**Deerwalk Institute Of Technology**

**Sifal, Kathmandu**

**Artificial Intelligence**

**Practical 4**

**Submitted By: Submitted To:**

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**Caesar Cipher**

Caesar Cipher is a cryptographic technique in which all of the Alphabets, A to Z are represented by number from 0 to 25 respectively and key is used to hide the original message. Without the key the message cannot be understood. ASCII is generally used for representing alphabets in number while writing programs. ASCII of A is 65, Z is 90, a is 97 and z is 122.

**Encryption:-**

It is encoding of message to be sent, by sender. To encrypt the message, on each alphabetical letter of the message key is added and modulo division by 26 is carried out.

**Decryption:-**

It is decoding of message received, by receiver. To decrypt the message, on each alphabetical letter of the message key is subtracted and modulo division by 26 is carried out.

**Program that illustrate encoding and decoding of Caesar Cipher**

**public class** CaesarCipher {  
  
 **public** String encode(String msg, **int** key){

**char** c;  
 String eMsg=**""**;  
 msg=msg.toLowerCase();  
  
 **for** (**int** i = 0; i < msg.length(); i++) {

**if**(isAlpha(msg.charAt(i))){

c=(**char**)((msg.charAt(i)+key)%123);  
 **if**(c<**'a'**){

c+=97;  
 }  
 }  
 **else** {

c=msg.charAt(i);  
 }  
 eMsg+=c;  
 }  
 **return** eMsg;  
 }

**public** String decode(String msg, **int** key){

**char** c;  
 String dMsg=**""**;  
 msg=msg.toLowerCase();  
  
 **for** (**int** i = 0; i < msg.length(); i++) {

**if**(isAlpha(msg.charAt(i))){  
 c=(**char**)((msg.charAt(i)-key)%123);  
 **if**(c<97){  
 c+=26;  
 }  
 }  
 **else** {  
 c=msg.charAt(i);  
 }  
 dMsg+=c;  
 }  
 **return** dMsg;  
 }

**private boolean** isAlpha(**char** msg){

**if**((msg>=**'a'**&&msg<=**'z'**)||(msg>=**'A'**&&msg<=**'Z'**)){  
 **return true**;  
 }  
 **else**{  
 **return false**;  
 }  
 }  
}

**import** java.util.Scanner;

**public class** MainClass {

**public static void** main(String[] args) {

Scanner read = **new** Scanner(System.***in***);  
 Scanner input = **new** Scanner(System.***in***);  
 CaesarCipher cipher = **new** CaesarCipher();  
 String choice=**"n"**;  
 **do** {

System.***out***.println(**"Enter a key: "**);  
 **int** key = read.nextInt();  
 System.***out***.println(**"Enter Message: "**);  
 String msg = input.nextLine();  
 System.***out***.printf(**"\nEnter: "**);  
 System.***out***.println(**"1 for Encode "**);  
 System.***out***.println(**"2 for Decode "**);  
 **int** opt=read.nextInt();  
 **switch** (opt){

**case** 1:  
 System.***out***.printf(**"\nEncoded Message is: "** + cipher.encode(msg,key));  
 **break**;

**case** 2:  
 System.***out***.printf(**"\nDecoded Message is: "**+ cipher.decode(msg,key));  
 **break**;

**default**:  
 System.***out***.printf(**"\nPlease Follow The Instruction."**);  
 }  
 System.***out***.printf(**"\nDo you want to exit? (y/n): "**);  
 choice=read.next();

}**while** (choice.equalsIgnoreCase(**"n"**));  
 }  
}

/\*Output\*/

Enter a key: 15

Enter Message: Weather is very nice today.

Enter:

1 for Encode

2 for Decode: 1

Encoded Message is: ltpiwtg xh ktgn cxrt idspn.

Do you want to exit? (y/n): n

Enter a key: 15

Enter Message: ltpiwtg xh ktgn cxrt idspn.

Enter:

1 for Encode

2 for Decode 2

Decoded Message is: weather is very nice today.

Do you want to exit? (y/n): y