PRACTICAL FILE

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NETWORK ALGORITHMS PRACTICAL LIST

1. Simulate Cyclic Redundancy Check (CRC) Error Detection algorithm for Noisy channel.

```
#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
```

```
    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:

```
PS C:\Users\saura\OneDrive\Desktop\HTML tutorial\.vscode> cd "c:\Users\saura\
OneDrive\Desktop\HTML tutorial\.vscode\.vscode\" ; if ($?) { g++ CRC.cpp -o C
RC } ; if ($?) { .\CRC }
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
PS C:\Users\saura\OneDrive\Desktop\HTML tutorial\.vscode\.vscode>
```

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

```
#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 :

```
                                                    > cd "c:\User
s\saura\OneDrive\Desktop\HTML tutorial\.vscode\.vscode\" ; if ($?) { g++ stop
.cpp -o stop } ; if ($?) { .\stop }
Enter window size:
5
Frames 1 has been transmitted
Acknowledgement has been received for frame 0
Frames 2 has been transmitted
Acknowledgement has been received for frame 1
Frames 3 has been transmitted
Acknowledgement has been received for frame 2
Frames 4 has been transmitted
Acknowledgement has been received for frame 3
Frames 5 has been transmitted
Acknowledgement has been received for frame 4

All frames has been sent successfully.
PS C:\Users\saura\OneDrive\Desktop\HTML tutorial\.vscode\.vscode>
```

3 .Shortest Path algorithm.

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

void dijikstra(int G[MAX][MAX], int n, int startnode); int main(){
	int G[MAX][MAX], i, j, n, u;
	printf("\nEnter the no. of vertices:: "); scanf("%d", &n);
	printf("\nEnter the adjacency 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;
                }
            visited[nextnode]=1; for(i=0;i <
            n;i++)
                if(!visited[i])
                    if(mindistance+cost[nextnode][i] < distance[i])
                    {
                        distance[i]=mindistance+cost[nextnode][i];
                        pred[i]=nextnode;
                    }
                count++;
        }

        for(i=0;i < n;i++) if(i!=startnode)
            {
                printf("\nDistance of %d = %d", i, distance[i]); printf("\nPath = %d", i);
                j=i;
                do
                {
                    j=pred[j];   printf(" <-%d",
                    j);
                }
                while(j!=startnode);
            }
}
```

OUTPUT :

```
PS C:\Users\saura\OneDrive\Desktop\HTML tutorial\.vscode\.vscode> cd "c:\Users\saur
a\OneDrive\Desktop\HTML tutorial\.vscode\.vscode\" ; if ($?) { g++ shortpath.cpp -o
 shortpath } ; if ($?) { .\shortpath }

Enter the no. of vertices:: 5

Enter the adjacency 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
```

4. Simulate and implement selective repeat sliding window protocol.

```
#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 :

```
                                                                > cd "c:\Users\
a\OneDrive\Desktop\HTML tutorial\.vscode\.vscode\" ; if ($?) { g++ selective.cp
 selective } ; if ($?) { .\selective }
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
2
Frame 2 has been sent
All Frames has been sent Successfully:
PS C:\Users\saura\OneDrive\Desktop\HTML tutorial\.vscode\.vscode>
```

5. Simulate and implement go back N sliding window protocol.

```
#include<stdio.h> int
main(){
        int windowsize,ack,i,sent=0; printf("Enter the size of
        Window: \n"); scanf("%d",&windowsize);
        while(1){
                for(i=0; i<windowsize;i++){
                        printf("Frames %d has been transmitted \n",sent); sent++;

                        if(windowsize == sent) break;

                }

                printf("Enter last acknowledgement received\n"); scanf("%d",&ack);

                if(ack == windowsize) break;
                else
                        sent = ack;

        }
        printf("All frames has been sent successfully: "); return 0;
```

