

**This is CS50.**

cs50.brianyu.me

# Week 6

- Python

**What questions do you have?**

# Questions

# Today

Python

CSV Files

Lab

PART ONE

**Python**

# Variables

`x = 28`                      `int`

`x = 1.5`                      `float`

`x = "Hello!"`                      `str`

`x = True`                      `bool`



# Variables

```
x = [1, 2, 3, 4]          list
```

```
x = (10, 20)             tuple
```

```
x = {  
    "HANNAH": "617-555-0100",  
    "BRIAN": "617-555-0101"  
}
```

dict

```
x = {"a", "b", "c"}      set
```

# Dictionaries

- Mapping of keys to values

# Dictionaries

word	definition
apple	the round fruit of a tree of the rose family
balloon	a brightly colored rubber sac inflated with air and then sealed
car	a road vehicle, typically with four wheels, powered by a combustion engine
day	a period of twenty-four hours as a unit of time

# Dictionaries

key	value

# Dictionaries

name	number
RITHVIK	617-555-0100
MONTAGUE	617-555-0101
BRIAN	617-555-0102
DAVID	617-555-0103

# Dictionaries

property	value
first	Emma
last	Humphrey
email	<u><a href="mailto:emma@cs50.harvard.edu">emma@cs50.harvard.edu</a></u>
house	Dunster

# Dictionaries

dna	repetitions
AATG	28
TATC	5
CAAT	14
TCTTA	50

# Dictionaries

```
names = {  
    "HANNAH": "617-555-0100",  
    "BRIAN": "617-555-0101"  
}
```

```
names["RODRIGO"] = "617-555-0102"
```

```
print(names["HANNAH"])
```



# Loops

```
names = ["Alice", "Bob", "Charlie"]  
for name in names:  
    print(name)
```

# Loops

```
name = "EMMA"  
for character in name:  
    print(character)
```

# Loops

```
for i in [0, 1, 2, 3, 4]:  
    print(i)
```

# Loops

```
for i in range(5):  
    print(i)
```

# Functions

```
def square(x):  
    return x * x
```

# File I/O

```
file = open(filename, "r")
```

# Exercise

Write a program `reverse.py` that reverses a string.

## Sample Usage

```
$ python reverse.py
```

```
Text: Hello!
```

```
!olleH
```

PART TWO

# CSV Files



first, last

Emma, Humphrey

Ashley, Wong

Diana, Feng

Montague, Mawere

```
import csv
```

# Exercise

Write a program `phonebook.py` that reads from a CSV file (provided as a command-line argument) and prints out the data on each person in the phone book. The file contains columns **name** and **number**, representing each person's name and phone number, respectively.

## Sample Usage

```
$ python phonebook.py data.csv
```

```
Emma's phone number is 617-555-0100
```

```
Rodrigo's phone number is 617-555-0101
```

```
Brian's phone number is 617-555-0102
```

```
David's phone number is 617-555-0103
```

