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ECE 2230-1

MP4 Test Plan

10/26/2023

In addition to the 2 provided unit tests (-u 0 and -u 1), I chose to implement 3 additional tests that cover a variety of different circumstances / conditions in my attempt to find potentially problematic corner cases. Each of my added test cases runs with all combinations of first-fit (-f first, or excluding this as it is the default), best-fit (-f best), non-coalescing (no additional command line parameter as it is default), and coalescing (-c).

My first driver (-u 2) deals mainly with large blocks of memory that are just under a page size, equal to a page size, and just over a page size. I also added tests for 2, 3, 8, and 9 pages to test large memory allocations requiring multiple pages to show that my full and multiple page allocations, total byte count tracking, and freeing mechanisms are robust.

First-fit search policy without coalescing

Alloc p1 (4080 bytes, 255 units (+1 w/ mem_chunk_t header))

_____Current_free_list_____

Total SBRK calls: 2

Total pages requested: 2

p=0x55fad5069010	size=255 (units)	end=0x55fad506a000 next=0x55fad5069000
p=0x55fad5069000	size=0 (units)	end=0x55fad5069000 next=0x55fad5069010 <-- dummy

Freeing p1 (4080 bytes, 255 units (+1 w/ mem_chunk_t header))

_____Current_free_list_____

Total SBRK calls: 2

Total pages requested: 2

p=0x55fad506a000	size=256 (units)	end=0x55fad506b000 next=0x55fad5069000
p=0x55fad5069000	size=0 (units)	end=0x55fad5069000 next=0x55fad5069010 <-- dummy
p=0x55fad5069010	size=255 (units)	end=0x55fad506a000 next=0x55fad506a000

Alloc p2 (4096 bytes, 256 units (+1 w/ mem_chunk_t header))

_____Current_free_list_____

Total SBRK calls: 3

Total pages requested: 4

p=0x55fad5069000	size=0 (units)	end=0x55fad5069000 next=0x55fad5069010 <-- dummy
p=0x55fad5069010	size=255 (units)	end=0x55fad506a000 next=0x55fad506a000
p=0x55fad506a000	size=256 (units)	end=0x55fad506b000 next=0x55fad506c010
p=0x55fad506c010	size=255 (units)	end=0x55fad506d000 next=0x55fad5069000

Freeing p2 (4096 bytes, 256 units (+1 w/ mem_chunk_t header))

_____Current_free_list_____

Total SBRK calls: 3

Total pages requested: 4

p=0x55fad506b000	size=257 (units)	end=0x55fad506c010 next=0x55fad5069010
p=0x55fad5069010	size=255 (units)	end=0x55fad506a000 next=0x55fad506a000
p=0x55fad506a000	size=256 (units)	end=0x55fad506b000 next=0x55fad506c010
p=0x55fad506c010	size=255 (units)	end=0x55fad506d000 next=0x55fad5069000
p=0x55fad5069000	size=0 (units)	end=0x55fad5069000 next=0x55fad506b000 <-- dummy

Alloc p3 (4112 bytes, 257 units (+1 w/ mem_chunk_t header))

_____Current_free_list_____

Total SBRK calls: 4

Total pages requested: 6

p=0x55fad5069010	size=255 (units)	end=0x55fad506a000 next=0x55fad506a000
p=0x55fad506a000	size=256 (units)	end=0x55fad506b000 next=0x55fad506c010
p=0x55fad506c010	size=255 (units)	end=0x55fad506d000 next=0x55fad5069000
p=0x55fad5069000	size=0 (units)	end=0x55fad5069000 next=0x55fad506b000 <-- dummy
p=0x55fad506b000	size=257 (units)	end=0x55fad506c010 next=0x55fad506e020
p=0x55fad506e020	size=254 (units)	end=0x55fad506f000 next=0x55fad5069010

Freeing p3 (4112 bytes, 257 units (+1 w/ mem_chunk_t header))

Current_free_list

Total SBRK calls: 4

Total pages requested: 6

p=0x55fad506d000	size=258 (units)	end=0x55fad506e020 next=0x55fad506a000
p=0x55fad506a000	size=256 (units)	end=0x55fad506b000 next=0x55fad506c010
p=0x55fad506c010	size=255 (units)	end=0x55fad506d000 next=0x55fad5069000
p=0x55fad5069000	size=0 (units)	end=0x55fad5069000 next=0x55fad506b000 <-- dummy
p=0x55fad506b000	size=257 (units)	end=0x55fad506c010 next=0x55fad506e020
p=0x55fad506e020	size=254 (units)	end=0x55fad506f000 next=0x55fad5069010
p=0x55fad5069010	size=255 (units)	end=0x55fad506a000 next=0x55fad506d000

Alloc p4 (8172 bytes, 511 units (+1 w/ mem_chunk_t header))

Current_free_list

Total SBRK calls: 5

Total pages requested: 8

p=0x55fad506a000	size=256 (units)	end=0x55fad506b000 next=0x55fad506c010
p=0x55fad506c010	size=255 (units)	end=0x55fad506d000 next=0x55fad5069000
p=0x55fad5069000	size=0 (units)	end=0x55fad5069000 next=0x55fad506b000 <-- dummy
p=0x55fad506b000	size=257 (units)	end=0x55fad506c010 next=0x55fad506e020
p=0x55fad506e020	size=254 (units)	end=0x55fad506f000 next=0x55fad5069010
p=0x55fad5069010	size=255 (units)	end=0x55fad506a000 next=0x55fad506d000
p=0x55fad506d000	size=258 (units)	end=0x55fad506e020 next=0x55fad506a000

Freeing p4 (8172 bytes, 511 units (+1 w/ mem_chunk_t header))

Current_free_list

Total SBRK calls: 5

Total pages requested: 8

p=0x55fad506f000	size=512 (units)	end=0x55fad5071000 next=0x55fad506c010
p=0x55fad506c010	size=255 (units)	end=0x55fad506d000 next=0x55fad5069000
p=0x55fad5069000	size=0 (units)	end=0x55fad5069000 next=0x55fad506b000 <-- dummy
p=0x55fad506b000	size=257 (units)	end=0x55fad506c010 next=0x55fad506e020
p=0x55fad506e020	size=254 (units)	end=0x55fad506f000 next=0x55fad5069010
p=0x55fad5069010	size=255 (units)	end=0x55fad506a000 next=0x55fad506d000
p=0x55fad506d000	size=258 (units)	end=0x55fad506e020 next=0x55fad506a000
p=0x55fad506a000	size=256 (units)	end=0x55fad506b000 next=0x55fad506f000

Alloc p5 (8212 bytes, 514 units (+1 w/ mem_chunk_t header))

Current_free_list

Total SBRK calls: 6

Total pages requested: 11

p=0x55fad506c010	size=255 (units)	end=0x55fad506d000 next=0x55fad5069000
p=0x55fad5069000	size=0 (units)	end=0x55fad5069000 next=0x55fad506b000 <-- dummy
p=0x55fad506b000	size=257 (units)	end=0x55fad506c010 next=0x55fad506e020
p=0x55fad506e020	size=254 (units)	end=0x55fad506f000 next=0x55fad5069010
p=0x55fad5069010	size=255 (units)	end=0x55fad506a000 next=0x55fad506d000
p=0x55fad506d000	size=258 (units)	end=0x55fad506e020 next=0x55fad506a000
p=0x55fad506a000	size=256 (units)	end=0x55fad506b000 next=0x55fad506f000
p=0x55fad506f000	size=512 (units)	end=0x55fad5071000 next=0x55fad5073030
p=0x55fad5073030	size=253 (units)	end=0x55fad5074000 next=0x55fad506c010

Freeing p5 (8212 bytes, 514 units (+1 w/ mem_chunk_t header))

Current_free_list

Total SBRK calls: 6

Total pages requested: 11

p=0x55fad5071000	size=515 (units)	end=0x55fad5073030 next=0x55fad5069000
p=0x55fad5069000	size=0 (units)	end=0x55fad5069000 next=0x55fad506b000 <-- dummy

p=0x55fad506b000	size=257 (units)	end=0x55fad506c010 next=0x55fad506e020
p=0x55fad506e020	size=254 (units)	end=0x55fad506f000 next=0x55fad5069010
p=0x55fad5069010	size=255 (units)	end=0x55fad506a000 next=0x55fad506d000
p=0x55fad506d000	size=258 (units)	end=0x55fad506e020 next=0x55fad506a000
p=0x55fad506a000	size=256 (units)	end=0x55fad506b000 next=0x55fad506f000
p=0x55fad506f000	size=512 (units)	end=0x55fad5071000 next=0x55fad5073030
p=0x55fad5073030	size=253 (units)	end=0x55fad5074000 next=0x55fad506c010
p=0x55fad506c010	size=255 (units)	end=0x55fad506d000 next=0x55fad5071000

Alloc p6 (32752 bytes, 2047 units (+1 w/ mem_chunk_t header))

Current_free_list

Total SBRK calls: 7

Total pages requested: 19

p=0x55fad5069000	size=0 (units)	end=0x55fad5069000 next=0x55fad506b000 <-- dummy
p=0x55fad506b000	size=257 (units)	end=0x55fad506c010 next=0x55fad506e020
p=0x55fad506e020	size=254 (units)	end=0x55fad506f000 next=0x55fad5069010
p=0x55fad5069010	size=255 (units)	end=0x55fad506a000 next=0x55fad506d000
p=0x55fad506d000	size=258 (units)	end=0x55fad506e020 next=0x55fad506a000
p=0x55fad506a000	size=256 (units)	end=0x55fad506b000 next=0x55fad506f000
p=0x55fad506f000	size=512 (units)	end=0x55fad5071000 next=0x55fad5073030
p=0x55fad5073030	size=253 (units)	end=0x55fad5074000 next=0x55fad506c010
p=0x55fad506c010	size=255 (units)	end=0x55fad506d000 next=0x55fad5071000
p=0x55fad5071000	size=515 (units)	end=0x55fad5073030 next=0x55fad5069000

Freeing p6 (32752 bytes, 2047 units (+1 w/ mem_chunk_t header))

Current_free_list

Total SBRK calls: 7

Total pages requested: 19

p=0x55fad5074000	size=2048 (units)	end=0x55fad507c000 next=0x55fad506b000
p=0x55fad506b000	size=257 (units)	end=0x55fad506c010 next=0x55fad506e020
p=0x55fad506e020	size=254 (units)	end=0x55fad506f000 next=0x55fad5069010
p=0x55fad5069010	size=255 (units)	end=0x55fad506a000 next=0x55fad506d000
p=0x55fad506d000	size=258 (units)	end=0x55fad506e020 next=0x55fad506a000
p=0x55fad506a000	size=256 (units)	end=0x55fad506b000 next=0x55fad506f000
p=0x55fad506f000	size=512 (units)	end=0x55fad5071000 next=0x55fad5073030
p=0x55fad5073030	size=253 (units)	end=0x55fad5074000 next=0x55fad506c010
p=0x55fad506c010	size=255 (units)	end=0x55fad506d000 next=0x55fad5071000
p=0x55fad5071000	size=515 (units)	end=0x55fad5073030 next=0x55fad5069000
p=0x55fad5069000	size=0 (units)	end=0x55fad5069000 next=0x55fad5074000 <-- dummy

Alloc p7 (32788 bytes, 2050 units (+1 w/ mem_chunk_t header))

Current_free_list

Total SBRK calls: 8

Total pages requested: 28

p=0x55fad506b000	size=257 (units)	end=0x55fad506c010 next=0x55fad506e020
p=0x55fad506e020	size=254 (units)	end=0x55fad506f000 next=0x55fad5069010
p=0x55fad5069010	size=255 (units)	end=0x55fad506a000 next=0x55fad506d000
p=0x55fad506d000	size=258 (units)	end=0x55fad506e020 next=0x55fad506a000
p=0x55fad506a000	size=256 (units)	end=0x55fad506b000 next=0x55fad506f000
p=0x55fad506f000	size=512 (units)	end=0x55fad5071000 next=0x55fad5073030
p=0x55fad5073030	size=253 (units)	end=0x55fad5074000 next=0x55fad506c010
p=0x55fad506c010	size=255 (units)	end=0x55fad506d000 next=0x55fad5071000
p=0x55fad5071000	size=515 (units)	end=0x55fad5073030 next=0x55fad5069000
p=0x55fad5069000	size=0 (units)	end=0x55fad5069000 next=0x55fad5074000 <-- dummy
p=0x55fad5074000	size=2048 (units)	end=0x55fad507c000 next=0x55fad5084030
p=0x55fad5084030	size=253 (units)	end=0x55fad5085000 next=0x55fad506b000

Freeing p7 (32788 bytes, 2050 units (+1 w/ mem_chunk_t header))

