

Pointers & Arrays

포인터 + 배열

Professor Masaaki Mizuno's Exercises

CSE2018 시스템프로그래밍기초
2016년 2학기

한양대학교 ERICA
컴퓨터공학과
도경구

문제

- 아래와 같이 출력하도록 변수 b, c, d, e, f, g, h를 적절히 선언 하자.

```
$ ./a.out
a  b  c  d  e  f  g  h
1  1  1  1  1  1  1  1
2  2  2  2  2  2  2  2
3  3  3  3  3  3  3  3
4  4  4  4  4  4  4  4
5  5  5  5  5  5  5  5
6  6  6  6  6  6  6  6
7  7  7  7  7  7  7  7
8  8  8  8  8  8  8  8
9  9  9  9  9  9  9  9
10 10 10 10 10 10 10 10
11 11 11 11 11 11 11 11
12 12 12 12 12 12 12 12
13 13 13 13 13 13 13 13
14 14 14 14 14 14 14 14
15 15 15 15 15 15 15 15
16 16 16 16 16 16 16 16
17 17 17 17 17 17 17 17
18 18 18 18 18 18 18 18
19 19 19 19 19 19 19 19
20 20 20 20 20 20 20 20
21 21 21 21 21 21 21 21
22 22 22 22 22 22 22 22
23 23 23 23 23 23 23 23
24 24 24 24 24 24 24 24
25 25 25 25 25 25 25 25
26 26 26 26 26 26 26 26
27 27 27 27 27 27 27 27
28 28 28 28 28 28 28 28
29 29 29 29 29 29 29 29
30 30 30 30 30 30 30 30
31 31 31 31 31 31 31 31
32 32 32 32 32 32 32 32
33 33 33 33 33 33 33 33
34 34 34 34 34 34 34 34
35 35 35 35 35 35 35 35
36 36 36 36 36 36 36 36
```

```
#include <stdio.h>
```

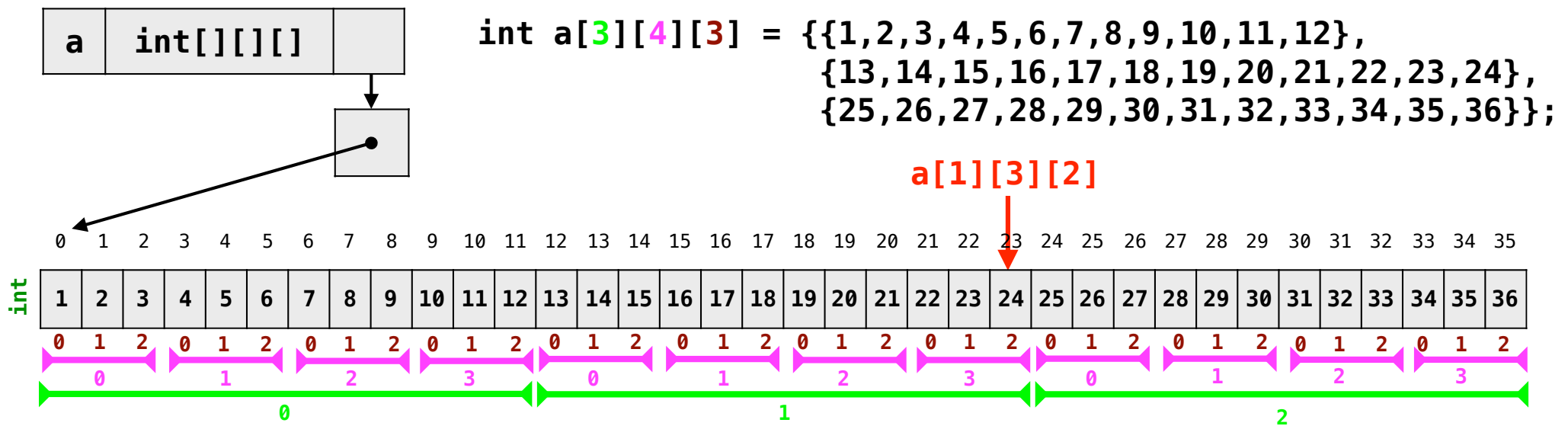
```
int a[3][4][3] = {{1,2,3,4,5,6,7,8,9,10,11,12},
                  {13,14,15,16,17,18,19,20,21,22,23,24},
                  {25,26,27,28,29,30,31,32,33,34,35,36}};
```

```
int (*b)[4][3];
int *(c[3][4]);
int *(*d)[4];
int *(*e[3]);
int ***f;
int (*g[3])[3];
int (**h)[3];
```

```
// Declare b, c, d, e, f, g, and h correctly
```

```
int main() {
    int i, j, k;

    printf("a\tb\tc\td\te\tf\tg\tg\tg\n\n");
    for (i = 0; i < 3; i++)
        for (j = 0; j < 4; j++)
            for (k = 0; k < 3; k++) {
                printf("%d\t", a[i][j][k]);
                printf("%d\t", b[i][j][k]);
                printf("%d\t", c[i][j][k]);
                printf("%d\t", d[i][j][k]);
                printf("%d\t", e[i][j][k]);
                printf("%d\t", f[i][j][k]);
                printf("%d\t", g[i][j][k]);
                printf("%d\t", h[i][j][k]);
                printf("\n");
            }
    return 0;
}
```

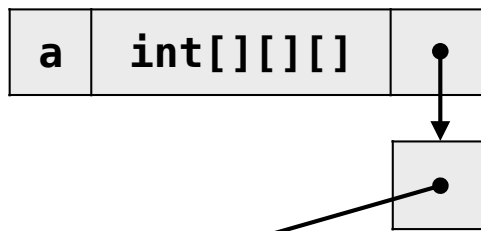


```
int a[3][4][3];
```

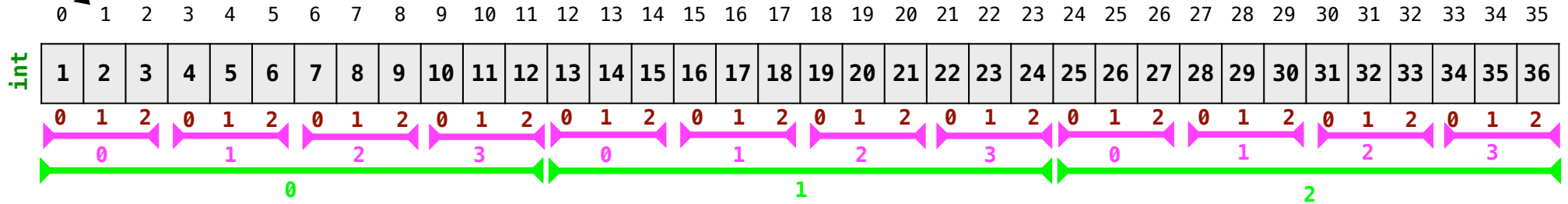
```
int i, j, k;
```

```
int n = 0;
```

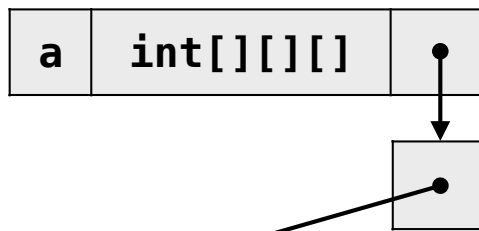
```
for (i = 0; i < 3; i++)
  for (j = 0; j < 4; j++)
    for (k = 0; k < 3; k++)
      a[i][j][k] = ++n;
```



