### BILL, RECORD LECTURE!!!!

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## When Hackers Attack!

September 28, 2020

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#### **Ciphertext and Plaintext**

#### Plaintext The message Alice really wants to send to Bob, e.g. Meet me after class.



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Ciphertext What Alice sends Bob. The hope is that if Eve sees it she will not learn the plaintext. E.g. PHHWP HDIWH UFODV V

We will describe several different types of attacks Eve can use. They depend on:

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- 2. What computing power Eve has.

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Eve's goal is to find out something about the plaintext she did not already know.

**Ciphertext Only Attack (COA)** 

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## **Ciphertext Only Attacks (COA)** All Eve has is the ciphertext. Eve cracked shift, affine, general sub, Vig with a COA.

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- 4. More WWII History Turing and his gang cracked the German Enigma Code, guessing that ein (German for one) would be in messages.

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- 2. WWII History England put mines in places that the Germans had no abbreviations for. The Germans cleared those mines and send NAME OF PLACE, all clear, transmitted in code.

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Dictionary Attack Many variants, we give two:

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qwerty: 1st 6 letters on 3rd line of a keyboard. qazwsz: Similar keyboard shenanigans. trusno1: I like that one, I think I'll use it :-)

### Brute Force Attacks (BFA)

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Easy to thwart Use a bigger key space!

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- 3. Look up the Maginot Line.

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3. Attack on RSA Will cover this later.

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  - 2.4 Hence teaching this course is a real eye-opener in that it **really applies** to the real world and hence its fascinating and frustrating to see what it can and cannot do.