Lab - 02

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Alm: write a Program to implement.
1. Exdended Euclidean Algorithm for finding multipli-
coffice Inverse
2. Multiplicative cipher
3. Aftine Cipher.
Program - 1: Extended Euclidean Algorithm
# melude < bits/ stactf.hz
using namespace std;
int multiplicative Inverse (int a, intb)
int x = max(a,b), x = min(a,b), t = 0, t, 21;
  int qxit;
   while ( 72 70)
      d= 1/23;
      8=8,- 2×9;
      2 = 2;
2 = 2).
      t= t, - 9xt;
      t,= t,;
```

```
it(21 1= 2)
      retym -1:
      else
         if(t/<0)
         t,+=26;
        return ti
 int main()
    int n, q, inverse;
    cin>>m>>a;
    if ((inverse = Multiplicative Inverse (n,a)) 1 = -1)
     cont < 4"muerse! < 4 inversex end);
      couted "Inverse Not possible" < cently
  return 0:
Input:-
inverse: 9
```

```
Program-2: - Multiplicative Cipher
 code: -
 # mclude < bits/stdc++.h7
 using mamespace std;
 string Encrypt (string PlumText, Mt K)
     string citherText = "";
for (inti=0; i< PlainText.lenyth(); ++i)
         ciphertent + = ((1 plainText [i]-'a')*K)1.26
     cout << "Encrypted Text: " << cirherText << end!;
    return ciPherTest;
void Decorpt (string cipherTest, int K)
      String Plain Tost = "11.
     for (mt i=0; i< clpherText.length(); ++i)
          plainText += (((cipherText[i]-'al) x k y.2)
                          +'4';
     cout << " Deory Pted Text: " << PlainText << and!
```

```
int main ()
     int K, n= 26;
     string Pt3 cout <<" enter John msj: " Kend!
     cm>>pt.
     cout << "enter your key! ske;
     cm>>k:
     while ( multiplicative towarse ( k, n) == -1) 1/3cd(kn) =1
       cout << " Inverse not possible " < cend";
       cout << "enter other key. ";
          cin>>1K',
      string cipherText = Encrypt (Pt, K);
      K = multiplicative muerse (K,n); 1/ Decryption key
                                    will be Threase.
     Decrypt ( RipherText, K);
     returno;
   Input:
 Enter your mig! muncut
 Enter your Key! 2
 Enter other key: 3
out put:
 Inverse not possible for key= 2
Enorgoted Text = Kingp
Decrypted Text = munert.
```

```
Program -3: - Affine cipher.
 source code:-
 #mclude < bits/stdc++.h>
 ustroj namespace sto;
string Encrypt ( string Plan Text, int k), int k2)
    String cipherTest ="";
    forcint i=0, ixplamTeset, panuth(); ++1)
       cipherText += (((plainText[i]-'a1)+k1+k)
                         1.26) + 101;
   cout << "Encrypted Test: " << citherTest<< end !:
   return ciPherTest
Void Dearypt (string elpher Text, mtk,; mt k,)
   String PhinText = "11.
   for cint 1=0; ix citherText.length(). ++i)
 plainTend += ((( cipherText [i] - 'a') + K2) * K)
              1.26) +'a1.
  cout < " De crypted Text: " << plainText < cend!
```

```
int main()
   int n=26, K1, K2;
   string pt;
cout << " enter your meg! ! e
   cont << " enter key 1: "
  cout << "enter koy2: ";
   (177) K2;
  while (multiplicative truerse (k,n) == -1)
     couted " key! Is not valid " gently
    cout << "enter other Key: ";
    CIM>> KI:
  string cichertent = Encrypt (Pt, K1, K2);
  K, = multiplicative muerse (KIIn);
  K, = n-K2; // (Additive squerse)
Decryption
  Decrypt (cipherTent, K1, k2);
 setum o;
                   out- put
Enter mig: - muner Encrypted Text: n/9ds
 Input
Enter K1: - 3 de cripted Text: munat
Enter K2:3
```