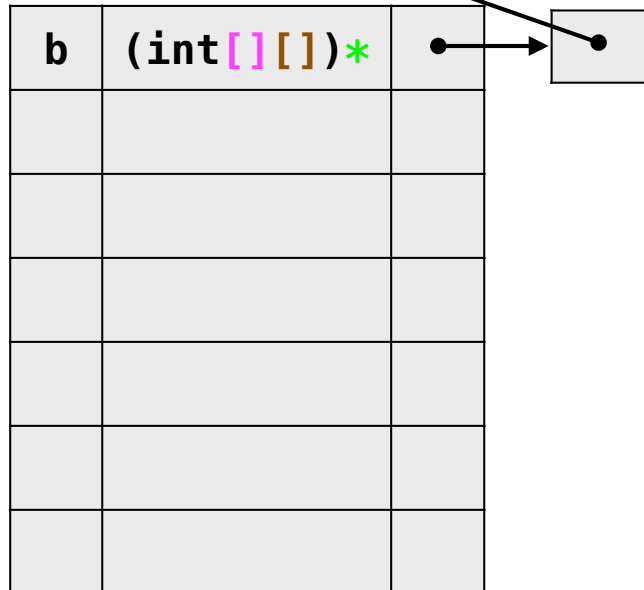
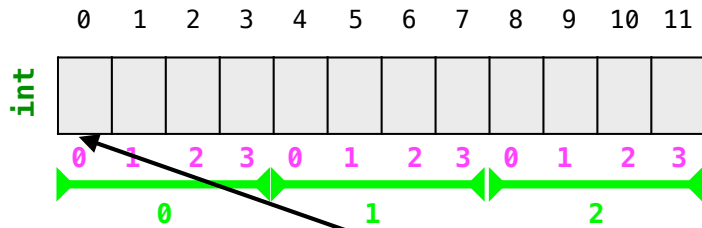
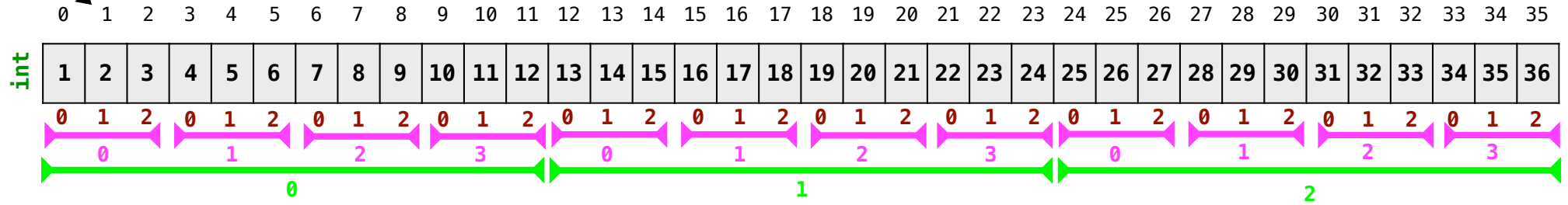
```
int a[3][4][3] = {{1,2,3,4,5,6,7,8,9,10,11,12},  
                  {13,14,15,16,17,18,19,20,21,22,23,24},  
                  {25,26,27,28,29,30,31,32,33,34,35,36}};
```



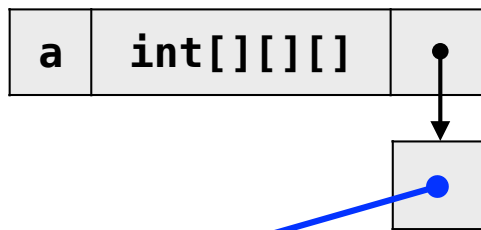
```
int (*b)[4][3];
```



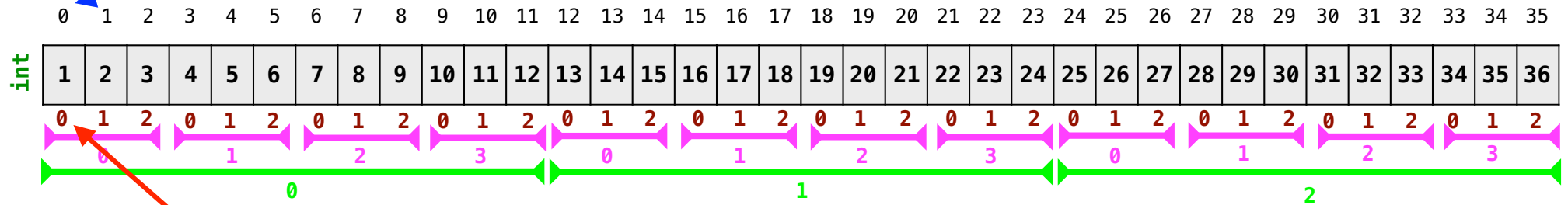
```
int a[3][4][3] = {{1,2,3,4,5,6,7,8,9,10,11,12},
                  {13,14,15,16,17,18,19,20,21,22,23,24},
                  {25,26,27,28,29,30,31,32,33,34,35,36}};
```



```
int (*b)[4][3];
```



```
int a[3][4][3] = {{1,2,3,4,5,6,7,8,9,10,11,12},
                  {13,14,15,16,17,18,19,20,21,22,23,24},
                  {25,26,27,28,29,30,31,32,33,34,35,36}};
```



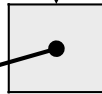
0	1	2	3	4	5	6	7	8	9	10	11

b	(int[][])*	•

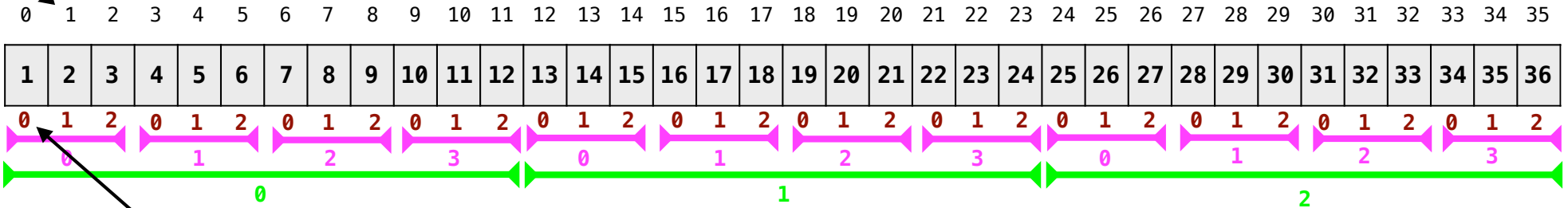
```
int (*b)[4][3] = a;
```

a	int[][][]	
---	-----------	--

```
int a[3][4][3] = {{1,2,3,4,5,6,7,8,9,10,11,12},
                  {13,14,15,16,17,18,19,20,21,22,23,24},
                  {25,26,27,28,29,30,31,32,33,34,35,36}};
```



int



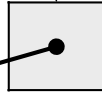
0	1	2	3	4	5	6	7	8	9	10	11

b	(int[4][3])*	

```
int (*b)[4][3] = a;
int *(c[3][4]);
```

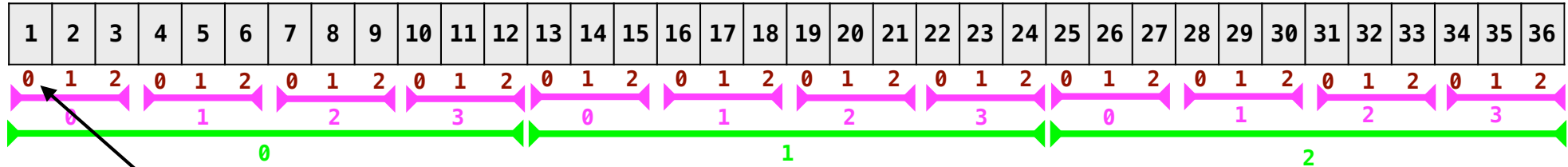
a	int[][][]	
---	-----------	--

```
int a[3][4][3] = {{1,2,3,4,5,6,7,8,9,10,11,12},
                  {13,14,15,16,17,18,19,20,21,22,23,24},
                  {25,26,27,28,29,30,31,32,33,34,35,36}};
```