OUTPUT :

```
                                                                > cd "c:\Users\saur
a\OneDrive\Desktop\HTML tutorial\.vscode\.vscode\" ; if ($?) { g++ goback.cpp -o go
back } ; if ($?) { .\goback }
Enter the size of Window:
4
Frames 0 has been transmitted
Frames 1 has been transmitted
Frames 2 has been transmitted
Frames 3 has been transmitted
Enter last acknowledgement received
3
Frames 3 has been transmitted
Enter last acknowledgement received
```

HTML PRACTICALS

1. Write a HTML program to design a form which should allow to enter your personal data.

```
<!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>
    <form>
        <table>
            <tr>
                <td>First Name</td>
                <td><input name="fname"></td>
            </tr>
            <tr>
                <td>Last Name</td>
                <td><input name="lname"></td>
            </tr>
            <tr>
                <td>Adress</td>
```

```
            <tr>
                <td>Gmail</td>
                <td><input type="text"></td>
            </tr>
            <tr>
                <td>Password</td>
                <td><input type="password" name="ps"></td>
            </tr>
            <tr>
                <td>Gender</td>
                <td>
                    <input type="radio" name="gn">male
                    <input type="radio" name="gn">Female
                    <input type="radio" name="gn">Other
                </td>
            </tr>
            <tr>
                <td>hobby</td>
                <td>
                    <input type="checkbox" name="sp">painting
                    <input type="checkbox" name="sp">Drawing
                    <input type="checkbox" name="sp">singing
                    <input type="checkbox" name="sp">dancing
                </td>
            </tr>
            <tr>
                <td><input type="submit"></td>
            </tr>
        </table>
```

OUTPUT :

First Name
Last Name
Adress
Gmail
Password
Gender ○ male ○ Female ○ Other
hobby ☐ painting ☐ Drawing ☐ singing ☐ dancing
Submit

2. Write html code to generate following output.

• Coffee • Tea

o Black Tea

o Green Tea

• Milk

```
<html>
<head>
<title> Prog 2 </title>
</head>

<body>

<ul>
<li>Coffee</li>
<li>

Tea
                <ul><li>Black Coffee</li>
                    <li> Green Tea </li>
        </ul>

</li>
<li>Milk</li>
</ul>

</body>
```

OUTPUT :

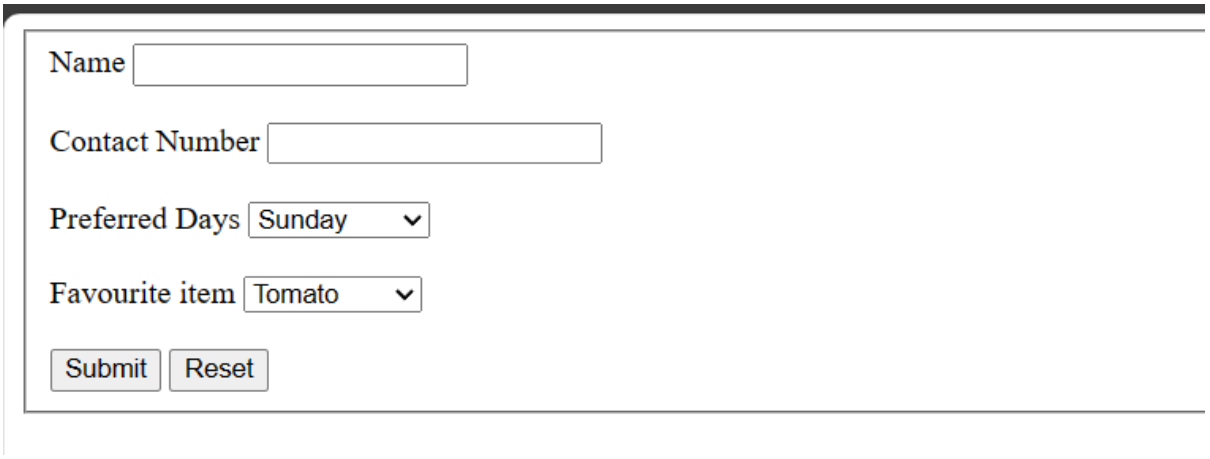
- Coffee
- Tea
    - Black Coffee
    - Green Tea
- Milk

