

Memory Hierarchy: arrays, locality, and storage technologies

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Announcements

PA4 Defusing a Binary Bomb: `sscanf()` ;

Looking ahead

Class plan

1. Today, Tuesday, 3/30: Finalize assembly with structs and arrays. Introduction to locality and the memory hierarchy.
2. Thursday, 4/1: Caches.
3. Starting this week: Recitations will have specialized topics for remainder of semester. <https://rutgers.instructure.com/courses/104725/pages/recitation-and-office-hour-information>
4. Preview of next two assignments—PA5: memory hierarchy. PA6: digital logic.

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PA4 Defusing a Binary Bomb

PA4 Due in one week, Tuesday 4/6.

1. Start right away if you haven't already.
2. 100 students making progress so far.
3. Should be fun. But takes time.
4. Parts get progressively harder.

Procedures and function calls: Transferring data

For purposes of this class, the Bomb Lab, and the CS:APP textbook, we study the x86-64 Linux Application Binary Interface (ABI). Would be different on ARM or in Windows. So, don't memorize this, but it is helpful for PA4 Bomb Lab.

Passing parameters

Parameter	Register / stack	Subset registers	Mnemonic ¹
1st	%rdi	%edi, %di	Diane's
2nd	%rsi	%esi, %si	silk
3rd	%rdx	%edx, %dx, %dl	dress
4th	%rcx	%ecx, %cx, %cl	cost
5th	%r8	%r8d	\$8
6th	%r9	%r9d	9
7th and beyond	Stack		

¹<http://csappbook.blogspot.com/2015/08/dianes-silk-dress-costs-89.html>

PA4 Defusing a Binary Bomb: sscanf ();

```
1 int sscanf (
2     const char *str, // 1st arg, %rdi
3     const char *format, // 2nd arg, %rsi
4     ...
5 )
```