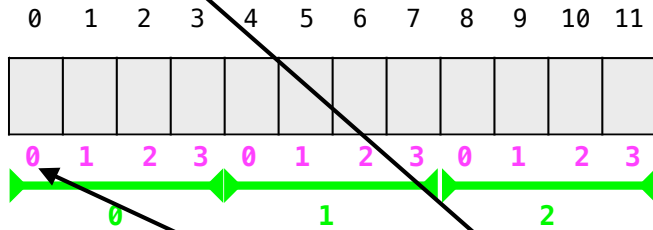


0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35

int

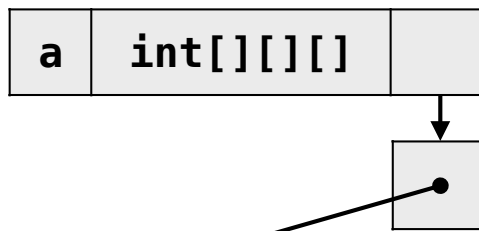


int*

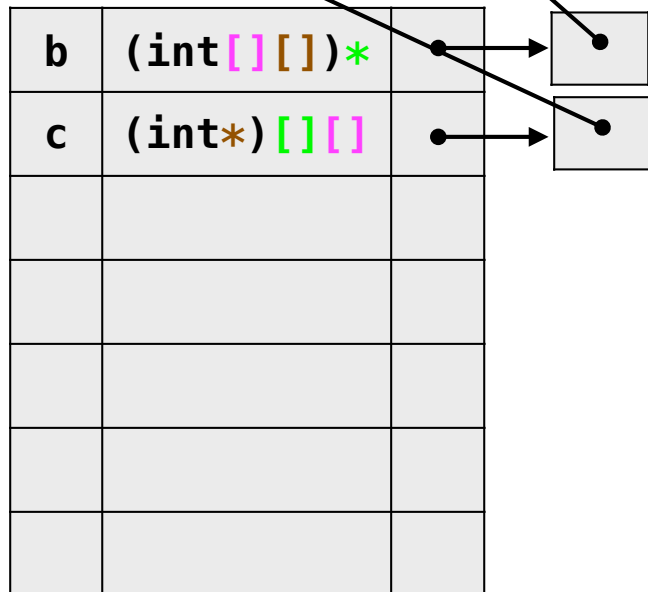
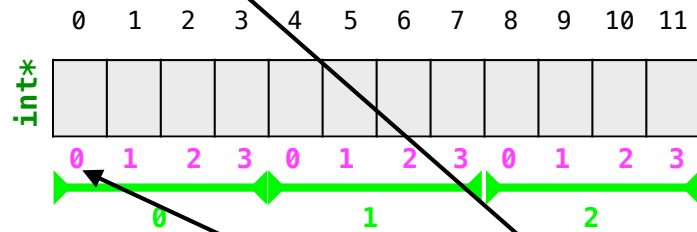
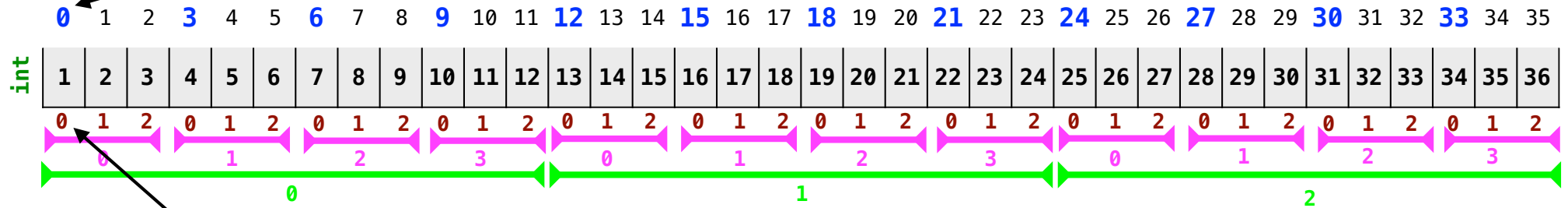


b	(int[4][3])*	
c	(int*)[4][3]	

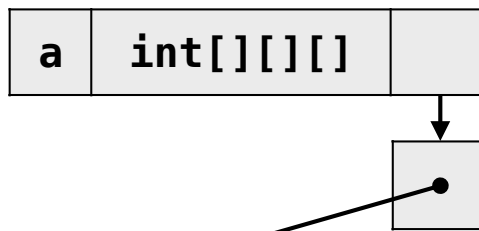
```
int (*b)[4][3] = a;
int *(c[3][4]);
```

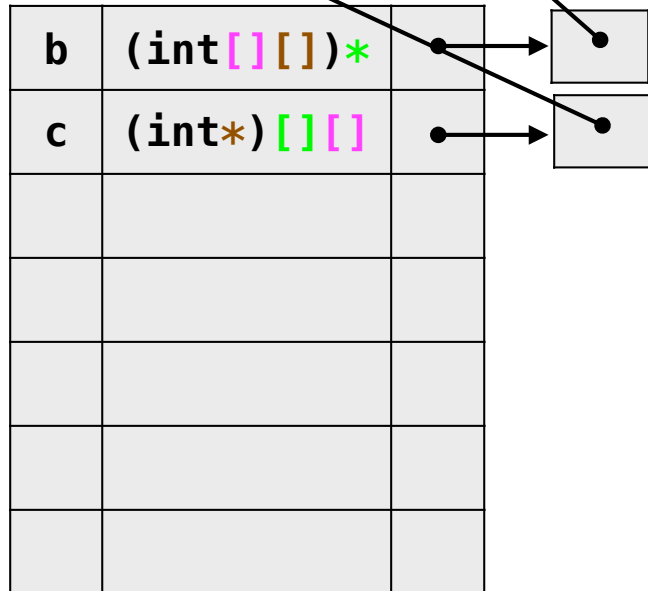
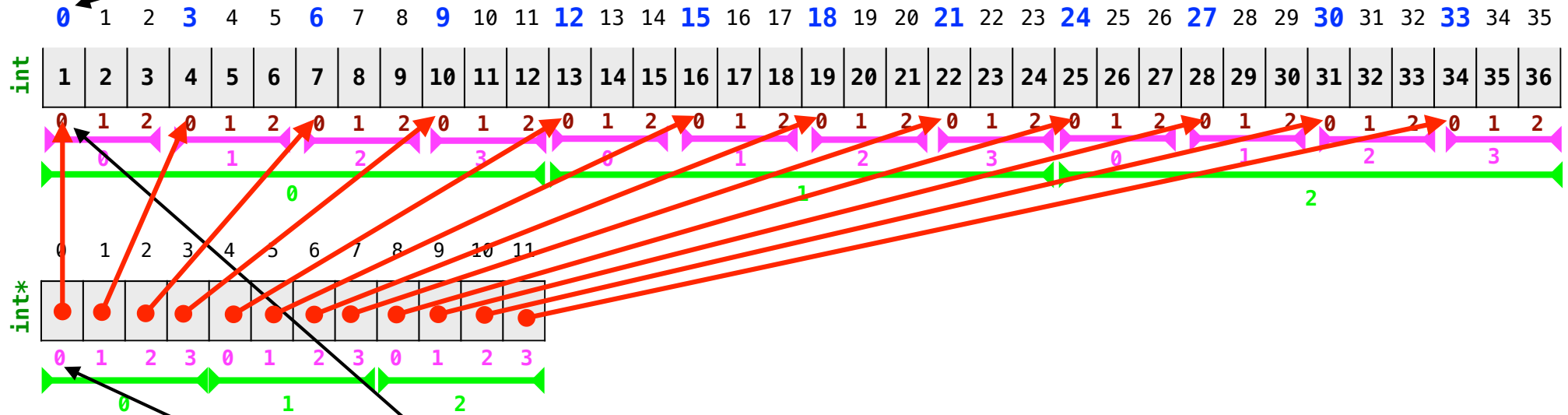
```
int a[3][4][3] = {{1,2,3,4,5,6,7,8,9,10,11,12},
                  {13,14,15,16,17,18,19,20,21,22,23,24},
                  {25,26,27,28,29,30,31,32,33,34,35,36}};
```



```
int (*b)[4][3] = a;
int *(c[3][4]) =
{a[0][0],a[0][1],a[0][2],a[0][3],
 a[1][0],a[1][1],a[1][2],a[1][3],
 a[2][0],a[2][1],a[2][2],a[2][3]};
```



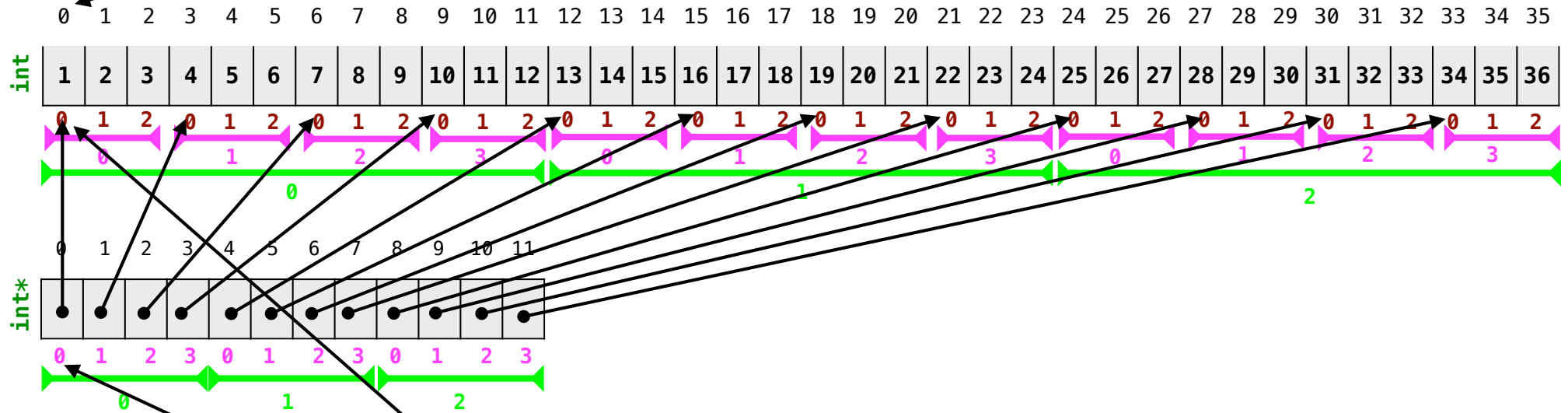
```
int a[3][4][3] = {{1,2,3,4,5,6,7,8,9,10,11,12},
                  {13,14,15,16,17,18,19,20,21,22,23,24},
                  {25,26,27,28,29,30,31,32,33,34,35,36}};
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```
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int *(c[3][4]) =
{a[0][0],a[0][1],a[0][2],a[0][3],
 a[1][0],a[1][1],a[1][2],a[1][3],
 a[2][0],a[2][1],a[2][2],a[2][3]};
```

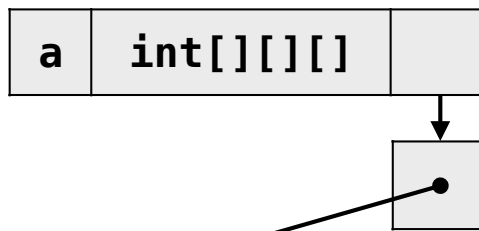
a	int[][][]	
---	-----------	--

```
int a[3][4][3] = {{1,2,3,4,5,6,7,8,9,10,11,12},
                  {13,14,15,16,17,18,19,20,21,22,23,24},
                  {25,26,27,28,29,30,31,32,33,34,35,36}};
```