Current_free_list

Total SBRK calls: 8

Total pages requested: 28

p=0x55fad507c000	size=2051 (units)	end=0x55fad5084030 next=0x55fad506e020
p=0x55fad506e020	size=254 (units)	end=0x55fad506f000 next=0x55fad5069010
p=0x55fad5069010	size=255 (units)	end=0x55fad506a000 next=0x55fad506d000
p=0x55fad506d000	size=258 (units)	end=0x55fad506e020 next=0x55fad506a000
p=0x55fad506a000	size=256 (units)	end=0x55fad506b000 next=0x55fad506f000

p=0x55fad506f000	size=512 (units)	end=0x55fad5071000 next=0x55fad5073030
p=0x55fad5073030	size=253 (units)	end=0x55fad5074000 next=0x55fad506c010
p=0x55fad506c010	size=255 (units)	end=0x55fad506d000 next=0x55fad5071000
p=0x55fad5071000	size=515 (units)	end=0x55fad5073030 next=0x55fad5069000
p=0x55fad5069000	size=0 (units)	end=0x55fad5069000 next=0x55fad5074000 <-- dummy
p=0x55fad5074000	size=2048 (units)	end=0x55fad507c000 next=0x55fad5084030
p=0x55fad5084030	size=253 (units)	end=0x55fad5085000 next=0x55fad506b000
p=0x55fad506b000	size=257 (units)	end=0x55fad506c010 next=0x55fad507c000

~~~~~ Free list stats ~~~~~

Including dummy block

|                                                                                                                                              |
|----------------------------------------------------------------------------------------------------------------------------------------------|
| Sbrk calls: 8<br>Pages allocated: 28 pages, 114688 bytes, 7168 units<br>Blocks in list: 13<br>Total memory in list: 114688 bytes, 7168 units |
|----------------------------------------------------------------------------------------------------------------------------------------------|

Not including dummy block

|                                                                                                                               |
|-------------------------------------------------------------------------------------------------------------------------------|
| Minimum block size: 4048 bytes, 253 units<br>Maximum block size: 32816 bytes, 2051 units<br>Average block size: 9556.00 bytes |
|-------------------------------------------------------------------------------------------------------------------------------|

|                                                    |
|----------------------------------------------------|
| All memory is in the heap -- no leaks are possible |
|----------------------------------------------------|

First-fit search policy using coalescing

Alloc p1 (4080 bytes, 255 units (+1 w/ mem\_chunk\_t header))

\_\_\_\_\_Current\_free\_list\_\_\_\_\_

Total SBRK calls: 2

Total pages requested: 2

|                  |                  |                                                  |
|------------------|------------------|--------------------------------------------------|
| p=0x559dcac01000 | size=0 (units)   | end=0x559dcac01000 next=0x559dcac02010 <-- dummy |
| p=0x559dcac02010 | size=255 (units) | end=0x559dcac03000 next=0x559dcac01000           |

Freeing p1 (4080 bytes, 255 units (+1 w/ mem\_chunk\_t header))

\_\_\_\_\_Current\_free\_list\_\_\_\_\_

Total SBRK calls: 2

Total pages requested: 2

|                  |                  |                                                  |
|------------------|------------------|--------------------------------------------------|
| p=0x559dcac01000 | size=0 (units)   | end=0x559dcac01000 next=0x559dcac01010 <-- dummy |
| p=0x559dcac01010 | size=511 (units) | end=0x559dcac03000 next=0x559dcac01000           |

Alloc p2 (4096 bytes, 256 units (+1 w/ mem\_chunk\_t header))

\_\_\_\_\_Current\_free\_list\_\_\_\_\_

Total SBRK calls: 2

Total pages requested: 2

|                  |                  |                                                  |
|------------------|------------------|--------------------------------------------------|
| p=0x559dcac01000 | size=0 (units)   | end=0x559dcac01000 next=0x559dcac02020 <-- dummy |
| p=0x559dcac02020 | size=254 (units) | end=0x559dcac03000 next=0x559dcac01000           |

Freeing p2 (4096 bytes, 256 units (+1 w/ mem\_chunk\_t header))

\_\_\_\_\_Current\_free\_list\_\_\_\_\_

Total SBRK calls: 2

Total pages requested: 2

|                  |                  |                                                  |
|------------------|------------------|--------------------------------------------------|
| p=0x559dcac01000 | size=0 (units)   | end=0x559dcac01000 next=0x559dcac01010 <-- dummy |
| p=0x559dcac01010 | size=511 (units) | end=0x559dcac03000 next=0x559dcac01000           |

Alloc p3 (4112 bytes, 257 units (+1 w/ mem\_chunk\_t header))

\_\_\_\_Current\_free\_list\_\_\_\_\_  
Total SBRK calls: 2  
Total pages requested: 2  
p=0x559dcac01000 size=0 (units) end=0x559dcac01000 next=0x559dcac02030 <-- dummy  
p=0x559dcac02030 size=253 (units) end=0x559dcac03000 next=0x559dcac01000

Freeing p3 (4112 bytes, 257 units (+1 w/ mem\_chunk\_t header))  
\_\_\_\_Current\_free\_list\_\_\_\_\_  
Total SBRK calls: 2  
Total pages requested: 2  
p=0x559dcac01000 size=0 (units) end=0x559dcac01000 next=0x559dcac01010 <-- dummy  
p=0x559dcac01010 size=511 (units) end=0x559dcac03000 next=0x559dcac01000

Alloc p4 (8172 bytes, 511 units (+1 w/ mem\_chunk\_t header))  
\_\_\_\_Current\_free\_list\_\_\_\_\_  
Total SBRK calls: 3  
Total pages requested: 4  
p=0x559dcac01000 size=0 (units) end=0x559dcac01000 next=0x559dcac03010 <-- dummy  
p=0x559dcac03010 size=511 (units) end=0x559dcac05000 next=0x559dcac01000

Freeing p4 (8172 bytes, 511 units (+1 w/ mem\_chunk\_t header))  
\_\_\_\_Current\_free\_list\_\_\_\_\_  
Total SBRK calls: 3  
Total pages requested: 4  
p=0x559dcac01000 size=0 (units) end=0x559dcac01000 next=0x559dcac01010 <-- dummy  
p=0x559dcac01010 size=1023 (units) end=0x559dcac05000 next=0x559dcac01000

Alloc p5 (8212 bytes, 514 units (+1 w/ mem\_chunk\_t header))  
\_\_\_\_Current\_free\_list\_\_\_\_\_  
Total SBRK calls: 3  
Total pages requested: 4  
p=0x559dcac01000 size=0 (units) end=0x559dcac01000 next=0x559dcac03040 <-- dummy  
p=0x559dcac03040 size=508 (units) end=0x559dcac05000 next=0x559dcac01000

Freeing p5 (8212 bytes, 514 units (+1 w/ mem\_chunk\_t header))  
\_\_\_\_Current\_free\_list\_\_\_\_\_  
Total SBRK calls: 3  
Total pages requested: 4  
p=0x559dcac01000 size=0 (units) end=0x559dcac01000 next=0x559dcac01010 <-- dummy  
p=0x559dcac01010 size=1023 (units) end=0x559dcac05000 next=0x559dcac01000

Alloc p6 (32752 bytes, 2047 units (+1 w/ mem\_chunk\_t header))  
\_\_\_\_Current\_free\_list\_\_\_\_\_  
Total SBRK calls: 4  
Total pages requested: 12  
p=0x559dcac01000 size=0 (units) end=0x559dcac01000 next=0x559dcac09010 <-- dummy  
p=0x559dcac09010 size=1023 (units) end=0x559dcac0d000 next=0x559dcac01000

Freeing p6 (32752 bytes, 2047 units (+1 w/ mem\_chunk\_t header))  
\_\_\_\_Current\_free\_list\_\_\_\_\_  
Total SBRK calls: 4  
Total pages requested: 12  
p=0x559dcac01000 size=0 (units) end=0x559dcac01000 next=0x559dcac01010 <-- dummy  
p=0x559dcac01010 size=3071 (units) end=0x559dcac0d000 next=0x559dcac01000

Alloc p7 (32788 bytes, 2050 units (+1 w/ mem\_chunk\_t header))  
\_\_\_\_Current\_free\_list\_\_\_\_\_  
Total SBRK calls: 4  
Total pages requested: 12  
p=0x559dcac01000 size=0 (units) end=0x559dcac01000 next=0x559dcac09040 <-- dummy  
p=0x559dcac09040 size=1020 (units) end=0x559dcac0d000 next=0x559dcac01000

Freeing p7 (32788 bytes, 2050 units (+1 w/ mem\_chunk\_t header))  
\_\_\_\_Current\_free\_list\_\_\_\_\_  
Total SBRK calls: 4  
Total pages requested: 12

p=0x559dcac01000 size=0 (units) end=0x559dcac01000 next=0x559dcac01010 <-- dummy  
p=0x559dcac01010 size=3071 (units) end=0x559dcac0d000 next=0x559dcac01000

~~~~~ Free list stats ~~~~~

Including dummy block

| |
|--|
| Sbrk calls: 4 |
| Pages allocated: 12 pages, 49152 bytes, 3072 units |
| Blocks in list: 2 |
| Total memory in list: 49152 bytes, 3072 units |

Not including dummy block

| |
|---|
| Minimum block size: 49136 bytes, 3071 units |
| Maximum block size: 49136 bytes, 3071 units |
| Average block size: 49136.00 bytes |

| |
|--|
| All memory is in the heap -- no leaks are possible |
|--|

Best-fit search policy without coalescing

Alloc p1 (4080 bytes, 255 units (+1 w/ mem_chunk_t header))

_____Current_free_list_____

Total SBRK calls: 2

Total pages requested: 2

| | | | |
|------------------|------------------|--------------------|-------------------------------|
| p=0x55963ad04010 | size=255 (units) | end=0x55963ad05000 | next=0x55963ad04000 |
| p=0x55963ad04000 | size=0 (units) | end=0x55963ad04000 | next=0x55963ad04010 <-- dummy |

Freeing p1 (4080 bytes, 255 units (+1 w/ mem_chunk_t header))

_____Current_free_list_____

Total SBRK calls: 2

Total pages requested: 2

| | | | |
|------------------|------------------|--------------------|-------------------------------|
| p=0x55963ad05000 | size=256 (units) | end=0x55963ad06000 | next=0x55963ad04000 |
| p=0x55963ad04000 | size=0 (units) | end=0x55963ad04000 | next=0x55963ad04010 <-- dummy |
| p=0x55963ad04010 | size=255 (units) | end=0x55963ad05000 | next=0x55963ad05000 |

Alloc p2 (4096 bytes, 256 units (+1 w/ mem_chunk_t header))

_____Current_free_list_____

Total SBRK calls: 3

Total pages requested: 4

| | | | |
|------------------|------------------|--------------------|-------------------------------|
| p=0x55963ad04000 | size=0 (units) | end=0x55963ad04000 | next=0x55963ad04010 <-- dummy |
| p=0x55963ad04010 | size=255 (units) | end=0x55963ad05000 | next=0x55963ad05000 |
| p=0x55963ad05000 | size=256 (units) | end=0x55963ad06000 | next=0x55963ad07010 |
| p=0x55963ad07010 | size=255 (units) | end=0x55963ad08000 | next=0x55963ad04000 |

Freeing p2 (4096 bytes, 256 units (+1 w/ mem_chunk_t header))

_____Current_free_list_____

Total SBRK calls: 3

Total pages requested: 4

| | | | |
|------------------|------------------|--------------------|-------------------------------|
| p=0x55963ad06000 | size=257 (units) | end=0x55963ad07010 | next=0x55963ad04010 |
| p=0x55963ad04010 | size=255 (units) | end=0x55963ad05000 | next=0x55963ad05000 |
| p=0x55963ad05000 | size=256 (units) | end=0x55963ad06000 | next=0x55963ad07010 |
| p=0x55963ad07010 | size=255 (units) | end=0x55963ad08000 | next=0x55963ad04000 |
| p=0x55963ad04000 | size=0 (units) | end=0x55963ad04000 | next=0x55963ad06000 <-- dummy |

Alloc p3 (4112 bytes, 257 units (+1 w/ mem_chunk_t header))

_____Current_free_list_____

Total SBRK calls: 4

Total pages requested: 6

| | | | |
|------------------|------------------|--------------------|-------------------------------|
| p=0x55963ad04010 | size=255 (units) | end=0x55963ad05000 | next=0x55963ad05000 |
| p=0x55963ad05000 | size=256 (units) | end=0x55963ad06000 | next=0x55963ad07010 |
| p=0x55963ad07010 | size=255 (units) | end=0x55963ad08000 | next=0x55963ad04000 |
| p=0x55963ad04000 | size=0 (units) | end=0x55963ad04000 | next=0x55963ad06000 <-- dummy |
| p=0x55963ad06000 | size=257 (units) | end=0x55963ad07010 | next=0x55963ad09020 |
| p=0x55963ad09020 | size=254 (units) | end=0x55963ad0a000 | next=0x55963ad04010 |

Freeing p3 (4112 bytes, 257 units (+1 w/ mem_chunk_t header))

_____Current_free_list_____

Total SBRK calls: 4

Total pages requested: 6

| | | | |
|------------------|------------------|--------------------|-------------------------------|
| p=0x55963ad08000 | size=258 (units) | end=0x55963ad09020 | next=0x55963ad05000 |
| p=0x55963ad05000 | size=256 (units) | end=0x55963ad06000 | next=0x55963ad07010 |
| p=0x55963ad07010 | size=255 (units) | end=0x55963ad08000 | next=0x55963ad04000 |
| p=0x55963ad04000 | size=0 (units) | end=0x55963ad04000 | next=0x55963ad06000 <-- dummy |
| p=0x55963ad06000 | size=257 (units) | end=0x55963ad07010 | next=0x55963ad09020 |
| p=0x55963ad09020 | size=254 (units) | end=0x55963ad0a000 | next=0x55963ad04010 |
| p=0x55963ad04010 | size=255 (units) | end=0x55963ad05000 | next=0x55963ad08000 |

Alloc p4 (8172 bytes, 511 units (+1 w/ mem_chunk_t header))

_____Current_free_list_____

Total SBRK calls: 5

Total pages requested: 8

| | | | |
|------------------|------------------|--------------------|-------------------------------|
| p=0x55963ad05000 | size=256 (units) | end=0x55963ad06000 | next=0x55963ad07010 |
| p=0x55963ad07010 | size=255 (units) | end=0x55963ad08000 | next=0x55963ad04000 |
| p=0x55963ad04000 | size=0 (units) | end=0x55963ad04000 | next=0x55963ad06000 <-- dummy |
| p=0x55963ad06000 | size=257 (units) | end=0x55963ad07010 | next=0x55963ad09020 |
| p=0x55963ad09020 | size=254 (units) | end=0x55963ad0a000 | next=0x55963ad04010 |
| p=0x55963ad04010 | size=255 (units) | end=0x55963ad05000 | next=0x55963ad08000 |
| p=0x55963ad08000 | size=258 (units) | end=0x55963ad09020 | next=0x55963ad05000 |

Freeing p4 (8172 bytes, 511 units (+1 w/ mem_chunk_t header))

_____Current_free_list_____

Total SBRK calls: 5

Total pages requested: 8

| | | | |
|------------------|------------------|--------------------|-------------------------------|
| p=0x55963ad0a000 | size=512 (units) | end=0x55963ad0c000 | next=0x55963ad07010 |
| p=0x55963ad07010 | size=255 (units) | end=0x55963ad08000 | next=0x55963ad04000 |
| p=0x55963ad04000 | size=0 (units) | end=0x55963ad04000 | next=0x55963ad06000 <-- dummy |
| p=0x55963ad06000 | size=257 (units) | end=0x55963ad07010 | next=0x55963ad09020 |
| p=0x55963ad09020 | size=254 (units) | end=0x55963ad0a000 | next=0x55963ad04010 |
| p=0x55963ad04010 | size=255 (units) | end=0x55963ad05000 | next=0x55963ad08000 |
| p=0x55963ad08000 | size=258 (units) | end=0x55963ad09020 | next=0x55963ad05000 |
| p=0x55963ad05000 | size=256 (units) | end=0x55963ad06000 | next=0x55963ad0a000 |

Alloc p5 (8212 bytes, 514 units (+1 w/ mem_chunk_t header))

_____Current_free_list_____

Total SBRK calls: 6

Total pages requested: 11

| | | | |
|------------------|------------------|--------------------|-------------------------------|
| p=0x55963ad07010 | size=255 (units) | end=0x55963ad08000 | next=0x55963ad04000 |
| p=0x55963ad04000 | size=0 (units) | end=0x55963ad04000 | next=0x55963ad06000 <-- dummy |
| p=0x55963ad06000 | size=257 (units) | end=0x55963ad07010 | next=0x55963ad09020 |
| p=0x55963ad09020 | size=254 (units) | end=0x55963ad0a000 | next=0x55963ad04010 |
| p=0x55963ad04010 | size=255 (units) | end=0x55963ad05000 | next=0x55963ad08000 |
| p=0x55963ad08000 | size=258 (units) | end=0x55963ad09020 | next=0x55963ad05000 |
| p=0x55963ad05000 | size=256 (units) | end=0x55963ad06000 | next=0x55963ad0a000 |
| p=0x55963ad0a000 | size=512 (units) | end=0x55963ad0c000 | next=0x55963ad0e030 |
| p=0x55963ad0e030 | size=253 (units) | end=0x55963ad0f000 | next=0x55963ad07010 |

