## Experiment No. 2

### 1. Post Lab Task

## Login Form

```
<%@ Page Title="" Language="C#" MasterPageFile="~/Site.Master" AutoEventWireup="true"
CodeBehind="Login.aspx.cs" Inherits="WebApplication2.WebForm2" %>
<asp:Content ID="Content1" ContentPlaceHolderID="HeadContent" runat="server">
    <style type="text/css">
        .style1
        {
            width: 74%;
            border-collapse: collapse;
            border: 1px solid #808000;
            margin-left: 0px;
            background-color:  #C0C0C0;
        }
        .style2
        {
            width: 174px;
            color: #800000;
        font-family: "Times New Roman", Times, serif;
        font-size: x-large;
    }
```

```
            .style3
            {
                width: 7px;
                text-align: center;
            }
            .style4
            {
                width: 375px;
            }
            .style5
            {
                width: 174px;
                color: #CC0000;
                font-size:  small;
            }
            .style6
            {
                width: 174px;
                color: #FF0000;
                height: 28px;
            }
            .style7
            {
                width: 7px;
                text-align: center;
                height: 28px;
            }
            .style8
            {
                width: 375px;
                height: 28px;
            }
        .style10
        {
            width: 174px;
            color: #CC0000;
            font-size: large;
                text-align: right;
            }
            .style11
            {
                width: 174px;
                color: #FF0000;
                font-family: "Times New Roman", Times, serif;
                font-size: x-large;
                text-align: right;
            }
        </style>
    </asp:Content>
    <asp:Content ID="Content2" ContentPlaceHolderID="MainContent" runat="server">
        <table align="center" class="style1">
            <tr>
                <td class="style5">
                     </td>
                <td class="style3">
                     </td>
                <td class="style4">
                    <asp:Label ID="lbl" runat="server"
                        style="color: #FF0000; font-size: x-large; font-weight: 700"
    Text="Label"></asp:Label>
                </td>
            </tr>
            <tr>
                <td class="style10">
```

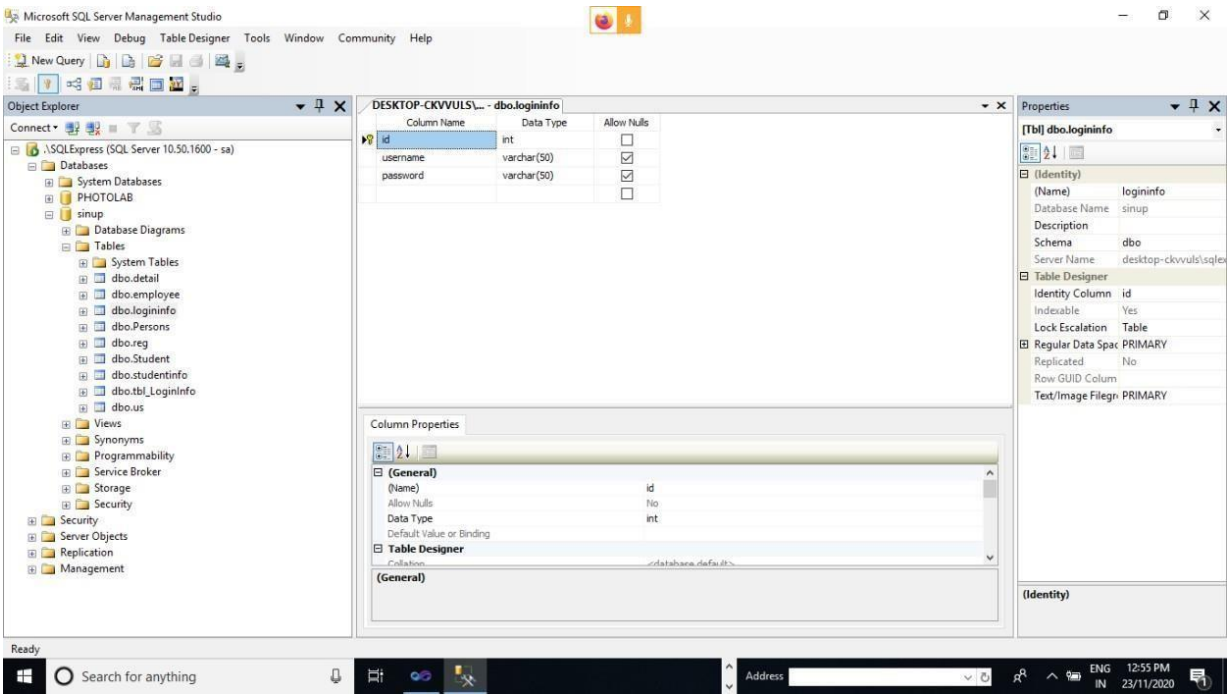
```
                <strong>User Name</strong></td>
            <td class="style3">
                :</td>
            <td class="style4">
                <asp:TextBox ID="txtUserName" runat="server"></asp:TextBox>
                <asp:RequiredFieldValidator ID="RequiredFieldValidator1" runat="server"
                    ErrorMessage="Enter User Name"
ControlToValidate="txtUserName"></asp:RequiredFieldValidator>
            </td>
        </tr>
        <tr>
            <td class="style11">
                <strong>Password</strong></td>
            <td class="style3">
                :</td>
            <td class="style4">
                <asp:TextBox ID="txtPassword" runat="server" TextMode="Password"></asp:TextBox>
                <asp:RequiredFieldValidator ID="RequiredFieldValidator2" runat="server"
                    ErrorMessage="Enter Passwrd"
ControlToValidate="txtUserName"></asp:RequiredFieldValidator>
            </td>
        </tr>
        <tr>
            <td class="style6">
            </td>
            <td class="style7">
            </td>
            <td class="style8">
                <asp:Button ID="btnSubmit" runat="server" Text="Submit"
                    onclick="btnSubmit_Click" />
                <asp:ValidationSummary ID="ValidationSummary1" runat="server"
                    ShowMessageBox="True" />
            </td>
        </tr>
    </table>
</asp:Content>
```

