

This is CS50

Week 2

Scan your HUID at the back table for attendance
Open code.cs50.io!

<https://carterzenke.me/section>

Think, Pair, Share

- What are you excited about from this week's lecture?
- What do you want to learn more about?

Today

- Compilation
- Arrays
- Strings
- Command-line Arguments

About me

William Cochran

Postdoctoral Fellow in Philosophy

Embedded EthiCS program @ Harvard



The Embedded EthiCS course modules teach students to...



identify ethical and social issues



reason through ethical and social issues



communicate their reasoned position



design ethically and socially responsible systems

```
int main(void)
{
    print("Hello");
}
```

...

main:

@main

.cfi_startproc

BB#0:

push %rbp

.Ltmp0:

.cfi_def_cfa_offset 16

.Ltmp1:

.cfi_offset %rbp, -16

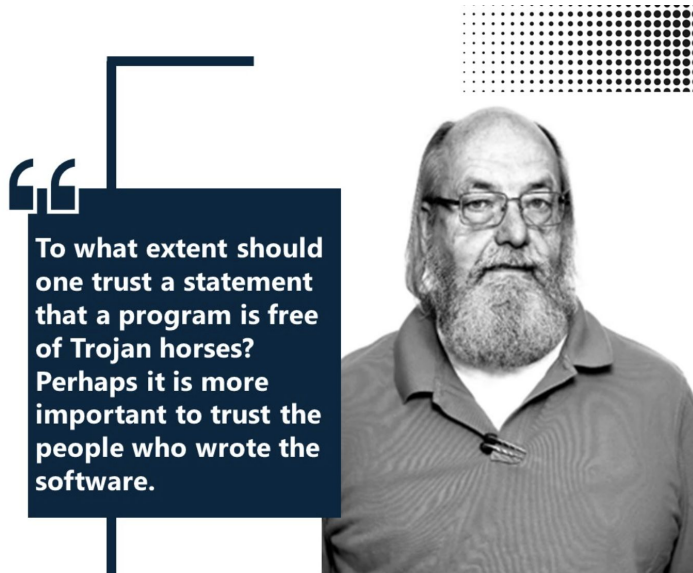
movq %rsp, %rbp

.Ltmp2:

.cfi_def_cfa_register %rbp

Possible solutions

Ken Thompson, “Reflections on Trusting Trust” (1984)

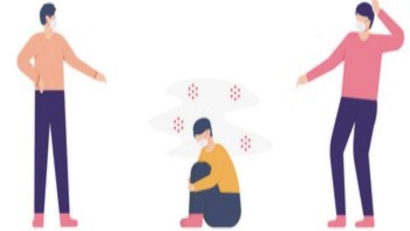


“
To what extent should one trust a statement that a program is free of Trojan horses? Perhaps it is more important to trust the people who wrote the software.”

Kenneth L. Thompson
ACM A.M. Turing Laureate



Update the
criminal code



Create social
stigma

Possible solutions

Onora O'Neill "What We Don't Understand About Trust" (TED talk, 2013)



“Blind Snake” Exercise

Arrays and Strings

W₄
O₁
R₁
H₄ E₁ L₁ L₁ O₁
D₂

[WORD SCORE: 17]

