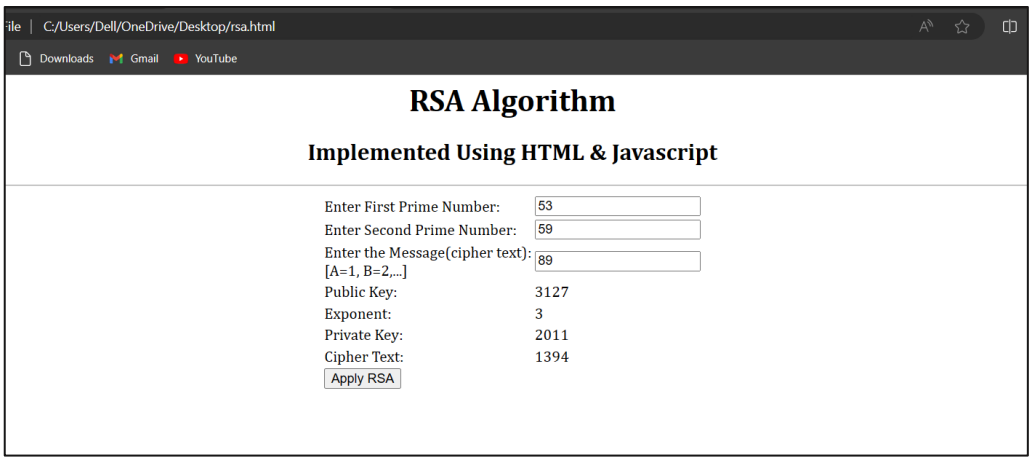
PROGRAM:

```
<html>
 <head>
  <title>RSA Encryption</title>
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
 </head>
 <body>
  <center>
  <h1>RSA Algorithm</h1>
  <h2>Implemented Using HTML & Javascript</h2>
  <hr>
  <table>
  <tr>
  <td>Enter First Prime Number:</td>
  <td><input type="number" value="53" id="p"></td>
  </tr>
  <tr>
  <td>Enter Second Prime Number:</td>
  <td><input type="number" value="59" id="q"></p> </td>
  </tr>
  <tr>
  <td>Enter the Message(cipher text):<br>[A=1, B=2,...]</td>
  <td><input type="number" value="89" id="msg"></p> </td>
   </tr>
  <tr>
  <td>Public Key:</td>
  <td><p id="publickey"></p> </td>
  </tr>
  <tr>
  <td>Exponent:</td>
  <td><p id="exponent"></p> </td>
  </tr>
  <tr>
  <td>Private Key:</td>
  <td><p id="privatekey"></p></td>
  </tr>
  <tr>
  <td>Cipher Text:</td>
  <td><p id="ciphertext"></p> </td>
  </tr>
  <tr>
  <td><button onclick="RSA();">Apply RSA</button></td>
  </tr>
  </table> </center>
```

```
</body>
<script type="text/javascript">
  function RSA()
  {
    var gcd, p, q, no, n, t, e, i, x;
    gcd = function (a, b) { return (!b) ? a : gcd(b, a % b); };
    p = document.getElementById('p').value;
    q = document.getElementById('q').value;
    no = document.getElementById('msg').value;
    n = p * q;
    t = (p - 1) * (q - 1);
    for (e = 2; e < t; e++)
    {
      if (gcd(e, t) == 1)
      {
        break;
      }
    }
    for (i = 0; i < 10; i++)
    {
      x = 1 + i * t
      if (x % e == 0)
      {
        d = x / e;
        break;
      }
    }
    ctt = Math.pow(no, e).toFixed(0);
    ct = ctt % n;
    dtt = Math.pow(ct, d).toFixed(0);
    dt = dtt % n;
    document.getElementById('publickey').innerHTML = n;
    document.getElementById('exponent').innerHTML = e;
    document.getElementById('privatekey').innerHTML = d;
    document.getElementById('ciphertext').innerHTML = ct;
  }
</script>
</html>
```

OUTPUT:


ile | C:/Users/Dell/OneDrive/Desktop/rsa.html
Downloads
Gmail
YouTube
RSA Algorithm
Implemented Using HTML & Javascript
Enter First Prime Number:
53
Enter Second Prime Number:
59
Enter the Message(cipher text):
[A=1, B=2,...]
89
Public Key:
3127
Exponent:
3
Private Key:
2011
Cipher Text:
1394
Apply RSA

PROGRAM:

```
import java.io.*;
import java.math.BigInteger;
class dh
{
 public static void main(String[]args)throws IOException
 {
  BufferedReader br=new BufferedReader(new InputStreamReader(System.in));
  System.out.println("Enter prime number:");
  BigInteger p=new BigInteger(br.readLine());
  System.out.print("Enter primitive root of "+p+":");
  BigInteger g=new BigInteger(br.readLine());
  System.out.println("Enter value for x less than "+p+":");
  BigInteger x=new BigInteger(br.readLine());
  BigInteger R1=g.modPow(x,p);
  System.out.println("R1="+R1);
  System.out.print("Enter value for y lessthan "+p+":");
  BigInteger y=new BigInteger(br.readLine());
  BigInteger R2=g.modPow(y,p);
  System.out.println("R2="+R2);
  BigInteger k1=R2.modPow(x,p);
  System.out.println("Key calculated at Sender's side:"+k1);
  BigInteger k2=R1.modPow(y,p);
  System.out.println("Key calculated at Receiver's side:"+k2);
  System.out.println("Diffie-Hellman secret key was calculated.");
 }
}
```

OUTPUT:

```
C:\Java\jdk1.8.0_202>set path=C:\Java\jdk1.8.0_202\jre\bin;

C:\Java\jdk1.8.0_202>java dh
Enter prime number:
11
Enter primitive root of 11:7
Enter value for x less than 11:
3
R1=2
Enter value for y lessthan 11:6
R2=4
Key calculated at Sender's side:9
Key calculated at Receiver's side:9
Diffie-Hellman secret key was calculated.
```