## Login Form Asp.net Code:

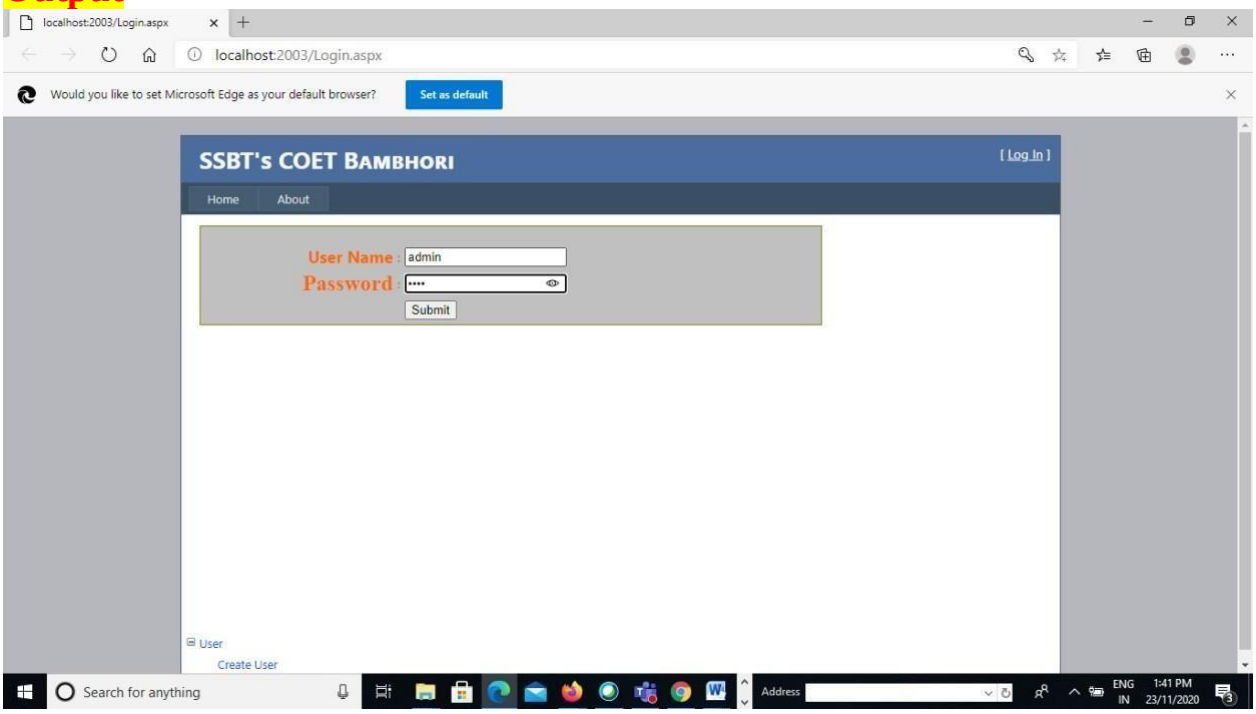
```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Web;
using System.Web.UI;
using System.Web.UI.WebControls;
using System.Data;
using System.Data.SqlClient;

namespace WebApplication2
{
    public partial class WebForm2 : System.Web.UI.Page
    {
        SqlConnection con = new SqlConnection("Data Source=.\\SQLExpress;Initial
Catalog=sinup;User ID=sa;Password=ssbt");
        protected void Page_Load(object sender, EventArgs e)
        {
            lbl.Visible = false;
        }
        public void show()
        {
            try
            {
```

```
                SqlCommand sqlcmd = new SqlCommand("insert into logininfo values('" +
txtUserName.Text + "','" + txtPassword.Text + "')", con);
                con.Open();
                sqlcmd.ExecuteNonQuery();
                con.Close();
            }
            catch (Exception ex)
            {
                lbl.Text = ex.Message;
            }
            finally
            {
                con.Close();
                con.Dispose();
            }

        }

        protected void btnSubmit_Click(object sender, EventArgs e)
        {
            show();
        }
    }
}
```

## Database



# Output




# Information Form Design

```
<%@ Page Title="" Language="C#" MasterPageFile="~/Site.Master" AutoEventWireup="true"
CodeBehind="info.aspx.cs" Inherits="WebApplication2.WebForm4" %>
<asp:Content ID="Content1" ContentPlaceHolderID="HeadContent" runat="server">
    <style type="text/css">
        .style1
        {
            width: 100%;
        }
        .style2
        {
            width: 41px;
            text-align: center;
        }
        .style3
        {
            width: 232px;
        }
        .style4
        {
            font-family: "Times New Roman";
            font-weight: bold;
            color: #00FF00;
            font-size: x-large;
            background-color: #CC0000;
        }
        .style5
        {
            background-color: #CC3300;
        }
        .style6
```

```
        {
            width: 41px;
            text-align: center;
            color: #000000;
            font-size: x-large;
            background-color: #669900;
        }
    </style>

</asp:Content>
<asp:Content ID="Content2" ContentPlaceHolderID="MainContent" runat="server">
    <table class="style1">
        <tr>
            <td class="style4" colspan="3" width="30">
                <asp:Label ID="lbl" runat="server"></asp:Label>
            </td>
        </tr>
        <tr>
            <td class="style4" width="30">
                Roll No</td>
            <td class="style6">
                :</td>
            <td class="style5">
                <asp:TextBox ID="txtRoll" runat="server"></asp:TextBox>
            </td>
        </tr>
        <tr>
            <td class="style4" width="30">
                Student Name</td>
            <td class="style6">
                :</td>
            <td class="style5">
                <asp:TextBox ID="txtStudentName" runat="server"></asp:TextBox>
            </td>
        </tr>
        <tr>
            <td class="style4" width="30">
                Father Name</td>
            <td class="style6">
                :</td>
            <td class="style5">
                <asp:TextBox ID="txtFatherName" runat="server"></asp:TextBox>
            </td>
        </tr>
        <tr>
            <td class="style4" width="30">
                City</td>
            <td class="style6">
                :</td>
            <td class="style5">
                <asp:TextBox ID="txtCity" runat="server"></asp:TextBox>
            </td>
        </tr>
        <tr>
            <td class="style4" width="30">
                 </td>
            <td class="style6">
                 </td>
            <td class="style5">
                <asp:Button ID="btnSave" runat="server" onclick="btnSave_Click"
                    style="background-color: #FF9900" Text="Save" />
    
            </td>
        </tr>
        <tr>
```

