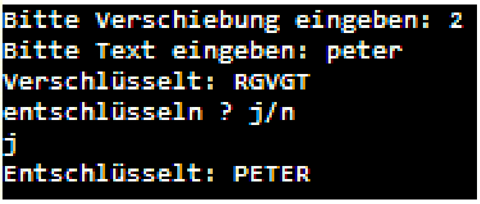
Kryptographie in Java

erste Standardverfahren

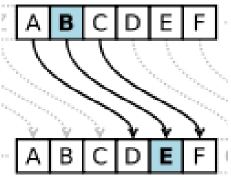
Caesar

```
import java.util.Scanner;

public class CaesarVer {
  public static void main (String[] args) {
    System.out.print("Bitte Verschiebung eingeben: ");
    Scanner scan = new Scanner(System.in);
    int shift = scan.nextInt();
    System.out.print("Bitte Text eingeben: ");
    Scanner scan2 = new Scanner(System.in);
    String a = scan2.nextLine();
    char[] text = a.toUpperCase().toCharArray();
    crypt(text, shift);
    System.out.println("Verschlüsselt:  " + new String(text));
    System.out.println("entschlüsseln ? j/n");
    Scanner scan3 = new Scanner(System.in);
    String b = scan3.nextLine();
    if (b.equals("j")) {
      crypt(text, -shift);
      System.out.println("Entschlüsselt:  " + new String(text));
    }
  }
```



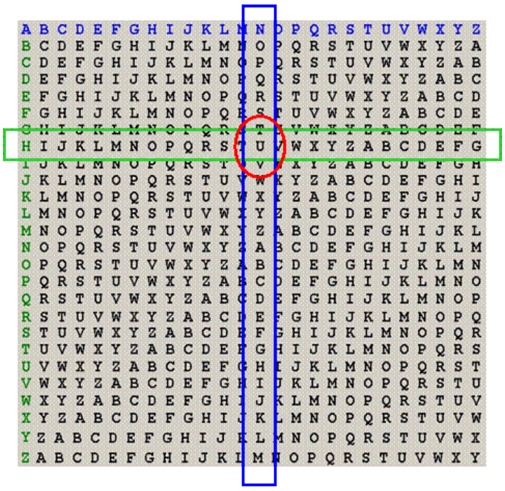
```
Bitte Verschiebung eingeben: 2
Bitte Text eingeben: peter
Verschlüsselt: RGVGT
entschlüsseln ? j/n
j
Entschlüsselt: PETER
```

```
 private static void crypt(char[] text, int shift){
   for(int i = 0; i < text.length; i++){
     if (text[i] >= 65 && text[i] <= 90) {
       text[i] = (char)(text[i] + shift);
       if(text[i] > 90){
         text[i] -= 26;
       } else if(text[i] < 65){
         text[i] += 26;
       }
     }}}}
```



Vigenère

```
import java.util.Scanner;

public class Vigenere {
  public static void main(String[] args) {
    Scanner ent = new Scanner(System.in);
    Scanner key = new Scanner(System.in);
    Scanner word = new Scanner(System.in);
    //Eingabe
    System.out.println("Wort:");
    String wort = word.nextLine().toUpperCase();
    System.out.println("Schlüssel:");
    String schlüssel = key.nextLine().toUpperCase();
    int a = wort.length() ;
    //mache Schlüsselwort mindestens gleich lang wie zu verschlüsselndes Wort
    int b = a / schlüssel.length();
    String hilfe = schlüssel;
    for (int i = 1; i <= b ; i++) {
      schlüssel = schlüssel + hilfe;
    }
```

