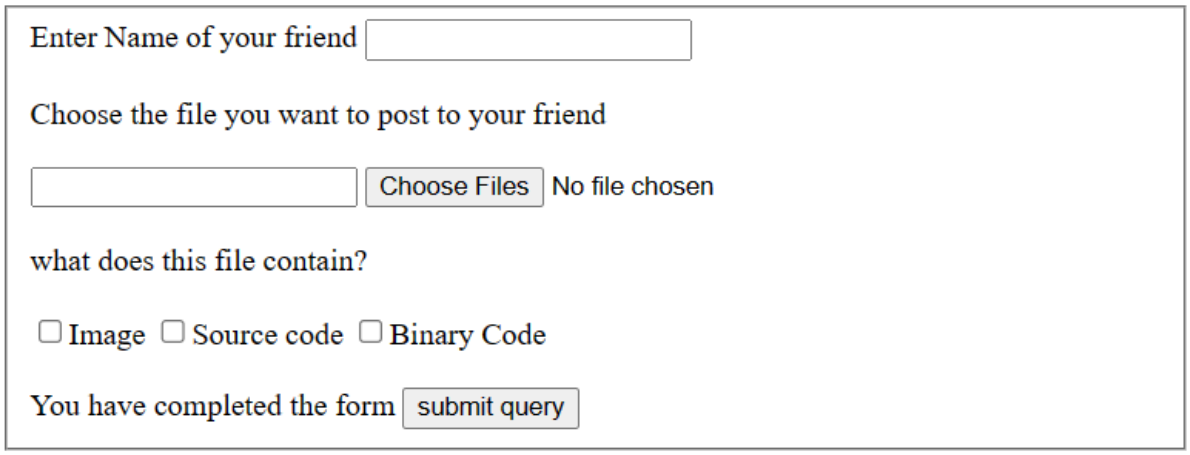
Output:

Q6 write a HTML code to generate the following output.

Code:

```
<html>
<head>
<title> Program No :6 </title>

</head>

<body>
<form>
<fieldset>
<label> Enter Name of your friend </label>
<input type = "label" name = frnm>
<br><br>

<label> Choose the file you want to post to your friend  </label>
<br><br>
<input type="label" name= "post">

<input type="file" id = "my file" name="browse" multiple>
<br><br>

<label> what does this file contain? </label>
<br><br>
<input type = "checkbox" name = "img">Image
<input type = "checkbox" name = "sc">Source code
<input type = "checkbox" name = "bin">Binary Code
<br><br>

<label> You have completed the form </label>
<input type="submit" value="submit query">

</fieldset>
</form>
</body>

</html>
```

Output:



Q7 Develop static pages of an online Book store. The website should consist of the following pages:

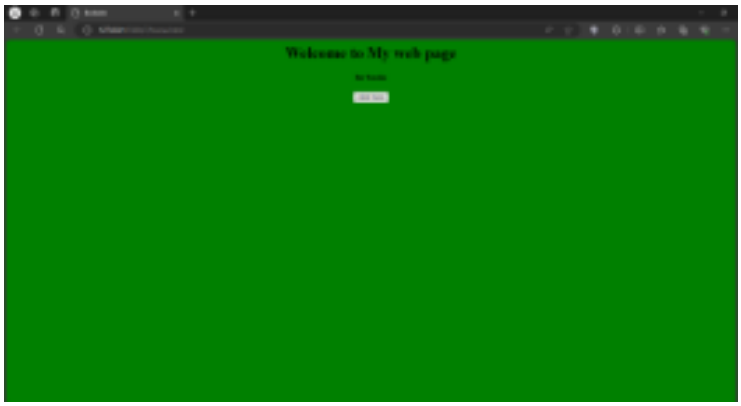
(homepage, registration and user login, user profile page, books catalog, shopping cart, payment by credit card order conformation)

Code:

Home page

```
<html>

<head>
    <title>
        Booksite </title>
</head>

<body bgcolor="Teal">
    <center>
        <strong>
            <h1>Welcome to My web page</h1>
        </strong>
        <form method="post" action="login.html" target=_blank>
            <h4>for books</h4><input type="submit" value="click here">
        </form>
    </center>
</body>

</html>
```