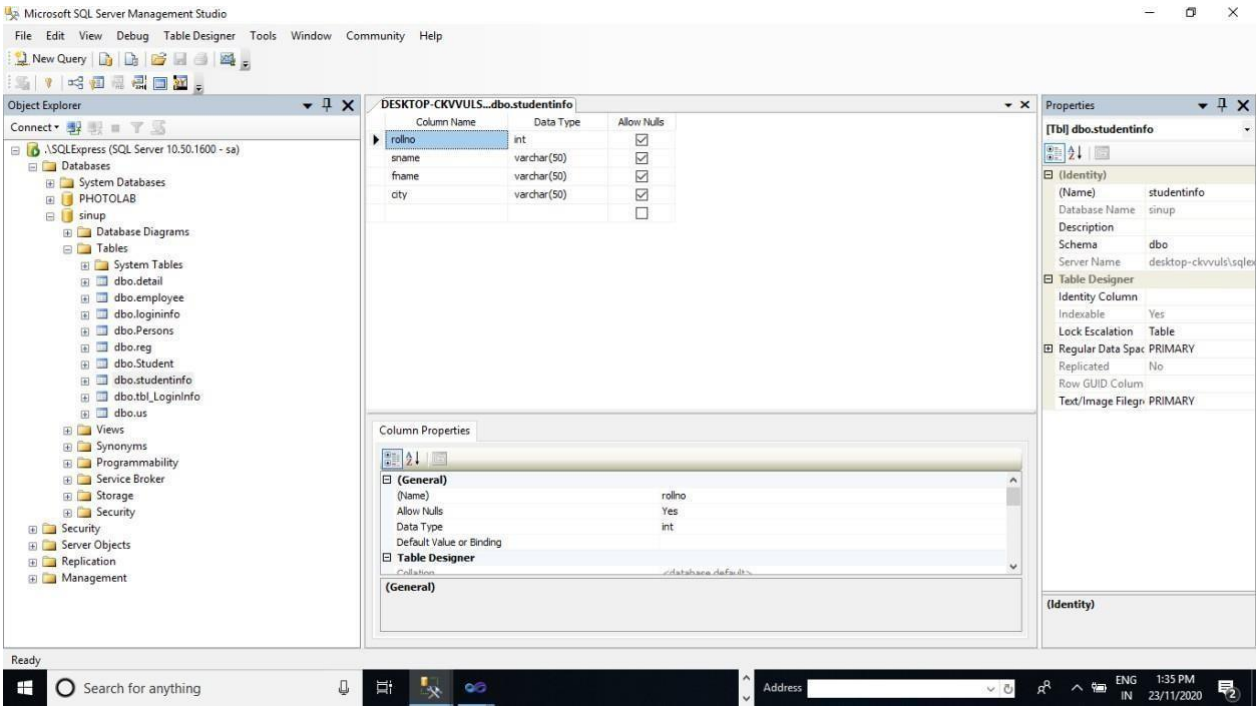
```
            <td class="style3" width="30">
                 </td>
            <td class="style2">
                 </td>
            <td>
                 </td>
        </tr>
    </table>
</asp:Content>
```

## Information Form Asp.net Code

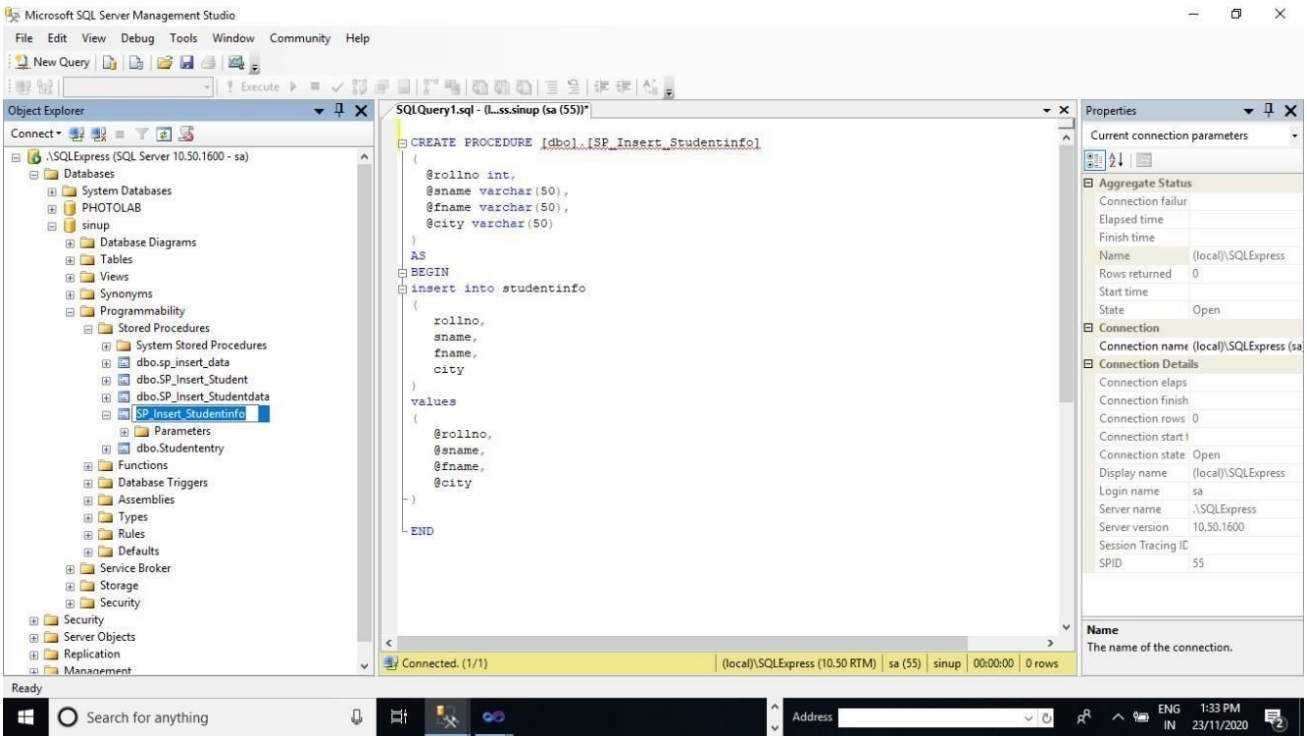
```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Web;
using System.Web.UI;
using System.Web.UI.WebControls;
using System.Data;
using System.Data.SqlClient;

namespace WebApplication2
{
    public partial class WebForm4 : System.Web.UI.Page
    {
        protected void Page_Load(object sender, EventArgs e)
        {
            lbl.Visible = false;

        }

        protected void btnSave_Click(object sender, System.EventArgs e)
        {
            SqlConnection con = new SqlConnection("Data Source=.\\SQLExpress;Initial
Catalog=sinup;User ID=sa;Password=ssbt");
            SqlCommand sqlcom = new SqlCommand("SP_Insert_Studentinfo", con);
            con.Open();
            sqlcom.CommandType = CommandType.StoredProcedure;
            sqlcom.Parameters.AddWithValue("@rollno", txtRoll.Text.ToString());
            sqlcom.Parameters.AddWithValue("@sname", txtStudentName.Text.ToString());
            sqlcom.Parameters.AddWithValue("@fname",txtFatherName.Text.ToString());
            sqlcom.Parameters.AddWithValue("@city",txtCity.Text.ToString());
            sqlcom.ExecuteNonQuery();
            con.Close();
            lbl.Text = "Record Inserted Successfully";
            lbl.Visible = true;
            clearcontrol();

        }
        public void clearcontrol()
        {
            txtCity.Text = "";
            txtFatherName.Text = "";
            txtRoll.Text = "";
            txtStudentName.Text = "";
        }

    }
}
```

