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**Roll Number : 20141224**

# **Experiment No: 5**

#include <bits/stdc++.h>

using namespace std;

int main()

{

 cout<<"20141224 Pradyumna Bhosale \n";

 cout<<"Implementation of RSA Algorithm \n";

 cout << "Enter two prime numbers\n";

 double num1, num2;

 cin >> num1 >> num2;

 double n = num1 \* num2;

 double track;

 double phi = (num1 - 1) \* (num2 - 1);

 double e = 7;

 while (e < phi)

 {

 track = \_\_gcd((int)e, (int)phi);

 if (track == 1)

 break;

 else

 e++;

 }

 double d1 = 1 / e;

 double d = fmod(d1, phi);

 double message;

 cout<<"Enter message\n";

 cin>>message;

 double c = pow(message, e);

 double m = pow(c, d);

 c = fmod(c, n);

 c = pow(message, e);

  m = pow(c, d);

 c = fmod(c, n);

 m = fmod(m, n);

 cout << "Original Message = " << message;

 cout << "\n"<< "p = " << num1;

 cout << "\n"<< "q = " << num2;

 cout << "\n"<< "n = pq = " << n;

 cout << "\n"<< "phi = " << phi;

 cout << "\n"<< "e = " << e;

 cout << "\n"<< "d = " << d;

 cout << "\n"<< "Encrypted message = " << c;

 cout << "\n"<< "Decrypted message = " << m;

 return 0;

}

**Output:**

