Stack

Heap

Stack

c1

300

200

int * ptr

10   4 bytes

300   new int

real

10

8 bytes

ptr = new int;

delete ptr;
delete 300;

imag

ptr -> 300
&ptr -> 200

ptr = NULL

20

*ptr -> 10

200

Stack

Heap

300

200   Complex* ptr

real

10

8 bytes

Complex *ptr = new Complex(10,20);

ptr->displayComplex();

imag

20

300   Anonymous Objects

delete ptr;
delete 300;

ptr = NULL;

stack

heap

c1

*rptr

rptr = new int;
iptr = new int

300

300

10   new int

*rptr = 10;
*iptr = 20;

*iptr

400

20   new int

cout<<*rptr
cout<<*iptr

200

400

delete rptr;
delete 300;

delete iptr;
delete 400;

C3

C2

C1

Stack

arr

0	1	2	3	4
10	20	30	40	50

200
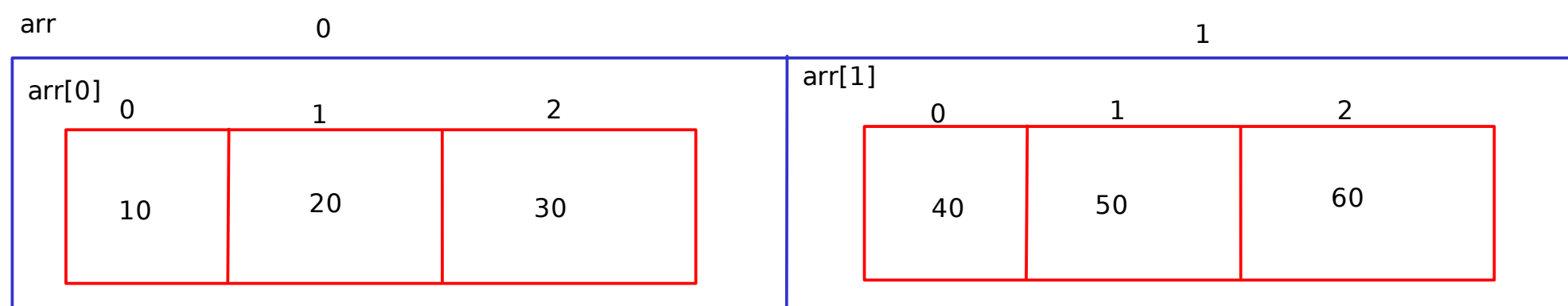
int arr[5];   arr[0] = 10; // 200[0]
                  arr[1] = 20; //200[1]
                  arr[2] = 30;
                  arr[3] = 40;
                  arr[4] = 50;

2D Array

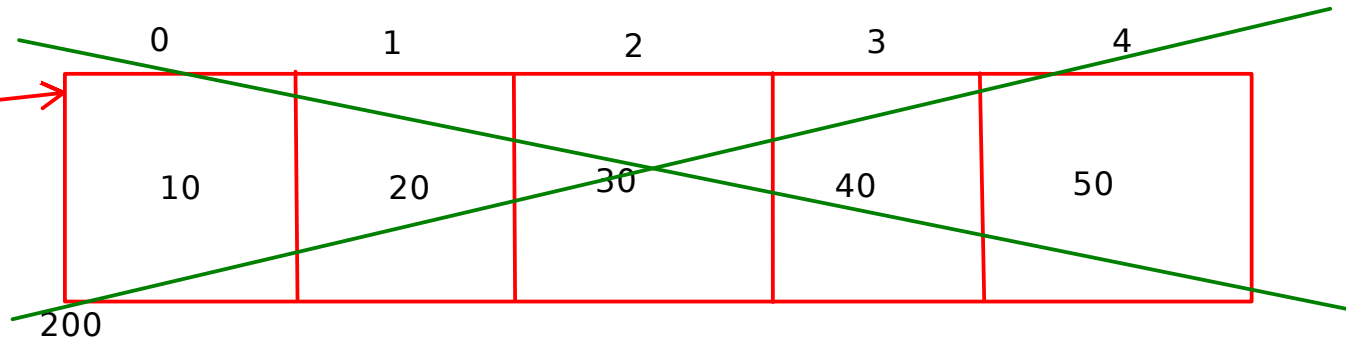arr   0   1

arr[0]   arr[1]

0	1	2
10	20	30

0	1	2
40	50	60

int arr[2][3];   arr[0]   arr[1]

arr[0][0]= 10;   arr[1][0]= 40;
arr[0][1]= 20;   arr[1][1]= 50;
arr[0][2]= 30;   arr[1][2]= 60;

stack   heap

0	1	2	3	4
10	20	30	40	50

200

200

int *arr

int *arr = new int[5];

new int[5];   arr[0]->200[0]

delete[] arr;
delete[] 200;