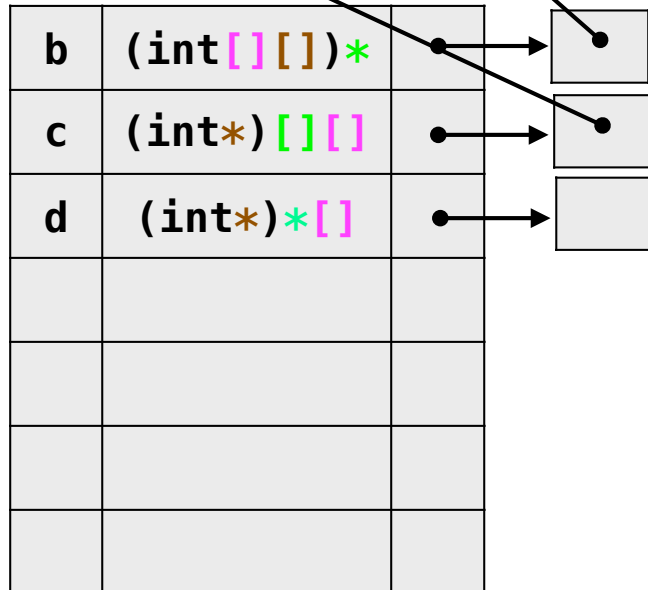
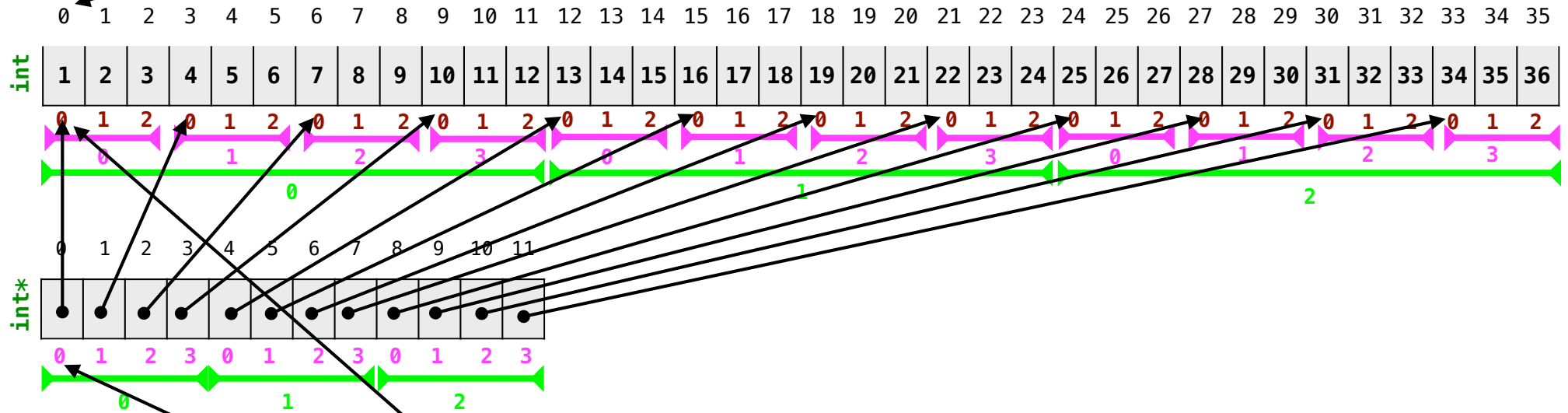


b	(int[4][3])*	
c	(int*)[4][3]	

```
int (*b)[4][3] = a;
int *(c[4][3]) =
    {a[0][0],a[0][1],a[0][2],a[0][3],
     a[1][0],a[1][1],a[1][2],a[1][3],
     a[2][0],a[2][1],a[2][2],a[2][3]};
int *(*d)[4];
```



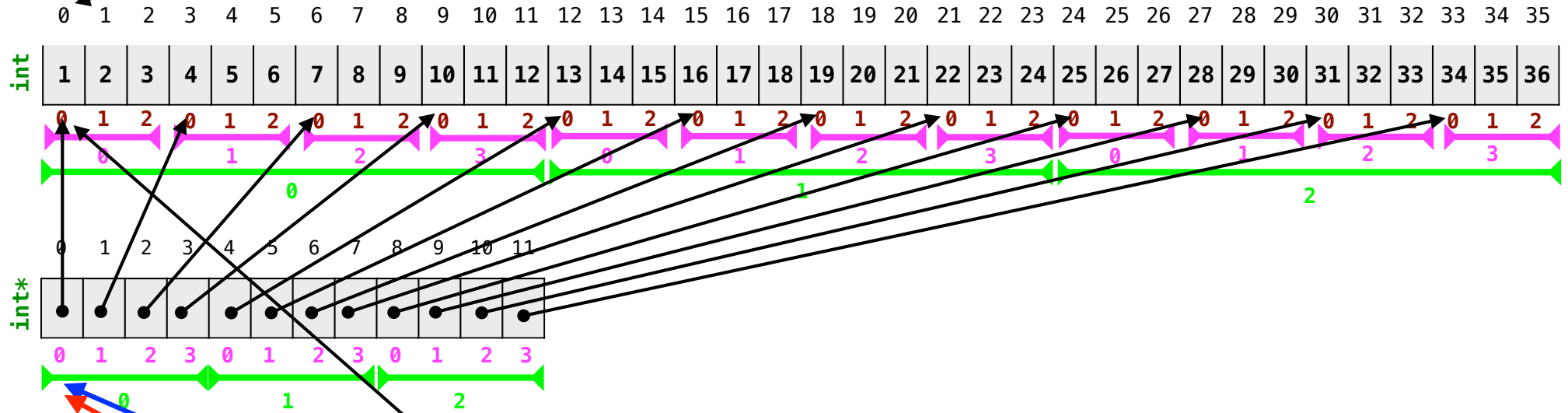
```
int a[3][4][3] = {{1,2,3,4,5,6,7,8,9,10,11,12},
                  {13,14,15,16,17,18,19,20,21,22,23,24},
                  {25,26,27,28,29,30,31,32,33,34,35,36}};
```



```
int (*b)[4][3] = a;
int *(c[3][4]) =
    {a[0][0],a[0][1],a[0][2],a[0][3],
     a[1][0],a[1][1],a[1][2],a[1][3],
     a[2][0],a[2][1],a[2][2],a[2][3]};
int *(*d)[4];
```

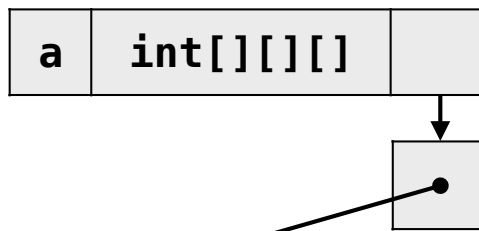
a	int[][][]	
---	-----------	--

```
int a[3][4][3] = {{1,2,3,4,5,6,7,8,9,10,11,12},
                  {13,14,15,16,17,18,19,20,21,22,23,24},
                  {25,26,27,28,29,30,31,32,33,34,35,36}};
```

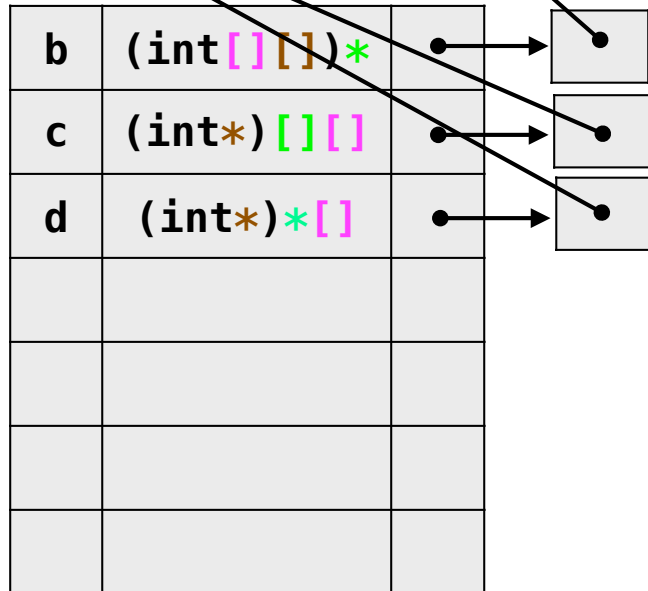
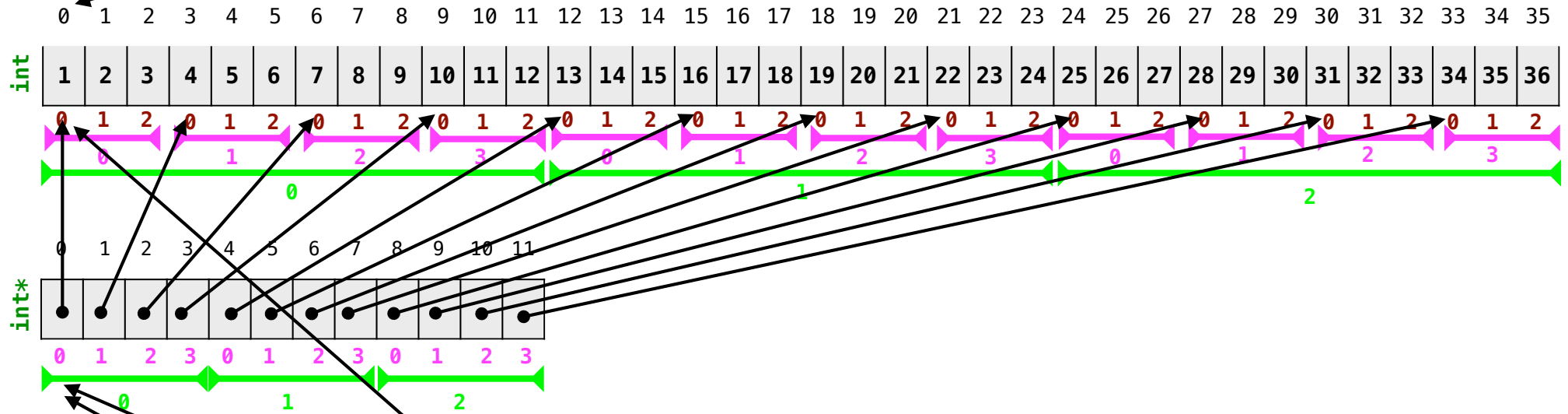