Output:



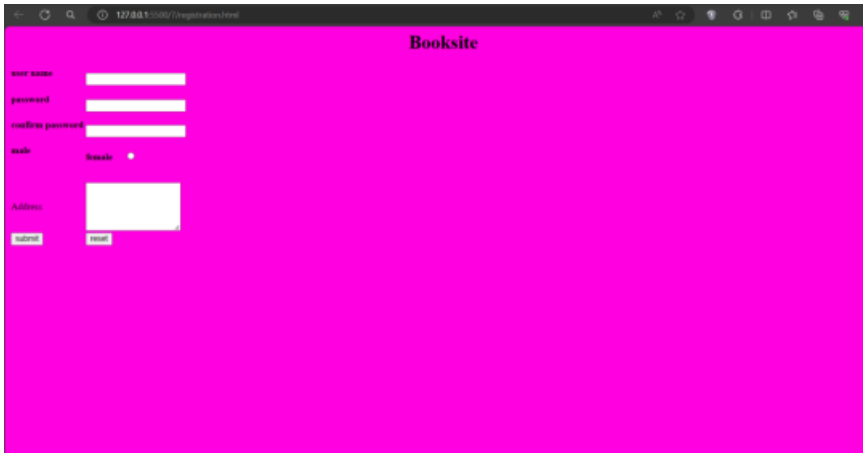
Registration and user Login

```
<html>

<head>
    <title>
        login page</title>
</head>
```

```
<body bgcolor="offwhite">
    <center><strong>
            <h1> Booksite </h1>
        </strong></center>
    <form method="post" action="./Catlog.html">
        <right>
            <table align="left">
                <tr>
                    <td>
                        <h4>user name
                    </td>
                    <td><input type="text"></td>
                <tr>
                <tr>
                    <td>
                        <h4>password
                    </td>
                    <td><input type="password"></td>
                </tr>
                <tr>
                    <td>
                        <h4>confirm password
                    </td>
                    <td><input type="password"></td>
                </tr>
                <tr>
                    <td>
                        <h4>male   
                            <option>
                                <input type="radio" name="sex" id="male">
                    </td>
                    <td>
                        <h4>female    
                            <input type="radio" name="sex" id="female">
                    </td>
                    </option>
                </tr>
                <tr>
                    <td>Address</td>
                    <td><textarea name="address" rows=5 cols=19>
</textarea>
                    </td>
                <tr>
                    <td>
                        <input type="submit" value="submit">
                    </td>
                    <td>
```

```
                        <input type="reset" value="reset">
                    </td>
                </tr>
    </form>
</body>

</html>
```

Output:

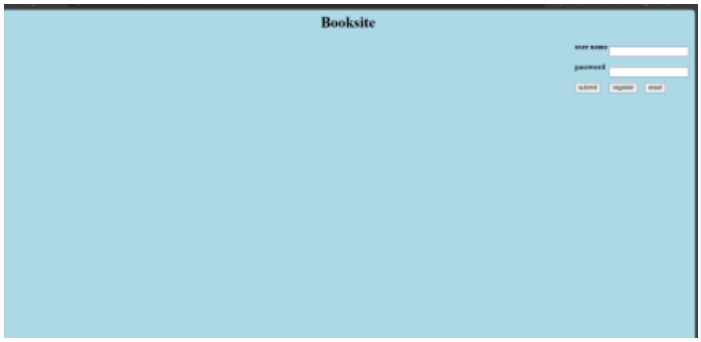


Login

```
<html>

<head>
    <title>
        login</title>
</head>

<body bgcolor="lightblue">
    <center>
        <strong>
            <h1> Booksite </h1>
        </strong>
    </center>
    <right>
```

```
        <table align="right">
            <tr>
                <td>
                    <h4>user name
                </td>
                <td><input type="text"></td>
                <td></td>
            </tr>
            <tr>
                <td>
                    <h4>password
                </td>
                <td><input type="password"></td>
                <td></td>
            </tr>
            <tr>
                <td>
                    <form method="post" action="./Catlog.html">
                        <input type="submit" value="submit">
                    </form>
                </td>
                <td>
                    <form method="post" action="./Registration.html">
                        <input type="submit" value="register">
                          
                        <input type="reset" value="reset">
                    </form>
                </td>
            </tr>
        </table>
</body>

</html>
```

