OSY.SSI[2015][10]

Software Lab: Code injection 2

ROP and UAF

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Both techniques are widely used today.

Return-oriented programming

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- What happens on exit? Why? More on that in a minute.

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(note: might work visibly or not)

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- Is it not amazing? Yes, yes it is.

Use-after-free

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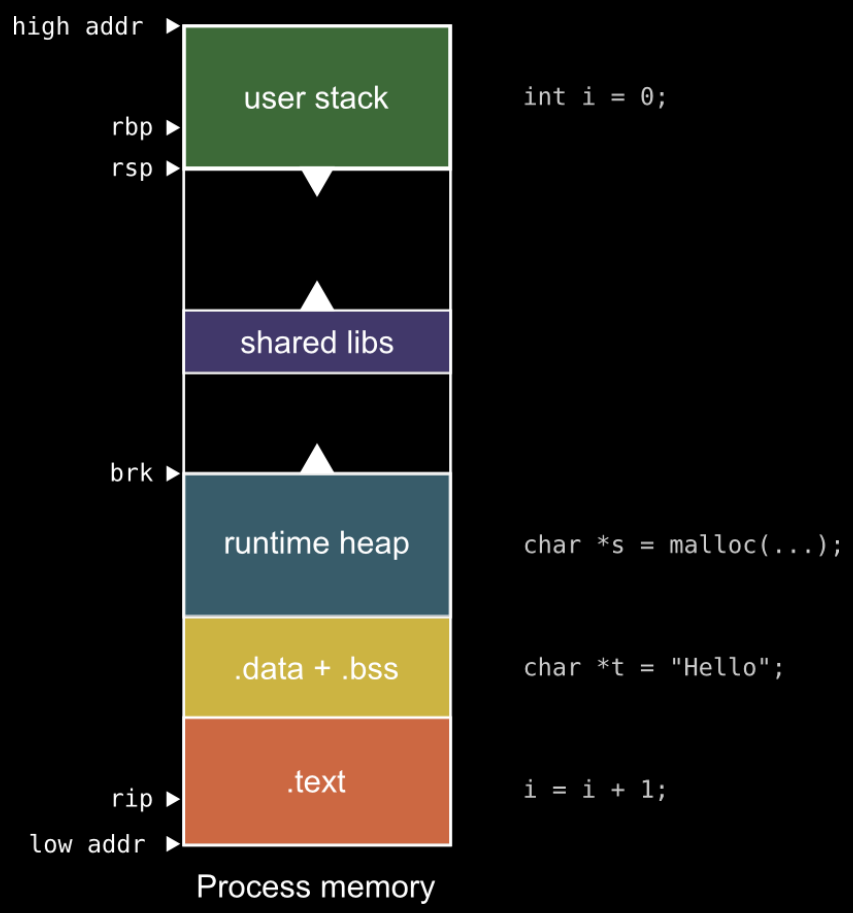
..."Object-oriented" programming languages – OOPs ;)

Reminder: the heap



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There is no intrinsic order in the heap.

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Object-oriented constructions are especially vulnerable.

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Control the `vtable`, control the program.

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Because they feed on memory like nerds on lingerie.

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- But can be done in pure HTML+JavaScript

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CVE-2015-0308, CVE-2015-0311, CVE-2015-0312,
CVE-2015-0313, CVE-2015-0315, CVE-2015-0320,
CVE-2015-0322, ..., CVE-2015-5119, CVE-2015-5122

All exploited in the wild.

Exercise: make your own. Jung Hoon Lee (17yrs) earned $225,000 at Pwn2Own 2015.