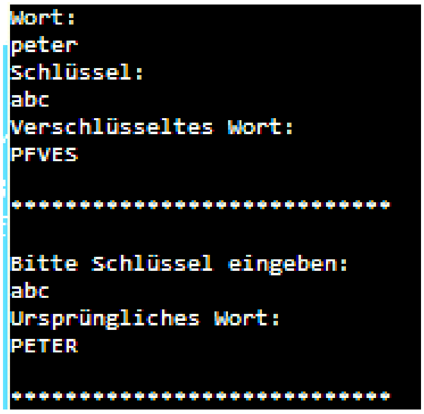


A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	A
C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	A	B
D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	A	B	C
E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	A	B	C	D
F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	A	B	C	D	E
G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	A	B	C	D	E	F
H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	A	B	C	D	E	F	G
I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	A	B	C	D	E	F	G	H
J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	A	B	C	D	E	F	G	H	I
K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	A	B	C	D	E	F	G	H	I	J
L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	A	B	C	D	E	F	G	H	I	J	K
M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	A	B	C	D	E	F	G	H	I	J	K	L
N	O	P	Q	R	S	T	U	V	W	X	Y	Z	A	B	C	D	E	F	G	H	I	J	K	L	M
O	P	Q	R	S	T	U	V	W	X	Y	Z	A	B	C	D	E	F	G	H	I	J	K	L	M	N
P	Q	R	S	T	U	V	W	X	Y	Z	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
Q	R	S	T	U	V	W	X	Y	Z	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
R	S	T	U	V	W	X	Y	Z	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
S	T	U	V	W	X	Y	Z	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
T	U	V	W	X	Y	Z	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
U	V	W	X	Y	Z	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
V	W	X	Y	Z	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U
W	X	Y	Z	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V
X	Y	Z	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W
Y	Z	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X
Z	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y

```
 //verschlüssle, achte auf Alphabetsgrenzen
String verwort = "";
   int n;
   for (int i = 0; i <= a-1 ; i++) {
     n = (int)wort.charAt(i) + ((int)schlüssel.charAt(i) - 65);
     if (n > 90) { n = n - 26; }
     verwort = verwort + (char)n; }
```

```
  //Ausgabe
   System.out.println("Verschlüsseltes Wort:");
   for (int i = 0; i <= a-1 ; i++ ) {
     System.out.print("" +
verwort.charAt(i));
   }

   System.out.println("");
   System.out.println("");
System.out.println("****
*******************
****");
System.out.println("");
   //Eingabe
   System.out.println("Bitte Schlüssel
eingeben:");
   String entschlüssel =
ent.nextLine().toUpperCase();

   //mache Entschlüsselwort mindestens gleich
lang wie zu verschlüsseltes Wort
   b = a / entschlüssel.length();
   hilfe = entschlüssel;
```

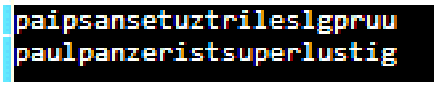
```
   for (int i = 1; i <= b ; i++) {
     entschlüssel = entschlüssel + hilfe;
   }

     //entschlüssle
     String ursprung = "";
     for (int i = 0; i <= a-1 ; i++) {
       n = (int)verwort.charAt(i) -
((int)entschlüssel.charAt(i) - 65);
       if (n < 65) { n = n + 26; }
       ursprung = ursprung + (char)n;
     }

   System.out.println("Ursprüngliches Wort: ");
   for (int i = 0; i <= a-1; i++) {
     System.out.print("" + ursprung.charAt(i));  }

System.out.println("");System.out.println("");
System.out.println("*******************
*******"); System.out.println("");
  }
}
```



```
Wort:
peter
Schlüssel:
abc
Verschlüsseltes Wort:
PFVES

****************************

Bitte Schlüssel eingeben:
abc
Ursprüngliches Wort:
PETER

****************************
```

Transposition

```
public class Rechteck {
   public static void main(String[] args){
      String input = "paulpanzeristsuperlustig";
      int length = 5;
```



```
paipsansetuztrileslgpruu
paulpanzeristsuperlustig
```

```
      String encrypted, decrypted;
      encrypted = encrypt(input, length);
      System.out.println(encrypted);
      decrypted = decrypt(encrypted, length);
      System.out.println(decrypted);
   }

   private static String encrypt(String text, int
length){
      StringBuilder builder = new
StringBuilder();
      for(int i = 1; i <= length; i++){
         for(int j = i - 1; j < text.length(); j +=
length){ builder.append(text.charAt(j));
         } } return builder.toString();
   }

   private static String decrypt(String text, int
length){
      char[] arr = new char[text.length()];
      for(int i = 1, x = 0; i <= length; i++){
         for(int j = i - 1; j < text.length(); j +=
length){
            arr[j] = text.charAt(x);
            x++;
         } }
      return new String(arr);
   }
}
```

P	A	U	L	P
A	N	Z	E	R
I	S	T	S	U
P	E	R	L	U
S	T	I	G	