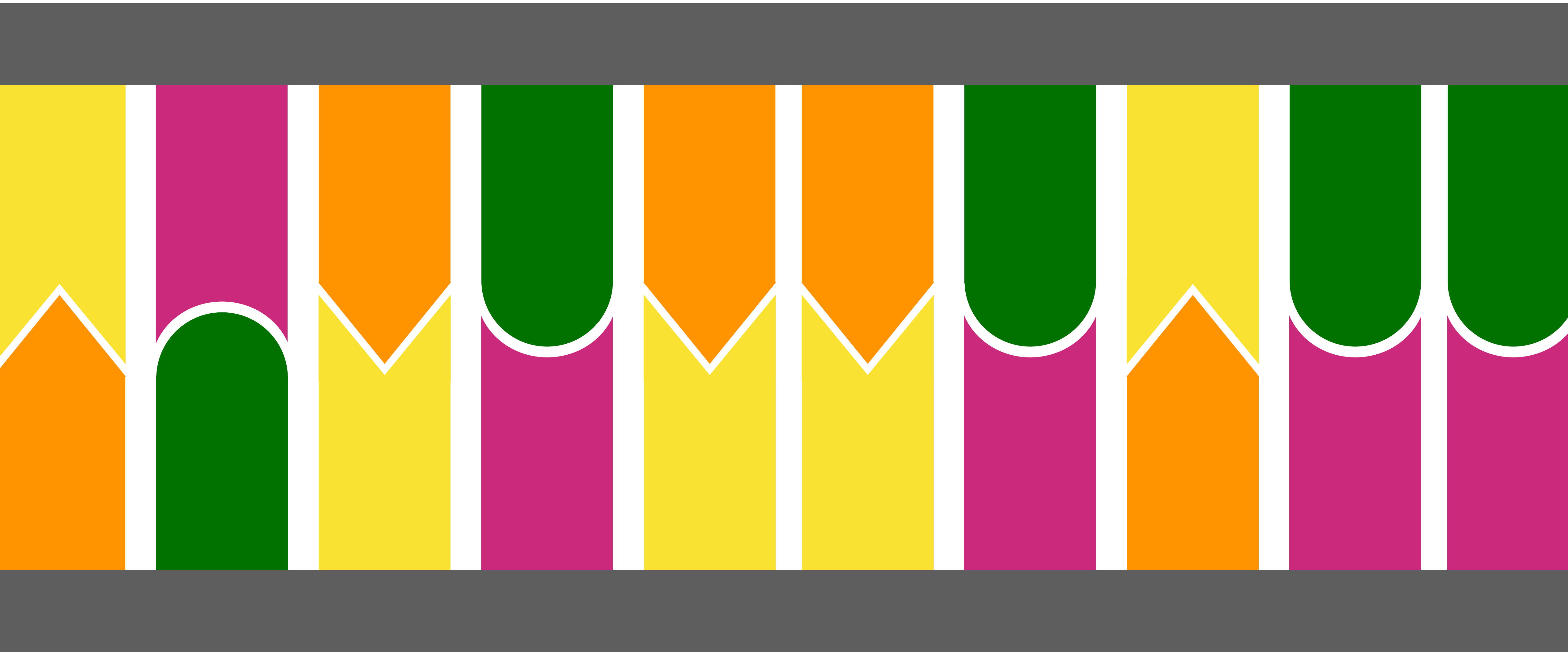
PART THREE

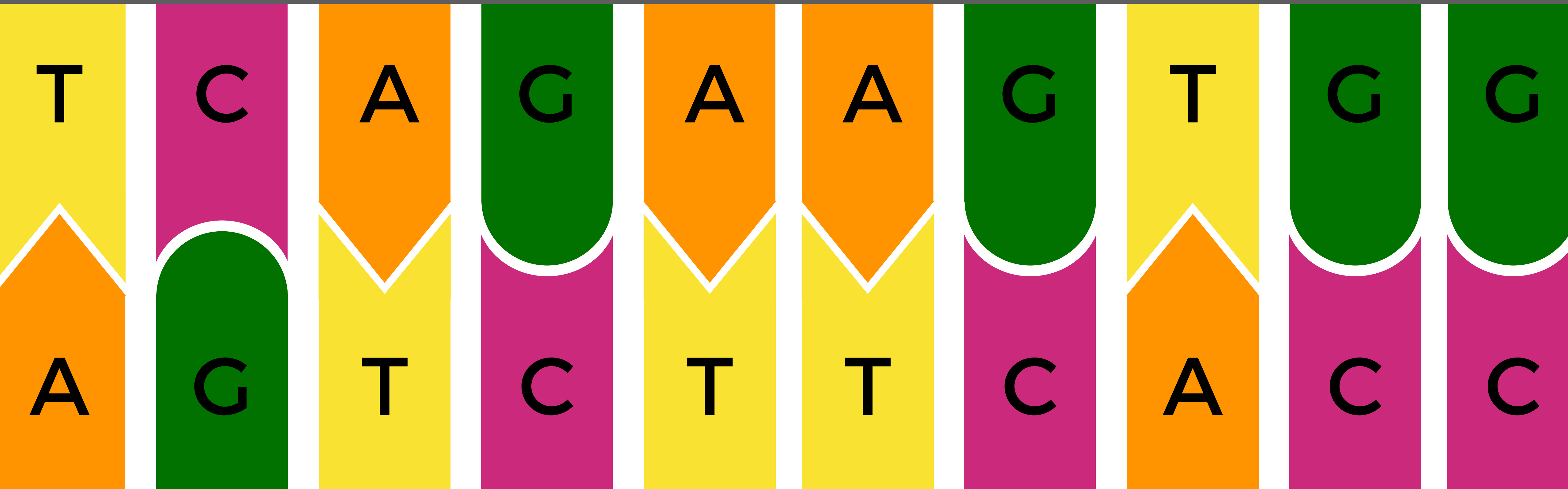
**Lab**

# Problem Set 6

# Problem Set 6

- Sentimental
  - Hello
  - Mario (Less) or Mario (More)
  - Cash or Credit
  - Readability
- DNA