Freeing p5 (8212 bytes, 514 units (+1 w/ mem_chunk_t header))

_____Current_free_list_____

Total SBRK calls: 6

Total pages requested: 11

| | | | |
|------------------|------------------|--------------------|---------------------|
| p=0x55963ad0c000 | size=515 (units) | end=0x55963ad0e030 | next=0x55963ad04000 |
|------------------|------------------|--------------------|---------------------|

| | | | |
|------------------|------------------|--------------------|-------------------------------|
| p=0x55963ad04000 | size=0 (units) | end=0x55963ad04000 | next=0x55963ad06000 <-- dummy |
| p=0x55963ad06000 | size=257 (units) | end=0x55963ad07010 | next=0x55963ad09020 |
| p=0x55963ad09020 | size=254 (units) | end=0x55963ad0a000 | next=0x55963ad04010 |
| p=0x55963ad04010 | size=255 (units) | end=0x55963ad05000 | next=0x55963ad08000 |
| p=0x55963ad08000 | size=258 (units) | end=0x55963ad09020 | next=0x55963ad05000 |
| p=0x55963ad05000 | size=256 (units) | end=0x55963ad06000 | next=0x55963ad0a000 |
| p=0x55963ad0a000 | size=512 (units) | end=0x55963ad0c000 | next=0x55963ad0e030 |
| p=0x55963ad0e030 | size=253 (units) | end=0x55963ad0f000 | next=0x55963ad07010 |
| p=0x55963ad07010 | size=255 (units) | end=0x55963ad08000 | next=0x55963ad0c000 |

Alloc p6 (32752 bytes, 2047 units (+1 w/ mem_chunk_t header))

Current_free_list

Total SBRK calls: 7

Total pages requested: 19

| | | | |
|------------------|------------------|--------------------|-------------------------------|
| p=0x55963ad04000 | size=0 (units) | end=0x55963ad04000 | next=0x55963ad06000 <-- dummy |
| p=0x55963ad06000 | size=257 (units) | end=0x55963ad07010 | next=0x55963ad09020 |
| p=0x55963ad09020 | size=254 (units) | end=0x55963ad0a000 | next=0x55963ad04010 |
| p=0x55963ad04010 | size=255 (units) | end=0x55963ad05000 | next=0x55963ad08000 |
| p=0x55963ad08000 | size=258 (units) | end=0x55963ad09020 | next=0x55963ad05000 |
| p=0x55963ad05000 | size=256 (units) | end=0x55963ad06000 | next=0x55963ad0a000 |
| p=0x55963ad0a000 | size=512 (units) | end=0x55963ad0c000 | next=0x55963ad0e030 |
| p=0x55963ad0e030 | size=253 (units) | end=0x55963ad0f000 | next=0x55963ad07010 |
| p=0x55963ad07010 | size=255 (units) | end=0x55963ad08000 | next=0x55963ad0c000 |
| p=0x55963ad0c000 | size=515 (units) | end=0x55963ad0e030 | next=0x55963ad04000 |

Freeing p6 (32752 bytes, 2047 units (+1 w/ mem_chunk_t header))

Current_free_list

Total SBRK calls: 7

Total pages requested: 19

| | | | |
|------------------|-------------------|--------------------|-------------------------------|
| p=0x55963ad0f000 | size=2048 (units) | end=0x55963ad17000 | next=0x55963ad06000 |
| p=0x55963ad06000 | size=257 (units) | end=0x55963ad07010 | next=0x55963ad09020 |
| p=0x55963ad09020 | size=254 (units) | end=0x55963ad0a000 | next=0x55963ad04010 |
| p=0x55963ad04010 | size=255 (units) | end=0x55963ad05000 | next=0x55963ad08000 |
| p=0x55963ad08000 | size=258 (units) | end=0x55963ad09020 | next=0x55963ad05000 |
| p=0x55963ad05000 | size=256 (units) | end=0x55963ad06000 | next=0x55963ad0a000 |
| p=0x55963ad0a000 | size=512 (units) | end=0x55963ad0c000 | next=0x55963ad0e030 |
| p=0x55963ad0e030 | size=253 (units) | end=0x55963ad0f000 | next=0x55963ad07010 |
| p=0x55963ad07010 | size=255 (units) | end=0x55963ad08000 | next=0x55963ad0c000 |
| p=0x55963ad0c000 | size=515 (units) | end=0x55963ad0e030 | next=0x55963ad04000 |
| p=0x55963ad04000 | size=0 (units) | end=0x55963ad04000 | next=0x55963ad0f000 <-- dummy |

Alloc p7 (32788 bytes, 2050 units (+1 w/ mem_chunk_t header))

Current_free_list

Total SBRK calls: 8

Total pages requested: 28

| | | | |
|------------------|-------------------|--------------------|-------------------------------|
| p=0x55963ad06000 | size=257 (units) | end=0x55963ad07010 | next=0x55963ad09020 |
| p=0x55963ad09020 | size=254 (units) | end=0x55963ad0a000 | next=0x55963ad04010 |
| p=0x55963ad04010 | size=255 (units) | end=0x55963ad05000 | next=0x55963ad08000 |
| p=0x55963ad08000 | size=258 (units) | end=0x55963ad09020 | next=0x55963ad05000 |
| p=0x55963ad05000 | size=256 (units) | end=0x55963ad06000 | next=0x55963ad0a000 |
| p=0x55963ad0a000 | size=512 (units) | end=0x55963ad0c000 | next=0x55963ad0e030 |
| p=0x55963ad0e030 | size=253 (units) | end=0x55963ad0f000 | next=0x55963ad07010 |
| p=0x55963ad07010 | size=255 (units) | end=0x55963ad08000 | next=0x55963ad0c000 |
| p=0x55963ad0c000 | size=515 (units) | end=0x55963ad0e030 | next=0x55963ad04000 |
| p=0x55963ad04000 | size=0 (units) | end=0x55963ad04000 | next=0x55963ad0f000 <-- dummy |
| p=0x55963ad0f000 | size=2048 (units) | end=0x55963ad17000 | next=0x55963ad1f030 |
| p=0x55963ad1f030 | size=253 (units) | end=0x55963ad20000 | next=0x55963ad06000 |

Freeing p7 (32788 bytes, 2050 units (+1 w/ mem_chunk_t header))

Current_free_list

Total SBRK calls: 8

Total pages requested: 28

| | | | |
|------------------|-------------------|--------------------|---------------------|
| p=0x55963ad17000 | size=2051 (units) | end=0x55963ad1f030 | next=0x55963ad09020 |
| p=0x55963ad09020 | size=254 (units) | end=0x55963ad0a000 | next=0x55963ad04010 |
| p=0x55963ad04010 | size=255 (units) | end=0x55963ad05000 | next=0x55963ad08000 |
| p=0x55963ad08000 | size=258 (units) | end=0x55963ad09020 | next=0x55963ad05000 |

| | | | |
|------------------|-------------------|--------------------|-------------------------------|
| p=0x55963ad05000 | size=256 (units) | end=0x55963ad06000 | next=0x55963ad0a000 |
| p=0x55963ad0a000 | size=512 (units) | end=0x55963ad0c000 | next=0x55963ad0e030 |
| p=0x55963ad0e030 | size=253 (units) | end=0x55963ad0f000 | next=0x55963ad07010 |
| p=0x55963ad07010 | size=255 (units) | end=0x55963ad08000 | next=0x55963ad0c000 |
| p=0x55963ad0c000 | size=515 (units) | end=0x55963ad0e030 | next=0x55963ad04000 |
| p=0x55963ad04000 | size=0 (units) | end=0x55963ad04000 | next=0x55963ad0f000 <-- dummy |
| p=0x55963ad0f000 | size=2048 (units) | end=0x55963ad17000 | next=0x55963ad1f030 |
| p=0x55963ad1f030 | size=253 (units) | end=0x55963ad20000 | next=0x55963ad06000 |
| p=0x55963ad06000 | size=257 (units) | end=0x55963ad07010 | next=0x55963ad17000 |

~~~~~ Free list stats ~~~~~

Including dummy block

|                                                     |
|-----------------------------------------------------|
| Sbrk calls: 8                                       |
| Pages allocated: 28 pages, 114688 bytes, 7168 units |
| Blocks in list: 13                                  |
| Total memory in list: 114688 bytes, 7168 units      |

Not including dummy block

|                                             |
|---------------------------------------------|
| Minimum block size: 4048 bytes, 253 units   |
| Maximum block size: 32816 bytes, 2051 units |
| Average block size: 9556.00 bytes           |

|                                                    |
|----------------------------------------------------|
| All memory is in the heap -- no leaks are possible |
|----------------------------------------------------|

Best-fit search policy using coalescing

Alloc p1 (4080 bytes, 255 units (+1 w/ mem\_chunk\_t header))

\_\_\_\_\_Current\_free\_list\_\_\_\_\_

Total SBRK calls: 2

Total pages requested: 2

|                  |                  |                    |                               |
|------------------|------------------|--------------------|-------------------------------|
| p=0x56538ed87000 | size=0 (units)   | end=0x56538ed87000 | next=0x56538ed88010 <-- dummy |
| p=0x56538ed88010 | size=255 (units) | end=0x56538ed89000 | next=0x56538ed87000           |

Freeing p1 (4080 bytes, 255 units (+1 w/ mem\_chunk\_t header))

\_\_\_\_\_Current\_free\_list\_\_\_\_\_

Total SBRK calls: 2

Total pages requested: 2

|                  |                  |                    |                               |
|------------------|------------------|--------------------|-------------------------------|
| p=0x56538ed87000 | size=0 (units)   | end=0x56538ed87000 | next=0x56538ed87010 <-- dummy |
| p=0x56538ed87010 | size=511 (units) | end=0x56538ed89000 | next=0x56538ed87000           |

Alloc p2 (4096 bytes, 256 units (+1 w/ mem\_chunk\_t header))

\_\_\_\_\_Current\_free\_list\_\_\_\_\_

Total SBRK calls: 2

Total pages requested: 2

|                  |                  |                    |                               |
|------------------|------------------|--------------------|-------------------------------|
| p=0x56538ed87000 | size=0 (units)   | end=0x56538ed87000 | next=0x56538ed88020 <-- dummy |
| p=0x56538ed88020 | size=254 (units) | end=0x56538ed89000 | next=0x56538ed87000           |

Freeing p2 (4096 bytes, 256 units (+1 w/ mem\_chunk\_t header))

\_\_\_\_\_Current\_free\_list\_\_\_\_\_

Total SBRK calls: 2

Total pages requested: 2

|                  |                  |                    |                               |
|------------------|------------------|--------------------|-------------------------------|
| p=0x56538ed87000 | size=0 (units)   | end=0x56538ed87000 | next=0x56538ed87010 <-- dummy |
| p=0x56538ed87010 | size=511 (units) | end=0x56538ed89000 | next=0x56538ed87000           |

Alloc p3 (4112 bytes, 257 units (+1 w/ mem\_chunk\_t header))

\_\_\_\_\_Current\_free\_list\_\_\_\_\_

Total SBRK calls: 2

Total pages requested: 2

p=0x56538ed87000 size=0 (units) end=0x56538ed87000

next=0x56538ed88030 <-- dummy

p=0x56538ed88030 size=253 (units) end=0x56538ed89000

next=0x56538ed87000

Freeing p3 (4112 bytes, 257 units (+1 w/ mem\_chunk\_t header))

\_\_\_\_\_Current\_free\_list\_\_\_\_\_

Total SBRK calls: 2

Total pages requested: 2

p=0x56538ed87000 size=0 (units) end=0x56538ed87000

next=0x56538ed87010 <-- dummy

p=0x56538ed87010 size=511 (units) end=0x56538ed89000

next=0x56538ed87000

Alloc p4 (8172 bytes, 511 units (+1 w/ mem\_chunk\_t header))

\_\_\_\_\_Current\_free\_list\_\_\_\_\_

Total SBRK calls: 3

Total pages requested: 4

p=0x56538ed87000 size=0 (units) end=0x56538ed87000

next=0x56538ed89010 <-- dummy

p=0x56538ed89010 size=511 (units) end=0x56538ed8b000

next=0x56538ed87000

Freeing p4 (8172 bytes, 511 units (+1 w/ mem\_chunk\_t header))

\_\_\_\_\_Current\_free\_list\_\_\_\_\_

Total SBRK calls: 3

Total pages requested: 4

p=0x56538ed87000 size=0 (units) end=0x56538ed87000

next=0x56538ed87010 <-- dummy

p=0x56538ed87010 size=1023 (units) end=0x56538ed8b000

next=0x56538ed87000

Alloc p5 (8212 bytes, 514 units (+1 w/ mem\_chunk\_t header))

\_\_\_\_\_Current\_free\_list\_\_\_\_\_

Total SBRK calls: 3

Total pages requested: 4

p=0x56538ed87000 size=0 (units) end=0x56538ed87000

next=0x56538ed89040 <-- dummy

p=0x56538ed89040 size=508 (units) end=0x56538ed8b000

next=0x56538ed87000

Freeing p5 (8212 bytes, 514 units (+1 w/ mem\_chunk\_t header))

\_\_\_\_\_Current\_free\_list\_\_\_\_\_

Total SBRK calls: 3

Total pages requested: 4

p=0x56538ed87000 size=0 (units) end=0x56538ed87000

next=0x56538ed87010 <-- dummy

p=0x56538ed87010 size=1023 (units) end=0x56538ed8b000

next=0x56538ed87000

Alloc p6 (32752 bytes, 2047 units (+1 w/ mem\_chunk\_t header))

\_\_\_\_\_Current\_free\_list\_\_\_\_\_

Total SBRK calls: 4

Total pages requested: 12

p=0x56538ed87000 size=0 (units) end=0x56538ed87000

next=0x56538ed8f010 <-- dummy

p=0x56538ed8f010 size=1023 (units) end=0x56538ed93000

next=0x56538ed87000

Freeing p6 (32752 bytes, 2047 units (+1 w/ mem\_chunk\_t header))

\_\_\_\_\_Current\_free\_list\_\_\_\_\_

Total SBRK calls: 4

Total pages requested: 12

p=0x56538ed87000 size=0 (units) end=0x56538ed87000

next=0x56538ed87010 <-- dummy

p=0x56538ed87010 size=3071 (units) end=0x56538ed93000

next=0x56538ed87000

Alloc p7 (32788 bytes, 2050 units (+1 w/ mem\_chunk\_t header))

\_\_\_\_\_Current\_free\_list\_\_\_\_\_

Total SBRK calls: 4

Total pages requested: 12

p=0x56538ed87000 size=0 (units) end=0x56538ed87000

next=0x56538ed8f040 <-- dummy

p=0x56538ed8f040 size=1020 (units) end=0x56538ed93000

next=0x56538ed87000

Freeing p7 (32788 bytes, 2050 units (+1 w/ mem\_chunk\_t header))

\_\_\_\_\_Current\_free\_list\_\_\_\_\_

Total SBRK calls: 4

Total pages requested: 12  
p=0x56538ed87000 size=0 (units) end=0x56538ed87000 next=0x56538ed87010 <-- dummy  
p=0x56538ed87010 size=3071 (units) end=0x56538ed93000 next=0x56538ed87000

~~~~~ Free list stats ~~~~~

Including dummy block

| |
|--|
| Sbrk calls: 4 |
| Pages allocated: 12 pages, 49152 bytes, 3072 units |
| Blocks in list: 2 |
| Total memory in list: 49152 bytes, 3072 units |

Not including dummy block

| |
|---|
| Minimum block size: 49136 bytes, 3071 units |
| Maximum block size: 49136 bytes, 3071 units |
| Average block size: 49136.00 bytes |

| |
|--|
| All memory is in the heap -- no leaks are possible |
|--|

My second driver (-u 3) implements 7 allocations that total 2 pages of memory total. The first 6 allocations fill a single page while the 7th allocation fills a second page on its own. I then free the allocated memory in a different order with the 7th allocated block being freed last to ensure that coalescing works in various circumstances. To keep this document short, I am suppressing the free list prints throughout the test as I have already proven that my roving pointer functions as intended.