# Information Form Database:

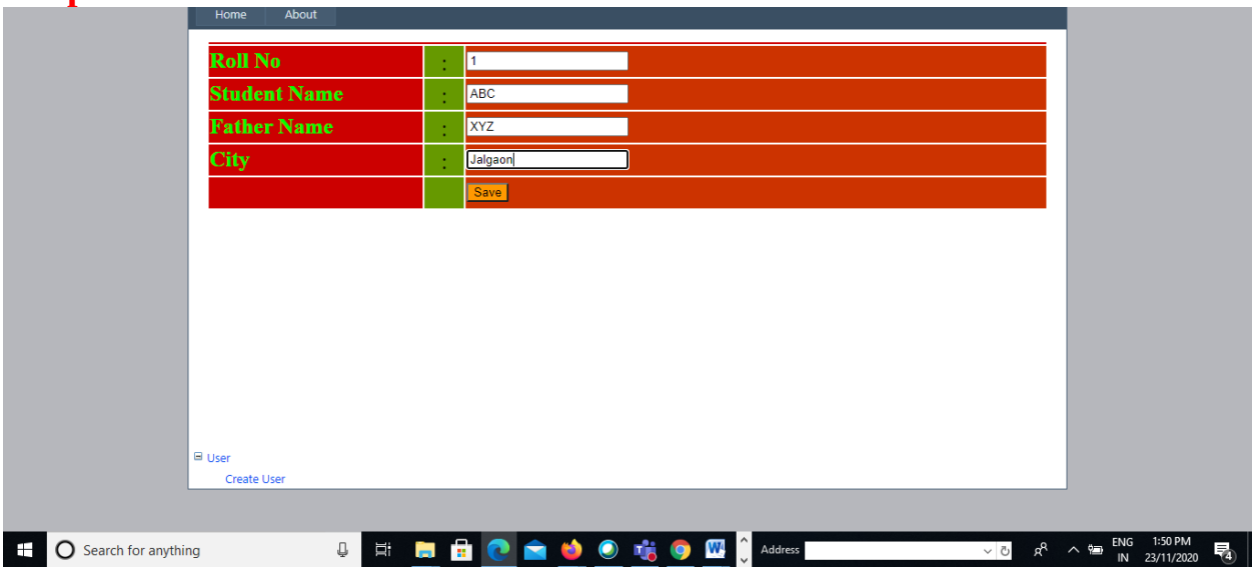
## Create Table




## Stored Procedure



# Output




# Report Design

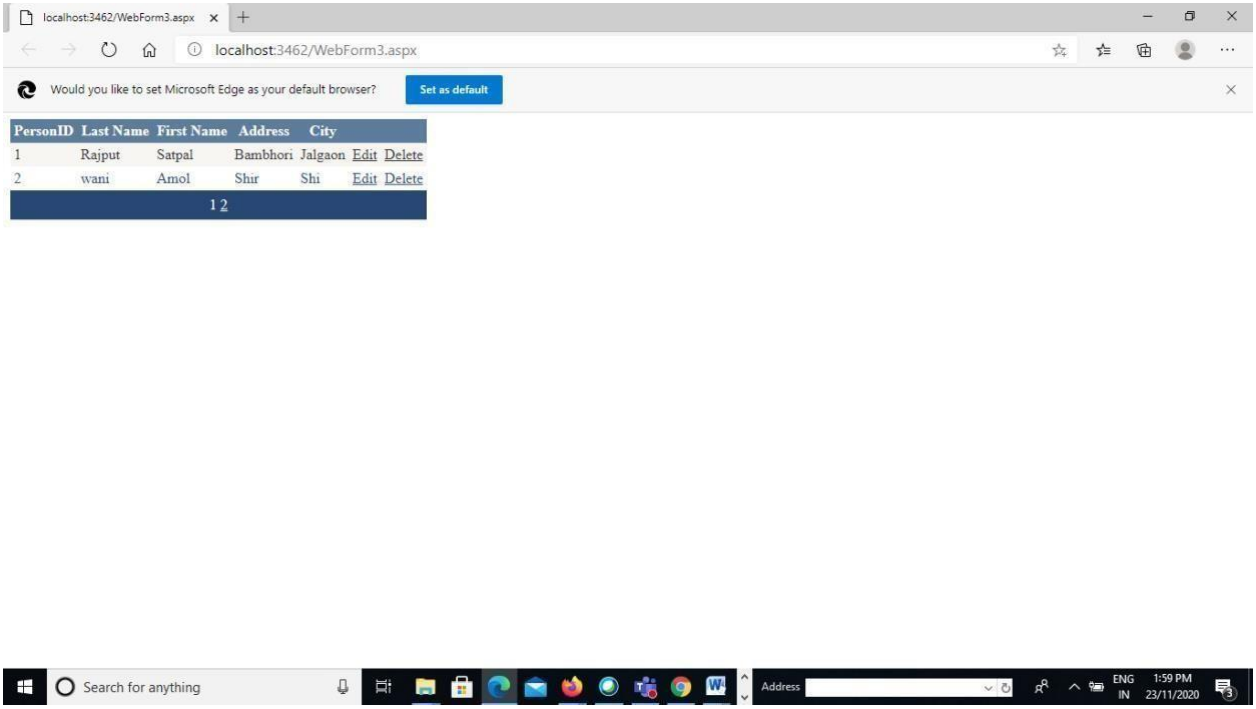
```
<%@ Page Language="C#" AutoEventWireup="true" CodeBehind="WebForm3.aspx.cs"
Inherits="WebApplication1.WebForm3" %>

<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">

<html  xmlns="http://www.w3.org/1999/xhtml">
<head runat="server">
    <title></title>
</head>
<body>
    <form id="form1" runat="server">
    <div>

        <asp:GridView ID="gvData" runat="server" AllowPaging="True"
            AutoGenerateColumns="False" CellPadding="4" ForeColor="#333333"
            GridLines="None" onpageindexchanging="gvData_PageIndexChanging" PageSize="2">
            <AlternatingRowStyle BackColor="White" ForeColor="#284775" />
            <Columns>
                <asp:BoundField DataField="PersonID" HeaderText="PersonID" />
                <asp:BoundField DataField="LastName" HeaderText="Last Name" />
                <asp:BoundField DataField="FirstName" HeaderText="First Name" />
                <asp:BoundField DataField="Address" HeaderText="Address" />
                <asp:BoundField DataField="City" HeaderText="City" />
                <asp:CommandField ShowEditButton="true" />
                <asp:CommandField ShowDeleteButton="true" />
            </Columns>
            <EditRowStyle BackColor="#999999" />
            <FooterStyle BackColor="#5D7B9D" Font-Bold="True" ForeColor="White" />
            <HeaderStyle BackColor="#5D7B9D" Font-Bold="True" ForeColor="White" />
            <PagerStyle BackColor="#284775" ForeColor="White" HorizontalAlign="Center" />
            <RowStyle BackColor="#F7F6F3" ForeColor="#333333" />
            <SelectedRowStyle BackColor="#E2DED6" Font-Bold="True" ForeColor="#333333" />
            <SortedAscendingCellStyle BackColor="#E9E7E2" />
            <SortedAscendingHeaderStyle BackColor="#506C8C" />
```

```
            <SortedDescendingCellStyle BackColor="#FFFDF8" />
            <SortedDescendingHeaderStyle BackColor="#6F8DAE" />
        </asp:GridView>

    </div>
    </form>
</body>
</html>
```