POINTS

1	3	3	2	...
---	---	---	---	-----

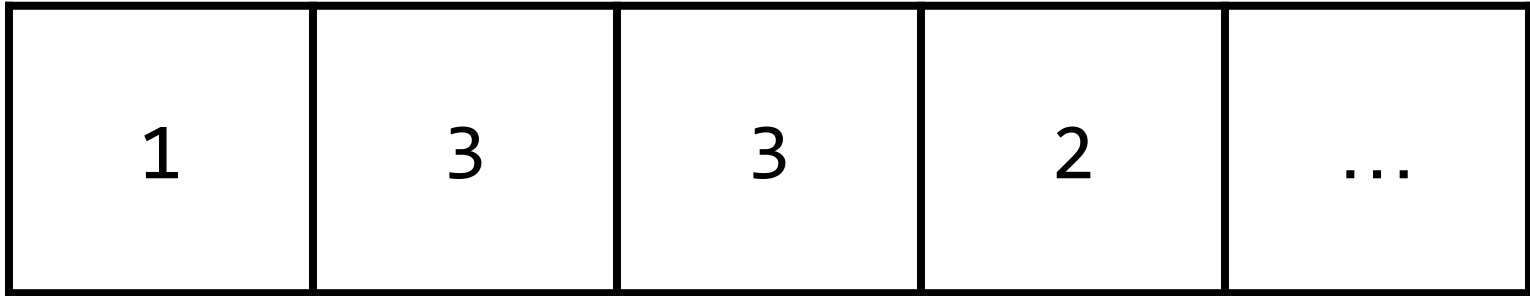
name



POINTS

1	3	3	2	...
---	---	---	---	-----

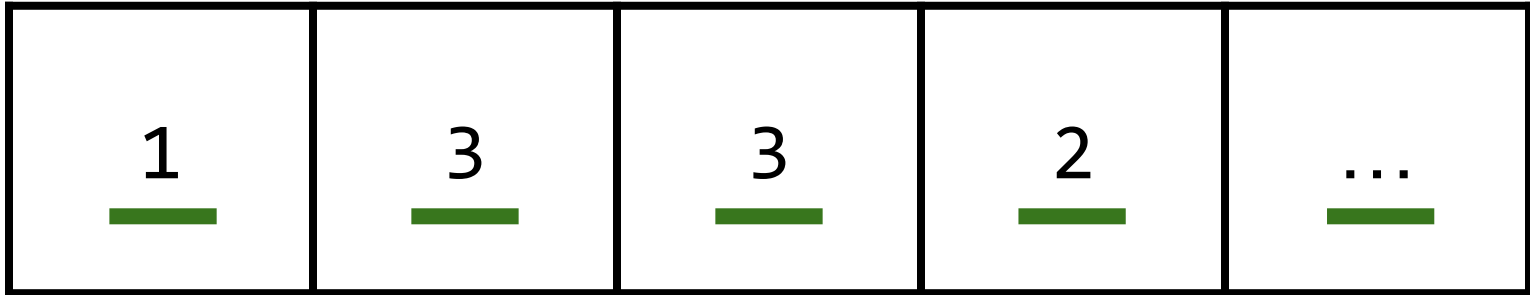
POINTS



size

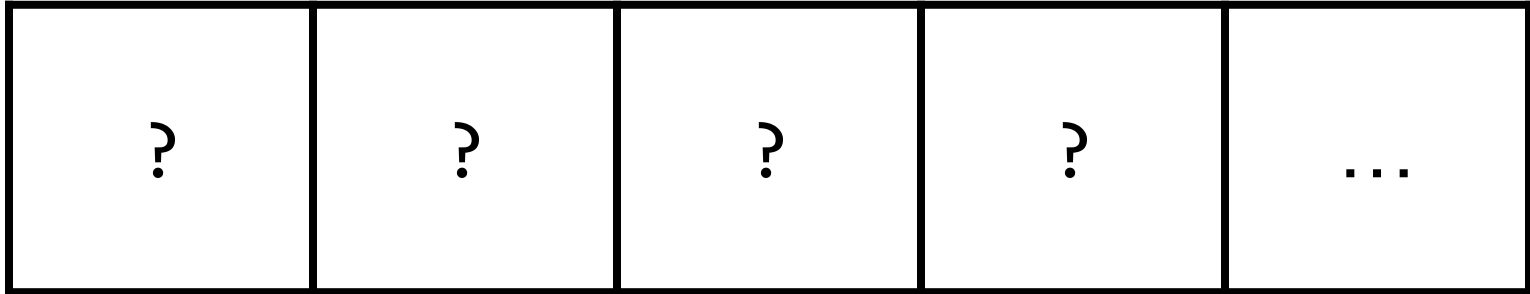