First-fit search policy without coalescing

Alloc p1 (224 bytes, 14 units (+1 w/ mem_chunk_t header))
Alloc p2 (464 bytes, 29 units (+1 w/ mem_chunk_t header))
Alloc p3 (544 bytes, 34 units (+1 w/ mem_chunk_t header))
Alloc p4 (784 bytes, 49 units (+1 w/ mem_chunk_t header))
Alloc p5 (864 bytes, 54 units (+1 w/ mem_chunk_t header))
Alloc p6 (1104 bytes, 69 units (+1 w/ mem_chunk_t header))
Alloc p7 (4080 bytes, 255 units (+1 w/ mem_chunk_t header))
Freeing p1 (224 bytes, 14 units (+1 w/ mem_chunk_t header))
Freeing p3 (544 bytes, 34 units (+1 w/ mem_chunk_t header))
Freeing p5 (864 bytes, 54 units (+1 w/ mem_chunk_t header))
Freeing p2 (464 bytes, 29 units (+1 w/ mem_chunk_t header))
Freeing p4 (784 bytes, 49 units (+1 w/ mem_chunk_t header))
Freeing p6 (1104 bytes, 69 units (+1 w/ mem_chunk_t header))
Freeing p7 (4080 bytes, 255 units (+1 w/ mem_chunk_t header))
_____Current_free_list_____

Total SBRK calls: 2
Total pages requested: 2

| | | | |
|------------------|------------------|--------------------|-------------------------------|
| p=0x5581e1d68000 | size=256 (units) | end=0x5581e1d69000 | next=0x5581e1d67000 |
| p=0x5581e1d67000 | size=0 (units) | end=0x5581e1d67000 | next=0x5581e1d67010 <-- dummy |
| p=0x5581e1d67010 | size=15 (units) | end=0x5581e1d67100 | next=0x5581e1d672e0 |
| p=0x5581e1d672e0 | size=35 (units) | end=0x5581e1d67510 | next=0x5581e1d67830 |
| p=0x5581e1d67830 | size=55 (units) | end=0x5581e1d67ba0 | next=0x5581e1d67100 |
| p=0x5581e1d67100 | size=30 (units) | end=0x5581e1d672e0 | next=0x5581e1d67510 |
| p=0x5581e1d67510 | size=50 (units) | end=0x5581e1d67830 | next=0x5581e1d67ba0 |
| p=0x5581e1d67ba0 | size=70 (units) | end=0x5581e1d68000 | next=0x5581e1d68000 |

~~~~~ Free list stats ~~~~~

Including dummy block

```
Sbrk calls: 2
Pages allocated: 2 pages, 8192 bytes, 512 units
Blocks in list: 8
Total memory in list: 8192 bytes, 512 units
```

Not including dummy block

```
Minimum block size: 240 bytes, 15 units
Maximum block size: 4096 bytes, 256 units
Average block size: 1168.00 bytes
```

All memory is in the heap -- no leaks are possible

First-fit search policy using coalescing

```
Alloc p1 (224 bytes, 14 units (+1 w/ mem_chunk_t header))
Alloc p2 (464 bytes, 29 units (+1 w/ mem_chunk_t header))
Alloc p3 (544 bytes, 34 units (+1 w/ mem_chunk_t header))
Alloc p4 (784 bytes, 49 units (+1 w/ mem_chunk_t header))
Alloc p5 (864 bytes, 54 units (+1 w/ mem_chunk_t header))
Alloc p6 (1104 bytes, 69 units (+1 w/ mem_chunk_t header))
Alloc p7 (4080 bytes, 255 units (+1 w/ mem_chunk_t header))
Freeing p1 (224 bytes, 14 units (+1 w/ mem_chunk_t header))
Freeing p3 (544 bytes, 34 units (+1 w/ mem_chunk_t header))
Freeing p5 (864 bytes, 54 units (+1 w/ mem_chunk_t header))
Freeing p2 (464 bytes, 29 units (+1 w/ mem_chunk_t header))
Freeing p4 (784 bytes, 49 units (+1 w/ mem_chunk_t header))
Freeing p6 (1104 bytes, 69 units (+1 w/ mem_chunk_t header))
Freeing p7 (4080 bytes, 255 units (+1 w/ mem_chunk_t header))
_____Current_free_list_____
Total SBRK calls: 2
Total pages requested: 2
p=0x555e09d44010 size=511 (units) end=0x555e09d46000 next=0x555e09d44000
p=0x555e09d44000 size=0 (units) end=0x555e09d44000 next=0x555e09d44010 <-- dummy
```

~~~~~ Free list stats ~~~~~

Including dummy block

```
Sbrk calls: 2
Pages allocated: 2 pages, 8192 bytes, 512 units
Blocks in list: 2
Total memory in list: 8192 bytes, 512 units
```

Not including dummy block

```
Minimum block size: 8176 bytes, 511 units
Maximum block size: 8176 bytes, 511 units
Average block size: 8176.00 bytes
```

All memory is in the heap -- no leaks are possible

Best-fit search policy without coalescing

Alloc p1 (224 bytes, 14 units (+1 w/ mem_chunk_t header))
Alloc p2 (464 bytes, 29 units (+1 w/ mem_chunk_t header))
Alloc p3 (544 bytes, 34 units (+1 w/ mem_chunk_t header))
Alloc p4 (784 bytes, 49 units (+1 w/ mem_chunk_t header))
Alloc p5 (864 bytes, 54 units (+1 w/ mem_chunk_t header))
Alloc p6 (1104 bytes, 69 units (+1 w/ mem_chunk_t header))
Alloc p7 (4080 bytes, 255 units (+1 w/ mem_chunk_t header))
Freeing p1 (224 bytes, 14 units (+1 w/ mem_chunk_t header))
Freeing p3 (544 bytes, 34 units (+1 w/ mem_chunk_t header))
Freeing p5 (864 bytes, 54 units (+1 w/ mem_chunk_t header))
Freeing p2 (464 bytes, 29 units (+1 w/ mem_chunk_t header))
Freeing p4 (784 bytes, 49 units (+1 w/ mem_chunk_t header))
Freeing p6 (1104 bytes, 69 units (+1 w/ mem_chunk_t header))
Freeing p7 (4080 bytes, 255 units (+1 w/ mem_chunk_t header))

Current_free_list

Total SBRK calls: 2

Total pages requested: 2

| | | | |
|------------------|------------------|--------------------|-------------------------------|
| p=0x5580c391a000 | size=256 (units) | end=0x5580c391b000 | next=0x5580c3919000 |
| p=0x5580c3919000 | size=0 (units) | end=0x5580c3919000 | next=0x5580c3919010 <-- dummy |
| p=0x5580c3919010 | size=15 (units) | end=0x5580c3919100 | next=0x5580c39192e0 |
| p=0x5580c39192e0 | size=35 (units) | end=0x5580c3919510 | next=0x5580c3919830 |
| p=0x5580c3919830 | size=55 (units) | end=0x5580c3919ba0 | next=0x5580c3919100 |
| p=0x5580c3919100 | size=30 (units) | end=0x5580c39192e0 | next=0x5580c3919510 |
| p=0x5580c3919510 | size=50 (units) | end=0x5580c3919830 | next=0x5580c3919ba0 |
| p=0x5580c3919ba0 | size=70 (units) | end=0x5580c391a000 | next=0x5580c391a000 |

~~~~~ Free list stats ~~~~~

Including dummy block

|                                                 |
|-------------------------------------------------|
| Sbrk calls: 2                                   |
| Pages allocated: 2 pages, 8192 bytes, 512 units |
| Blocks in list: 8                               |
| Total memory in list: 8192 bytes, 512 units     |

Not including dummy block

|                                           |
|-------------------------------------------|
| Minimum block size: 240 bytes, 15 units   |
| Maximum block size: 4096 bytes, 256 units |
| Average block size: 1168.00 bytes         |

|                                                    |
|----------------------------------------------------|
| All memory is in the heap -- no leaks are possible |
|----------------------------------------------------|

#### Best-fit search policy using coalescing

Alloc p1 (224 bytes, 14 units (+1 w/ mem\_chunk\_t header))  
Alloc p2 (464 bytes, 29 units (+1 w/ mem\_chunk\_t header))  
Alloc p3 (544 bytes, 34 units (+1 w/ mem\_chunk\_t header))  
Alloc p4 (784 bytes, 49 units (+1 w/ mem\_chunk\_t header))  
Alloc p5 (864 bytes, 54 units (+1 w/ mem\_chunk\_t header))  
Alloc p6 (1104 bytes, 69 units (+1 w/ mem\_chunk\_t header))

```

Alloc p7 (4080 bytes, 255 units (+1 w/ mem_chunk_t header))
Freeing p1 (224 bytes, 14 units (+1 w/ mem_chunk_t header))
Freeing p3 (544 bytes, 34 units (+1 w/ mem_chunk_t header))
Freeing p5 (864 bytes, 54 units (+1 w/ mem_chunk_t header))
Freeing p2 (464 bytes, 29 units (+1 w/ mem_chunk_t header))
Freeing p4 (784 bytes, 49 units (+1 w/ mem_chunk_t header))
Freeing p6 (1104 bytes, 69 units (+1 w/ mem_chunk_t header))
Freeing p7 (4080 bytes, 255 units (+1 w/ mem_chunk_t header))
_____Current_free_list_____
Total SBRK calls: 2
Total pages requested: 2
p=0x555d9da4c010 size=511 (units) end=0x555d9da4e000 next=0x555d9da4c000
p=0x555d9da4c000 size=0 (units) end=0x555d9da4c000 next=0x555d9da4c010 <-- dummy

```

~~~~~ Free list stats ~~~~~

Including dummy block

| |
|---|
| Sbrk calls: 2 |
| Pages allocated: 2 pages, 8192 bytes, 512 units |
| Blocks in list: 2 |
| Total memory in list: 8192 bytes, 512 units |

Not including dummy block

| |
|---|
| Minimum block size: 8176 bytes, 511 units |
| Maximum block size: 8176 bytes, 511 units |
| Average block size: 8176.00 bytes |

| |
|--|
| All memory is in the heap -- no leaks are possible |
|--|

Finally, my third driver (-u 4) performs 17 allocations, frees the memory, then allocates the same 17 memory sizes again while freeing the previous memory block after each allocation. I chose this pattern to test that the first-fit and best-fit block selection mechanisms worked as intended. Here, the free list prints are suppressed except for the immediately after the first time all memory blocks are freed and after the following few allocations to show the block finding works while keeping the size of this document as small as possible.

```

First-fit search policy without coalescing
Alloc p1 (96 bytes, 6 units (+1 w/ mem_chunk_t header))
Alloc p2 (112 bytes, 7 units (+1 w/ mem_chunk_t header))
Alloc p3 (128 bytes, 8 units (+1 w/ mem_chunk_t header))
Alloc p4 (144 bytes, 9 units (+1 w/ mem_chunk_t header))
Alloc p5 (160 bytes, 10 units (+1 w/ mem_chunk_t header))
Alloc p6 (176 bytes, 11 units (+1 w/ mem_chunk_t header))
Alloc p7 (192 bytes, 12 units (+1 w/ mem_chunk_t header))
Alloc p8 (208 bytes, 13 units (+1 w/ mem_chunk_t header))
Alloc p9 (224 bytes, 14 units (+1 w/ mem_chunk_t header))
Alloc p10 (240 bytes, 15 units (+1 w/ mem_chunk_t header))
Alloc p11 (256 bytes, 16 units (+1 w/ mem_chunk_t header))
Alloc p12 (272 bytes, 17 units (+1 w/ mem_chunk_t header))
Alloc p13 (288 bytes, 18 units (+1 w/ mem_chunk_t header))

```

Alloc p14 (304 bytes, 19 units (+1 w/ mem_chunk_t header))
 Alloc p15 (320 bytes, 20 units (+1 w/ mem_chunk_t header))
 Alloc p16 (336 bytes, 21 units (+1 w/ mem_chunk_t header))
 Alloc p17 (352 bytes, 22 units (+1 w/ mem_chunk_t header))

