Numbers

The data behind our apps

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Overview

- Integers (27)
- printf()
- Floating-point numbers (3.14)
- Math libraries

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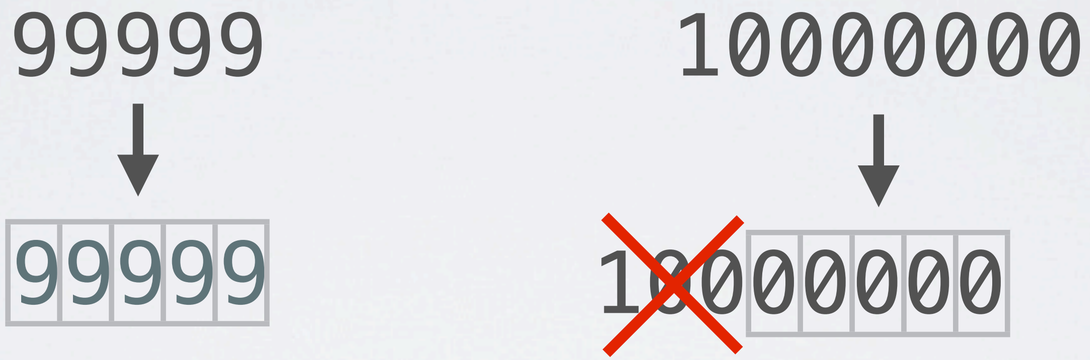
Integers

- `char:` ‘a’, ‘b’, ‘c’
- `short:` 32,000
- `int:` 2,000,000,000
- `long:` 9,000,000,000,000,000,000
- `long long:` 9,000,000,000,000,000,000

Integers

- `char:` ‘a’, ‘b’, ‘c’ (8 bits = 1 byte)
- `short:` 32,000 (16 bits)
- `int:` 2,000,000,000 (32 bits)
- `long:` 9,000,000,000,000,000,000 (32 or 64 bits)
- `long long:` 9,000,000,000,000,000,000 (64 bits)

Overflow



printf

- Formatted text
- Tokens
- \n (i.e. newline or return)

`%d`	int
`%c`	char
`%f`	float/double
`%s`	char * (i.e. text)
`%ld`	long

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Math

```
8 + 4 * 2 = ?

(8 + 4) * 2 = ?
```

Integer Division

```
5 / 2 = ?
5 % 2 = ?
```

Integer Division

```
5 / 2 = 2
5 % 2 = 1
```

Floating-point Numbers

- `float:` 3.14
- `double:` 3.141592653

Floating-point Numbers

- `float:` 3.14 (32 bits)
- `double:` 3.141592653 (64 bits)

Math Library

```
#include <stdlib.h>
    abs(-13);  // absolute value

#include <math.h>
    cos(60 * M_PI / 180.0);  // radians
```

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Review

- Integers
- printf()
- Floating-point numbers
- Math libraries

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