POINTS

type (int)



```
int POINTS[26];
```

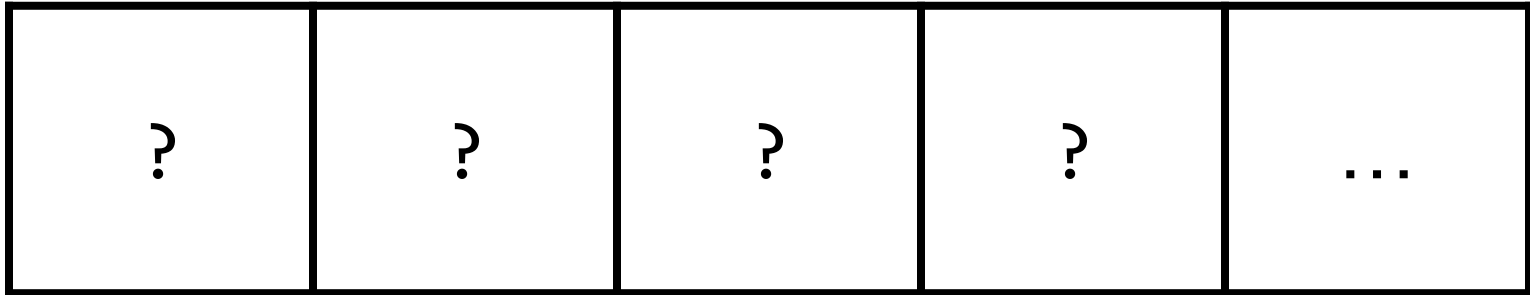
POINTS



name

```
int POINTS[26];
```

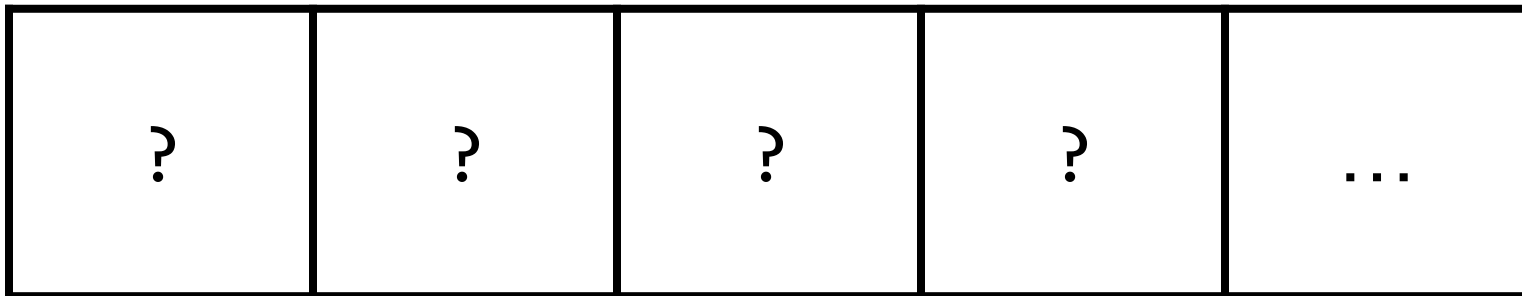
POINTS



size

```
int POINTS[26];
```

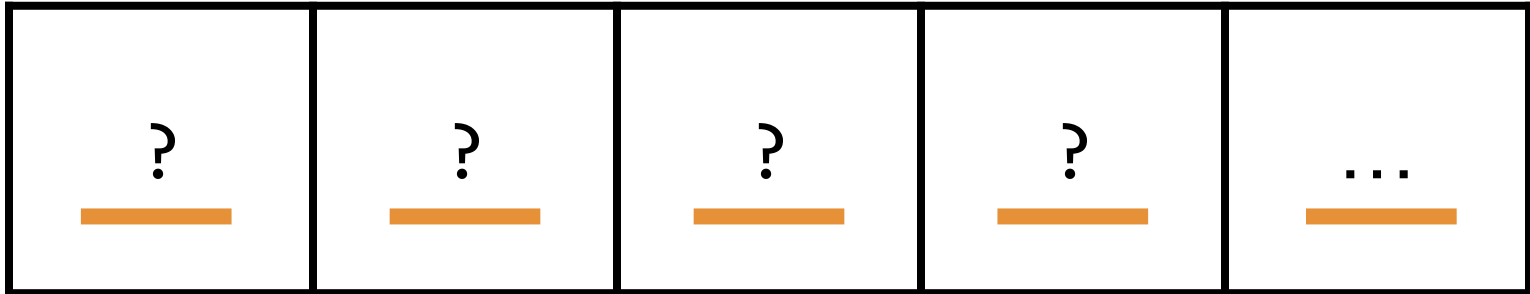