b	(int[4][3])*	
c	(int*)[4][3]	
d	(int*)*[4]	

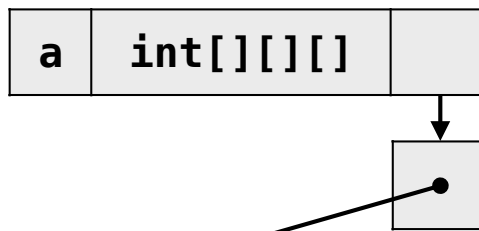
```
int (*b)[4][3] = a;
int *(c[3][4]) =
    {a[0][0],a[0][1],a[0][2],a[0][3],
     a[1][0],a[1][1],a[1][2],a[1][3],
     a[2][0],a[2][1],a[2][2],a[2][3]};
int *(*d)[4] = c;
```



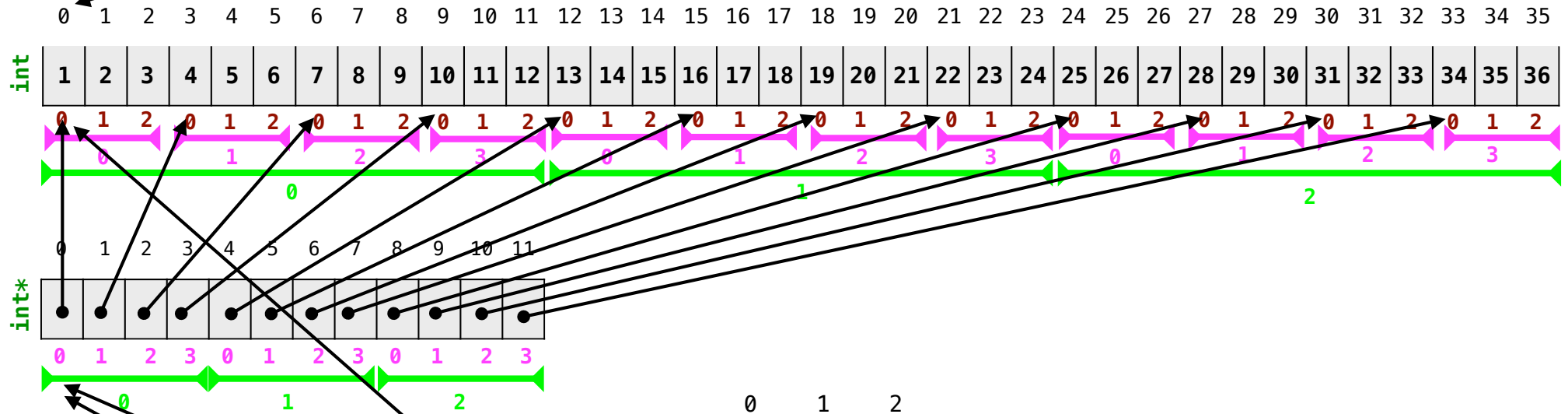
```
int a[3][4][3] = {{1,2,3,4,5,6,7,8,9,10,11,12},
                  {13,14,15,16,17,18,19,20,21,22,23,24},
                  {25,26,27,28,29,30,31,32,33,34,35,36}};
```



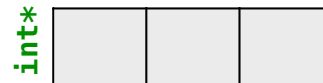
```
int (*b)[4][3] = a;
int *(c[3][4]) =
    {a[0][0],a[0][1],a[0][2],a[0][3],
     a[1][0],a[1][1],a[1][2],a[1][3],
     a[2][0],a[2][1],a[2][2],a[2][3]};
int *(*d)[4] = c;
int **(*e[3]);
```



```
int a[3][4][3] = {{1,2,3,4,5,6,7,8,9,10,11,12},
                  {13,14,15,16,17,18,19,20,21,22,23,24},
                  {25,26,27,28,29,30,31,32,33,34,35,36}};
```



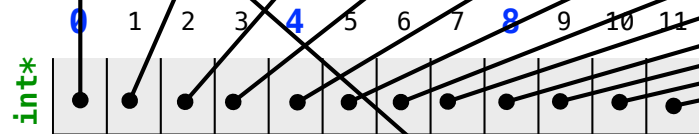
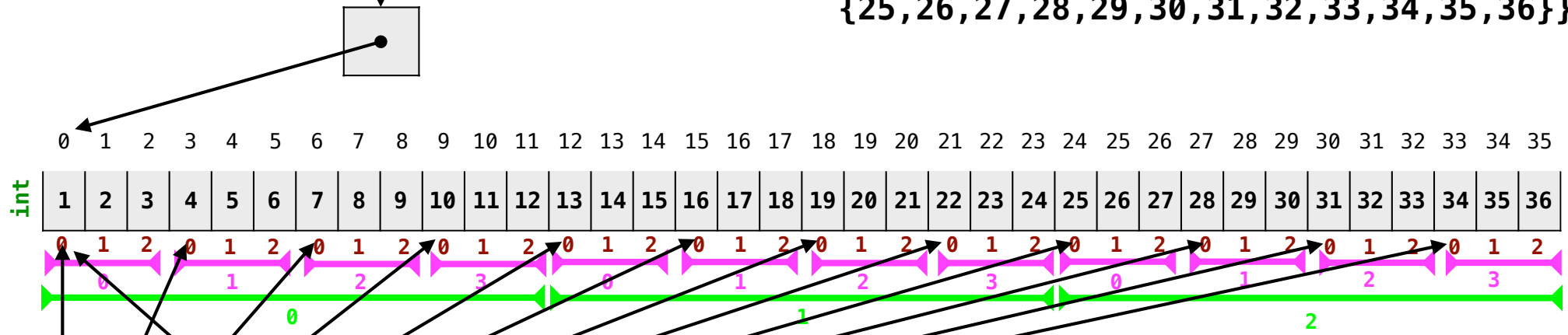
b	(int[4][3])*	
c	(int*)[4][3]	
d	(int*)* [4]	
e	(int*)[4]*	



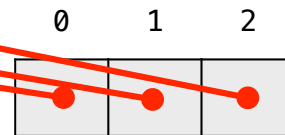
```
int (*b)[4][3] = a;
int *(c[4][3]) =
    {a[0][0],a[0][1],a[0][2],a[0][3],
     a[1][0],a[1][1],a[1][2],a[1][3],
     a[2][0],a[2][1],a[2][2],a[2][3]};
int *(*d)[4] = c;
int **(*e[4]);
```

a	int[][][]	
---	-----------	--

```
int a[3][4][3] = {{1,2,3,4,5,6,7,8,9,10,11,12},
                  {13,14,15,16,17,18,19,20,21,22,23,24},
                  {25,26,27,28,29,30,31,32,33,34,35,36}};
```