**Report Asp.net Code**

```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Web;
using System.Web.UI;
using System.Web.UI.WebControls;
using System.Data;
using System.Data.SqlClient;
namespace WebApplication1
{
    public partial class WebForm3 : System.Web.UI.Page
    {
        SqlConnection con = new SqlConnection("Data Source=.\\SQLExpress;Initial
Catalog=sinup;User ID=sa;Password=ssbt");
        protected void Page_Load(object sender, EventArgs e)
        {
            con.Open();
            show();
        }
        private void show()
        {
            SqlCommand cmd = new SqlCommand("select * from Persons", con);
            SqlDataAdapter da = new SqlDataAdapter(cmd);
            DataSet ds = new DataSet();
            da.Fill(ds);
            gvData.DataSource = ds;
            gvData.DataBind();

        }

        protected void gvData_PageIndexChanging(object sender, GridViewPageEventArgs e)
        {
            gvData.PageIndex = e.NewPageIndex;
            show();

        }

    }

}
```

# Output


localhost:3462/WebForm3.aspx
localhost:3462/WebForm3.aspx
Would you like to set Microsoft Edge as your default browser?
Set as default
PersonID Last Name First Name Address City
1 Rajput Satpal Bambhori Jalgaon Edit Delete
2 wani Amol Shir Shi Edit Delete
1 2
Search for anything
Address
ENG
IN
1:59 PM
23/11/2020

EXPERIMENT NO 3

**4. In Lab Tasks**

Perform the following data analysis and visualization on the given dataset.

**Write a Python program to display first 5 rows from COVID-19 dataset. Also print the dataset information and check the missing**

**Solution :**

```
import pandas as pd
covid_data= pd.read_csv('covid_19_data.csv')
print("\nDataset First Five Rows:")
print(covid_data.head(5))
print("\nDataset Information :")
print(covid_data.info())
```

```
print("\nMissing data information:")
print(covid_data.isna().sum())
```

**Output :**

```
Dataset First Five Rows:
   SNo ObservationDate Province/State  Country/Region      Last Update \
0    1     01/22/2020         Anhui  Mainland China 1/22/2020 17:00
1    2     01/22/2020       Beijing  Mainland China  1/22/2020 17:00
2    3     01/22/2020     Chongqing  Mainland China 1/22/2020 17:00
3    4     01/22/2020       Fujian  Mainland China  1/22/2020 17:00
4    5     01/22/2020        Gansu  Mainland China   1/22/2020 17:00

   Confirmed  Deaths  Recovered
0        1.0     0.0        0.0
1       14.0     0.0        0.0
2        6.0     0.0        0.0
3        1.0     0.0        0.0
4        0.0     0.0        0.0

Dataset Information :
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 156292 entries, 0 to 156291
Data columns (total 8 columns):
 #   Column          Non-Null Count  Dtype
---  ------          --------------  -----
 0   SNo             156292 non-null  int64
 1   ObservationDate  156292 non-null  object
 2   Province/State  111979 non-null  object
 3   Country/Region  156292 non-null  object
 4   Last Update     156292 non-null  object
 5   Confirmed       156292 non-null float64
 6   Deaths          156292 non-null  float64
 7   Recovered       156292 non-null  float64
dtypes: float64(3), int64(1), object(4)
memory usage: 9.5+ MB
None

Missing data information:
SNo                0
ObservationDate        0
Province/State     44313
Country/Region         0
Last Update            0
Confirmed              0
Deaths             0
Recovered              0
dtype: int64
```

---

**Write a Python program to get the latest number of confirmed, deaths, recovered and active cases of Novel Coronavirus (COVID-19) Country wise.**

## Solution:

```
import pandas as pd
covid_data= pd.read_csv('covid_19_data.csv')
covid_data['Active'] = covid_data['Confirmed'] - covid_data['Deaths'] - covid_data['Recovered']
```

```
result = covid_data.groupby('Country/Region')[['Confirmed', 'Deaths', 'Recovered',
'Active']].sum().reset_index()
print(result)
```