POINTS



type

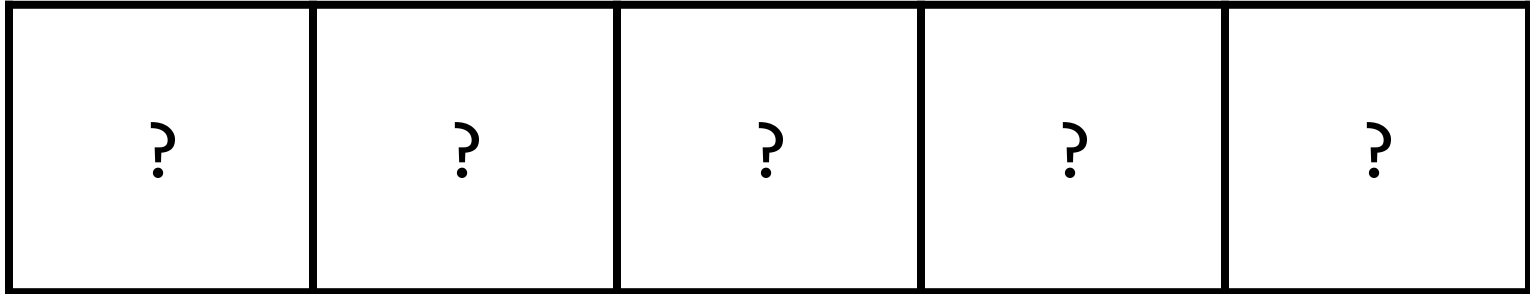
```
int POINTS[26];
```

POINTS



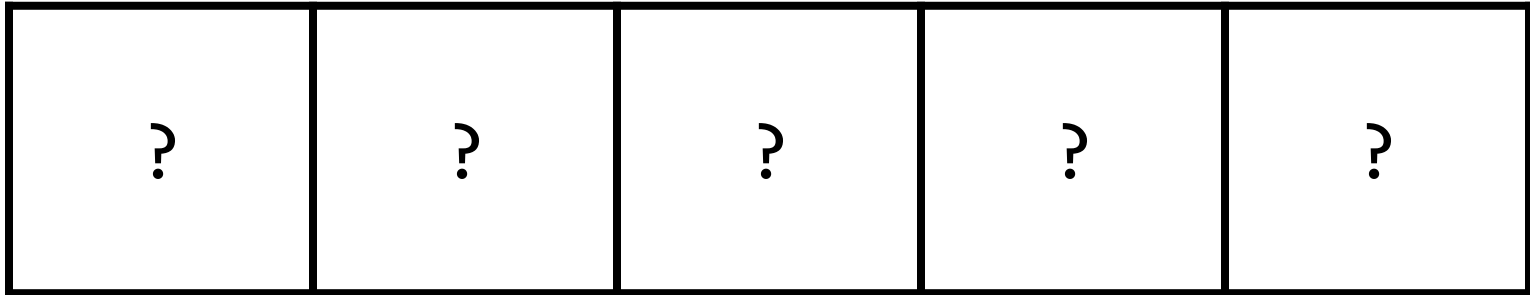
```
int POINTS[26];
```

POINTS



```
int POINTS[26];
```

POINTS



0

1

