

# GEMS OF TCS

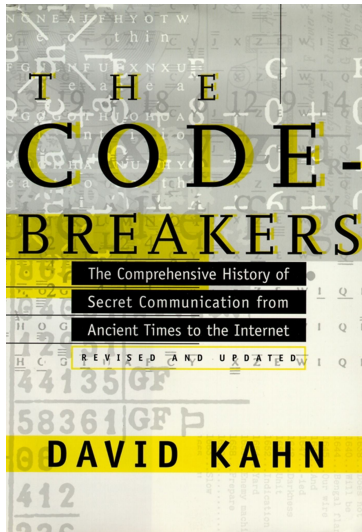
## SECRET KEY CRYPTOGRAPHY

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Sasha Golovnev

November 10, 2021

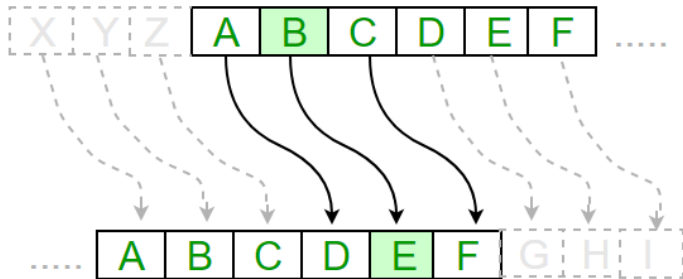
# THE CODEBREAKERS



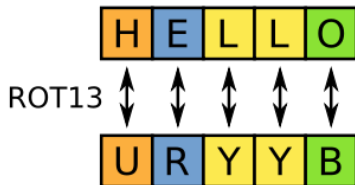
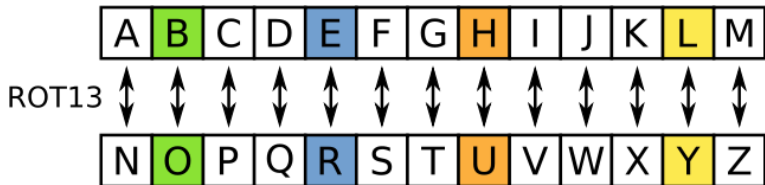
# PIG LATIN

emsgay ofyay eorythay

# CAESAR CIPHER

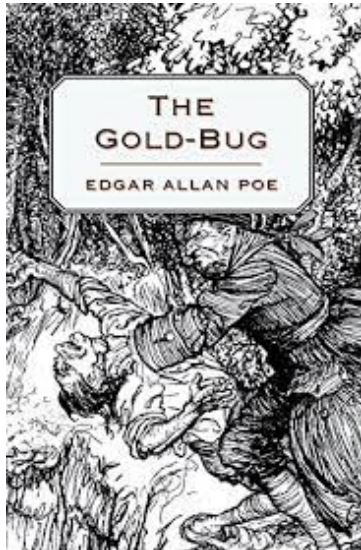


# ROT13



# SUBSTITUTION CIPHERS


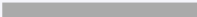






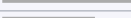












# BREAKING SUBSTITUTION CIPHERS



## Dancing Man Code (Sherlock Holmes)

X	+	5	X	X	Y	X	Y	Y	Y	Y	Y	Y	Y	Y	Y
A	B	C	D	E	F	G	H	I	J	K	L	M			
+	Y	Y	Y	Y	+	X	Y	Y	Y	X	Y	Y	Y	Y	Y
N	O	P	Q	R	S	T	U	V	W	X	Y	Z			
X	+	+	+	X	+	+	+	+	+	+	+	+			
1	2	3	4	5	6	7	8	9	0						

# LETTER FREQUENCY

<b>e</b>	13%	
<b>t</b>	9.1%	
<b>a</b>	8.2%	
<b>o</b>	7.5%	
<b>i</b>	7%	
<b>n</b>	6.7%	
<b>s</b>	6.3%	
<b>h</b>	6.1%	
<b>r</b>	6%	
<b>d</b>	4.3%	
<b>l</b>	4%	
<b>c</b>	2.8%	
<b>u</b>	2.8%	
<b>m</b>	2.4%	
<b>w</b>	2.4%	
<b>f</b>	2.2%	
<b>g</b>	2%	
<b>y</b>	2%	
<b>p</b>	1.9%	
<b>b</b>	1.5%	
<b>v</b>	0.98%	



## EXAMPLE

qvw jds jqosu yqcw al jds qisnqes qtsnczqg qns  
uysgj al jds ebisngtsgj cg vsuu jdqg q uszbgw

# GOOD CIPHER

# ONE-TIME PAD

PERFECT SECRECY

# STREAM CIPHERS