T

C

A

G

T C A G A G G A T T T C A G C T C C G A T A C A A C A G T

A G T A G A T A G A T A G A T A G A T A G A T G G A T T T

A G A T

A G T A G A T A G A T A G A T A G A T G G A T T T

A G A T

A G T A G A T A G A T A G A T A G A T A G A T G G A T T T

A G A T

A G T A G A T A G A T A G A T A G A T A G A T G G A T T T

A G A T

A G T A G A T A G A T A G A T A G A T A G A T G G A T T T

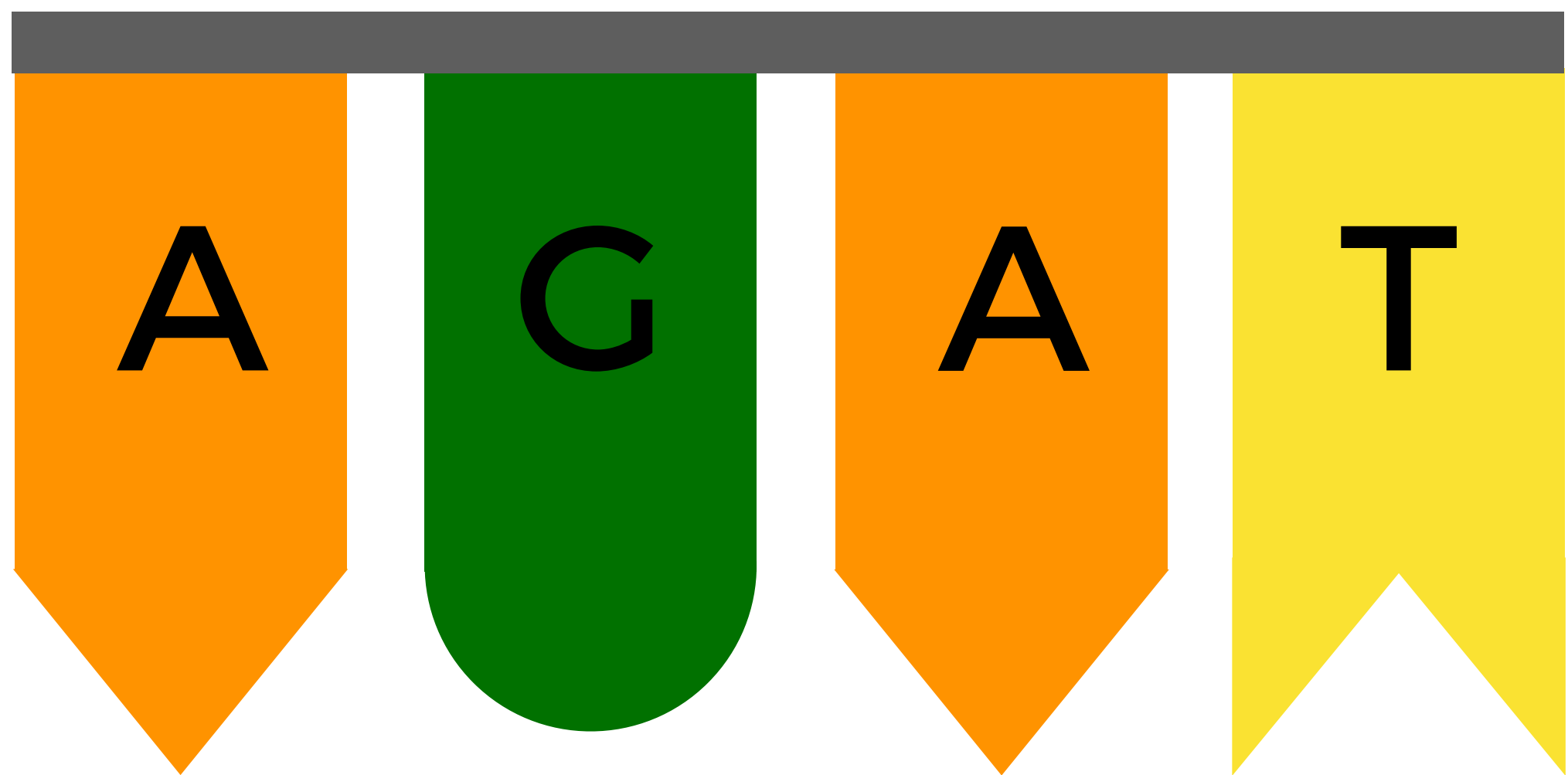
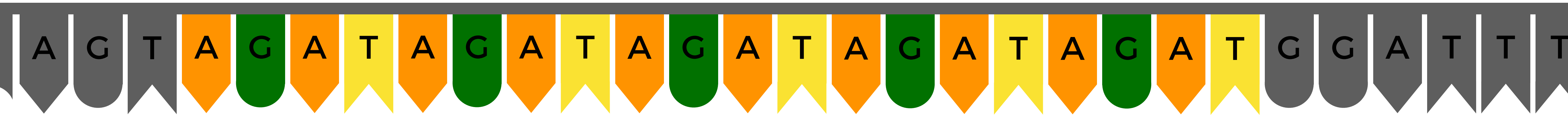
A G A T