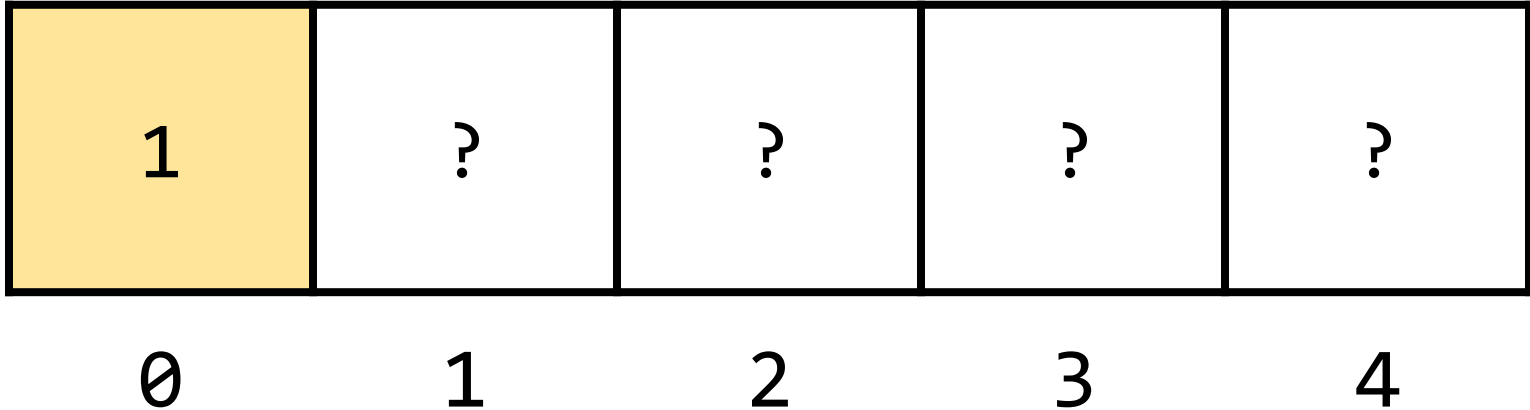
2

3

4

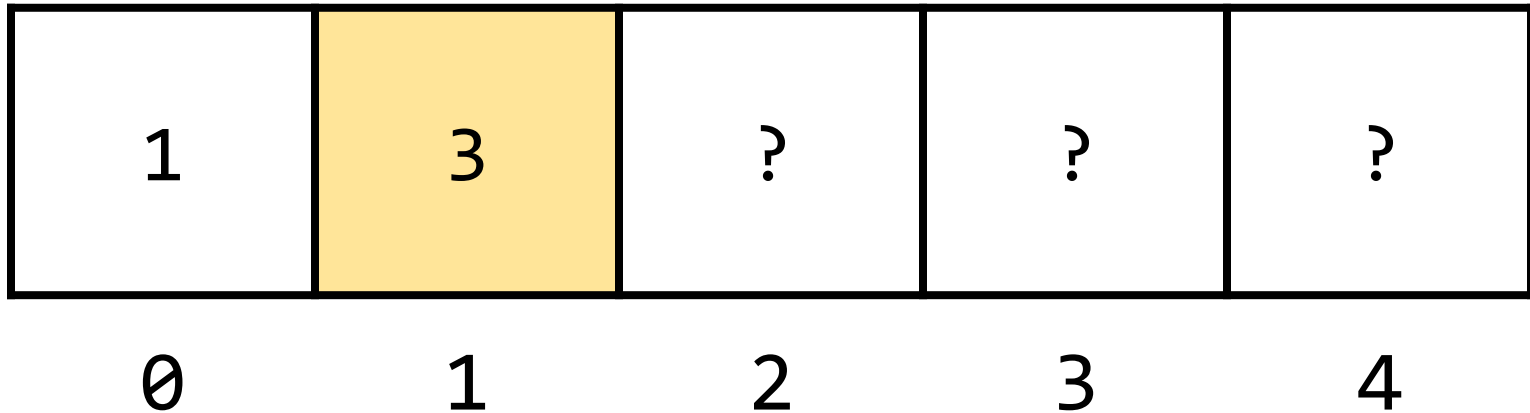
```
int POINTS[26];  
POINTS[0] = 1;
```

POINTS



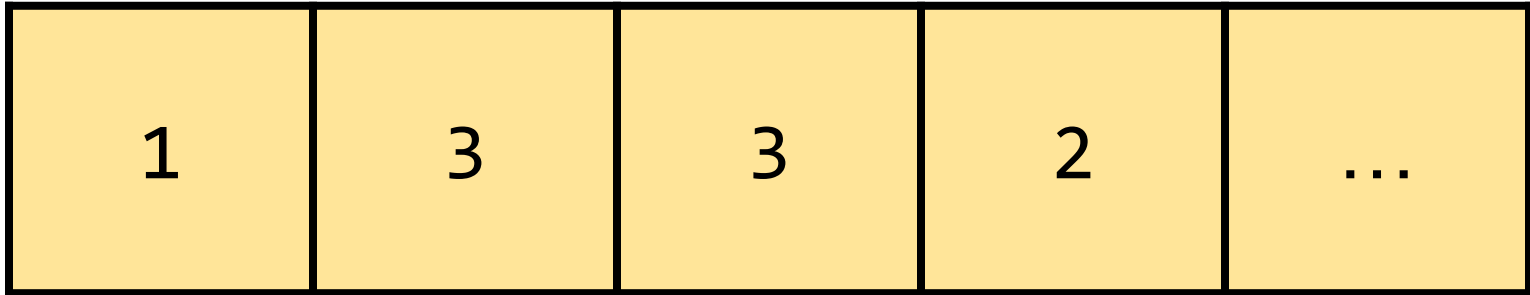

```
int POINTS[26];  
POINTS[0] = 1;  
POINTS[1] = 3;
```

