Strings and Arrays

Lecture 4
Jan 19th 2023 | COMP 211-002 | Joshua Bakita
Welcome!

Today:
➔ Review of `printf()`
➔ Strings, Arrays, and Structures

Logistics:
➔ Readings up, please read them for more detail on in-class material
➔ >50% started on Assign 1. Due in one week.
➔ Prefer Piazza, then email: s23-comp-211-002-staff-cs@cs.unc.edu

Office hour calendar is live on the website
Quick printf() Review
Quick `printf()` Review

Last time...

**Question From Last Time:**
What parameters should I give `printf` to print a number as hex, like `0x0000BEEF` for decimal number 48879?

75%-90% of Responses:
```
#include <stdio.h>

int main() {
    int num = 48879;
    printf("%#08X\n", num);
}
```

Correct Answer:
```
#include <stdio.h>

int main() {
    int num = 48879;
    printf("%#010X\n", num);
}
```
Quick `printf()` Review

Why we care about `printf()`

Print PI to 3 decimal places (pi = 3.14159265)

```
console.log("PI is about %.3f", pi);¹
print("PI is about %.3f"%(pi))
System.out.printf("PI is about %.3f\n", pi);
console.log("PI is about %.3f", pi);¹
printf("PI is about %.3f", __arglist(pi));²
printf("PI is about %.3f", pi);
printf("PI is about %.3f", $pi);
printf("PI is about %.3f\n" $pi
printf("PI is about %.3f\n", pi);
printf("PI is about %.3f\n", pi)
```

¹ Implements a small subset  ² Requires a special declaration
Quick printf() Review

printf() demo
Quick printf() Review

Suggested Readings

For printf():

- man 3 printf
- info libc "Formatted Output"
- *The C Programming Language*, §7.2 (2 pgs) or §B1.2 (2 pgs)
Representing Strings

How do we represent strings when we only have integers?
What is a character?

Read Sec. 1-5 of ANSI Standard X3.4-1977 (linked on website)
Representing Strings

""", ' ', and char *
### Representing Strings

#### ASCII

Read Sec. 1-5 of ANSI Standard X3.4-1977 (linked on website)

What string does the array of bytes
\[
\{0x55, 0x4e, 0x43, 0x20, 0x43, 0x53, 0x20, 0x69, 0x73, 0x20, 0x67, 0x72, 0x65, 0x61, 0x74, 0x21, 0x0a, 0x00\}
\]
represent?

Representing Strings

Suggested Readings

- *The GNU C Reference Manual*, §2.5.5 (1 pg)
- info gnu-c "Arrays as Strings"
- *ANSI Standard X3.4-1977*, §1 through §5 (5 pgs)
- *Computer Systems: A Programmer's Perspective*, §2.1.5 (1 pg)
Thanks!

Questions?

Come chat with me now, or drop by office hours 8:30-11 Monday!

Assignment 1 due Jan 26.

Readings now being posted on the website.

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