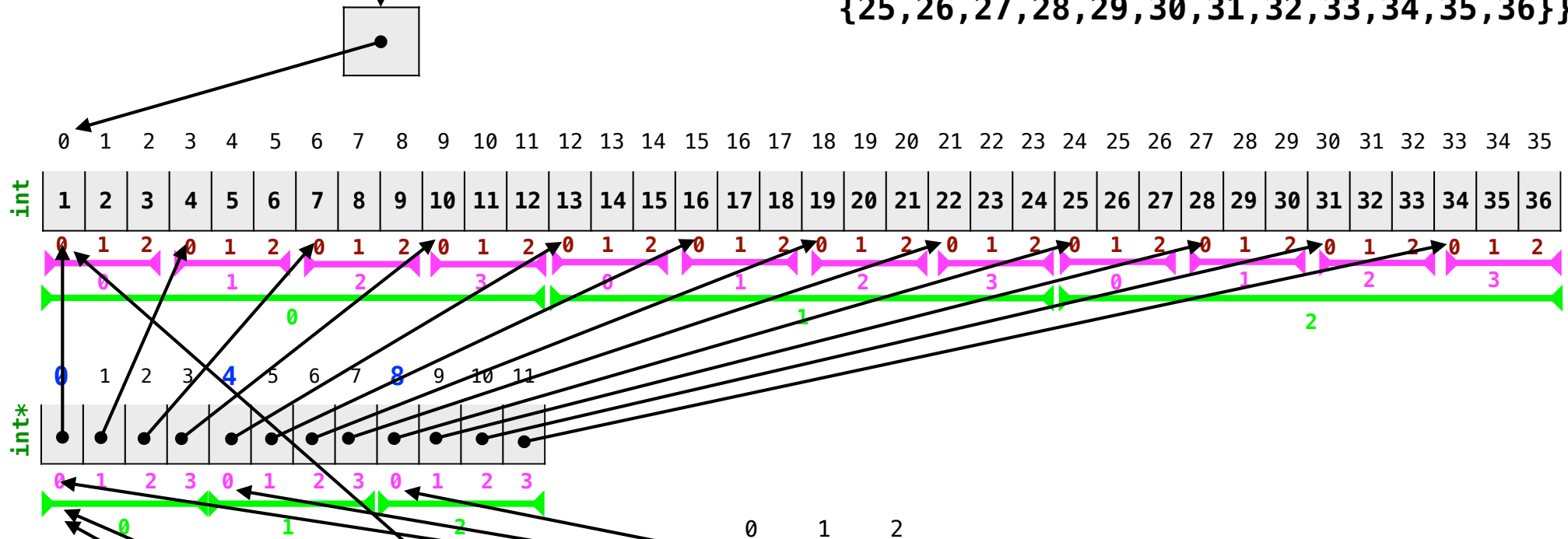
b	(int[4][3])*	
c	(int*)[4][3]	
d	(int*)*[4]	
e	(int*)[4]*	



```
int (*b)[4][3] = a;
int *(c[3][4]) =
    {a[0][0],a[0][1],a[0][2],a[0][3],
     a[1][0],a[1][1],a[1][2],a[1][3],
     a[2][0],a[2][1],a[2][2],a[2][3]};
int *(*d)[4] = c;
int *(*e[3]) = {c[0],c[1],c[2]};
```


a	int[][][]	
---	-----------	--

```
int a[3][4][3] = {{1,2,3,4,5,6,7,8,9,10,11,12},
                  {13,14,15,16,17,18,19,20,21,22,23,24},
                  {25,26,27,28,29,30,31,32,33,34,35,36}};
```

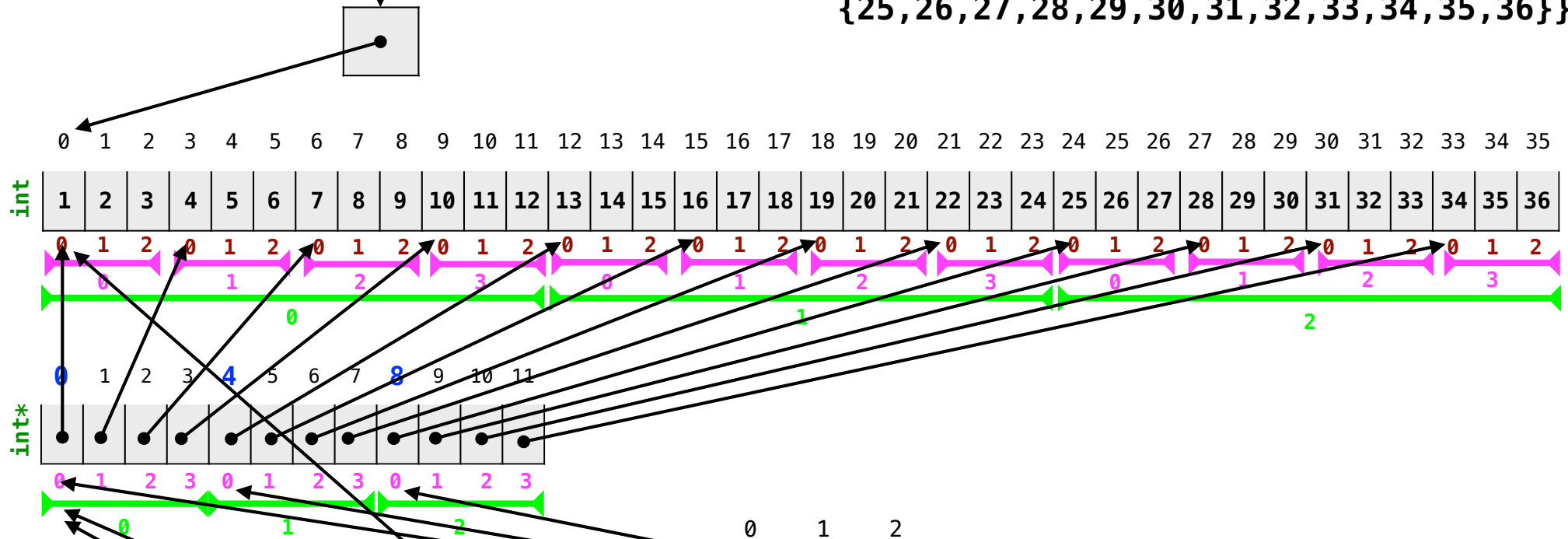


b	(int[4][3])*	
c	(int*)[4][3]	
d	(int*)*[4]	
e	(int*)[4]*	

```
int (*b)[4][3] = a;
int *(c[3][4]) =
    {a[0][0],a[0][1],a[0][2],a[0][3],
     a[1][0],a[1][1],a[1][2],a[1][3],
     a[2][0],a[2][1],a[2][2],a[2][3]};
int *(*d)[4] = c;
int **e[3] = {c[0],c[1],c[2]};
int ***f;
```

a	int[][][]	
---	-----------	--

```
int a[3][4][3] = {{1,2,3,4,5,6,7,8,9,10,11,12},
                  {13,14,15,16,17,18,19,20,21,22,23,24},
                  {25,26,27,28,29,30,31,32,33,34,35,36}};
```

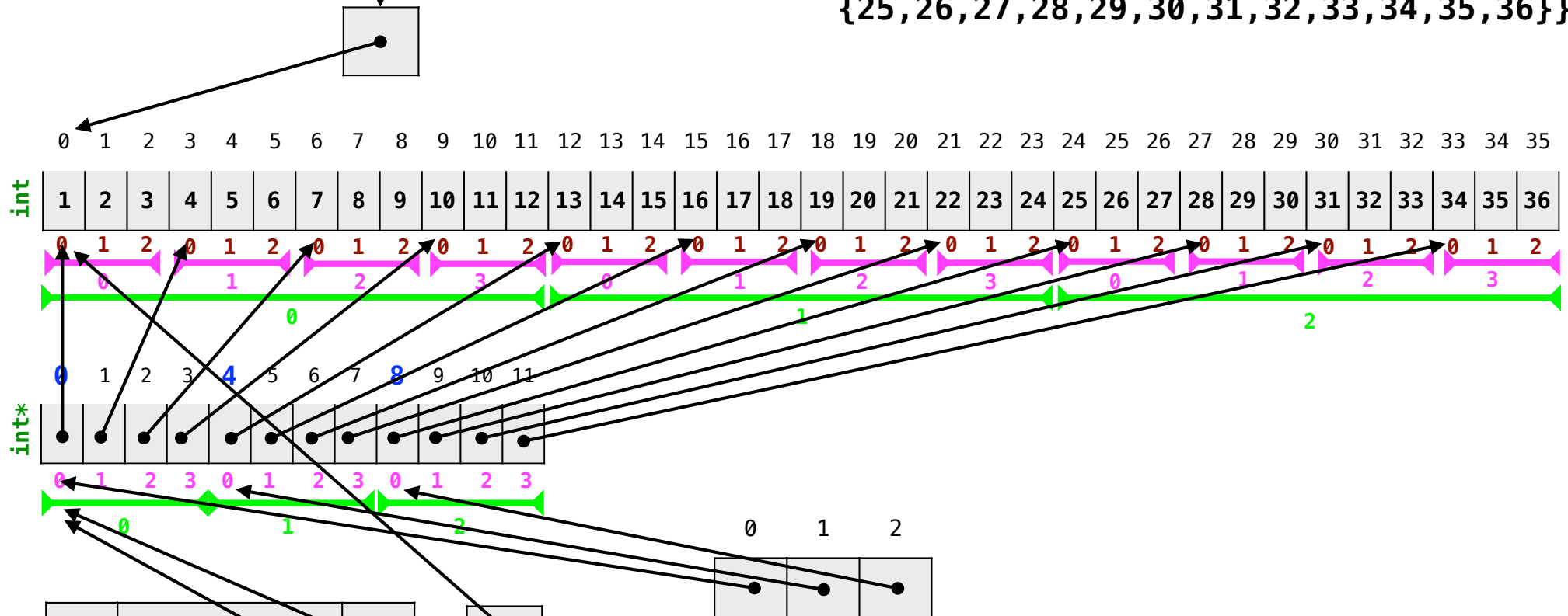


b	(int[4][3])*	
c	(int*)[4][3]	
d	(int*)*[4]	
e	(int*)[4]*	
f	int***	

```
int (*b)[4][3] = a;
int *(c[3][4]) =
    {a[0][0],a[0][1],a[0][2],a[0][3],
     a[1][0],a[1][1],a[1][2],a[1][3],
     a[2][0],a[2][1],a[2][2],a[2][3]};
int **d[4] = c;
int **e[3] = {c[0],c[1],c[2]};
int ***f;
```