**Output:**

```
                Country/Region  Confirmed    Deaths  Recovered     Active
0                    Azerbaijan        1.0       0.0        0.0        1.0
1                  ('St. Martin',)        2.0       0.0        0.0        2.0
2                   Afghanistan  6289387.0  208903.0  4251819.0  1828665.0
3                       Albania  1685359.0   45778.0   937725.0   701856.0
4                       Algeria  6560551.0  262137.0  4499006.0  1799408.0
..                          ...        ...       ...        ...        ...
221              Western Sahara     2011.0     174.0     1536.0      301.0
222                       Yemen   286662.0   81116.0   157104.0    48442.0
223                      Zambia  1592737.0   36186.0  1431407.0   125144.0
224                    Zimbabwe   829416.0   22839.0   628780.0   177797.0
225  occupied Palestinian territory       25.0       0.0        0.0       25.0

[226 rows x 5 columns]
```

---

**Write a Python program to get the latest number of confirmed deaths and recovered people of Novel Coronavirus (COVID-19) cases Country/Region - Province/State wise.**

## Solution:

```
import pandas as pd
covid_data= pd.read_csv('covid_19_data.csv')
data = covid_data.groupby(['Country/Region', 'Province/State'])[['Confirmed', 'Deaths',
'Recovered']].max()
pd.set_option('display.max_rows', None)
print(data)
```

**Output:**

```
                                                Confirmed \
Country/Region Province/State

Australia      Australian Capital Territory                114.0
               Diamond Princess cruise ship                  0.0
               External territories                          0.0
               From Diamond Princess                         8.0
               Jervis Bay Territory                          0.0
               New South Wales                            4498.0
               Northern Territory                           46.0
               Queensland                                 1185.0
               South Australia                             544.0
               Tasmania                                    231.0
               Victoria                                  20347.0
               Western Australia                           787.0
Austria        None                                          2.0
```

---

**Write a Python program to get the Chinese province wise cases of confirmed, deaths and recovered cases of Novel Coronavirus (COVID-19).**

## Solution:

```
import pandas as pd
```

```
covid_data=    pd.read_csv('covid_19_data.csv')
c_data = covid_data[covid_data['Country/Region']=='Mainland China']
c_data = c_data[['Province/State', 'Confirmed', 'Deaths', 'Recovered']]
result = c_data.sort_values(by='Confirmed', ascending=False)
result = result.reset_index(drop=True)
print(result)
```

**Output:**

| | Province/State | Confirmed | Deaths | Recovered |
|---|---|---|---|---|
| 0 | Hubei | 68148.0 | 4512.0 | 63627.0 |
| 1 | Hubei | 68148.0 | 4512.0 | 63627.0 |
| 2 | Hubei | 68147.0 | 4512.0 | 63627.0 |
| 3 | Hubei | 68147.0 | 4512.0 | 63627.0 |
| 4 | Hubei | 68147.0 | 4512.0 | 63627.0 |
| ... | ... | ... | ... | ... |
| 9262 | Gansu | 0.0 | 0.0 | 0.0 |
| 9263 | Jilin | 0.0 | 0.( | 0.0 |
| 9264 | Heilongjiang | 0.0 | 0.0 | 0.0 |
| 9265 | Inner Mongolia | 0.0 | 0.0 | 0.0 |
| 9266 | Xinjiang | 0.0 | 0.0 | 0.0 |

[9267 rows x 4 columns]

---

**Write a Python program to list countries with no cases of Novel Coronavirus (COVID-19) recovered.**

**Solution:**

```
import pandas as pd
covid_data=  pd.read_csv('covid_19_data.csv')
data = covid_data.groupby('Country/Region')[['Confirmed', 'Deaths', 'Recovered']].sum().reset_index()
result = data[data['Recovered']==0][['Country/Region',  'Confirmed', 'Deaths', 'Recovered']]
print(result)
```

**Output:**

| | Country/Region | Confirmed | Deaths | Recovered |
|---|---|---|---|---|
| 0 | Azerbaijan | 1.0 | 0.0 | 0.0 |
| 1 | ('St. Martin',) | 2.0 | 0.0 | 0.0 |
| 10 | Aruba | 19.0 | 0.0 | 0.0 |
| 15 | Bahamas, The | 10.0 | 0.0 | 0.0 |
| 37 | Cape Verde | 1.0 | 0.0 | 0.0 |
| 38 | Cayman Islands | 3.0 | 0.0 | 0.0 |
| 41 | Channel Islands | 1.0 | 0.0 | 0.0 |
| 50 | Curacao | 2.0 | 0.0 | 0.0 |
| 58 | East Timor | 1.0 | 0.0 | 0.0 |
| 67 | Faroe Islands | 10.0 | 0.0 | 0.0 |
| 74 | Gambia, The | 4.0 | 0.0 | 0.0 |
| 80 | Greenland | 3.0 | 0.0 | 0.0 |
| 82 | Guadeloupe | 187.0 | 0.0 | 0.0 |
| 83 | Guam | 6.0 | 0.0 | 0.0 |
| 85 | Guernsey | 3.0 | 0.0 | 0.0 |
| 105 | Jersey | 6.0 | 0.0 | 0.0 |
| 121 | MS Zaandam | 2069.0 | 458.0 | 0.0 |
| 131 | Martinique | 172.0 | 6.0 | 0.0 |

| | | | | |
|---|---|---|---|---|
| 134 | Mayotte | 21.0 | 0.0 | 0.0 |
| 149 | North Ireland | 1.0 | 0.0 | 0.0 |
| 155 | Palestine | 86.0 | 0.0 | 0.0 |
| 163 | Puerto Rico | 3.0 | 0.0 | 0.0 |
| 165 | Republic of Ireland | 21.0 | 0.0 | 0.0 |
| 166 | Republic of the Congo | 1.0 | 0.0 | 0.0 |
| 167 | Reunion | 137.0 | 0.0 | 0.0 |
| 171 | Saint Barthelemy | 17.0 | 0.0 | 0.0 |
| 192 | St. Martin | 2.0 | 0.0 | 0.0 |
| 202 | The Bahamas | 3.0 | 0.0 | 0.0 |
| 203 | The Gambia | 1.0 | 0.0 | 0.0 |
| 216 | Vanuatu | 6.0 | 0.0 | 0.0 |
| 217 | Vatican City | 4.0 | 0.0 | 0.0 |
| 225 | occupied Palestinian territory | 25.0 | 0.0 | 0.0 |

**Write a Python program to get the top 10 countries data (Last Update, Country/Region, Confirmed, Death s, Recovered) of Novel Coronavirus (COVID-19).**