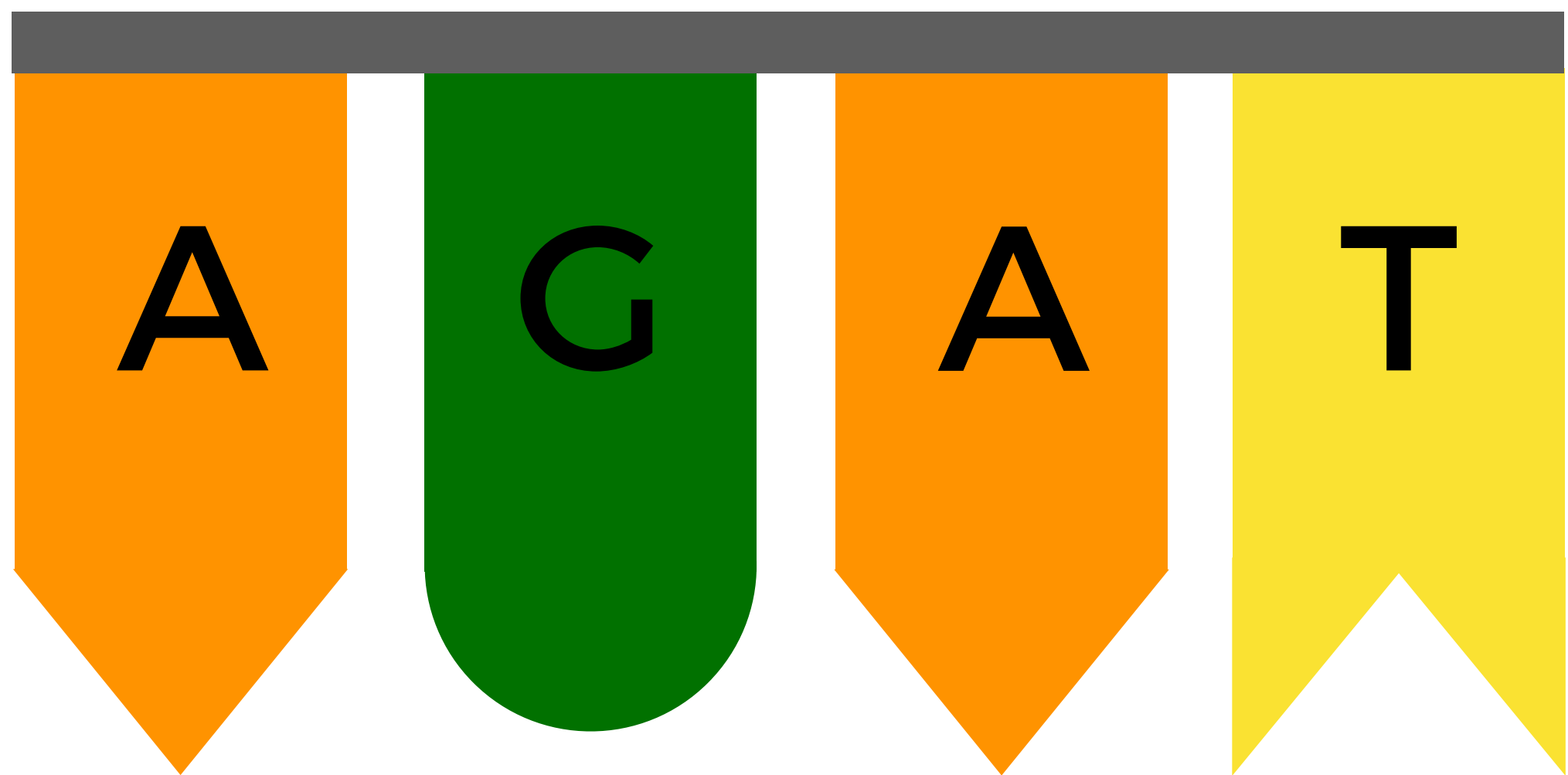
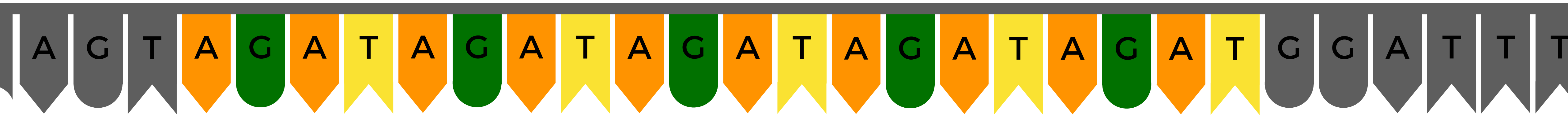


