Memory Hierarchy: arrays, locality, and storage technologies

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Announcements

PA4 Defusing a Binary Bomb: sscanf() ;
Looking ahead

Class plan

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
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Announcements

PA4 Defusing a Binary Bomb: sscanf() ;
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.
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

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Register / stack</th>
<th>Subset registers</th>
<th>Mnemonic¹</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>%rdi</td>
<td>%edi, %di</td>
<td>Diane’s</td>
</tr>
<tr>
<td>2nd</td>
<td>%rsi</td>
<td>%esi, %si</td>
<td>silk</td>
</tr>
<tr>
<td>3rd</td>
<td>%rdx</td>
<td>%edx, %dx, %dl</td>
<td>dress</td>
</tr>
<tr>
<td>4th</td>
<td>%rcx</td>
<td>%ecx, %cx, %cl</td>
<td>cost</td>
</tr>
<tr>
<td>5th</td>
<td>%r8</td>
<td>%r8d</td>
<td>$8</td>
</tr>
<tr>
<td>6th</td>
<td>%r9</td>
<td>%r9d</td>
<td>9</td>
</tr>
<tr>
<td>7th and beyond</td>
<td>Stack</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

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