Output:



User profile page

```
<html>

<head>
    <title>
        userprofile</title>
</head>

<body bgcolor="Golden">
    <center>
        <strong>
            <h1>Welcome to Booksite Online Book Store </h1>
        </strong>
    </center>
<center>
        Edit your profile here...
        <form method="post" action="catalog.html">
            <right>
                <table align="left">
                    <tr>
                        <td>
                            <h4>Edit user name
                        </td>
                        <td><input type="text"></td>
                    <tr>
                    <tr>
                        <td>
                            <h4>Edit password
                        </td>
                        <td><input type="password"></td>
```

```
                    </tr>
                    <tr>
                        <option>
                            <td>
                                <h4>male   
                                    <input type="radio" name="sex" id="male">
                            </td>
                            <td>
                                <h4>female    
                                    <input type="radio" name="sex"
id="female">
                            </td>
                        </option>
                    </tr>
                    <tr>
                        <td>Edit Address</td>
                        <td><textarea name="address" rows=5 cols=19>
</textarea>
                        </td>
                    <tr>
                        <td>
                            <input type="submit" value="submit">
                        </td>
                    </tr>
</center>
    </form>
</body>

</html>
```

Output:

Book catalog

```
<head>
    <title>
        books catalog</title>
</head>

<body bgcolor="pink">
    <center>
        <h1>Booksite</h1>
    </center>
    <center>
        <form method="post" action="shopping.html">
            <left>
                <table>
                    <tr>
                        <td><b>
                                <h3>frontend books</td>
                        <td></td>
                    </tr>
                    <tr>
                        <td></td>
                        <td>
                            <h4>C&Ds
                        </td>
                    </tr>
                    <tr>
                        <td></td>
                        <td>
                            <h4>Ads
                        </td>
                    </tr>
                    <tr>
                        <td></td>
                        <td>
                            <h4>JAVA
                        </td>
                    </tr>
                    <tr>
                        <td><b>
                                <h3>backend books</td>
                        <td></td>
                    </tr>
                    <tr>
                        <td></td>
                        <td>
```

```
                    <tr>
                        <td></td>
                        <td>
                            <h4>Ms SQL Server
                        </td>
                    </tr>
                    <tr>
                        <td></td>
                        <td>
                            <h4>MySql
                        </td>
                    </tr>
                </table>
                </h4>
                <center>
                    <b>for buy one of these books
                        <br>
                    </b><input type="submit" value="click here">
                </center>
    </center>>
    </form>
</body>

</html>
```

Output:

Shopping cart

```
<html>

<head>
    <title>shopping cart</title>
</head>

<body bgcolor="Purple">
    <center>
        <h1>
            Shopping Cart</h1>
    </center>
    <br><br><br><br><br>
    <table align="center">
        <tr>
            <td>Text Books</td>
            <td>
                <select>
                    <optgroup label="select the book">
                        <option value="C&Ds">C&Ds
                        <option value="Ads">Ads
                        <option value="Java">Java
                        <option value="Oracle">Oracle
                        <option value="Ms SQL Server">Ms SQL Server
                        <option value="MySql">MySql
                    </optgroup>
                </select>
            </td>
        </tr>
        <tr>
            <td>
                Quantity</td>
            <td>
                <input type="text" id="q">
            </td>
        </tr>
        <tr>
            <td></td>
            <td>
                <form method=post action="payment.html">
                    <input type="submit" value=ok />
                </form>
            </td>
        </tr>
    </table>
    <center>
        <pre>Cost of one book is"500" + shipping "100"</pre>
    </center>
```

