DS2000
3/17 - Fri (4 leaf clover)

Admin

- HW6 out, due 3/24
  (but waived late penalty, can submit 3/26 9pm)

Agenda

1. Strings
2. Data encryption
3. Python

1. strings

Basic data type: int, float, bool, string
↳ word/phrase enclosed in quotes

Data structure!

s = "Toronto"

↓

data structure
label is s
7 values

1. Create

s = "Toronto"

input() } default to string
readline() }

2. Add to a string

Strings are immutable!

- no append
- But, we have + → concatenation
- Can use this to construct a string one character at a time

```
s = ""
s = s + "h"
s = s + "i"
s = s + "!"
```

What is s's value?

h

hi

hi!

↳ not modifying!

creates a new string every time

13. Look at one thing

```
s = "Toronto"
print(s[2])
```

⟶ r

14. Look at all the things

```
for letter in s:
    print(letter)
```

```
for i in range(len(s)):
    print(s[:i]) :)
    s[i] = "x" :(
```

error

Other string functions

```
s = "Toronto"
s.startswith("Tor")
s.startswith("or")
s.startswith("Toron")
```

⟶ True

⟶ False

⟶ True

s.lower() → returns "toronto"
does not modify s

s.isalpha() → True, b/c all characters are a-z
(get rid of punctuation)

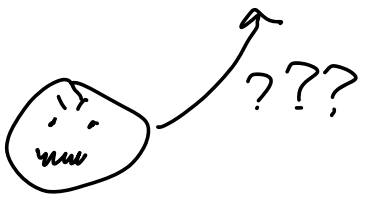
2. Data Decryption

- in DS, we have sensitive data
  (names, SSNs, pwds, biz data, crime statistics)
- the data comes to you encrypted
- you need to decrypt to use it!

goal: no one bad gets access to our data

message → [encrypt] → coded message

559-2759 → xx7:%o



Our goal:

coded msg → decrypt → original message

Vigenère Cipher

↳ character substitution

coded _ _ _ _

↓ ↓ ↓ ↓

orig _ _ _ _

key

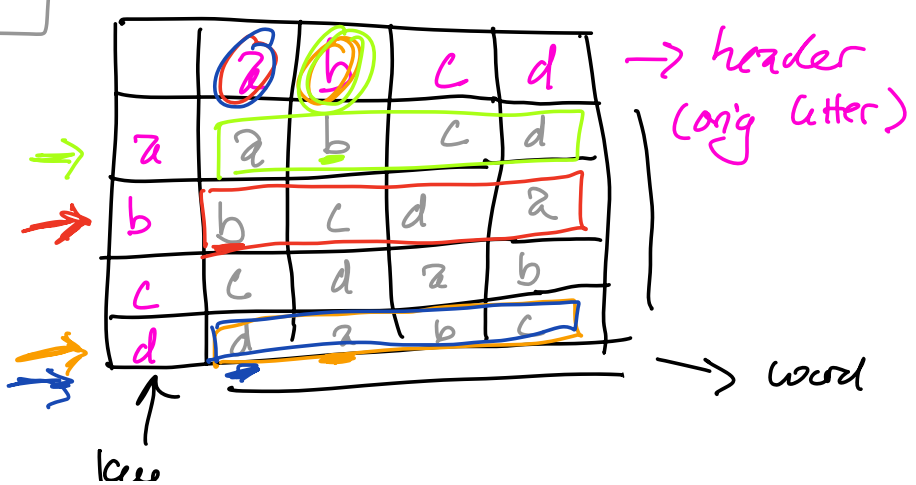
coded word → orig

look up table

ex:

Lookup table

universe:
a, b, c, d



key = b d a d

coded word = b a b d

decrypted = a b b a

Find key's letter in column

Find word's letter in raw