Homework 16

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1 Homework 16

1.1 9.15

Request	Block size	Block header
malloc(3)	8	0x9
malloc(11)	16	0x11
malloc(20)	24	0x19
malloc(21)	32	0x21

1.2 9.16

Alignment	Allocated block	Free block	Minimum block size
Single word	Header and footer	Header and footer	16
Single word	Header, but no footer	Header and footer	16
Double word	Header and footer	Header and footer	16
Double word	Header, but no footer	Header and footer	16

1.3 9.17

主要修改mm_init, find_fit, coalesce三个函数，新加一个全局变量last_bp。

```
1 static void *last_bp;
2 int mm_init(void)
3 {
4         // ...
5         last_bp = heap_listp;
6 }
7 static void *find_fit(size_t asize)
8 {
```

```
9           /* Next fit search */
10          void *bp = last_bp;
11          do {
12                  if (!GET_ALLOC(HDRP(bp)) && (asize <= GET_SIZE(HDRP(bp)
                        ))) {
13                          return (last_bp = bp);
14                  }
15                  bp = GET_SIZE(HDRP(bp)) > 0 ? NEXT_BLKP(bp) :
                        heap_listp;
16          } while (bp != last_bp);
17          return NULL; /* No fit */
18  }
19  static void *coalesce(void *bp)
20  {
21          // ...
22          else if (!prev_alloc && next_alloc) { /* Case 3 */
23                  size += GET_SIZE(HDRP(PREV_BLKP(bp)));
24                  PUT(FTRP(bp), PACK(size, 0));
25                  PUT(HDRP(PREV_BLKP(bp)), PACK(size, 0));
26                  if (last_bp == bp)
27                  {
28                          last_bp = PREV_BLKP(bp);
29                  }
30                  bp = PREV_BLKP(bp);
31          }
32          else { /* Case 4 */
33                  size += GET_SIZE(HDRP(PREV_BLKP(bp))) +
34                  GET_SIZE(FTRP(NEXT_BLKP(bp)));
35                  PUT(HDRP(PREV_BLKP(bp)), PACK(size, 0));
36                  PUT(FTRP(NEXT_BLKP(bp)), PACK(size, 0));
37                  if (last_bp == bp)
38                  {
39                          last_bp = PREV_BLKP(bp);
40                  }
41                  bp = PREV_BLKP(bp);
42          }
43          return bp;
44  }
```

1.4 9.15

1. a
2. d
3. b