A G T A G A T A G A T A G A T A G A T A G A T G G A T T T

A G A T



**Short Tandem Repeat**



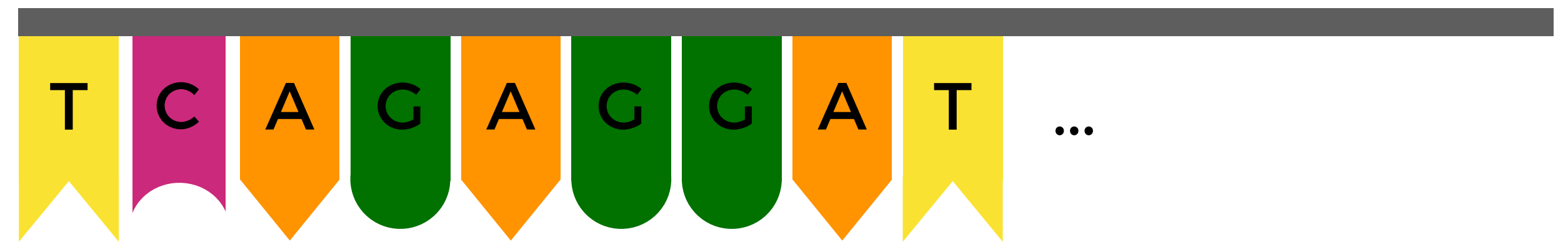
**STR**

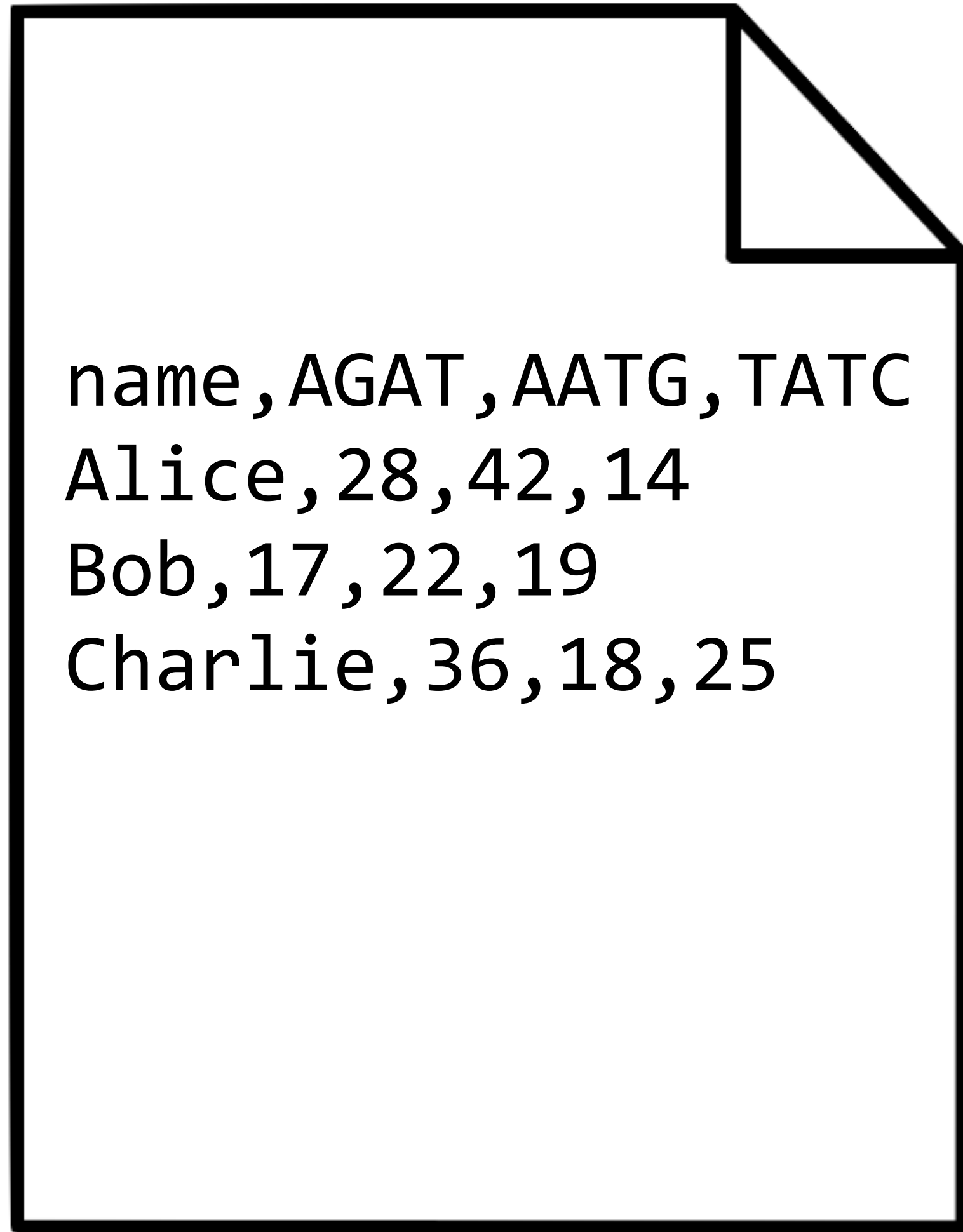
name, AGAT, AATG, TATC  
Alice, 28, 42, 14  
Bob, 17, 22, 19  
Charlie, 36, 18, 25

