Lecture 11: Better strings in C

CSE 29: Systems Programming and Software Tools

Olivia Weng

Announcements
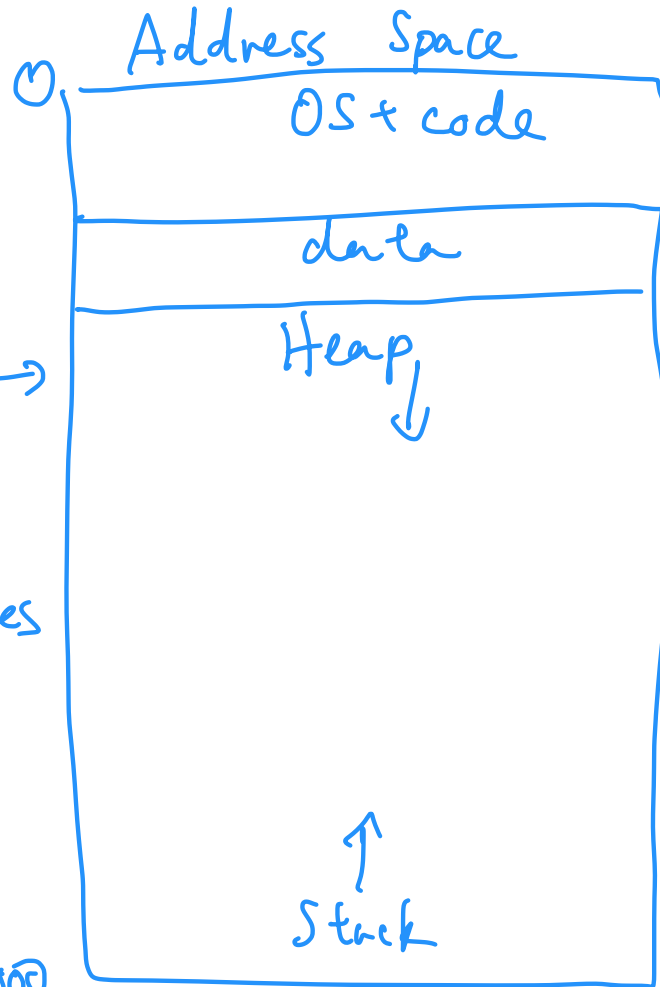
- Problem set 3 released and due Wednesday, July 23rd at 10am PT

- Exam 2
  - Sign up to take your exam on prairietest.com!

Demo

- Examining stack vs heap addresses

Address Space

0

OS + code

data

Heap ↓

lower address →

compared
with
Stack addresses
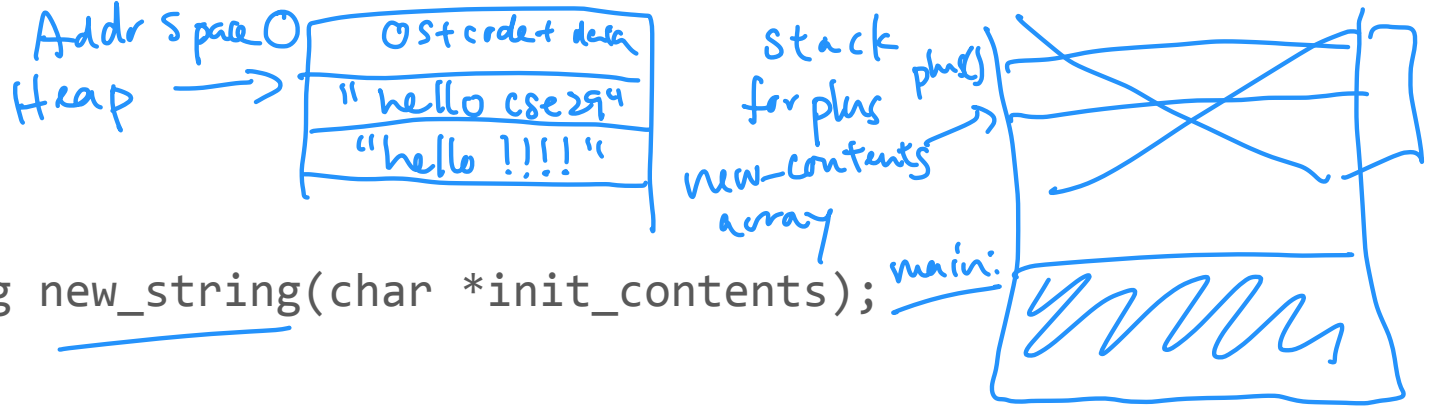
↑

Stack

0x8000

Strings in Python are great.

How could we implement a String class in C?

How could we implement a String "class" in C?

```
struct string {

    uint64_t length; // = strlen(contents)

    char *contents; // has space for length + null terminator

};


typedef struct string String;
```

Demo

Addr space 0
Heap →

0 Start data
" hello cse29 "
"hello !!!! "

stack for plus plus()
new_contents array

main:

```
struct string new_string(char *init_contents);
```

```
struct string plus(struct string s1, struct string s2);
```

int main () {

String s = new_String("hello");

}

enough memory for String struct returning stack →

s
0x800
''hello''

0x800