3. Design an 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 (to be selected from a list of items), suggestions etc. One should provide button to Submit as well as Reset the form contents

```
<html>
<head>
<title>Prog 3</title>
</head>

<body>

<form>
<fieldset>

<label> Name </label>
<input type="label" name=nm >
<br><br>

<label> Contact Number </label>
<input type="label" name=cnmun >
<br><br>

<label> Preferred Days </label>
<select name = "days">
                        <option value="SN">Sunday</option>
                        <option value="MN">Monday</option>
                        <option value="TU">Tuesday</option>
                        <option value="WD">Wednesday</option>
</select>

<br><br>

<label>Favourite item</label>
<select name = "item">
                        <option > Tomato </option>
                        <option > Potato </option>
                        <option > Mustard Oil </option>
                        <option > coconut Oil </option>
```

```
<input type="reset">



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

OUTPUT :

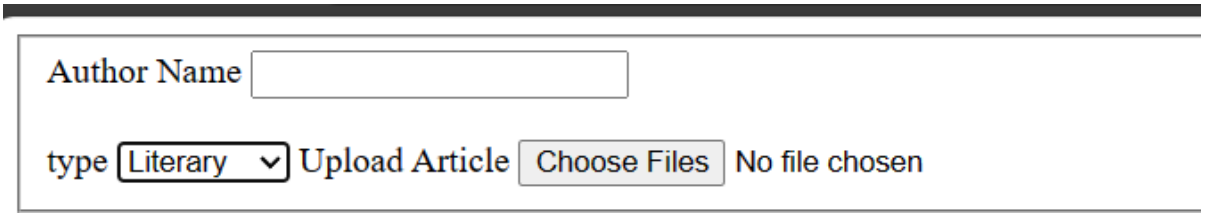


4. Design an html form to take the information of an article to be uploaded such as file path, author name, type (technical, literary, general), subject topic (to be selected from a list) etc. One should provide button to Submit as well as Reset the form contents.

```
<html>
<head>

<title> Prog 4 </title>

</head>
<body>

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

<br><br>
```

```
      <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:

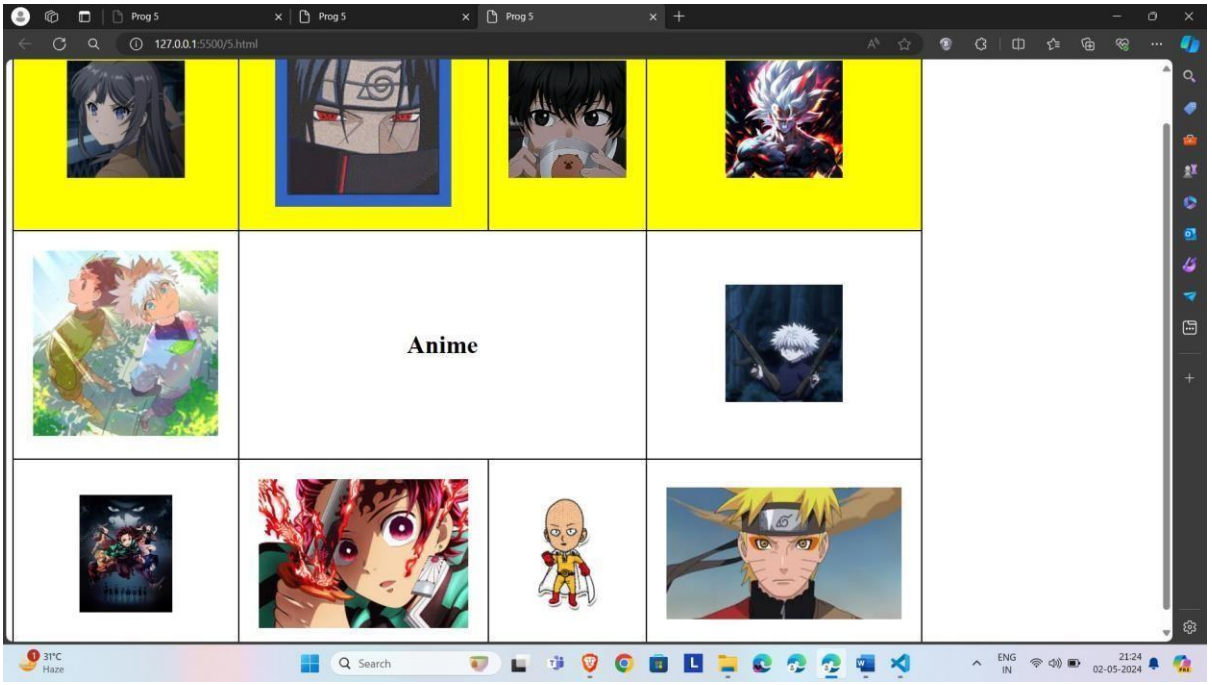


5. Design an HTML document using Table related tags align the images

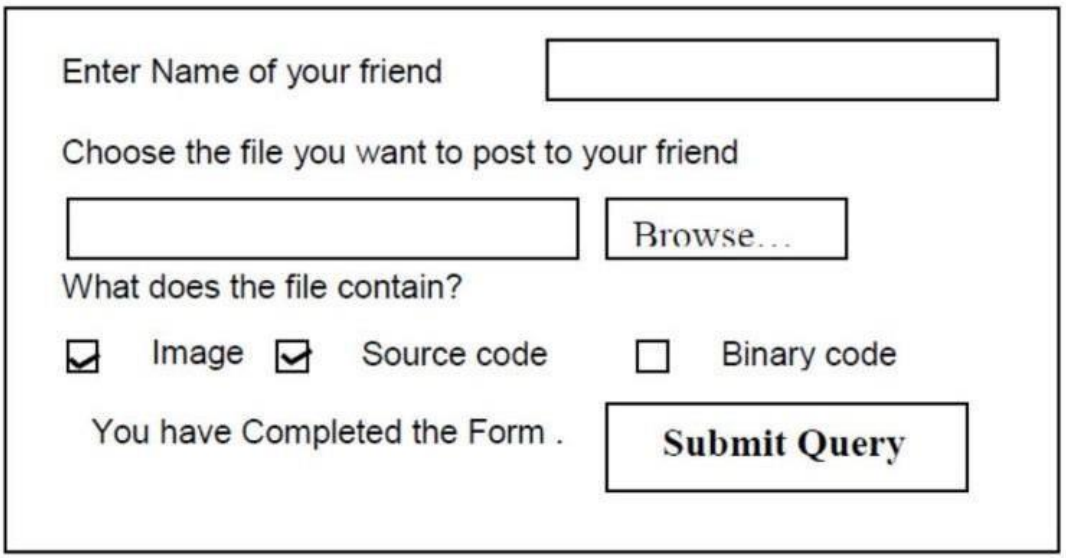
```
<!DOCTYPE html>
<html>
<head>
	<title>Prog 5</title>

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

		table, tr, td {
```

```
            }

            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 :


Prog 5
Prog 5
Prog 5
127.0.0.1:5500/5.html
Anime
31°C
Haze
Search
ENG
IN
21:24
02-05-2024

6 .Write a HTML code to generate following output.