## Solution:

```
import pandas as pd
covid_data= pd.read_csv('covid_19_data.csv', usecols = ['Last Update', 'Country/Region',
'Confirmed', 'Deaths', 'Recovered'])
result = covid_data.groupby('Country/Region').max().sort_values(by='Confirmed',
ascending=False)[:10]
pd.set_option('display.max_column', None)
print(result)
```

## Output:

```
              Last Update  Confirmed  Deaths Recovered
Country/Region
France         4/6/20 9:37  1867721.0  42215.0   113017.0
India          4/6/20 9:37  1747242.0  45974.0  1615379.0
Argentina      4/6/20 9:37 1310491.0  35436.0  1129102.0
UK             4/6/20 9:37  1174979.0  45592.0     816.0
Brazil         4/6/20 9:37  1168640.0  40564.0  1051778.0
US             4/6/20 9:37  1059753.0  34032.0  4174884.0
Iran           4/6/20 9:37 762068.0  41493.0  558818.0
South Africa   4/6/20 9:37 751024.0  20241.0  693467.0
Poland         4/6/20 9:37 712972.0  10348.0  294783.0
Iraq           4/6/20 9:37 519152.0  11670.0  447039.0
```

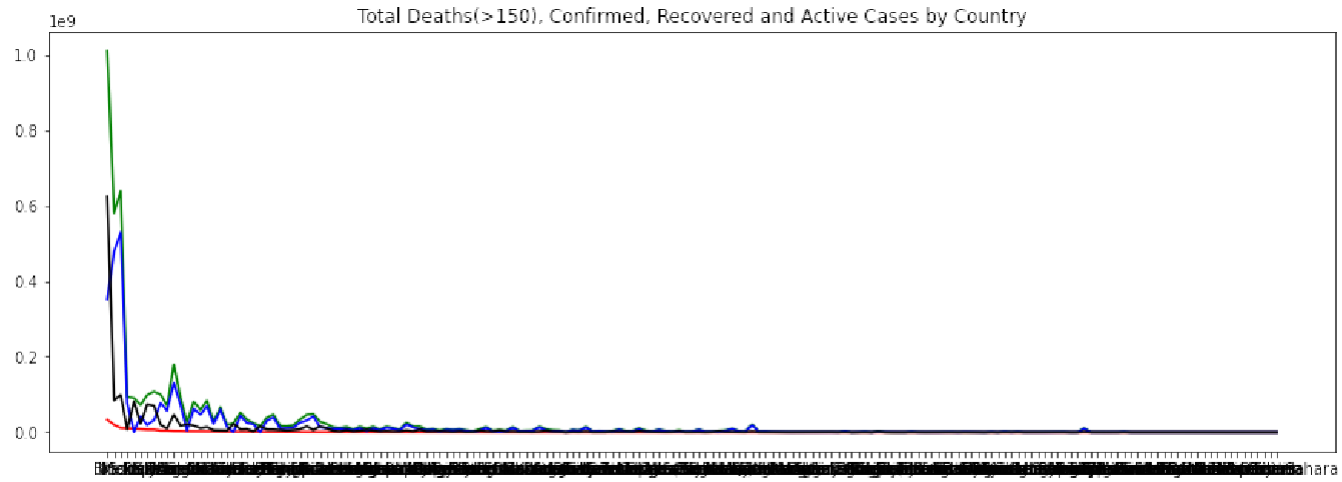
**Write a Python program to create a plot (lines) of total deaths, confirmed, recovered and active cases Country wise where deaths greater than 150.**

## Solution:

```
import pandas as pd
import matplotlib.pyplot as plt
covid_data= pd.read_csv('covid_19_data.csv', usecols = ['Last Update', 'Country/Region', 'Confirmed',
'Deaths', 'Recovered'])
covid_data['Active'] = covid_data['Confirmed'] - covid_data['Deaths'] - covid_data['Recovered']

r_data = covid_data.groupby(["Country/Region"])[["Deaths", "Confirmed", "Recovered",
"Active"]].sum().reset_index()
```

```
r_data = r_data.sort_values(by='Deaths', ascending=False)
r_data = r_data[r_data['Deaths']>50]
plt.figure(figsize=(15, 5))
plt.plot(r_data['Country/Region'], r_data['Deaths'],color='red')
plt.plot(r_data['Country/Region'], r_data['Confirmed'],color='green')
plt.plot(r_data['Country/Region'], r_data['Recovered'], color='blue')
plt.plot(r_data['Country/Region'], r_data['Active'], color='black')

plt.title('Total Deaths(>150), Confirmed, Recovered and Active Cases by Country')
plt.show()
```