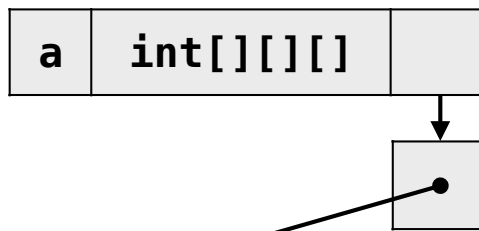
a	int[][][]	
---	-----------	--

```
int a[3][4][3] = {{1,2,3,4,5,6,7,8,9,10,11,12},
                  {13,14,15,16,17,18,19,20,21,22,23,24},
                  {25,26,27,28,29,30,31,32,33,34,35,36}};
```

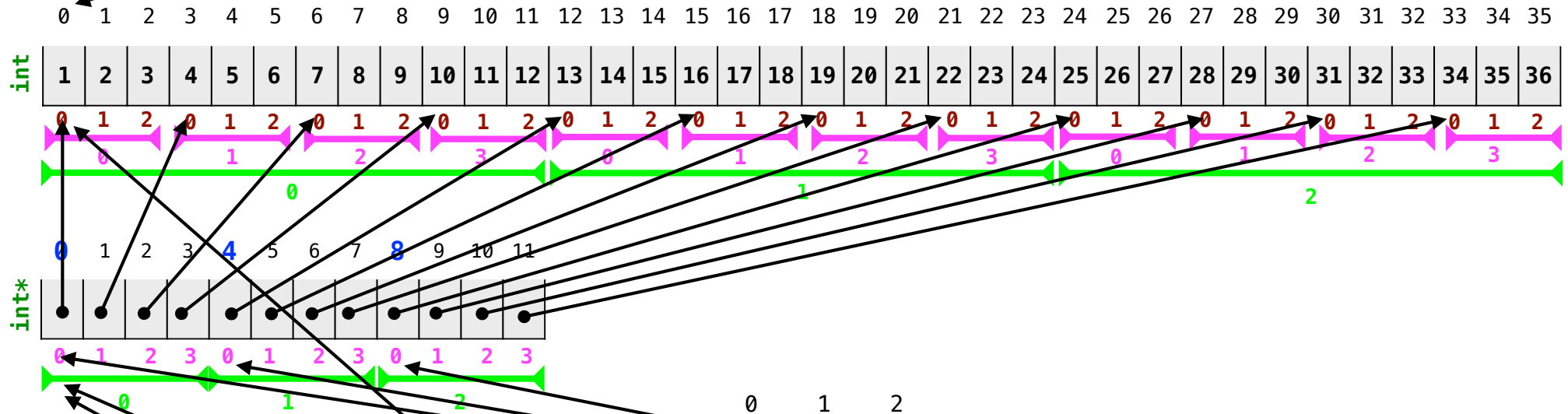


b	(int[4][3])*	
c	(int*)[4][3]	
d	(int*)*[4]	
e	(int*)[4]*	
f	int***	

```
int (*b)[4][3] = a;
int *(c[3][4]) =
    {a[0][0],a[0][1],a[0][2],a[0][3],
     a[1][0],a[1][1],a[1][2],a[1][3],
     a[2][0],a[2][1],a[2][2],a[2][3]};
int *(*d)[4] = c;
int **(*e[3]) = {c[0],c[1],c[2]};
int ***f = e;
```

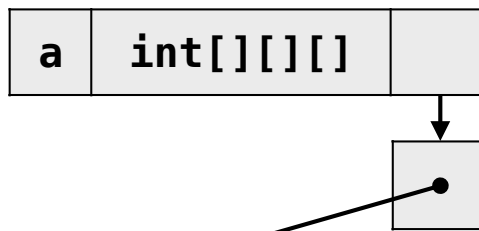


```
int a[3][4][3] = {{1,2,3,4,5,6,7,8,9,10,11,12},
                  {13,14,15,16,17,18,19,20,21,22,23,24},
                  {25,26,27,28,29,30,31,32,33,34,35,36}};
```

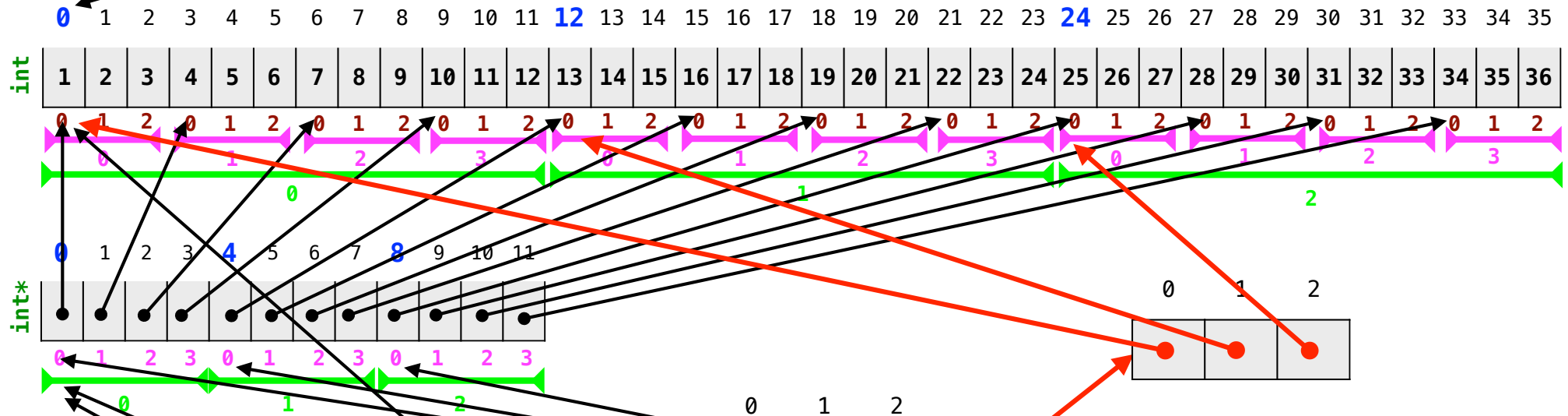


b	(int[4][3])*	
c	(int*)[4]	
d	(int*)*[4]	
e	(int*)[4]*	
f	int***	

```
int (*b)[4][3] = a;
int *(c[4]) =
{a[0][0],a[0][1],a[0][2],a[0][3],
 a[1][0],a[1][1],a[1][2],a[1][3],
 a[2][0],a[2][1],a[2][2],a[2][3]};
int *(*d)[4] = c;
int ***(e[4]) = {c[0],c[1],c[2]};
int ***f = e;
int (*g[4])[3];
```



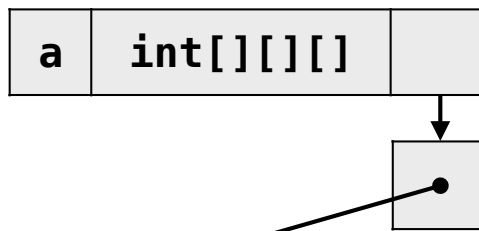
```
int a[3][4][3] = {{1,2,3,4,5,6,7,8,9,10,11,12},
                  {13,14,15,16,17,18,19,20,21,22,23,24},
                  {25,26,27,28,29,30,31,32,33,34,35,36}};
```