```
<html>
<head>
<title> Prog 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>
```

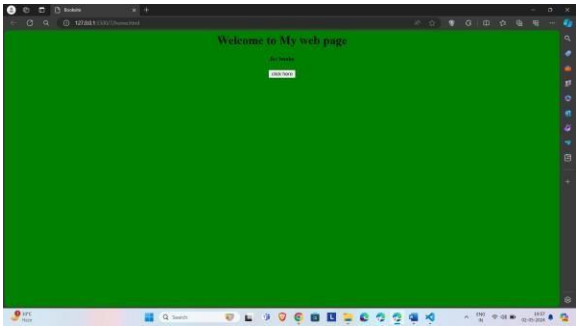
OUTPUT :

7. Develop static pages (using only HTML) of an online Book store.The website should consist of following pages.

HOMEPAGE:

```
<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>
```

OUTPUT :



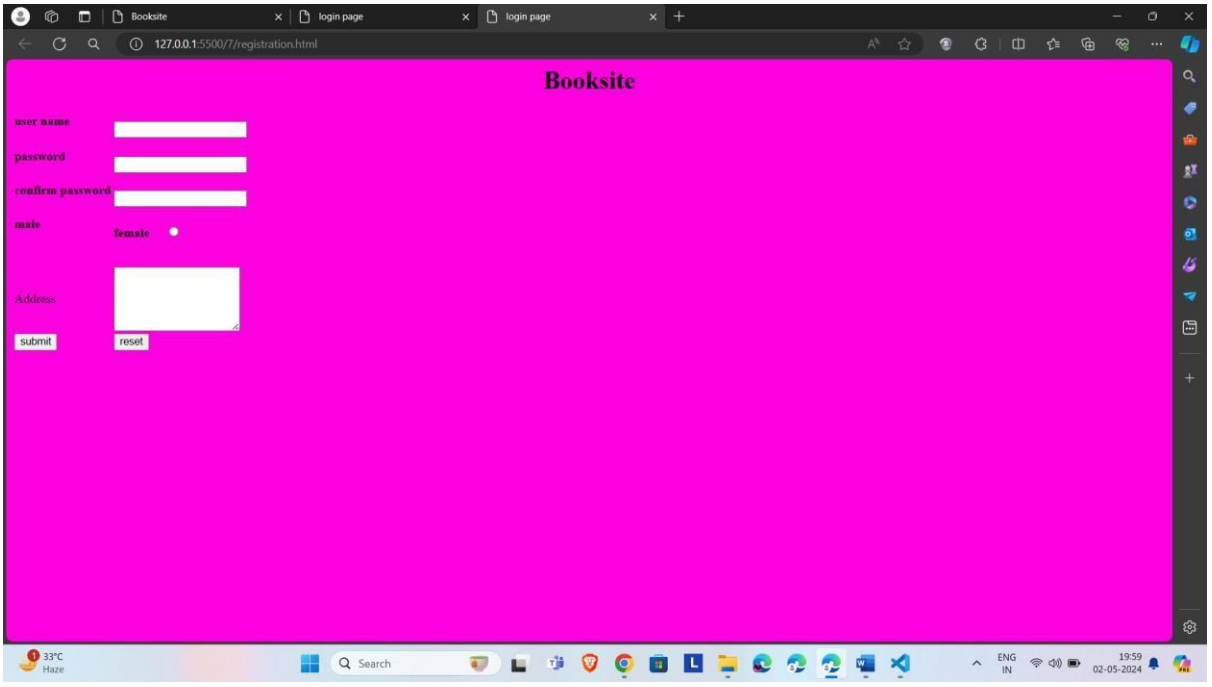
REGISTRATION & USER LOGIN:

```
<html>

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

```
<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 :

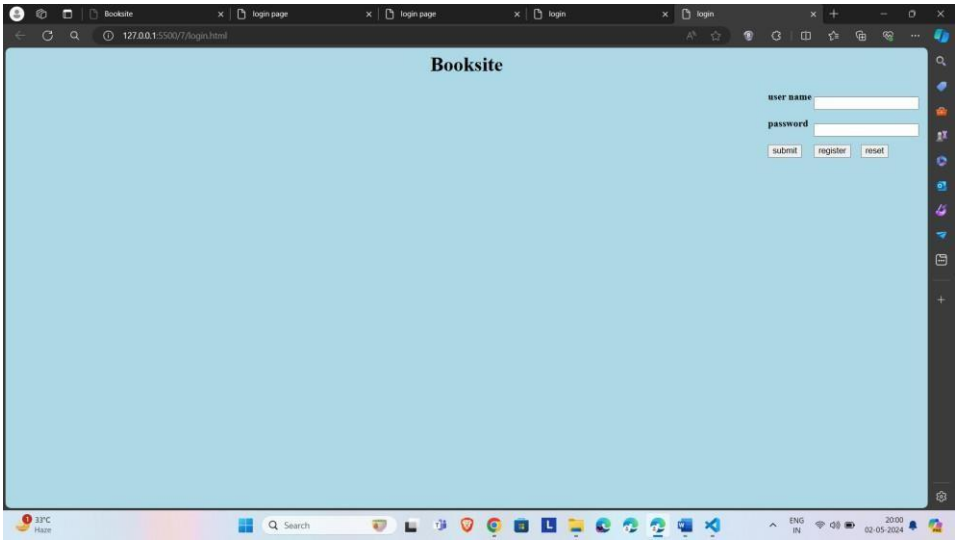


LOGIN :

```
78% of storage used … If you run out, you can't create, edit, and upload files.
<html>

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

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

```
        <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>
```

OUTPUT :

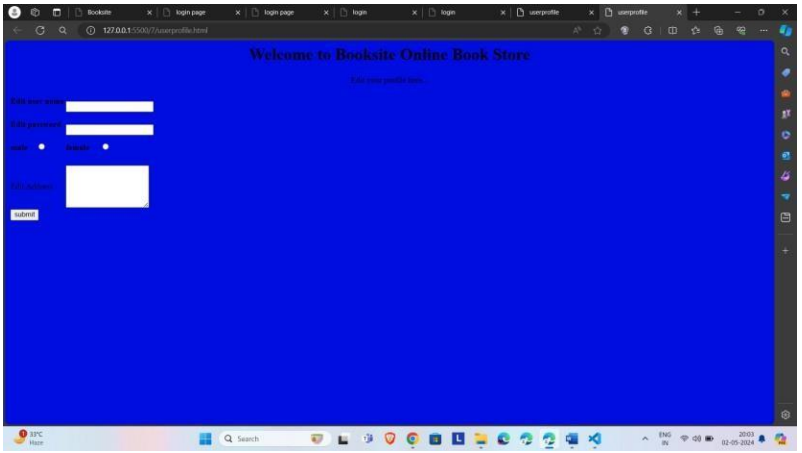


USER PROFILE PAGE:

```
<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>
```

```
                    </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>
```

OUTPUT :