	AGAT	AATG	TATC
Alice	28	42	14
Bob	17	22	19
Charlie	36	18	25

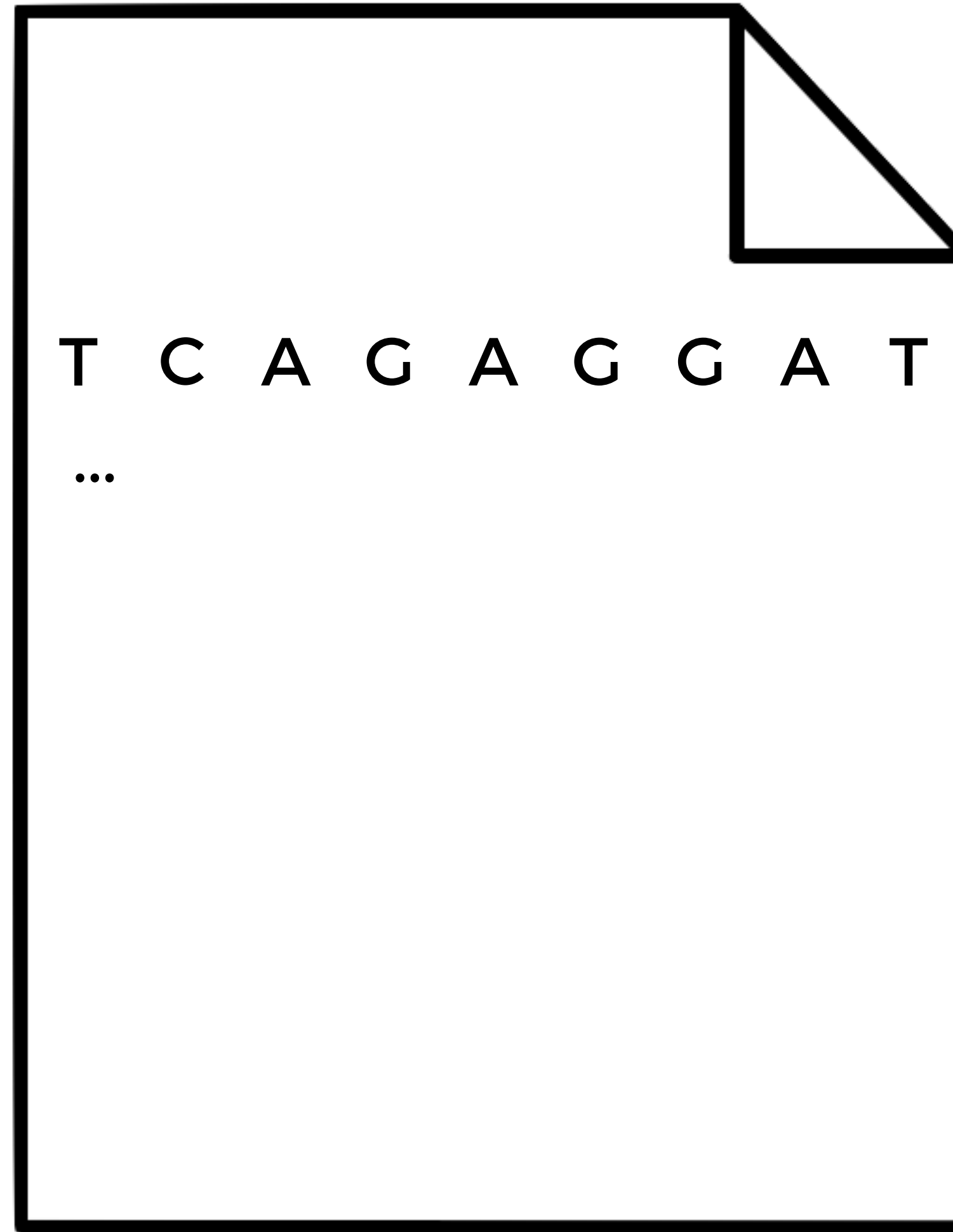
```
name,AGAT,AATG,TATC  
Alice,28,42,14  
Bob,17,22,19  
Charlie,36,18,25
```

data.csv





data.csv



sequence.txt

**This is CS50.**