Freeing all blocks in pseudo-random order, creating multiple small blocks

____Current_free_list____

Total SBRK calls: 1

Total pages requested: 1

| | | | |
|------------------|-----------------|--------------------|-------------------------------|
| p=0x5639fc438970 | size=19 (units) | end=0x5639fc438aa0 | next=0x5639fc438000 |
| p=0x5639fc438000 | size=0 (units) | end=0x5639fc438000 | next=0x5639fc438010 <-- dummy |
| p=0x5639fc438010 | size=7 (units) | end=0x5639fc438080 | next=0x5639fc4383a0 |
| p=0x5639fc4383a0 | size=13 (units) | end=0x5639fc438470 | next=0x5639fc438aa0 |
| p=0x5639fc438aa0 | size=20 (units) | end=0x5639fc438be0 | next=0x5639fc438080 |
| p=0x5639fc438080 | size=8 (units) | end=0x5639fc438100 | next=0x5639fc438470 |
| p=0x5639fc438470 | size=14 (units) | end=0x5639fc438550 | next=0x5639fc438be0 |
| p=0x5639fc438be0 | size=21 (units) | end=0x5639fc438d30 | next=0x5639fc438100 |
| p=0x5639fc438100 | size=9 (units) | end=0x5639fc438190 | next=0x5639fc438550 |
| p=0x5639fc438550 | size=15 (units) | end=0x5639fc438640 | next=0x5639fc438d30 |
| p=0x5639fc438d30 | size=22 (units) | end=0x5639fc438e90 | next=0x5639fc438190 |
| p=0x5639fc438190 | size=10 (units) | end=0x5639fc438230 | next=0x5639fc438640 |
| p=0x5639fc438640 | size=16 (units) | end=0x5639fc438740 | next=0x5639fc438e90 |
| p=0x5639fc438e90 | size=23 (units) | end=0x5639fc439000 | next=0x5639fc438230 |
| p=0x5639fc438230 | size=11 (units) | end=0x5639fc4382e0 | next=0x5639fc438740 |
| p=0x5639fc438740 | size=17 (units) | end=0x5639fc438850 | next=0x5639fc4382e0 |
| p=0x5639fc4382e0 | size=12 (units) | end=0x5639fc4383a0 | next=0x5639fc438850 |
| p=0x5639fc438850 | size=18 (units) | end=0x5639fc438970 | next=0x5639fc438970 |

Repeating allocations, freeing along the way

Alloc p1 (96 bytes, 6 units (+1 w/ mem_chunk_t header))

____Current_free_list____

Total SBRK calls: 1

Total pages requested: 1

| | | | |
|------------------|-----------------|--------------------|-------------------------------|
| p=0x5639fc438000 | size=0 (units) | end=0x5639fc438000 | next=0x5639fc438010 <-- dummy |
| p=0x5639fc438010 | size=7 (units) | end=0x5639fc438080 | next=0x5639fc4383a0 |
| p=0x5639fc4383a0 | size=13 (units) | end=0x5639fc438470 | next=0x5639fc438aa0 |
| p=0x5639fc438aa0 | size=20 (units) | end=0x5639fc438be0 | next=0x5639fc438080 |
| p=0x5639fc438080 | size=8 (units) | end=0x5639fc438100 | next=0x5639fc438470 |
| p=0x5639fc438470 | size=14 (units) | end=0x5639fc438550 | next=0x5639fc438be0 |
| p=0x5639fc438be0 | size=21 (units) | end=0x5639fc438d30 | next=0x5639fc438100 |
| p=0x5639fc438100 | size=9 (units) | end=0x5639fc438190 | next=0x5639fc438550 |
| p=0x5639fc438550 | size=15 (units) | end=0x5639fc438640 | next=0x5639fc438d30 |
| p=0x5639fc438d30 | size=22 (units) | end=0x5639fc438e90 | next=0x5639fc438190 |
| p=0x5639fc438190 | size=10 (units) | end=0x5639fc438230 | next=0x5639fc438640 |
| p=0x5639fc438640 | size=16 (units) | end=0x5639fc438740 | next=0x5639fc438e90 |
| p=0x5639fc438e90 | size=23 (units) | end=0x5639fc439000 | next=0x5639fc438230 |
| p=0x5639fc438230 | size=11 (units) | end=0x5639fc4382e0 | next=0x5639fc438740 |
| p=0x5639fc438740 | size=17 (units) | end=0x5639fc438850 | next=0x5639fc4382e0 |
| p=0x5639fc4382e0 | size=12 (units) | end=0x5639fc4383a0 | next=0x5639fc438850 |
| p=0x5639fc438850 | size=18 (units) | end=0x5639fc438970 | next=0x5639fc4389e0 |
| p=0x5639fc4389e0 | size=12 (units) | end=0x5639fc438aa0 | next=0x5639fc438000 |

Alloc p6 (176 bytes, 11 units (+1 w/ mem_chunk_t header))

____Current_free_list____

Total SBRK calls: 1

Total pages requested: 1

| | | | |
|------------------|-----------------|--------------------|---------------------|
| p=0x5639fc438aa0 | size=20 (units) | end=0x5639fc438be0 | next=0x5639fc438080 |
| p=0x5639fc438080 | size=8 (units) | end=0x5639fc438100 | next=0x5639fc438470 |
| p=0x5639fc438470 | size=14 (units) | end=0x5639fc438550 | next=0x5639fc438be0 |
| p=0x5639fc438be0 | size=21 (units) | end=0x5639fc438d30 | next=0x5639fc438100 |
| p=0x5639fc438100 | size=9 (units) | end=0x5639fc438190 | next=0x5639fc438550 |
| p=0x5639fc438550 | size=15 (units) | end=0x5639fc438640 | next=0x5639fc438d30 |
| p=0x5639fc438d30 | size=22 (units) | end=0x5639fc438e90 | next=0x5639fc438190 |
| p=0x5639fc438190 | size=10 (units) | end=0x5639fc438230 | next=0x5639fc438640 |

| | | | |
|------------------|-----------------|--------------------|-------------------------------|
| p=0x5639fc438640 | size=16 (units) | end=0x5639fc438740 | next=0x5639fc438e90 |
| p=0x5639fc438e90 | size=23 (units) | end=0x5639fc439000 | next=0x5639fc438230 |
| p=0x5639fc438230 | size=11 (units) | end=0x5639fc4382e0 | next=0x5639fc438740 |
| p=0x5639fc438740 | size=17 (units) | end=0x5639fc438850 | next=0x5639fc4382e0 |
| p=0x5639fc4382e0 | size=12 (units) | end=0x5639fc4383a0 | next=0x5639fc438850 |
| p=0x5639fc438850 | size=18 (units) | end=0x5639fc438970 | next=0x5639fc4389e0 |
| p=0x5639fc4389e0 | size=12 (units) | end=0x5639fc438aa0 | next=0x5639fc438000 |
| p=0x5639fc438000 | size=0 (units) | end=0x5639fc438000 | next=0x5639fc438010 <-- dummy |
| p=0x5639fc438010 | size=7 (units) | end=0x5639fc438080 | next=0x5639fc438460 |
| p=0x5639fc438460 | size=1 (units) | end=0x5639fc438470 | next=0x5639fc438aa0 |

Free p1 (96 bytes, 6 units (+1 w/ mem_chunk_t header))

Current_free_list

Total SBRK calls: 1

Total pages requested: 1

| | | | |
|------------------|-----------------|--------------------|-------------------------------|
| p=0x5639fc438970 | size=7 (units) | end=0x5639fc4389e0 | next=0x5639fc438080 |
| p=0x5639fc438080 | size=8 (units) | end=0x5639fc438100 | next=0x5639fc438470 |
| p=0x5639fc438470 | size=14 (units) | end=0x5639fc438550 | next=0x5639fc438be0 |
| p=0x5639fc438be0 | size=21 (units) | end=0x5639fc438d30 | next=0x5639fc438100 |
| p=0x5639fc438100 | size=9 (units) | end=0x5639fc438190 | next=0x5639fc438550 |
| p=0x5639fc438550 | size=15 (units) | end=0x5639fc438640 | next=0x5639fc438d30 |
| p=0x5639fc438d30 | size=22 (units) | end=0x5639fc438e90 | next=0x5639fc438190 |
| p=0x5639fc438190 | size=10 (units) | end=0x5639fc438230 | next=0x5639fc438640 |
| p=0x5639fc438640 | size=16 (units) | end=0x5639fc438740 | next=0x5639fc438e90 |
| p=0x5639fc438e90 | size=23 (units) | end=0x5639fc439000 | next=0x5639fc438230 |
| p=0x5639fc438230 | size=11 (units) | end=0x5639fc4382e0 | next=0x5639fc438740 |
| p=0x5639fc438740 | size=17 (units) | end=0x5639fc438850 | next=0x5639fc4382e0 |
| p=0x5639fc4382e0 | size=12 (units) | end=0x5639fc4383a0 | next=0x5639fc438850 |
| p=0x5639fc438850 | size=18 (units) | end=0x5639fc438970 | next=0x5639fc4389e0 |
| p=0x5639fc4389e0 | size=12 (units) | end=0x5639fc438aa0 | next=0x5639fc438000 |
| p=0x5639fc438000 | size=0 (units) | end=0x5639fc438000 | next=0x5639fc438010 <-- dummy |
| p=0x5639fc438010 | size=7 (units) | end=0x5639fc438080 | next=0x5639fc438460 |
| p=0x5639fc438460 | size=1 (units) | end=0x5639fc438470 | next=0x5639fc438aa0 |
| p=0x5639fc438aa0 | size=20 (units) | end=0x5639fc438be0 | next=0x5639fc438970 |

Alloc p12 (272 bytes, 17 units (+1 w/ mem_chunk_t header))

Current_free_list

Total SBRK calls: 1

Total pages requested: 1

| | | | |
|------------------|-----------------|--------------------|-------------------------------|
| p=0x5639fc438100 | size=9 (units) | end=0x5639fc438190 | next=0x5639fc438550 |
| p=0x5639fc438550 | size=15 (units) | end=0x5639fc438640 | next=0x5639fc438d30 |
| p=0x5639fc438d30 | size=22 (units) | end=0x5639fc438e90 | next=0x5639fc438190 |
| p=0x5639fc438190 | size=10 (units) | end=0x5639fc438230 | next=0x5639fc438640 |
| p=0x5639fc438640 | size=16 (units) | end=0x5639fc438740 | next=0x5639fc438e90 |
| p=0x5639fc438e90 | size=23 (units) | end=0x5639fc439000 | next=0x5639fc438230 |
| p=0x5639fc438230 | size=11 (units) | end=0x5639fc4382e0 | next=0x5639fc438740 |
| p=0x5639fc438740 | size=17 (units) | end=0x5639fc438850 | next=0x5639fc4382e0 |
| p=0x5639fc4382e0 | size=12 (units) | end=0x5639fc4383a0 | next=0x5639fc438850 |
| p=0x5639fc438850 | size=18 (units) | end=0x5639fc438970 | next=0x5639fc4389e0 |
| p=0x5639fc4389e0 | size=12 (units) | end=0x5639fc438aa0 | next=0x5639fc438000 |
| p=0x5639fc438000 | size=0 (units) | end=0x5639fc438000 | next=0x5639fc438010 <-- dummy |
| p=0x5639fc438010 | size=7 (units) | end=0x5639fc438080 | next=0x5639fc438460 |
| p=0x5639fc438460 | size=1 (units) | end=0x5639fc438470 | next=0x5639fc438aa0 |
| p=0x5639fc438aa0 | size=20 (units) | end=0x5639fc438be0 | next=0x5639fc438970 |
| p=0x5639fc438970 | size=7 (units) | end=0x5639fc4389e0 | next=0x5639fc438080 |
| p=0x5639fc438080 | size=8 (units) | end=0x5639fc438100 | next=0x5639fc438470 |
| p=0x5639fc438470 | size=14 (units) | end=0x5639fc438550 | next=0x5639fc438d00 |
| p=0x5639fc438d00 | size=3 (units) | end=0x5639fc438d30 | next=0x5639fc438100 |

Free p6 (176 bytes, 11 units (+1 w/ mem_chunk_t header))

Current_free_list

Total SBRK calls: 1

Total pages requested: 1

| | | | |
|------------------|-----------------|--------------------|---------------------|
| p=0x5639fc4383a0 | size=12 (units) | end=0x5639fc438460 | next=0x5639fc438550 |
| p=0x5639fc438550 | size=15 (units) | end=0x5639fc438640 | next=0x5639fc438d30 |
| p=0x5639fc438d30 | size=22 (units) | end=0x5639fc438e90 | next=0x5639fc438190 |

| | | | |
|------------------|-----------------|--------------------|-------------------------------|
| p=0x5639fc438190 | size=10 (units) | end=0x5639fc438230 | next=0x5639fc438640 |
| p=0x5639fc438640 | size=16 (units) | end=0x5639fc438740 | next=0x5639fc438e90 |
| p=0x5639fc438e90 | size=23 (units) | end=0x5639fc439000 | next=0x5639fc438230 |
| p=0x5639fc438230 | size=11 (units) | end=0x5639fc4382e0 | next=0x5639fc438740 |
| p=0x5639fc438740 | size=17 (units) | end=0x5639fc438850 | next=0x5639fc4382e0 |
| p=0x5639fc4382e0 | size=12 (units) | end=0x5639fc4383a0 | next=0x5639fc438850 |
| p=0x5639fc438850 | size=18 (units) | end=0x5639fc438970 | next=0x5639fc4389e0 |
| p=0x5639fc4389e0 | size=12 (units) | end=0x5639fc438aa0 | next=0x5639fc438000 |
| p=0x5639fc438000 | size=0 (units) | end=0x5639fc438000 | next=0x5639fc438010 <-- dummy |
| p=0x5639fc438010 | size=7 (units) | end=0x5639fc438080 | next=0x5639fc438460 |
| p=0x5639fc438460 | size=1 (units) | end=0x5639fc438470 | next=0x5639fc438aa0 |
| p=0x5639fc438aa0 | size=20 (units) | end=0x5639fc438be0 | next=0x5639fc438970 |
| p=0x5639fc438970 | size=7 (units) | end=0x5639fc4389e0 | next=0x5639fc438080 |
| p=0x5639fc438080 | size=8 (units) | end=0x5639fc438100 | next=0x5639fc438470 |
| p=0x5639fc438470 | size=14 (units) | end=0x5639fc438550 | next=0x5639fc438d00 |
| p=0x5639fc438d00 | size=3 (units) | end=0x5639fc438d30 | next=0x5639fc438100 |
| p=0x5639fc438100 | size=9 (units) | end=0x5639fc438190 | next=0x5639fc4383a0 |

Alloc p2 (112 bytes, 7 units (+1 w/ mem_chunk_t header))
Free p12 (272 bytes, 17 units (+1 w/ mem_chunk_t header))

Alloc p17 (352 bytes, 22 units (+1 w/ mem_chunk_t header))
Free p2 (112 bytes, 7 units (+1 w/ mem_chunk_t header))

Alloc p9 (224 bytes, 14 units (+1 w/ mem_chunk_t header))
Free p17 (352 bytes, 22 units (+1 w/ mem_chunk_t header))

Alloc p15 (320 bytes, 20 units (+1 w/ mem_chunk_t header))
Free p9 (224 bytes, 14 units (+1 w/ mem_chunk_t header))

Alloc p8 (208 bytes, 13 units (+1 w/ mem_chunk_t header))
Free p15 (320 bytes, 20 units (+1 w/ mem_chunk_t header))

Alloc p10 (240 bytes, 15 units (+1 w/ mem_chunk_t header))
Free p8 (208 bytes, 13 units (+1 w/ mem_chunk_t header))

Alloc p3 (128 bytes, 8 units (+1 w/ mem_chunk_t header))
Free p10 (240 bytes, 15 units (+1 w/ mem_chunk_t header))