POINTS



```
int POINTS[26] = {1, 3, 3, 2, ...};
```

POINTS



0

1

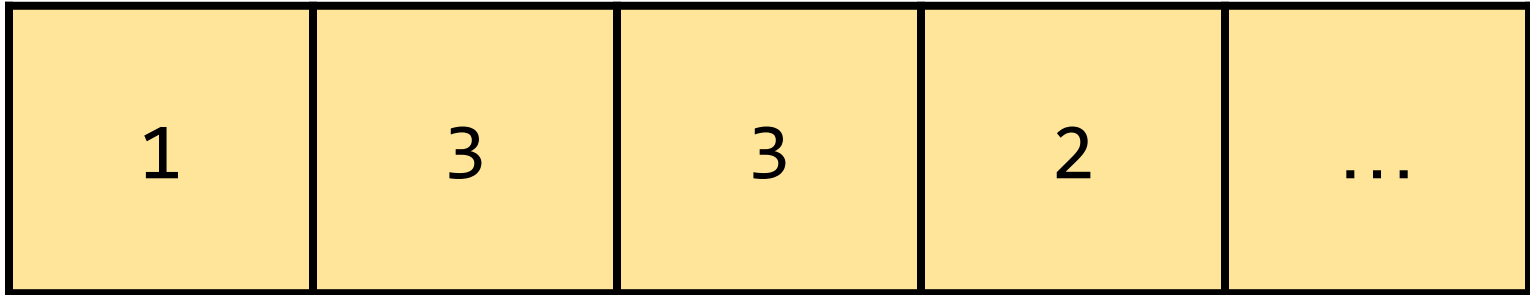
2

3

4

```
int POINTS[] = {1, 3, 3, 2, ...};
```

POINTS



0

1

2

3

4

```
int POINTS[] = {1, 3, 3, 2, ...};  
  
for (int i = 0; i < 26; i++)  
{  
    printf("%i\n", POINTS[i]);  
}
```

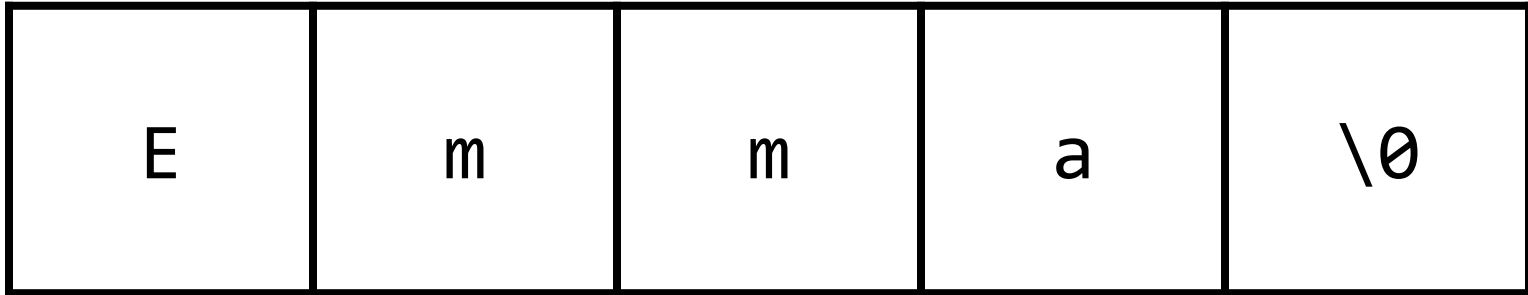
```
int POINTS[] = {1, 3, 3, 2, ...};  
  
for (int i = 0; i < 26; i++)  
{  
    printf("%i\n", POINTS[i]);  
}
```

Compute Score

Compute and return the score of a word passed as input to the **compute_score** function.

```
string word = "Emma";
```

