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**MINOR PROJECT:TO DESIGN AFFINE CIPHER**

**INTRODUCTUON TO COMPUTER PROGRAMMING(ICP)**

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**REGISTRATION NO. :2241016031**

**SECTION :2241026**

AFFINE CIPHER

import java.util.Scanner;  
public class AffineChiper{  
 public static void main(String[]Args){  
 Scanner input\_paraphrase = new Scanner(System.*in*);  
 System.*out*.println("Enter a paraphrase: ");  
 String input\_string = input\_paraphrase.nextLine();  
 input\_paraphrase.close();  
 String plaintext = input\_string;  
  
 String ciphertext = *encrypt*(plaintext);  
 String decrypted = *decrypt*(ciphertext);  
 System.*out*.println("Ciphertext: " + ciphertext);  
 System.*out*.println("Decrypted text: " + decrypted);  
  
 }  
 public static String encrypt(String plaintext) {  
 int k1 = 7;  
 int k2 = 2;  
 char[] ciphertext = new char[plaintext.length()];  
  
 for (int i = 0; i < plaintext.length(); i++) {  
 char character\_check = plaintext.charAt(i);  
 if (Character.*isUpperCase*(character\_check)){  
 int k3 = plaintext.charAt(i) - 'A';  
 int encrypted = (k3 \* k1 +k2) % 26;  
 ciphertext[i] = (char)(encrypted + 'A');  
  
 } else {  
 int k3 = plaintext.charAt(i) - 'a';  
 int encrypted = (k3 \* k1 +k2) % 26;  
 ciphertext[i] = (char)(encrypted + 'a');  
 }  
 }  
 return new String(ciphertext);  
 }  
 public static String decrypt(String ciphertext) {  
 int k1 = 7;  
 int k2 = 2;  
 char[] plaintext = new char[ciphertext.length()];  
   
 int k1\_inverse = 0;  
 for (int i = 0; i < 26; i++) {  
 if ((k1 \* i) % 26 == 1) {  
 k1\_inverse = i;  
 break;  
 }  
 }  
  
 for (int i = 0; i < ciphertext.length(); i++) {  
 char character\_check = ciphertext.charAt(i);  
 if (Character.*isUpperCase*(character\_check)){  
 int k3 = ciphertext.charAt(i) - 'A';  
 int decrypted = ((k3 - k2 + 26)\* k1\_inverse) % 26;  
 plaintext[i] = (char)(decrypted + 'A');  
  
 } else {  
 int k3 = ciphertext.charAt(i) - 'a';  
 int decrypted = ((k3 - k2 + 26)\* k1\_inverse) % 26;  
 plaintext[i] = (char)(decrypted + 'a');  
 }  
 }  
 return new String(plaintext);}}



### ***Working of driving code***

The driver code first asks for input from the user using Scanner class of input\_paraphrase and assigns the input to the variable plaintext. Then it calls the method of ***encrypt(plaintext)*** and ***decrypt(ciphertext)*** for encryption and decryption of the provided paraphrase Finally, the program outputs the encrypted message (ciphertext) and the decrypted message (plaintext). The ***input.close()*** method is used to close the input stream after taking the user input. The program is closed by the main method.

