

**This is CS50.**

cs50.brianyu.me

# Week 2

- Compiling
- Debugging
- Data Types
- Memory
- Arrays
- Strings
- Command-Line Arguments

**What questions do you have?**

# Today

Arrays

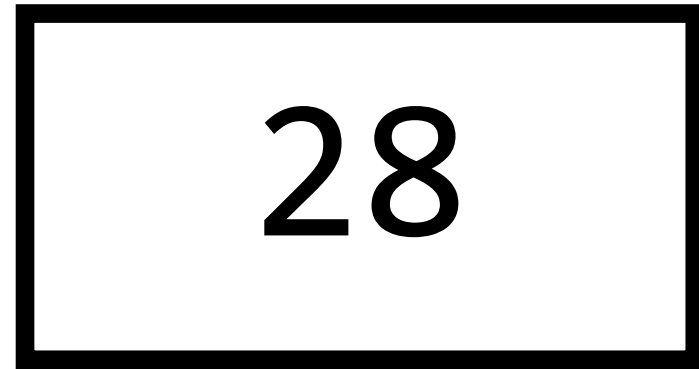
Strings

Lab

PART ONE

# Arrays

value



```
int value = 28;
```

```
int values[5];
```

values



```
int values[5];  
values[0] = 10;  
values[1] = 20;  
values[3] = 40;
```

values

10	20		40	
----	----	--	----	--



# Exercise

Write a program that takes 5 integers and prints them in reverse order.

```
$ ./reverse
```

```
Number 1: 5
```

```
Number 2: 10
```

```
Number 3: 15
```

```
Number 4: 20
```

```
Number 5: 25
```

```
25 20 15 10 5
```

PART TWO

# Strings

```
int main(void)
{
    printf("%c\n", 'A');
}
```

```
int main(void)
{
    printf("%i\n", 'A');
}
```

# ASCII

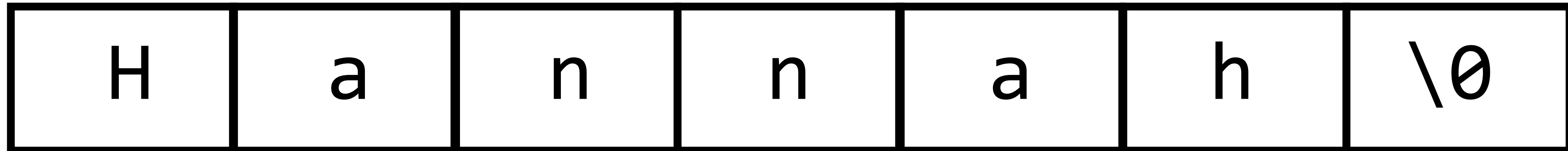
<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>...</b>	<b>Z</b>
<b>65</b>	<b>66</b>	<b>67</b>	<b>68</b>	<b>69</b>	<b>...</b>	<b>90</b>

<b>a</b>	<b>b</b>	<b>c</b>	<b>d</b>	<b>e</b>	<b>...</b>	<b>z</b>
<b>97</b>	<b>98</b>	<b>99</b>	<b>100</b>	<b>101</b>	<b>...</b>	<b>122</b>

```
int main(void)
{
    printf("%i\n", 'A' + 1);
}
```

```
string name = "Hannah";
```

name



```
string name = "Hannah";
```

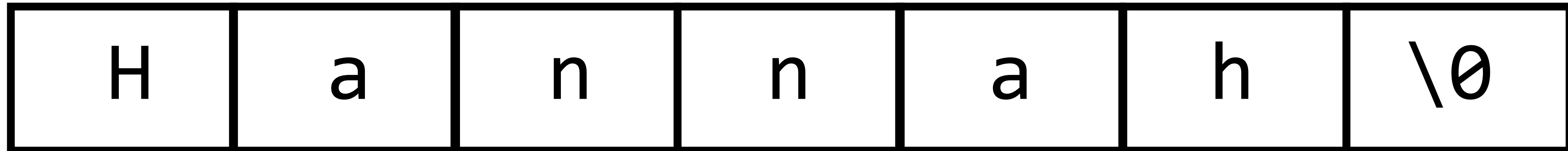
name

72	97	110	110	97	104	\0
----	----	-----	-----	----	-----	----



```
string name = "Hannah";
```

name



strlen

# Exercise

Update your reverse program to take a string as input, and print out the reverse of the string.

```
$ ./reverse
```

```
Text: Hello!
```

```
!olleH
```

# Command-Line Arguments

```
$ ./cash
```

```
$ make mario
```

```
$ clang -o hello hello.c
```

```
$ ./cash
```

```
$ make mario
```

```
$ clang -o hello hello.c
```

\$ ./cash  
argv[0]

\$ make mario  
argv[0] argv[1]

\$ clang -o hello hello.c  
argv[0] argv[1] argv[2] argv[3]

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



Argument Count

Argument Vector



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

# Exercise

Write a program `initials.c` that prints the initials of a name provided as command-line arguments.

```
$ ./capitalize rodrigo daboïn sanchez
```

```
RDS
```

**Modulo**

# Modulo

- $a \% b$  returns the remainder when **a** is divided by **b**

PART THREE

**Lab**

A	B	C	D	E	...	X	Y	Z
1	3	3	2	1	...	8	4	10

```
int POINTS[] = {1, 3, 3, 2, 1, 4, 2, 4, 1, 8, 5, 1, 3, 1,
                1, 3, 10, 1, 1, 1, 1, 4, 4, 8, 4, 10};
```

How many points is 'A' worth?

POINTS[0]

How many points is 'N' worth?

POINTS[13]

POINTS['N' - 65]

POINTS['N' - 'A']

How many points is 'n' worth?

POINTS['n' - 'a']

# Problem Set 2



# Problem Set 2

- Readability
- One of:
  - Caesar
  - Substitution

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