Alloc p14 (304 bytes, 19 units (+1 w/ mem_chunk_t header))
Free p3 (128 bytes, 8 units (+1 w/ mem_chunk_t header))

Alloc p16 (336 bytes, 21 units (+1 w/ mem_chunk_t header))
Free p14 (304 bytes, 19 units (+1 w/ mem_chunk_t header))

Alloc p13 (288 bytes, 18 units (+1 w/ mem_chunk_t header))
Free p16 (336 bytes, 21 units (+1 w/ mem_chunk_t header))

Alloc p4 (144 bytes, 9 units (+1 w/ mem_chunk_t header))
Free p13 (288 bytes, 18 units (+1 w/ mem_chunk_t header))

Alloc p7 (192 bytes, 12 units (+1 w/ mem_chunk_t header))
Free p4 (144 bytes, 9 units (+1 w/ mem_chunk_t header))

Alloc p5 (160 bytes, 10 units (+1 w/ mem_chunk_t header))
Free p7 (192 bytes, 12 units (+1 w/ mem_chunk_t header))

Alloc p11 (256 bytes, 16 units (+1 w/ mem_chunk_t header))
Free p5 (160 bytes, 10 units (+1 w/ mem_chunk_t header))

Free p11 (256 bytes, 16 units (+1 w/ mem_chunk_t header))
____Current_free_list_____

Total SBRK calls: 1

Total pages requested: 1

| | | | |
|------------------|-----------------|--------------------|---------------------|
| p=0x5639fc438850 | size=17 (units) | end=0x5639fc438960 | next=0x5639fc4389e0 |
| p=0x5639fc4389e0 | size=12 (units) | end=0x5639fc438aa0 | next=0x5639fc438f90 |

| | | | |
|------------------|-----------------|--------------------|-------------------------------|
| p=0x5639fc438f90 | size=5 (units) | end=0x5639fc438fe0 | next=0x5639fc438000 |
| p=0x5639fc438000 | size=0 (units) | end=0x5639fc438000 | next=0x5639fc4387d0 <-- dummy |
| p=0x5639fc4387d0 | size=5 (units) | end=0x5639fc438820 | next=0x5639fc438010 |
| p=0x5639fc438010 | size=7 (units) | end=0x5639fc438080 | next=0x5639fc438e90 |
| p=0x5639fc438e90 | size=16 (units) | end=0x5639fc438f90 | next=0x5639fc438460 |
| p=0x5639fc438460 | size=1 (units) | end=0x5639fc438470 | next=0x5639fc438970 |
| p=0x5639fc438970 | size=7 (units) | end=0x5639fc4389e0 | next=0x5639fc438740 |
| p=0x5639fc438740 | size=9 (units) | end=0x5639fc4387d0 | next=0x5639fc438080 |
| p=0x5639fc438080 | size=8 (units) | end=0x5639fc438100 | next=0x5639fc438470 |
| p=0x5639fc438470 | size=14 (units) | end=0x5639fc438550 | next=0x5639fc438d00 |
| p=0x5639fc438d00 | size=3 (units) | end=0x5639fc438d30 | next=0x5639fc438100 |
| p=0x5639fc438100 | size=9 (units) | end=0x5639fc438190 | next=0x5639fc438420 |
| p=0x5639fc438420 | size=4 (units) | end=0x5639fc438460 | next=0x5639fc438550 |
| p=0x5639fc438550 | size=15 (units) | end=0x5639fc438640 | next=0x5639fc438be0 |
| p=0x5639fc438be0 | size=18 (units) | end=0x5639fc438d00 | next=0x5639fc438190 |
| p=0x5639fc438190 | size=10 (units) | end=0x5639fc438230 | next=0x5639fc438bd0 |
| p=0x5639fc438bd0 | size=1 (units) | end=0x5639fc438be0 | next=0x5639fc438640 |
| p=0x5639fc438640 | size=16 (units) | end=0x5639fc438740 | next=0x5639fc438dd0 |
| p=0x5639fc438dd0 | size=12 (units) | end=0x5639fc438e90 | next=0x5639fc438230 |
| p=0x5639fc438230 | size=11 (units) | end=0x5639fc4382e0 | next=0x5639fc438b70 |
| p=0x5639fc438b70 | size=6 (units) | end=0x5639fc438bd0 | next=0x5639fc4383a0 |
| p=0x5639fc4383a0 | size=8 (units) | end=0x5639fc438420 | next=0x5639fc438d30 |
| p=0x5639fc438d30 | size=10 (units) | end=0x5639fc438dd0 | next=0x5639fc438830 |
| p=0x5639fc438830 | size=2 (units) | end=0x5639fc438850 | next=0x5639fc438390 |
| p=0x5639fc438390 | size=1 (units) | end=0x5639fc4383a0 | next=0x5639fc438fe0 |
| p=0x5639fc438fe0 | size=2 (units) | end=0x5639fc439000 | next=0x5639fc438aa0 |
| p=0x5639fc438aa0 | size=13 (units) | end=0x5639fc438b70 | next=0x5639fc438960 |
| p=0x5639fc438960 | size=1 (units) | end=0x5639fc438970 | next=0x5639fc438820 |
| p=0x5639fc438820 | size=1 (units) | end=0x5639fc438830 | next=0x5639fc4382e0 |
| p=0x5639fc4382e0 | size=11 (units) | end=0x5639fc438390 | next=0x5639fc438850 |

~~~~~ Free list stats ~~~~~

Including dummy block

|                                                 |
|-------------------------------------------------|
| Sbrk calls: 1                                   |
| Pages allocated: 1 pages, 4096 bytes, 256 units |
| Blocks in list: 32                              |
| Total memory in list: 4096 bytes, 256 units     |

Not including dummy block

|                                         |
|-----------------------------------------|
| Minimum block size: 16 bytes, 1 units   |
| Maximum block size: 288 bytes, 18 units |
| Average block size: 131.61 bytes        |

|                                                    |
|----------------------------------------------------|
| All memory is in the heap -- no leaks are possible |
|----------------------------------------------------|

First-fit search policy using coalescing

Alloc p1 (96 bytes, 6 units (+1 w/ mem\_chunk\_t header))  
 Alloc p2 (112 bytes, 7 units (+1 w/ mem\_chunk\_t header))  
 Alloc p3 (128 bytes, 8 units (+1 w/ mem\_chunk\_t header))  
 Alloc p4 (144 bytes, 9 units (+1 w/ mem\_chunk\_t header))  
 Alloc p5 (160 bytes, 10 units (+1 w/ mem\_chunk\_t header))  
 Alloc p6 (176 bytes, 11 units (+1 w/ mem\_chunk\_t header))  
 Alloc p7 (192 bytes, 12 units (+1 w/ mem\_chunk\_t header))  
 Alloc p8 (208 bytes, 13 units (+1 w/ mem\_chunk\_t header))

Alloc p9 (224 bytes, 14 units (+1 w/ mem\_chunk\_t header))  
 Alloc p10 (240 bytes, 15 units (+1 w/ mem\_chunk\_t header))  
 Alloc p11 (256 bytes, 16 units (+1 w/ mem\_chunk\_t header))  
 Alloc p12 (272 bytes, 17 units (+1 w/ mem\_chunk\_t header))  
 Alloc p13 (288 bytes, 18 units (+1 w/ mem\_chunk\_t header))  
 Alloc p14 (304 bytes, 19 units (+1 w/ mem\_chunk\_t header))  
 Alloc p15 (320 bytes, 20 units (+1 w/ mem\_chunk\_t header))  
 Alloc p16 (336 bytes, 21 units (+1 w/ mem\_chunk\_t header))  
 Alloc p17 (352 bytes, 22 units (+1 w/ mem\_chunk\_t header))

Freeing all blocks in pseudo-random order, resulting in a single block

\_\_\_\_\_Current\_free\_list\_\_\_\_\_

Total SBRK calls: 1

Total pages requested: 1

|                  |                  |                    |                               |
|------------------|------------------|--------------------|-------------------------------|
| p=0x55b5e735f010 | size=255 (units) | end=0x55b5e7360000 | next=0x55b5e735f000           |
| p=0x55b5e735f000 | size=0 (units)   | end=0x55b5e735f000 | next=0x55b5e735f010 <-- dummy |

Repeating allocations, freeing along the way

Alloc p1 (96 bytes, 6 units (+1 w/ mem\_chunk\_t header))

\_\_\_\_\_Current\_free\_list\_\_\_\_\_

Total SBRK calls: 1

Total pages requested: 1

|                  |                  |                    |                               |
|------------------|------------------|--------------------|-------------------------------|
| p=0x55b5e735f000 | size=0 (units)   | end=0x55b5e735f000 | next=0x55b5e735f080 <-- dummy |
| p=0x55b5e735f080 | size=248 (units) | end=0x55b5e7360000 | next=0x55b5e735f000           |

Alloc p6 (176 bytes, 11 units (+1 w/ mem\_chunk\_t header))

\_\_\_\_\_Current\_free\_list\_\_\_\_\_

Total SBRK calls: 1

Total pages requested: 1

|                  |                  |                    |                               |
|------------------|------------------|--------------------|-------------------------------|
| p=0x55b5e735f000 | size=0 (units)   | end=0x55b5e735f000 | next=0x55b5e735f140 <-- dummy |
| p=0x55b5e735f140 | size=236 (units) | end=0x55b5e7360000 | next=0x55b5e735f000           |

Free p1 (96 bytes, 6 units (+1 w/ mem\_chunk\_t header))

\_\_\_\_\_Current\_free\_list\_\_\_\_\_

Total SBRK calls: 1

Total pages requested: 1

|                  |                  |                    |                               |
|------------------|------------------|--------------------|-------------------------------|
| p=0x55b5e735f000 | size=0 (units)   | end=0x55b5e735f000 | next=0x55b5e735f010 <-- dummy |
| p=0x55b5e735f010 | size=7 (units)   | end=0x55b5e735f080 | next=0x55b5e735f140           |
| p=0x55b5e735f140 | size=236 (units) | end=0x55b5e7360000 | next=0x55b5e735f000           |

Alloc p12 (272 bytes, 17 units (+1 w/ mem\_chunk\_t header))

\_\_\_\_\_Current\_free\_list\_\_\_\_\_

Total SBRK calls: 1

Total pages requested: 1

|                  |                  |                    |                               |
|------------------|------------------|--------------------|-------------------------------|
| p=0x55b5e735f000 | size=0 (units)   | end=0x55b5e735f000 | next=0x55b5e735f010 <-- dummy |
| p=0x55b5e735f010 | size=7 (units)   | end=0x55b5e735f080 | next=0x55b5e735f260           |
| p=0x55b5e735f260 | size=218 (units) | end=0x55b5e7360000 | next=0x55b5e735f000           |

Free p6 (176 bytes, 11 units (+1 w/ mem\_chunk\_t header))

\_\_\_\_\_Current\_free\_list\_\_\_\_\_

Total SBRK calls: 1

Total pages requested: 1

|                  |                  |                    |                               |
|------------------|------------------|--------------------|-------------------------------|
| p=0x55b5e735f010 | size=19 (units)  | end=0x55b5e735f140 | next=0x55b5e735f260           |
| p=0x55b5e735f260 | size=218 (units) | end=0x55b5e7360000 | next=0x55b5e735f000           |
| p=0x55b5e735f000 | size=0 (units)   | end=0x55b5e735f000 | next=0x55b5e735f010 <-- dummy |

Alloc p2 (112 bytes, 7 units (+1 w/ mem\_chunk\_t header))

Free p12 (272 bytes, 17 units (+1 w/ mem\_chunk\_t header))

Alloc p17 (352 bytes, 22 units (+1 w/ mem\_chunk\_t header))

Free p2 (112 bytes, 7 units (+1 w/ mem\_chunk\_t header))

Alloc p9 (224 bytes, 14 units (+1 w/ mem\_chunk\_t header))

Free p17 (352 bytes, 22 units (+1 w/ mem\_chunk\_t header))

Alloc p15 (320 bytes, 20 units (+1 w/ mem\_chunk\_t header))  
Free p9 (224 bytes, 14 units (+1 w/ mem\_chunk\_t header))

Alloc p8 (208 bytes, 13 units (+1 w/ mem\_chunk\_t header))  
Free p15 (320 bytes, 20 units (+1 w/ mem\_chunk\_t header))

Alloc p10 (240 bytes, 15 units (+1 w/ mem\_chunk\_t header))  
Free p8 (208 bytes, 13 units (+1 w/ mem\_chunk\_t header))

Alloc p3 (128 bytes, 8 units (+1 w/ mem\_chunk\_t header))  
Free p10 (240 bytes, 15 units (+1 w/ mem\_chunk\_t header))

Alloc p14 (304 bytes, 19 units (+1 w/ mem\_chunk\_t header))  
Free p3 (128 bytes, 8 units (+1 w/ mem\_chunk\_t header))

Alloc p16 (336 bytes, 21 units (+1 w/ mem\_chunk\_t header))  
Free p14 (304 bytes, 19 units (+1 w/ mem\_chunk\_t header))

Alloc p13 (288 bytes, 18 units (+1 w/ mem\_chunk\_t header))  
Free p16 (336 bytes, 21 units (+1 w/ mem\_chunk\_t header))

Alloc p4 (144 bytes, 9 units (+1 w/ mem\_chunk\_t header))  
Free p13 (288 bytes, 18 units (+1 w/ mem\_chunk\_t header))

Alloc p7 (192 bytes, 12 units (+1 w/ mem\_chunk\_t header))  
Free p4 (144 bytes, 9 units (+1 w/ mem\_chunk\_t header))

Alloc p5 (160 bytes, 10 units (+1 w/ mem\_chunk\_t header))  
Free p7 (192 bytes, 12 units (+1 w/ mem\_chunk\_t header))

Alloc p11 (256 bytes, 16 units (+1 w/ mem\_chunk\_t header))  
Free p5 (160 bytes, 10 units (+1 w/ mem\_chunk\_t header))

Free p11 (256 bytes, 16 units (+1 w/ mem\_chunk\_t header))  
\_\_\_\_\_Current\_free\_list\_\_\_\_\_

Total SBRK calls: 1

Total pages requested: 1

|                  |                  |                    |                               |
|------------------|------------------|--------------------|-------------------------------|
| p=0x55b5e735f000 | size=0 (units)   | end=0x55b5e735f000 | next=0x55b5e735f010 <-- dummy |
| p=0x55b5e735f010 | size=255 (units) | end=0x55b5e7360000 | next=0x55b5e735f000           |

~~~~~ Free list stats ~~~~~

Including dummy block

| |
|---|
| Sbrk calls: 1 |
| Pages allocated: 1 pages, 4096 bytes, 256 units |
| Blocks in list: 2 |
| Total memory in list: 4096 bytes, 256 units |