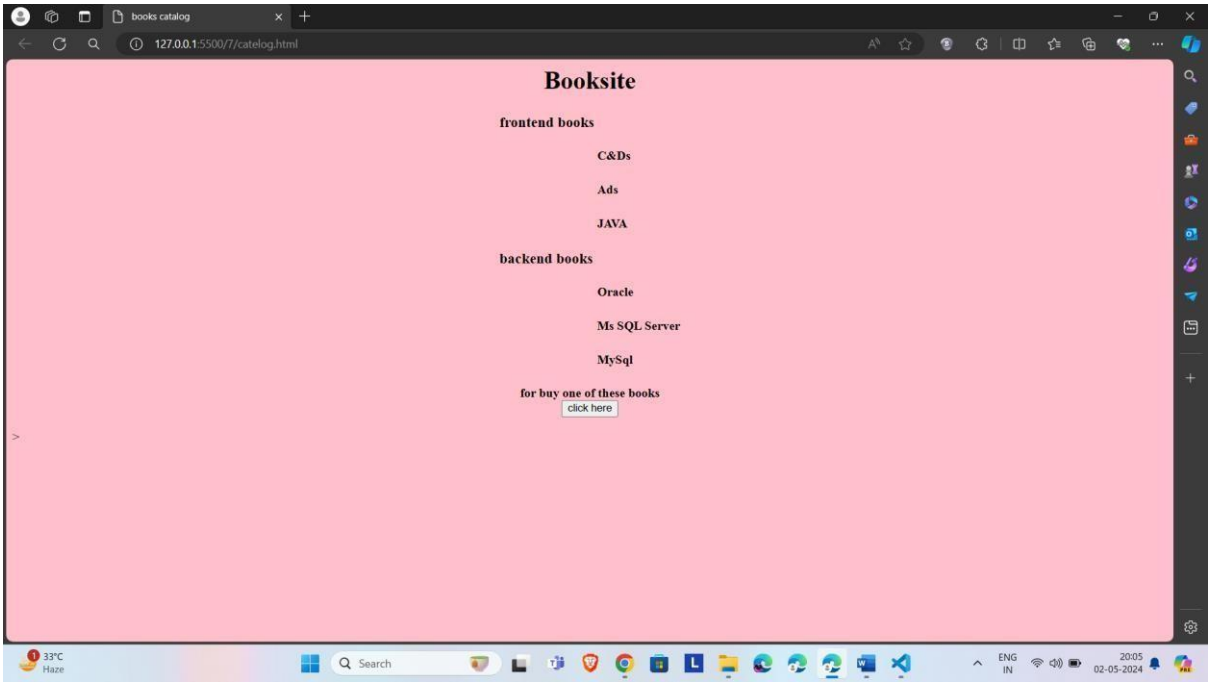
BOOKS CATALOGUE:

```
<html>
```

```
<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>
							<h4>Oracle
						</td>
					</tr>
```

```
                    <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>
```

OUTPUT :