**Output:**

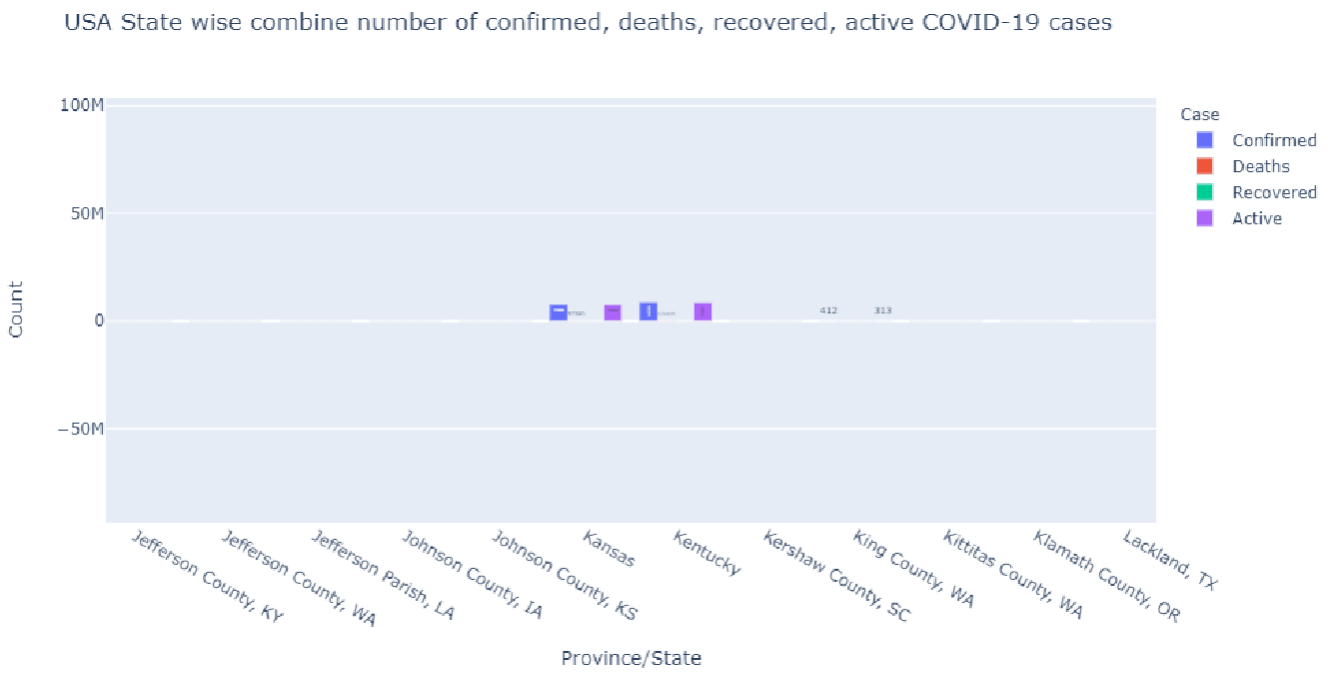



**Write a Python program to visualize the state/province wise combine number of confirmed, deaths, recovered, active Novel Coronavirus (COVID-19) cases in USA.**

**Solution:**

```
import pandas as pd
import plotly.express as px
covid_data= pd.read_csv('covid_19_data.csv')
covid_data['Active'] = covid_data['Confirmed'] - covid_data['Deaths'] - covid_data['Recovered']
combine_us_data = covid_data[covid_data['Country/Region']=='US'].drop(['Country/Region'], axis=1)
combine_us_data = combine_us_data[combine_us_data.sum(axis = 1) > 0]
combine_us_data = combine_us_data.groupby(['Province/State'])[['Confirmed', 'Deaths', 'Recovered',
'Active']].sum().reset_index()
combine_us_data = pd.melt(combine_us_data, id_vars='Province/State', value_vars=['Confirmed',
'Deaths', 'Recovered', 'Active'], value_name='Count', var_name='Case')
fig = px.bar(combine_us_data, x='Province/State', y='Count', text='Count', barmode='group',
color='Case', title='USA State wise combine number of confirmed, deaths, recovered, active COVID-19
cases')
fig.show()
```

**Output:**

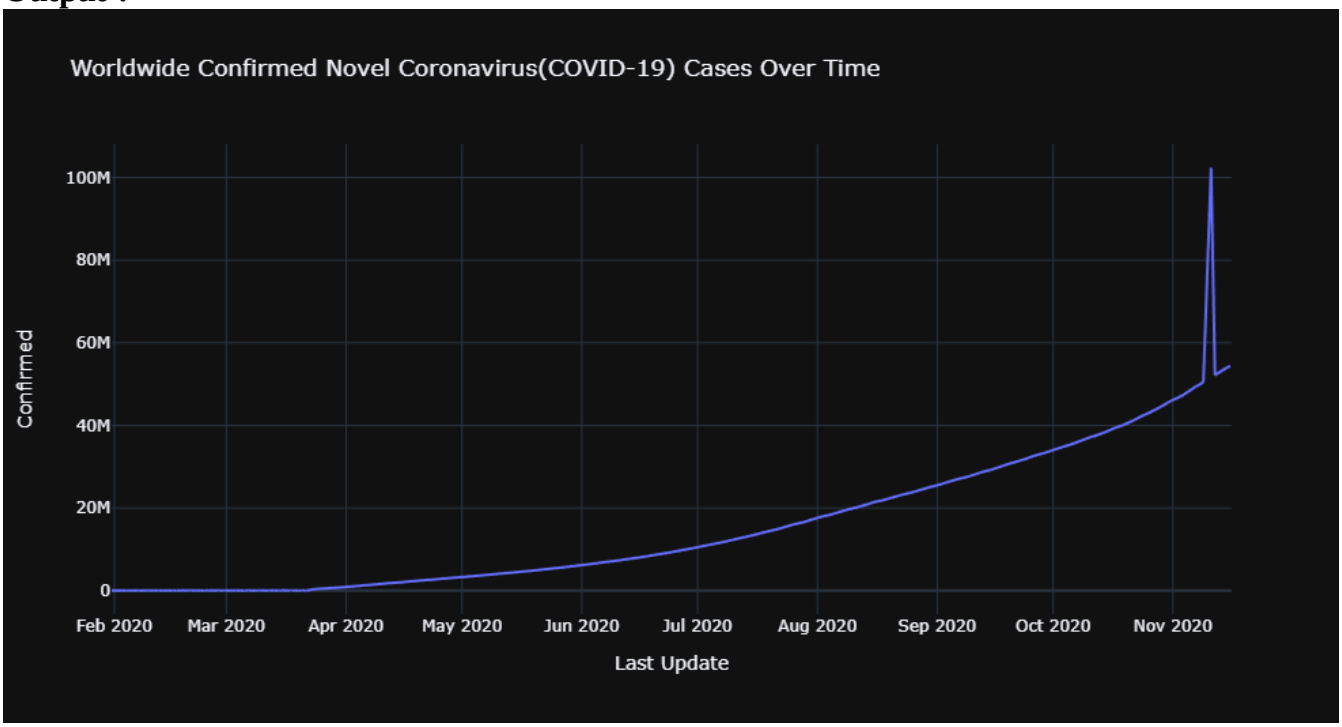



**Write a Python program to visualize Worldwide Confirmed Novel Coronavirus (COVID-19) cases over time.**

**Solution**:

```
import pandas as pd
import plotly.express as px
import plotly.io as pio
pio.templates.default = "plotly_dark"

covid_data=    pd.read_csv('covid_19_data.csv')
grouped = covid_data.groupby('Last Update')[['Last Update', 'Confirmed',
'Deaths']].sum().reset_index()
fig = px.line(grouped, x="Last Update", y="Confirmed",
          title="Worldwide Confirmed Novel Coronavirus(COVID-19) Cases Over Time")
fig.show()
```

**Output :**


Worldwide Confirmed Novel Coronavirus(COVID-19) Cases Over Time
Confirmed
100M
80M
60M
40M
20M
0
Feb 2020
Mar 2020
Apr 2020
May 2020
Jun 2020
Jul 2020
Aug 2020
Sep 2020
Oct 2020
Nov 2020
Last Update