Not including dummy block

| |
|---|
| Minimum block size: 4080 bytes, 255 units |
| Maximum block size: 4080 bytes, 255 units |
| Average block size: 4080.00 bytes |

| |
|--|
| All memory is in the heap -- no leaks are possible |
|--|

Best-fit search policy without coalescing

Alloc p1 (96 bytes, 6 units (+1 w/ mem_chunk_t header))
Alloc p2 (112 bytes, 7 units (+1 w/ mem_chunk_t header))
Alloc p3 (128 bytes, 8 units (+1 w/ mem_chunk_t header))
Alloc p4 (144 bytes, 9 units (+1 w/ mem_chunk_t header))
Alloc p5 (160 bytes, 10 units (+1 w/ mem_chunk_t header))
Alloc p6 (176 bytes, 11 units (+1 w/ mem_chunk_t header))
Alloc p7 (192 bytes, 12 units (+1 w/ mem_chunk_t header))
Alloc p8 (208 bytes, 13 units (+1 w/ mem_chunk_t header))
Alloc p9 (224 bytes, 14 units (+1 w/ mem_chunk_t header))
Alloc p10 (240 bytes, 15 units (+1 w/ mem_chunk_t header))
Alloc p11 (256 bytes, 16 units (+1 w/ mem_chunk_t header))
Alloc p12 (272 bytes, 17 units (+1 w/ mem_chunk_t header))
Alloc p13 (288 bytes, 18 units (+1 w/ mem_chunk_t header))
Alloc p14 (304 bytes, 19 units (+1 w/ mem_chunk_t header))
Alloc p15 (320 bytes, 20 units (+1 w/ mem_chunk_t header))
Alloc p16 (336 bytes, 21 units (+1 w/ mem_chunk_t header))
Alloc p17 (352 bytes, 22 units (+1 w/ mem_chunk_t header))

Freeing all blocks in pseudo-random order, creating multiple small blocks

_____Current_free_list_____

Total SBRK calls: 1

Total pages requested: 1

| | | | |
|------------------|-----------------|--------------------|-------------------------------|
| p=0x5623a69af970 | size=19 (units) | end=0x5623a69afaa0 | next=0x5623a69af000 |
| p=0x5623a69af000 | size=0 (units) | end=0x5623a69af000 | next=0x5623a69af010 <-- dummy |
| p=0x5623a69af010 | size=7 (units) | end=0x5623a69af080 | next=0x5623a69af3a0 |
| p=0x5623a69af3a0 | size=13 (units) | end=0x5623a69af470 | next=0x5623a69afaa0 |
| p=0x5623a69afaa0 | size=20 (units) | end=0x5623a69afbe0 | next=0x5623a69af080 |
| p=0x5623a69af080 | size=8 (units) | end=0x5623a69af100 | next=0x5623a69af470 |
| p=0x5623a69af470 | size=14 (units) | end=0x5623a69af550 | next=0x5623a69afbe0 |
| p=0x5623a69afbe0 | size=21 (units) | end=0x5623a69afd30 | next=0x5623a69af100 |
| p=0x5623a69af100 | size=9 (units) | end=0x5623a69af190 | next=0x5623a69af550 |
| p=0x5623a69af550 | size=15 (units) | end=0x5623a69af640 | next=0x5623a69afd30 |
| p=0x5623a69afd30 | size=22 (units) | end=0x5623a69afe90 | next=0x5623a69af190 |
| p=0x5623a69af190 | size=10 (units) | end=0x5623a69af230 | next=0x5623a69af640 |
| p=0x5623a69af640 | size=16 (units) | end=0x5623a69af740 | next=0x5623a69afe90 |
| p=0x5623a69afe90 | size=23 (units) | end=0x5623a69b0000 | next=0x5623a69af230 |
| p=0x5623a69af230 | size=11 (units) | end=0x5623a69af2e0 | next=0x5623a69af740 |
| p=0x5623a69af740 | size=17 (units) | end=0x5623a69af850 | next=0x5623a69af2e0 |
| p=0x5623a69af2e0 | size=12 (units) | end=0x5623a69af3a0 | next=0x5623a69af850 |
| p=0x5623a69af850 | size=18 (units) | end=0x5623a69af970 | next=0x5623a69af970 |

Repeating allocations, freeing along the way

Alloc p1 (96 bytes, 6 units (+1 w/ mem_chunk_t header))

_____Current_free_list_____

Total SBRK calls: 1

Total pages requested: 1

| | | | |
|------------------|-----------------|--------------------|---------------------|
| p=0x5623a69af3a0 | size=13 (units) | end=0x5623a69af470 | next=0x5623a69afaa0 |
| p=0x5623a69afaa0 | size=20 (units) | end=0x5623a69afbe0 | next=0x5623a69af080 |
| p=0x5623a69af080 | size=8 (units) | end=0x5623a69af100 | next=0x5623a69af470 |
| p=0x5623a69af470 | size=14 (units) | end=0x5623a69af550 | next=0x5623a69afbe0 |
| p=0x5623a69afbe0 | size=21 (units) | end=0x5623a69afd30 | next=0x5623a69af100 |
| p=0x5623a69af100 | size=9 (units) | end=0x5623a69af190 | next=0x5623a69af550 |
| p=0x5623a69af550 | size=15 (units) | end=0x5623a69af640 | next=0x5623a69afd30 |
| p=0x5623a69afd30 | size=22 (units) | end=0x5623a69afe90 | next=0x5623a69af190 |
| p=0x5623a69af190 | size=10 (units) | end=0x5623a69af230 | next=0x5623a69af640 |
| p=0x5623a69af640 | size=16 (units) | end=0x5623a69af740 | next=0x5623a69afe90 |
| p=0x5623a69afe90 | size=23 (units) | end=0x5623a69b0000 | next=0x5623a69af230 |
| p=0x5623a69af230 | size=11 (units) | end=0x5623a69af2e0 | next=0x5623a69af740 |
| p=0x5623a69af740 | size=17 (units) | end=0x5623a69af850 | next=0x5623a69af2e0 |

| | | | |
|------------------|-----------------|--------------------|-------------------------------|
| p=0x5623a69af2e0 | size=12 (units) | end=0x5623a69af3a0 | next=0x5623a69af850 |
| p=0x5623a69af850 | size=18 (units) | end=0x5623a69af970 | next=0x5623a69af970 |
| p=0x5623a69af970 | size=19 (units) | end=0x5623a69afaa0 | next=0x5623a69af000 |
| p=0x5623a69af000 | size=0 (units) | end=0x5623a69af000 | next=0x5623a69af3a0 <-- dummy |

Alloc p6 (176 bytes, 11 units (+1 w/ mem_chunk_t header))

Current_free_list

Total SBRK calls: 1

Total pages requested: 1

| | | | |
|------------------|-----------------|--------------------|-------------------------------|
| p=0x5623a69af850 | size=18 (units) | end=0x5623a69af970 | next=0x5623a69af970 |
| p=0x5623a69af970 | size=19 (units) | end=0x5623a69afaa0 | next=0x5623a69af000 |
| p=0x5623a69af000 | size=0 (units) | end=0x5623a69af000 | next=0x5623a69af3a0 <-- dummy |
| p=0x5623a69af3a0 | size=13 (units) | end=0x5623a69af470 | next=0x5623a69afaa0 |
| p=0x5623a69afaa0 | size=20 (units) | end=0x5623a69afbe0 | next=0x5623a69af080 |
| p=0x5623a69af080 | size=8 (units) | end=0x5623a69af100 | next=0x5623a69af470 |
| p=0x5623a69af470 | size=14 (units) | end=0x5623a69af550 | next=0x5623a69afbe0 |
| p=0x5623a69afbe0 | size=21 (units) | end=0x5623a69afd30 | next=0x5623a69af100 |
| p=0x5623a69af100 | size=9 (units) | end=0x5623a69af190 | next=0x5623a69af550 |
| p=0x5623a69af550 | size=15 (units) | end=0x5623a69af640 | next=0x5623a69afd30 |
| p=0x5623a69afd30 | size=22 (units) | end=0x5623a69afe90 | next=0x5623a69af190 |
| p=0x5623a69af190 | size=10 (units) | end=0x5623a69af230 | next=0x5623a69af640 |
| p=0x5623a69af640 | size=16 (units) | end=0x5623a69af740 | next=0x5623a69afe90 |
| p=0x5623a69afe90 | size=23 (units) | end=0x5623a69b0000 | next=0x5623a69af230 |
| p=0x5623a69af230 | size=11 (units) | end=0x5623a69af2e0 | next=0x5623a69af740 |
| p=0x5623a69af740 | size=17 (units) | end=0x5623a69af850 | next=0x5623a69af850 |

Free p1 (96 bytes, 6 units (+1 w/ mem_chunk_t header))

Current_free_list

Total SBRK calls: 1

Total pages requested: 1

| | | | |
|------------------|-----------------|--------------------|-------------------------------|
| p=0x5623a69af010 | size=7 (units) | end=0x5623a69af080 | next=0x5623a69af970 |
| p=0x5623a69af970 | size=19 (units) | end=0x5623a69afaa0 | next=0x5623a69af000 |
| p=0x5623a69af000 | size=0 (units) | end=0x5623a69af000 | next=0x5623a69af3a0 <-- dummy |
| p=0x5623a69af3a0 | size=13 (units) | end=0x5623a69af470 | next=0x5623a69afaa0 |
| p=0x5623a69afaa0 | size=20 (units) | end=0x5623a69afbe0 | next=0x5623a69af080 |
| p=0x5623a69af080 | size=8 (units) | end=0x5623a69af100 | next=0x5623a69af470 |
| p=0x5623a69af470 | size=14 (units) | end=0x5623a69af550 | next=0x5623a69afbe0 |
| p=0x5623a69afbe0 | size=21 (units) | end=0x5623a69afd30 | next=0x5623a69af100 |
| p=0x5623a69af100 | size=9 (units) | end=0x5623a69af190 | next=0x5623a69af550 |
| p=0x5623a69af550 | size=15 (units) | end=0x5623a69af640 | next=0x5623a69afd30 |
| p=0x5623a69afd30 | size=22 (units) | end=0x5623a69afe90 | next=0x5623a69af190 |
| p=0x5623a69af190 | size=10 (units) | end=0x5623a69af230 | next=0x5623a69af640 |
| p=0x5623a69af640 | size=16 (units) | end=0x5623a69af740 | next=0x5623a69afe90 |
| p=0x5623a69afe90 | size=23 (units) | end=0x5623a69b0000 | next=0x5623a69af230 |
| p=0x5623a69af230 | size=11 (units) | end=0x5623a69af2e0 | next=0x5623a69af740 |
| p=0x5623a69af740 | size=17 (units) | end=0x5623a69af850 | next=0x5623a69af850 |
| p=0x5623a69af850 | size=18 (units) | end=0x5623a69af970 | next=0x5623a69af010 |

Alloc p12 (272 bytes, 17 units (+1 w/ mem_chunk_t header))

Current_free_list

Total SBRK calls: 1

Total pages requested: 1

| | | | |
|------------------|-----------------|--------------------|-------------------------------|
| p=0x5623a69af010 | size=7 (units) | end=0x5623a69af080 | next=0x5623a69af970 |
| p=0x5623a69af970 | size=19 (units) | end=0x5623a69afaa0 | next=0x5623a69af000 |
| p=0x5623a69af000 | size=0 (units) | end=0x5623a69af000 | next=0x5623a69af3a0 <-- dummy |
| p=0x5623a69af3a0 | size=13 (units) | end=0x5623a69af470 | next=0x5623a69afaa0 |
| p=0x5623a69afaa0 | size=20 (units) | end=0x5623a69afbe0 | next=0x5623a69af080 |
| p=0x5623a69af080 | size=8 (units) | end=0x5623a69af100 | next=0x5623a69af470 |
| p=0x5623a69af470 | size=14 (units) | end=0x5623a69af550 | next=0x5623a69afbe0 |
| p=0x5623a69afbe0 | size=21 (units) | end=0x5623a69afd30 | next=0x5623a69af100 |
| p=0x5623a69af100 | size=9 (units) | end=0x5623a69af190 | next=0x5623a69af550 |
| p=0x5623a69af550 | size=15 (units) | end=0x5623a69af640 | next=0x5623a69afd30 |
| p=0x5623a69afd30 | size=22 (units) | end=0x5623a69afe90 | next=0x5623a69af190 |
| p=0x5623a69af190 | size=10 (units) | end=0x5623a69af230 | next=0x5623a69af640 |
| p=0x5623a69af640 | size=16 (units) | end=0x5623a69af740 | next=0x5623a69afe90 |
| p=0x5623a69afe90 | size=23 (units) | end=0x5623a69b0000 | next=0x5623a69af230 |

| | | | |
|------------------|-----------------|--------------------|---------------------|
| p=0x5623a69af230 | size=11 (units) | end=0x5623a69af2e0 | next=0x5623a69af740 |
| p=0x5623a69af740 | size=17 (units) | end=0x5623a69af850 | next=0x5623a69af010 |

Free p6 (176 bytes, 11 units (+1 w/ mem_chunk_t header))

Current_free_list_____

Total SBRK calls: 1

Total pages requested: 1

| | | | |
|------------------|-----------------|--------------------|--------------------------------|
| p=0x5623a69af2e0 | size=12 (units) | end=0x5623a69af3a0 | next=0x5623a69af970 |
| p=0x5623a69af970 | size=19 (units) | end=0x5623a69afaa0 | next=0x5623a69af000 |
| p=0x5623a69af000 | size=0 (units) | end=0x5623a69af000 | next=0x5623a69af3a0 <--- dummy |
| p=0x5623a69af3a0 | size=13 (units) | end=0x5623a69af470 | next=0x5623a69afaa0 |
| p=0x5623a69afaa0 | size=20 (units) | end=0x5623a69afbe0 | next=0x5623a69af080 |
| p=0x5623a69af080 | size=8 (units) | end=0x5623a69af100 | next=0x5623a69af470 |
| p=0x5623a69af470 | size=14 (units) | end=0x5623a69af550 | next=0x5623a69afbe0 |
| p=0x5623a69afbe0 | size=21 (units) | end=0x5623a69afd30 | next=0x5623a69af100 |
| p=0x5623a69af100 | size=9 (units) | end=0x5623a69af190 | next=0x5623a69af550 |
| p=0x5623a69af550 | size=15 (units) | end=0x5623a69af640 | next=0x5623a69afd30 |
| p=0x5623a69afd30 | size=22 (units) | end=0x5623a69afe90 | next=0x5623a69af190 |
| p=0x5623a69af190 | size=10 (units) | end=0x5623a69af230 | next=0x5623a69af640 |
| p=0x5623a69af640 | size=16 (units) | end=0x5623a69af740 | next=0x5623a69afe90 |
| p=0x5623a69afe90 | size=23 (units) | end=0x5623a69b0000 | next=0x5623a69af230 |
| p=0x5623a69af230 | size=11 (units) | end=0x5623a69af2e0 | next=0x5623a69af740 |
| p=0x5623a69af740 | size=17 (units) | end=0x5623a69af850 | next=0x5623a69af010 |
| p=0x5623a69af010 | size=7 (units) | end=0x5623a69af080 | next=0x5623a69af2e0 |