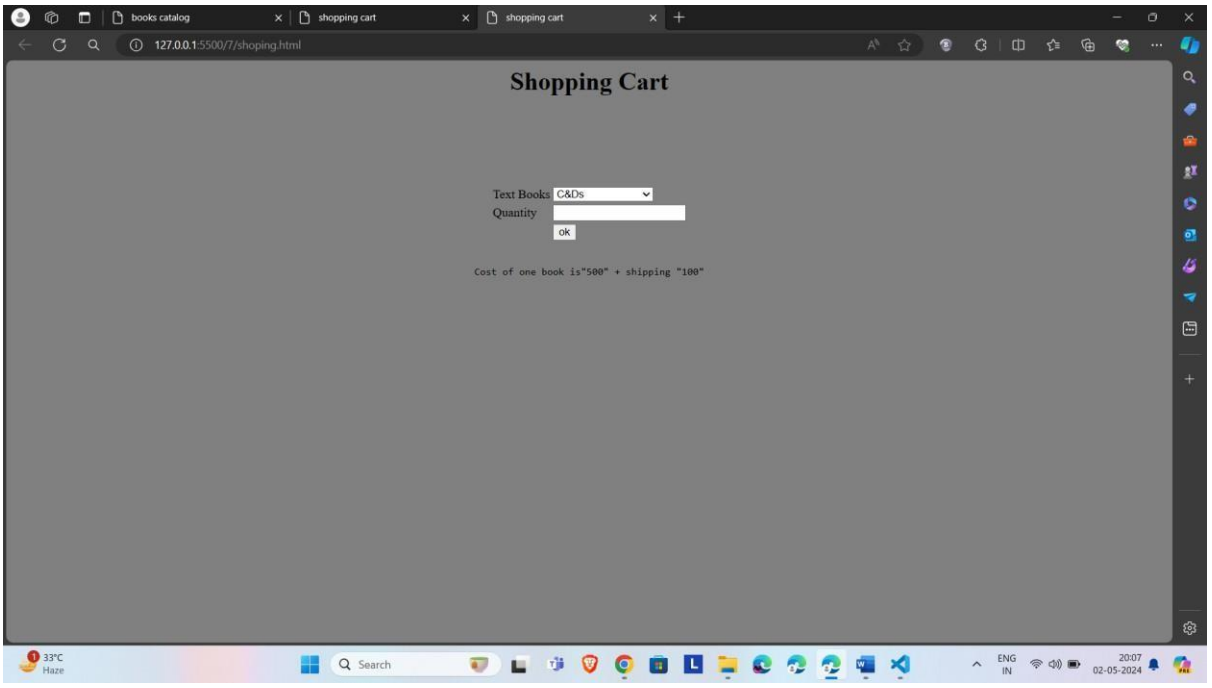


SHOPPING CART :

```
<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>
```

```
    <body>

</html>
```

OUTPUT :

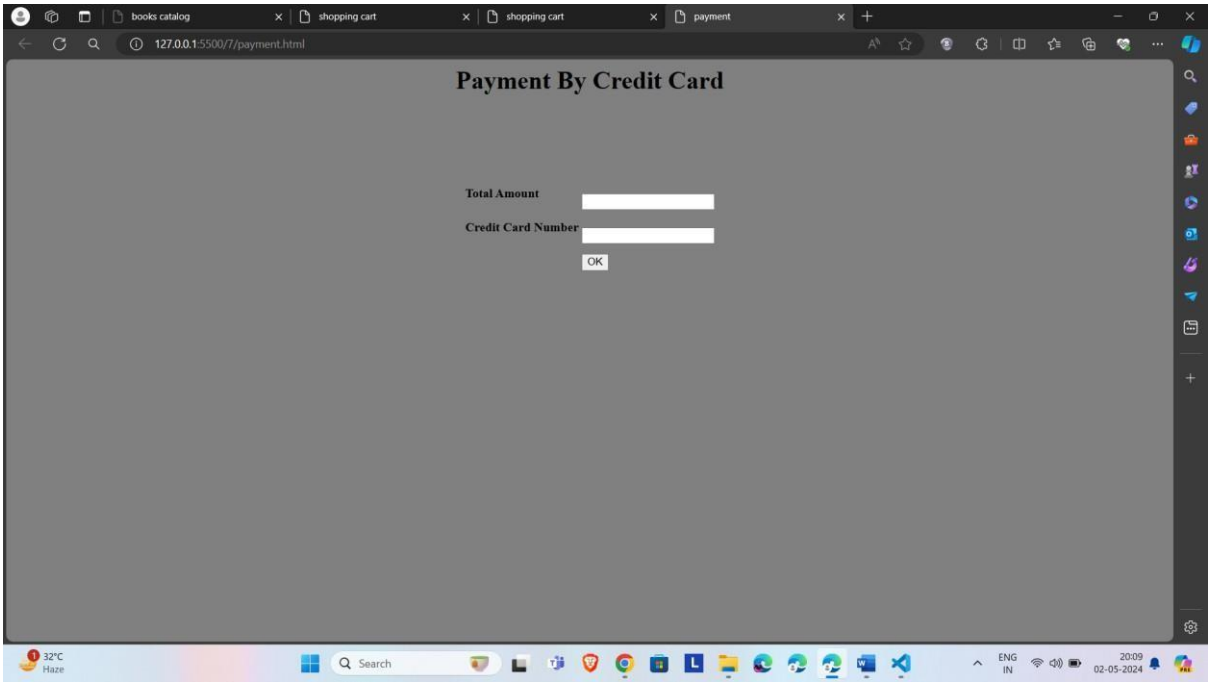


PAYMENT BY CREDIT CARD:

```
<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>
                </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>
```

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>
```

OUTPUT :