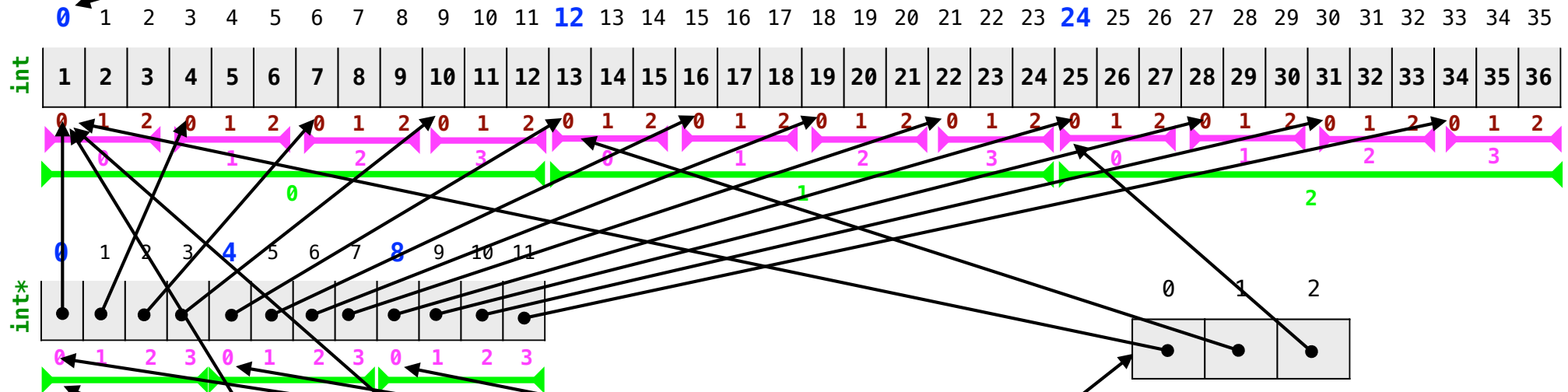
b	(int[4][3])*	
c	(int*)[4]	
d	(int*)*4	
e	(int*)[4]*	
f	int***	
g	int[][3]	

```
int (*b)[4][3] = a;
int *(c[4]) =
{a[0][0],a[0][1],a[0][2],a[0][3],
 a[1][0],a[1][1],a[1][2],a[1][3],
 a[2][0],a[2][1],a[2][2],a[2][3]};

int **d[4] = c;
int **e[4] = {c[0],c[1],c[2]};
int ***f = e;
int (*g[3])[3] = {a[0],a[1],a[2]};
```



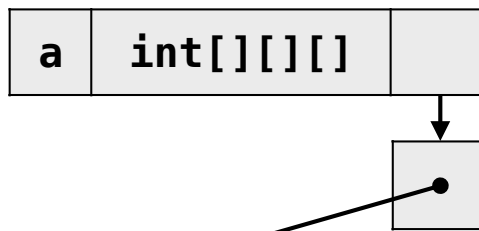
```
int a[3][4][3] = {{1,2,3,4,5,6,7,8,9,10,11,12},
                  {13,14,15,16,17,18,19,20,21,22,23,24},
                  {25,26,27,28,29,30,31,32,33,34,35,36}};
```



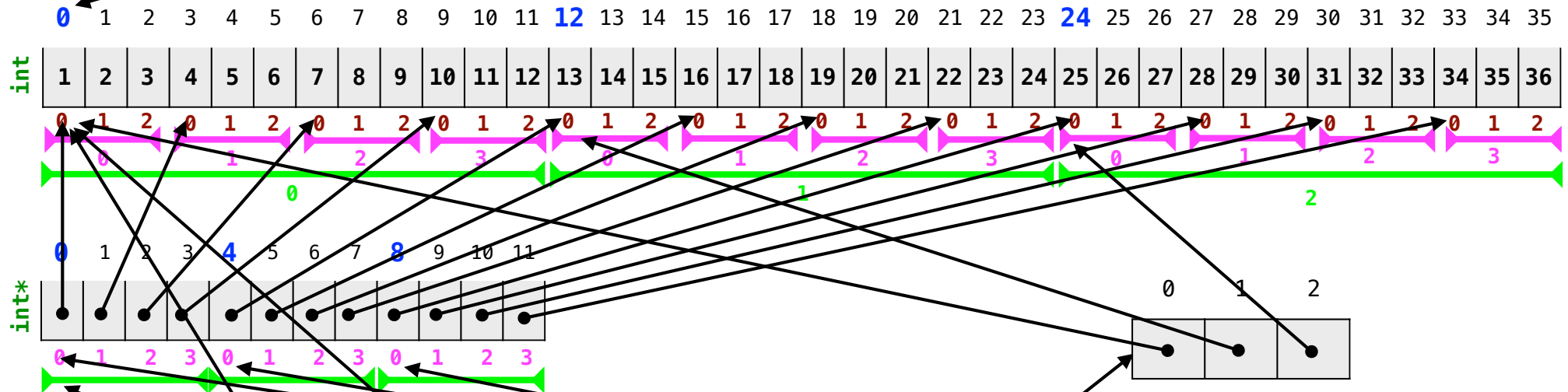
b	(int[4][3])*	
c	(int*)[4]	
d	(int*)*4	
e	(int*)[3]	
f	int***	
g	int[][3]	

```
int (*b)[4][3] = a;
int *(c[4]) =
{a[0][0],a[0][1],a[0][2],a[0][3],
 a[1][0],a[1][1],a[1][2],a[1][3],
 a[2][0],a[2][1],a[2][2],a[2][3]};

int **d[4] = c;
int **e[3] = {c[0],c[1],c[2]};
int ***f = e;
int (*g[3])[3] = {a[0],a[1],a[2]};
int (**h)[3];
```

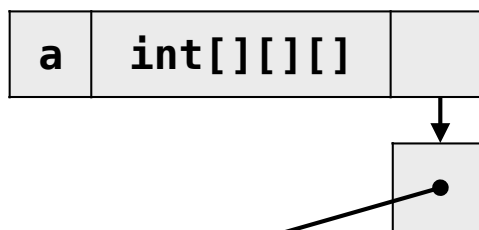


```
int a[3][4][3] = {{1,2,3,4,5,6,7,8,9,10,11,12},
                  {13,14,15,16,17,18,19,20,21,22,23,24},
                  {25,26,27,28,29,30,31,32,33,34,35,36}};
```

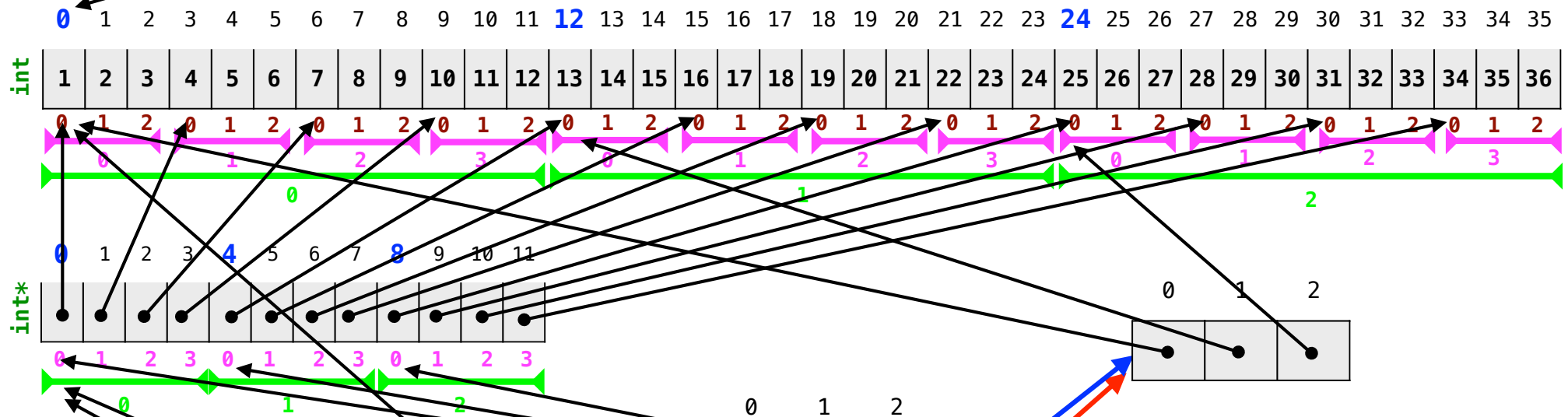


b	(int[4][3])*	
c	(int*)[4]	
d	(int*)*[4]	
e	(int*)[4]*	
f	int***	
g	int[][4]	
h	int**[4]	

```
int (*b)[4][3] = a;
int *(c[4]) =
{a[0][0],a[0][1],a[0][2],a[0][3],
 a[1][0],a[1][1],a[1][2],a[1][3],
 a[2][0],a[2][1],a[2][2],a[2][3]};
int **d[4] = c;
int ***e = {c[0],c[1],c[2]};
int (**f)[4] = e;
int (*g[4])[3] = {a[0],a[1],a[2]};
int (**h)[4];
```



```
int a[3][4][3] = {{1,2,3,4,5,6,7,8,9,10,11,12},
                  {13,14,15,16,17,18,19,20,21,22,23,24},
                  {25,26,27,28,29,30,31,32,33,34,35,36}};
```



b	(int[4][3])*	
c	(int*)[4]	
d	(int*)*4	
e	(int*)[4]*	
f	int***	
g	int[][4]	
h	int**[4]	

```
int (*b)[4][3] = a;
int *(c[4]) =
{a[0][0],a[0][1],a[0][2],a[0][3],
 a[1][0],a[1][1],a[1][2],a[1][3],
 a[2][0],a[2][1],a[2][2],a[2][3]};
int *(*d)[4] = c;
int **e[4] = {c[0],c[1],c[2]};
int ***f = e;
int (*g[4])[3] = {a[0],a[1],a[2]};
int (**h)[4] = g;
```