Alloc p2 (112 bytes, 7 units (+1 w/ mem_chunk_t header))

Free p12 (272 bytes, 17 units (+1 w/ mem_chunk_t header))

Alloc p17 (352 bytes, 22 units (+1 w/ mem_chunk_t header))

Free p2 (112 bytes, 7 units (+1 w/ mem_chunk_t header))

Alloc p9 (224 bytes, 14 units (+1 w/ mem_chunk_t header))

Free p17 (352 bytes, 22 units (+1 w/ mem_chunk_t header))

Alloc p15 (320 bytes, 20 units (+1 w/ mem_chunk_t header))

Free p9 (224 bytes, 14 units (+1 w/ mem_chunk_t header))

Alloc p8 (208 bytes, 13 units (+1 w/ mem_chunk_t header))

Free p15 (320 bytes, 20 units (+1 w/ mem_chunk_t header))

Alloc p10 (240 bytes, 15 units (+1 w/ mem_chunk_t header))

Free p8 (208 bytes, 13 units (+1 w/ mem_chunk_t header))

Alloc p3 (128 bytes, 8 units (+1 w/ mem_chunk_t header))

Free p10 (240 bytes, 15 units (+1 w/ mem_chunk_t header))

Alloc p14 (304 bytes, 19 units (+1 w/ mem_chunk_t header))

Free p3 (128 bytes, 8 units (+1 w/ mem_chunk_t header))

Alloc p16 (336 bytes, 21 units (+1 w/ mem_chunk_t header))

Free p14 (304 bytes, 19 units (+1 w/ mem_chunk_t header))

Alloc p13 (288 bytes, 18 units (+1 w/ mem_chunk_t header))

Free p16 (336 bytes, 21 units (+1 w/ mem_chunk_t header))

Alloc p4 (144 bytes, 9 units (+1 w/ mem_chunk_t header))

Free p13 (288 bytes, 18 units (+1 w/ mem_chunk_t header))

Alloc p7 (192 bytes, 12 units (+1 w/ mem_chunk_t header))

Free p4 (144 bytes, 9 units (+1 w/ mem_chunk_t header))

Alloc p5 (160 bytes, 10 units (+1 w/ mem_chunk_t header))

Free p7 (192 bytes, 12 units (+1 w/ mem_chunk_t header))

Alloc p11 (256 bytes, 16 units (+1 w/ mem_chunk_t header))

Free p5 (160 bytes, 10 units (+1 w/ mem_chunk_t header))

Free p11 (256 bytes, 16 units (+1 w/ mem_chunk_t header))

Current_free_list

Total SBRK calls: 1

Total pages requested: 1

| | | | |
|------------------|-----------------|--------------------|-------------------------------|
| p=0x5623a69af740 | size=17 (units) | end=0x5623a69af850 | next=0x5623a69af2e0 |
| p=0x5623a69af2e0 | size=12 (units) | end=0x5623a69af3a0 | next=0x5623a69af000 |
| p=0x5623a69af000 | size=0 (units) | end=0x5623a69af000 | next=0x5623a69afd30 <-- dummy |
| p=0x5623a69afd30 | size=22 (units) | end=0x5623a69afe90 | next=0x5623a69af850 |
| p=0x5623a69af850 | size=18 (units) | end=0x5623a69af970 | next=0x5623a69af190 |
| p=0x5623a69af190 | size=10 (units) | end=0x5623a69af230 | next=0x5623a69af100 |
| p=0x5623a69af100 | size=9 (units) | end=0x5623a69af190 | next=0x5623a69afbe0 |
| p=0x5623a69afbe0 | size=21 (units) | end=0x5623a69afd30 | next=0x5623a69af550 |
| p=0x5623a69af550 | size=15 (units) | end=0x5623a69af640 | next=0x5623a69af640 |
| p=0x5623a69af640 | size=16 (units) | end=0x5623a69af740 | next=0x5623a69afe90 |
| p=0x5623a69afe90 | size=23 (units) | end=0x5623a69b0000 | next=0x5623a69afaa0 |
| p=0x5623a69afaa0 | size=20 (units) | end=0x5623a69afbe0 | next=0x5623a69af970 |
| p=0x5623a69af970 | size=19 (units) | end=0x5623a69afaa0 | next=0x5623a69af3a0 |
| p=0x5623a69af3a0 | size=13 (units) | end=0x5623a69af470 | next=0x5623a69af470 |
| p=0x5623a69af470 | size=14 (units) | end=0x5623a69af550 | next=0x5623a69af080 |
| p=0x5623a69af080 | size=8 (units) | end=0x5623a69af100 | next=0x5623a69af010 |
| p=0x5623a69af010 | size=7 (units) | end=0x5623a69af080 | next=0x5623a69af230 |
| p=0x5623a69af230 | size=11 (units) | end=0x5623a69af2e0 | next=0x5623a69af740 |

~~~~~ Free list stats ~~~~~

Including dummy block

|                                                 |
|-------------------------------------------------|
| Sbrk calls: 1                                   |
| Pages allocated: 1 pages, 4096 bytes, 256 units |
| Blocks in list: 18                              |
| Total memory in list: 4096 bytes, 256 units     |

Not including dummy block

|                                         |
|-----------------------------------------|
| Minimum block size: 112 bytes, 7 units  |
| Maximum block size: 368 bytes, 23 units |
| Average block size: 240.00 bytes        |

|                                                    |
|----------------------------------------------------|
| All memory is in the heap -- no leaks are possible |
|----------------------------------------------------|

Best-fit search policy using coalescing

Alloc p1 (96 bytes, 6 units (+1 w/ mem\_chunk\_t header))  
Alloc p2 (112 bytes, 7 units (+1 w/ mem\_chunk\_t header))  
Alloc p3 (128 bytes, 8 units (+1 w/ mem\_chunk\_t header))  
Alloc p4 (144 bytes, 9 units (+1 w/ mem\_chunk\_t header))  
Alloc p5 (160 bytes, 10 units (+1 w/ mem\_chunk\_t header))  
Alloc p6 (176 bytes, 11 units (+1 w/ mem\_chunk\_t header))  
Alloc p7 (192 bytes, 12 units (+1 w/ mem\_chunk\_t header))  
Alloc p8 (208 bytes, 13 units (+1 w/ mem\_chunk\_t header))  
Alloc p9 (224 bytes, 14 units (+1 w/ mem\_chunk\_t header))  
Alloc p10 (240 bytes, 15 units (+1 w/ mem\_chunk\_t header))  
Alloc p11 (256 bytes, 16 units (+1 w/ mem\_chunk\_t header))  
Alloc p12 (272 bytes, 17 units (+1 w/ mem\_chunk\_t header))  
Alloc p13 (288 bytes, 18 units (+1 w/ mem\_chunk\_t header))



Alloc p14 (304 bytes, 19 units (+1 w/ mem\_chunk\_t header))  
Alloc p15 (320 bytes, 20 units (+1 w/ mem\_chunk\_t header))  
Alloc p16 (336 bytes, 21 units (+1 w/ mem\_chunk\_t header))  
Alloc p17 (352 bytes, 22 units (+1 w/ mem\_chunk\_t header))

Freeing all blocks in pseudo-random order, resulting in a single block

\_\_\_\_\_Current\_free\_list\_\_\_\_\_

Total SBRK calls: 1

Total pages requested: 1

|                  |                  |                    |                               |
|------------------|------------------|--------------------|-------------------------------|
| p=0x55ee07aaf010 | size=255 (units) | end=0x55ee07ab0000 | next=0x55ee07aaf000           |
| p=0x55ee07aaf000 | size=0 (units)   | end=0x55ee07aaf000 | next=0x55ee07aaf010 <-- dummy |

Repeating allocations, freeing along the way

Alloc p1 (96 bytes, 6 units (+1 w/ mem\_chunk\_t header))

\_\_\_\_\_Current\_free\_list\_\_\_\_\_

Total SBRK calls: 1

Total pages requested: 1

|                  |                  |                    |                               |
|------------------|------------------|--------------------|-------------------------------|
| p=0x55ee07aaf000 | size=0 (units)   | end=0x55ee07aaf000 | next=0x55ee07aaf080 <-- dummy |
| p=0x55ee07aaf080 | size=248 (units) | end=0x55ee07ab0000 | next=0x55ee07aaf000           |

Alloc p6 (176 bytes, 11 units (+1 w/ mem\_chunk\_t header))

\_\_\_\_\_Current\_free\_list\_\_\_\_\_

Total SBRK calls: 1

Total pages requested: 1

|                  |                  |                    |                               |
|------------------|------------------|--------------------|-------------------------------|
| p=0x55ee07aaf000 | size=0 (units)   | end=0x55ee07aaf000 | next=0x55ee07aaf140 <-- dummy |
| p=0x55ee07aaf140 | size=236 (units) | end=0x55ee07ab0000 | next=0x55ee07aaf000           |

Free p1 (96 bytes, 6 units (+1 w/ mem\_chunk\_t header))

\_\_\_\_\_Current\_free\_list\_\_\_\_\_

Total SBRK calls: 1

Total pages requested: 1

|                  |                  |                    |                               |
|------------------|------------------|--------------------|-------------------------------|
| p=0x55ee07aaf000 | size=0 (units)   | end=0x55ee07aaf000 | next=0x55ee07aaf010 <-- dummy |
| p=0x55ee07aaf010 | size=7 (units)   | end=0x55ee07aaf080 | next=0x55ee07aaf140           |
| p=0x55ee07aaf140 | size=236 (units) | end=0x55ee07ab0000 | next=0x55ee07aaf000           |

Alloc p12 (272 bytes, 17 units (+1 w/ mem\_chunk\_t header))

\_\_\_\_\_Current\_free\_list\_\_\_\_\_

Total SBRK calls: 1

Total pages requested: 1

|                  |                  |                    |                               |
|------------------|------------------|--------------------|-------------------------------|
| p=0x55ee07aaf000 | size=0 (units)   | end=0x55ee07aaf000 | next=0x55ee07aaf010 <-- dummy |
| p=0x55ee07aaf010 | size=7 (units)   | end=0x55ee07aaf080 | next=0x55ee07aaf260           |
| p=0x55ee07aaf260 | size=218 (units) | end=0x55ee07ab0000 | next=0x55ee07aaf000           |

Free p6 (176 bytes, 11 units (+1 w/ mem\_chunk\_t header))

\_\_\_\_\_Current\_free\_list\_\_\_\_\_

Total SBRK calls: 1

Total pages requested: 1

|                  |                  |                    |                               |
|------------------|------------------|--------------------|-------------------------------|
| p=0x55ee07aaf010 | size=19 (units)  | end=0x55ee07aaf140 | next=0x55ee07aaf260           |
| p=0x55ee07aaf260 | size=218 (units) | end=0x55ee07ab0000 | next=0x55ee07aaf000           |
| p=0x55ee07aaf000 | size=0 (units)   | end=0x55ee07aaf000 | next=0x55ee07aaf010 <-- dummy |

Alloc p2 (112 bytes, 7 units (+1 w/ mem\_chunk\_t header))

Free p12 (272 bytes, 17 units (+1 w/ mem\_chunk\_t header))

Alloc p17 (352 bytes, 22 units (+1 w/ mem\_chunk\_t header))

Free p2 (112 bytes, 7 units (+1 w/ mem\_chunk\_t header))

Alloc p9 (224 bytes, 14 units (+1 w/ mem\_chunk\_t header))

Free p17 (352 bytes, 22 units (+1 w/ mem\_chunk\_t header))

Alloc p15 (320 bytes, 20 units (+1 w/ mem\_chunk\_t header))

Free p9 (224 bytes, 14 units (+1 w/ mem\_chunk\_t header))

Alloc p8 (208 bytes, 13 units (+1 w/ mem\_chunk\_t header))

Free p15 (320 bytes, 20 units (+1 w/ mem\_chunk\_t header))

Alloc p10 (240 bytes, 15 units (+1 w/ mem\_chunk\_t header))

Free p8 (208 bytes, 13 units (+1 w/ mem\_chunk\_t header))

Alloc p3 (128 bytes, 8 units (+1 w/ mem\_chunk\_t header))

Free p10 (240 bytes, 15 units (+1 w/ mem\_chunk\_t header))

Alloc p14 (304 bytes, 19 units (+1 w/ mem\_chunk\_t header))

Free p3 (128 bytes, 8 units (+1 w/ mem\_chunk\_t header))

Alloc p16 (336 bytes, 21 units (+1 w/ mem\_chunk\_t header))

Free p14 (304 bytes, 19 units (+1 w/ mem\_chunk\_t header))

Alloc p13 (288 bytes, 18 units (+1 w/ mem\_chunk\_t header))

Free p16 (336 bytes, 21 units (+1 w/ mem\_chunk\_t header))

Alloc p4 (144 bytes, 9 units (+1 w/ mem\_chunk\_t header))

Free p13 (288 bytes, 18 units (+1 w/ mem\_chunk\_t header))

Alloc p7 (192 bytes, 12 units (+1 w/ mem\_chunk\_t header))

Free p4 (144 bytes, 9 units (+1 w/ mem\_chunk\_t header))

Alloc p5 (160 bytes, 10 units (+1 w/ mem\_chunk\_t header))

Free p7 (192 bytes, 12 units (+1 w/ mem\_chunk\_t header))

Alloc p11 (256 bytes, 16 units (+1 w/ mem\_chunk\_t header))

Free p5 (160 bytes, 10 units (+1 w/ mem\_chunk\_t header))

Free p11 (256 bytes, 16 units (+1 w/ mem\_chunk\_t header))

\_\_\_\_\_Current\_free\_list\_\_\_\_\_

Total SBRK calls: 1

Total pages requested: 1

p=0x55ee07aaf000 size=0 (units) end=0x55ee07aaf000 next=0x55ee07aaf010 <-- dummy

p=0x55ee07aaf010 size=255 (units) end=0x55ee07ab0000 next=0x55ee07aaf000

~~~~~ Free list stats ~~~~~

Including dummy block

| |
|---|
| Sbrk calls: 1 |
| Pages allocated: 1 pages, 4096 bytes, 256 units |
| Blocks in list: 2 |
| Total memory in list: 4096 bytes, 256 units |

Not including dummy block

| |
|---|
| Minimum block size: 4080 bytes, 255 units |
| Maximum block size: 4080 bytes, 255 units |
| Average block size: 4080.00 bytes |

| |
|--|
| All memory is in the heap -- no leaks are possible |
|--|