

**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING**

**Lab Report-3**

**Course Title: Cryptography and Network Security Lab**

**Course Code: CSE-432**

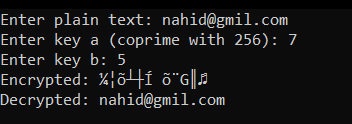
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| **Submitted By** | **Submitted To** |
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**Submission Date: 14.08.2025**

* **Experiment No: 03**
* **Experiment Name: Affine Cipher for Extended ASCII (0–255)**
* **Code**

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| #include <iostream>  #include <string>  using namespace std;  const int M = 256;  int modInverse(int a, int m) {  a = a % m;  for (int x = 1; x < m; x++) {  if ((a \* x) % m == 1) return x;  }  return -1;  }  string encrypt(string text, int a, int b) {  string result = "";  for (unsigned char ch : text) {  int x = ch;  int enc = (a \* x + b) % M;  result += (unsigned char)enc;  }  return result;  }  string decrypt(string text, int a, int b) {  string result = "";  int a\_inv = modInverse(a, M);  if (a\_inv == -1) return "Invalid 'a'!";  for (unsigned char ch : text) {  int y = ch;  int dec = (a\_inv \* (y - b + M)) % M;  result += (unsigned char)dec;  }  return result;  }  int main() {  string text;  int a, b;  cout << "Enter plain text: ";  getline(cin, text);  cout << "Enter key a (coprime with 256): ";  cin >> a;  cout << "Enter key b: ";  cin >> b;  if (modInverse(a, M) == -1) {  cout << "a must be coprime with 256" << endl;  return 1;  }  string cipher = encrypt(text, a, b);  cout << "Encrypted: " << cipher << endl;  cout << "Decrypted: " << decrypt(cipher, a, b) << endl;  return 0;  } |

* **Output:**

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