output

Payment by credit crad

```
<html>

<head>
    <title>payment</title>
</head>

<body bgcolor="babypink">
    <center>
        <h1>Payment By Credit Card</h1>
    </center>
    <form method=post action="./OrderConformation.html">
        <br><br><br><br><br>
        <table align="center">
            <tr>
                <td>
                    <h4>Total Amount</h4>
                </td>
                <td><input type="text">
```

```
                </td>
            </tr>
            <tr>
                <td>
                    <h4>Credit Card Number
                </td>
                <td><input type="text"></td>
            </tr>
            <tr>
                <td>
                </td>
                <td><input type="submit" value=OK>
                </td>
            </tr>
        </table>
    </form>
</body>

</html>
```

Output:

Order confirmation

```
<html>

    <head>
```

```
        <title>order conformation</title>
        <M /head>

    <body bgcolor="lightgreen">
        <center>
            <h1><b>BOOK SHOPPING</h1>
            <pre><strong>
    <b>Your order Is Conformed
    </strong></pre>
            <h2><b>THANK YOU</h2>
        </center>
    </body>

    </html>
```

Output:

Source code c

Q1 Simulate Cyclic Redundancy Check (CRC) error detection algorithm for noisy channel

Code:

```cpp
#include <iostream>
#include <cstdlib>

using namespace std;

// Structure to represent the CRC generator polynomial
struct CRCGenerator {
    int *coefficients;
    int size;
};

// Structure to represent the message
struct Message {
    int *data;
    int size;
};

// Function to calculate CRC
void calc(int *temp, int *poly, int size) {
    for (int i = 0; i < size; i++) {
        if (temp[i] == poly[i])
            temp[i] = 0;
        else
            temp[i] = 1;
    }
}

// Function to simulate CRC error detection
void simulateCRCError(Message &msg, const CRCGenerator &crcGen) {
```

```
    int *temp = new int[crcGen.size];
    int *zeroPoly = new int[crcGen.size];

    for (int i = 0; i < crcGen.size; i++) {
        temp[i] = msg.data[i];
        zeroPoly[i] = 0;
    }

    for (int i = crcGen.size - 1; i < msg.size; i++) {
        temp[crcGen.size - 1] = msg.data[i];

        if (temp[0] == 0)
            calc(temp, zeroPoly, crcGen.size);
        else
            calc(temp, crcGen.coefficients, crcGen.size);

        for (int j = 1; j < crcGen.size; j++) {
            temp[j - 1] = temp[j];
        }
    }

    cout << "\nCRC is: ";
    for (int i = 0; i < crcGen.size - 1; i++) {
        cout << temp[i];
    }

    bool errorDetected = false;
    for (int i = 0; i < crcGen.size - 1; i++) {
        if (temp[i] == 1) {
            errorDetected = true;
            break;
        }
    }
```

```
    if (errorDetected)
        cout << "\nError detected\n";
    else
        cout << "\nNo error\n";

    delete[] temp;
    delete[] zeroPoly;
}

int main() {
    CRCGenerator crcGen;
    Message msg;

    cout << "Enter the size of key: ";
```

```
    cin >> crcGen.size;
    crcGen.coefficients = new int[crcGen.size];

    cout << "Enter key: ";
    for (int i = 0; i < crcGen.size; i++)
        cin >> crcGen.coefficients[i];

    cout << "Enter the size of message: ";
    cin >> msg.size;
    msg.data = new int[msg.size + crcGen.size - 1];

    cout << "Enter message: ";
    for (int i = 0; i < msg.size; i++)
        cin >> msg.data[i];

    for (int i = msg.size; i < msg.size + crcGen.size - 1; i++)
        msg.data[i] = 0;

    simulateCRCError(msg, crcGen);

    return 0;
}
```

Output:

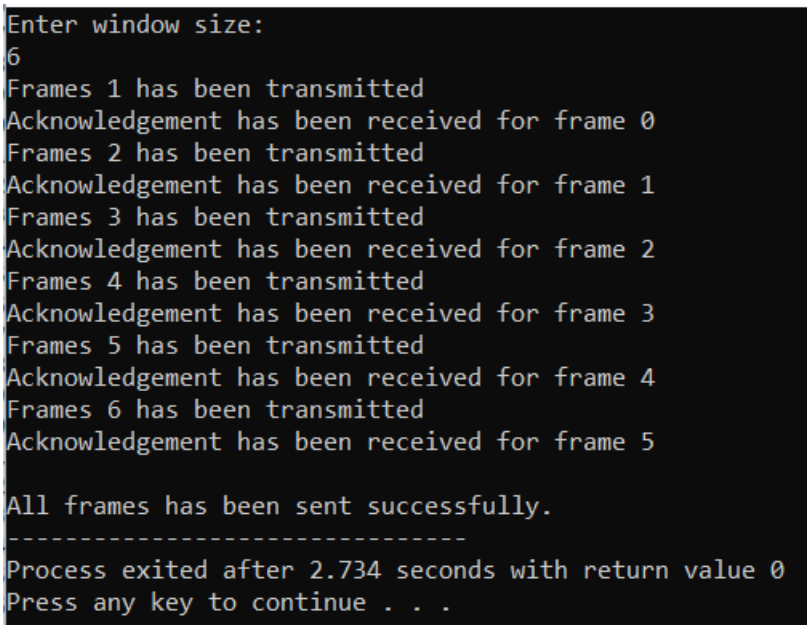
```
Enter the size of key: 4
Enter key: 1 0 0 1
Enter the size of message: 8
Enter message: 1 1 0 0 1 1 1 0

CRC is: 100
Error detected
```

Q2 Simulate and implement stop and wait protocol for noisy channel.

Code:

```
#include<stdio.h>
int main(){
    int windowsize,i,ack,sent=0;
    printf("Enter window size: \n");
    scanf("%d",&windowsize);


    while(1){
        for(i=0; i<=windowsize; i++)
        {

            printf("Frames %d has been transmitted \n",sent+1);
            printf("Acknowledgement has been received for frame %d \n",sent);
            sent++;
            if(windowsize == sent)
                break;

        }

            break;

    }
    printf(" \n");
    printf("All frames has been sent successfully. ");
    return 0;
}
```

Output:



Q3 Simulate and implement go back and sliding window protocol.

Code:

```cpp
#include<iostream>
#include<ctime>
#include<cstdlib>
using namespace std;
int main()
{
    int nf,N;
    int no_tr=0;
    srand(time(NULL));
    cout<<"Enter the number of frames : ";
    cin>>nf;
    cout<<"Enter the Window Size : ";
    cin>>N;
    int i=1;
    while(i<=nf)
    {
        int x=0;
        for(int j=i;j<i+N && j<=nf;j++)
        {
            cout<<"Sent Frame "<<j<<endl;
            no_tr++;
        }
        for(int j=i;j<i+N && j<=nf;j++)
        {
            int flag = rand()%2;
            if(!flag)
            {
                cout<<"Acknowledgment for Frame "<<j<<endl;
                x++;
            }
            else
            {
                cout<<"Frame "<<j<<" Not Received"<<endl;
                cout<<"Retransmitting Window"<<endl;
                break;
            }
        }
        cout<<endl;
        i+=x;
    }
    cout<<"Total number of transmissions : "<<no_tr<<endl;
    return 0;
}
```

```
Enter the number of frames : 6
Enter the Window Size : 2
Sent Frame 1
Sent Frame 2
Frame 1 Not Received
Retransmitting Window

Sent Frame 1
Sent Frame 2
Acknowledgment for Frame 1
Acknowledgment for Frame 2

Sent Frame 3
Sent Frame 4
Frame 3 Not Received
Retransmitting Window

Sent Frame 3
Sent Frame 4
Acknowledgment for Frame 3
Acknowledgment for Frame 4

Sent Frame 5
Sent Frame 6
Acknowledgment for Frame 5
Frame 6 Not Received
Retransmitting Window

Sent Frame 6
Acknowledgment for Frame 6

Total number of transmissions : 11

--------------------------------
Process exited after 3.817 seconds with return value 0
Press any key to continue . . .
```

Q4 Simulate and implement selective repeat sliding window protocol.