word



0

1

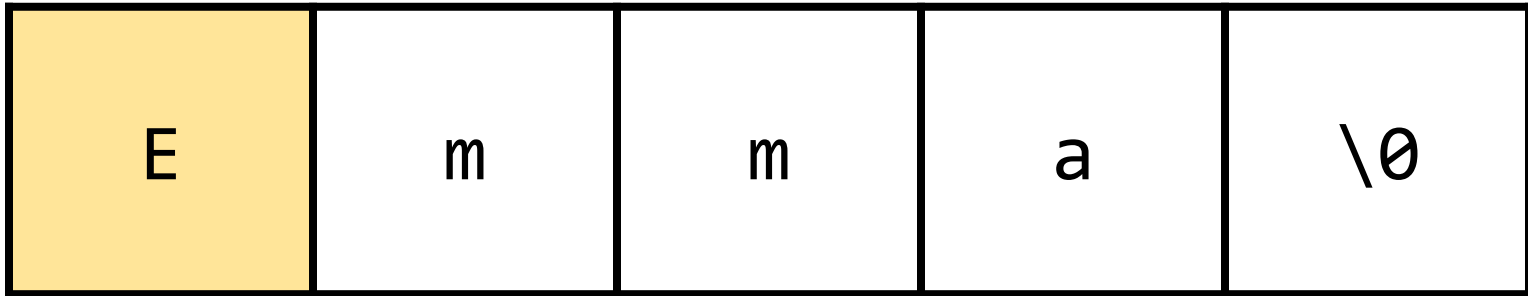
2

3

4

```
word[0];
```

```
word
```



0

1

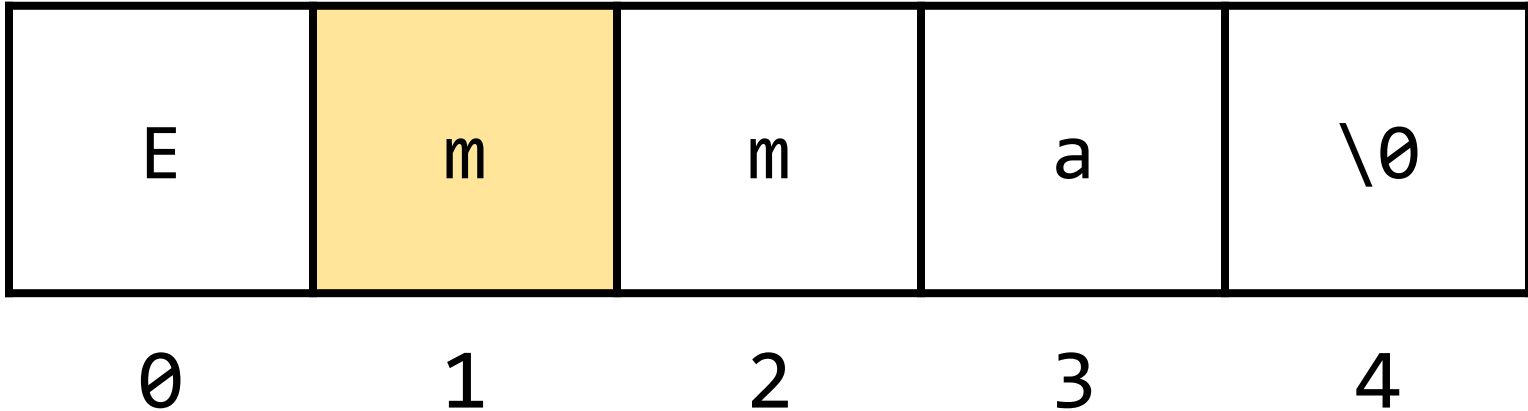
2

3

4


```
word[1];
```

```
word
```



A	B	C	...	Z
65	66	67	...	90

a	b	c	...	z
97	98	99	...	122

Charlotte's Web



E. B. White

PICTURES BY GARTH WILLIAMS

One fish, two fish, red fish, blue fish.

The literature on disciplinary identity emphasizes that identification with computer science is best conceived not as a static trait, but as an evolving process. The process of identification occurs not solely within the student's mind, but in the interaction between the mind and the environment.

Command-line Arguments

What are some examples of programs we've seen that take command-line arguments?

```
$ make mario
```



```
$ ./caesar 13
```

```
int calculate_quarters(int cents)
{
    ...
}
```

Function argument(s)



```
int calculate_quarters(int cents)
{
    ...
}
```

Return type



```
int calculate_quarters(int cents)
{
    ...
}
```

```
int main(void)
{
    ...
}
```

```
int main(int argc, string argv[])  
{  
    ...  
}
```

\$ make mario

argv[0]

argv[1]

```
$ ./caesar 13
```



```
$ ./initials Carter Zenke
```

```
$ ./initials Carter Zenke
```

argv[1]

argv[2]

```
$ ./initials Carter Zenke  
              argv[1][0] argv[2][0]
```

This was CS50