

assume 1000 bytes
of heap space

$x = \text{malloc}(24)$

$y = \text{malloc}(40)$

$z = \text{malloc}(40)$

$w = \text{malloc}(16)$

$\text{free}(x)$ // freeing y or z would have made space for u
 $u = \text{malloc}(32)$ // cannot use x space

Rules for blocks:

First 8 bytes is a header

- Odd if busy/allocated
- Even if free
- Value with $\text{LSB} = 0$ is block size
- Block size is in bytes, includes header

Lecture malloc is not PA malloc

Variable/Role Address
HEAD_START 0x...00

Address

0x...00

0x...08

0x...10

0x...18

0x...20

0x...28

0x...30

0x...38

0x...40

0x...48

0x...50

0x...58

0x...60

0x...68

0x...70

0x...78

0x...80

0x...88

0x...90

0x...98

0x...A0

0x...A8

0x...B0

0x...B8

0x...C0

0x...C8

0x...D0

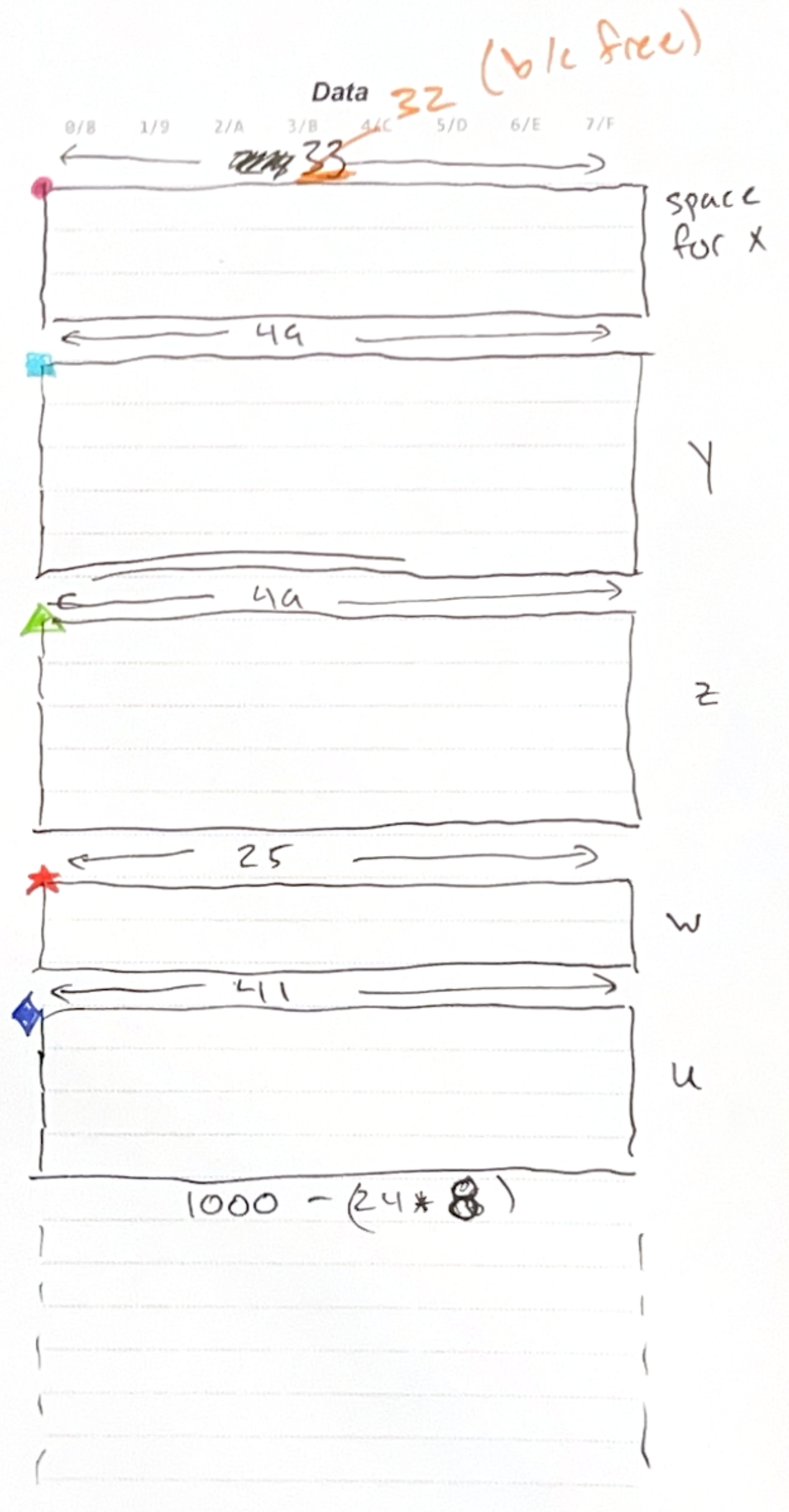
0x...D8

0x...E0

0x...E8

0x...F0

0x...F8



sbrk(len)
moves "break" by
len bytes and
returns old break

OS
code
globals
heap

Stack