Code:

```c
#include<stdio.h>
int main(){
    int windowsize,i,ack,sent=0;

    printf("Enter Window size \n");
    scanf("%d",&windowsize);

    while(1){

        for(i=0; i<windowsize; i++){

            printf("Frame %d has been transmitted \n", sent+1);
            sent++;

            if(windowsize == sent)
                break;
        }


            printf("Enter the frame for which acknowledgement has not been received \n");
            scanf("%d",&ack);

            printf("Frame %d has been sent \n",ack);
            break;
    }

    printf("All Frames has been sent Successfully: ");
    return 0;

}
```

Output:

```
Enter Window size
5
Frame 1 has been transmitted
Frame 2 has been transmitted
Frame 3 has been transmitted
Frame 4 has been transmitted
Frame 5 has been transmitted
Enter the frame for which acknowledgement has not been received
3
Frame 3 has been sent
All Frames has been sent Successfully:
--------------------------------
Process exited after 12.18 seconds with return value 0
Press any key to continue . . .
```

Q5 Shortest Path algorithm

Code:

```c
#include<stdio.h>
#include<conio.h>
#define INFINITY 9999
#define MAX 10

void dijikstra(int G[MAX][MAX], int n, int startnode);

void main(){
    int G[MAX][MAX], i, j, n, u;
    printf("\nEnter the no. of vertices:: ");
    scanf("%d", &n);
    printf("\nEnter the adjacenct matrix::\n");
    for(i=0;i < n;i++)
        for(j=0;j < n;j++)
            scanf("%d", &G[i][j]);
    printf("\nEnter the starting node:: ");
    scanf("%d", &u);
    dijikstra(G,n,u);
    getch();
}

void dijikstra(int G[MAX][MAX], int n, int startnode){
    int cost[MAX][MAX], distance[MAX], pred[MAX];
    int visited[MAX], count, mindistance, nextnode, i,j;
    for(i=0;i < n;i++)
        for(j=0;j < n;j++)
            if(G[i][j]==0)
                cost[i][j]=INFINITY;
            else
                cost[i][j]=G[i][j];

    for(i=0;i< n;i++)
    {
        distance[i]=cost[startnode][i];
        pred[i]=startnode;
        visited[i]=0;
    }
    distance[startnode]=0;
    visited[startnode]=1;
    count=1;
    while(count < n-1){
        mindistance=INFINITY;
        for(i=0;i < n;i++)
            if(distance[i] < mindistance&&!visited[i])
            {
                mindistance=distance[i];
                nextnode=i;
            }
```

```
49          visited[nextnode]=1;
50          for(i=0;i < n;i++)
51              if(!visited[i])
52                  if(mindistance+cost[nextnode][i] < distance[i])
53                  {
54                      distance[i]=mindistance+cost[nextnode][i];
55                      pred[i]=nextnode;
56                  }
57              count++;
58      }
59
60      for(i=0;i < n;i++)
61          if(i!=startnode)
62          {
63              printf("\nDistance of %d = %d", i, distance[i]);
64              printf("\nPath = %d", i);
65              j=i;
66              do
67              {
68                  j=pred[j];
69                  printf(" <-%d", j);
70              }
71              while(j!=startnode);
72          }
73  }
```

Output:

```
Enter the no. of vertices:: 5

Enter the adjacenct matrix::
0 10 20 0 0
10 0 5 25 5
20 5 0 15 10
0 25 15 0 20
0 0 10 20 0

Enter the starting node:: 0

Distance of 1 = 10
Path = 1 <-0
Distance of 2 = 15
Path = 2 <-1 <-0
Distance of 3 = 30
Path = 3 <-2 <-1 <-0
Distance of 4 = 15
Path = 4 <-1 <-0
--------------------------------
Process exited after 84.14 seconds with return value 13
Press any key to continue . . .
```