Stack

Heap

int **arr

int **arr = new int *[2];

	0	1
	int *	int *

200

arr[0] = new int[3];
arr[1] = new int[3];

300   250

200   204

arr[0][0] = 10;
arr[1][2] = 60;

300	
0	10
	int
304	
1	20
	int
304	
2	30
	int

① new int[3]

250	
0	40
	int
254	
1	50
	int
258	
2	60
	int

② new int [3]

③

delete[] arr[0]
delete[] arr[1]

delete[] arr

---

arr[0][0]->10;
arr[2][3] -> Garbage/ segmentation
arr[4][1]->140

delete[] arr[0];
delete[] arr[1];

arr

	0	1	2	3	4
	int *	int *	int *	int *	int *
	300	250	400	350	280

200   204   208   212   216

stack

int *arr[5];

300	
0	10
1	20
2	30

new int[3]

250	
0	40
1	50
2	60

new int[3]

400	
0	70
1	80
2	90

new int[3]

350	
0	100
1	110
2	120

new int[3]

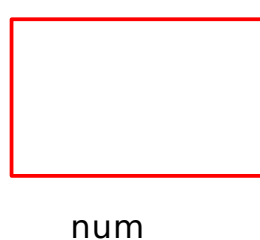| 280	
0	130
1	140
2	150

new int[3]

heap

---

iint *ptr;

cretaeArray(){
// dynamic memory
return new int[5];
}

sortArray(){

ptr = createArray();

}

num

1) Array of Objects
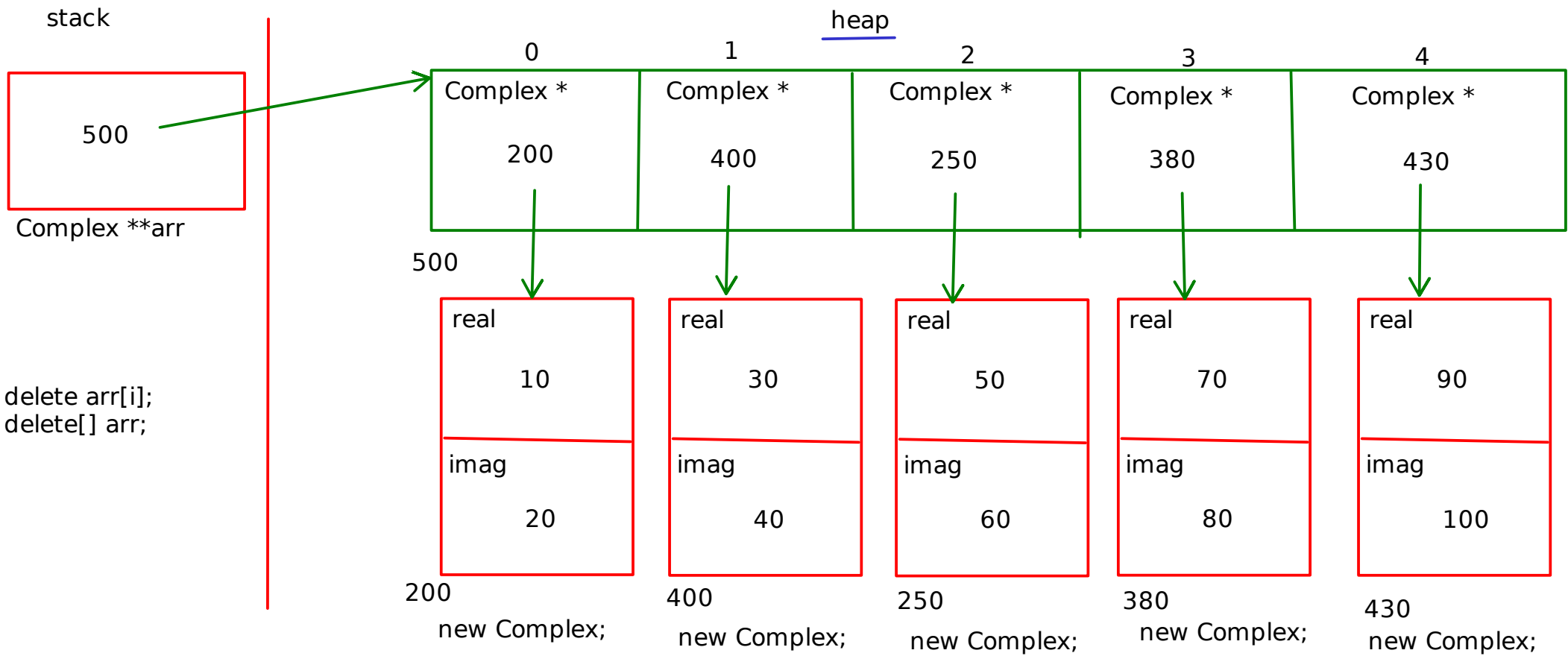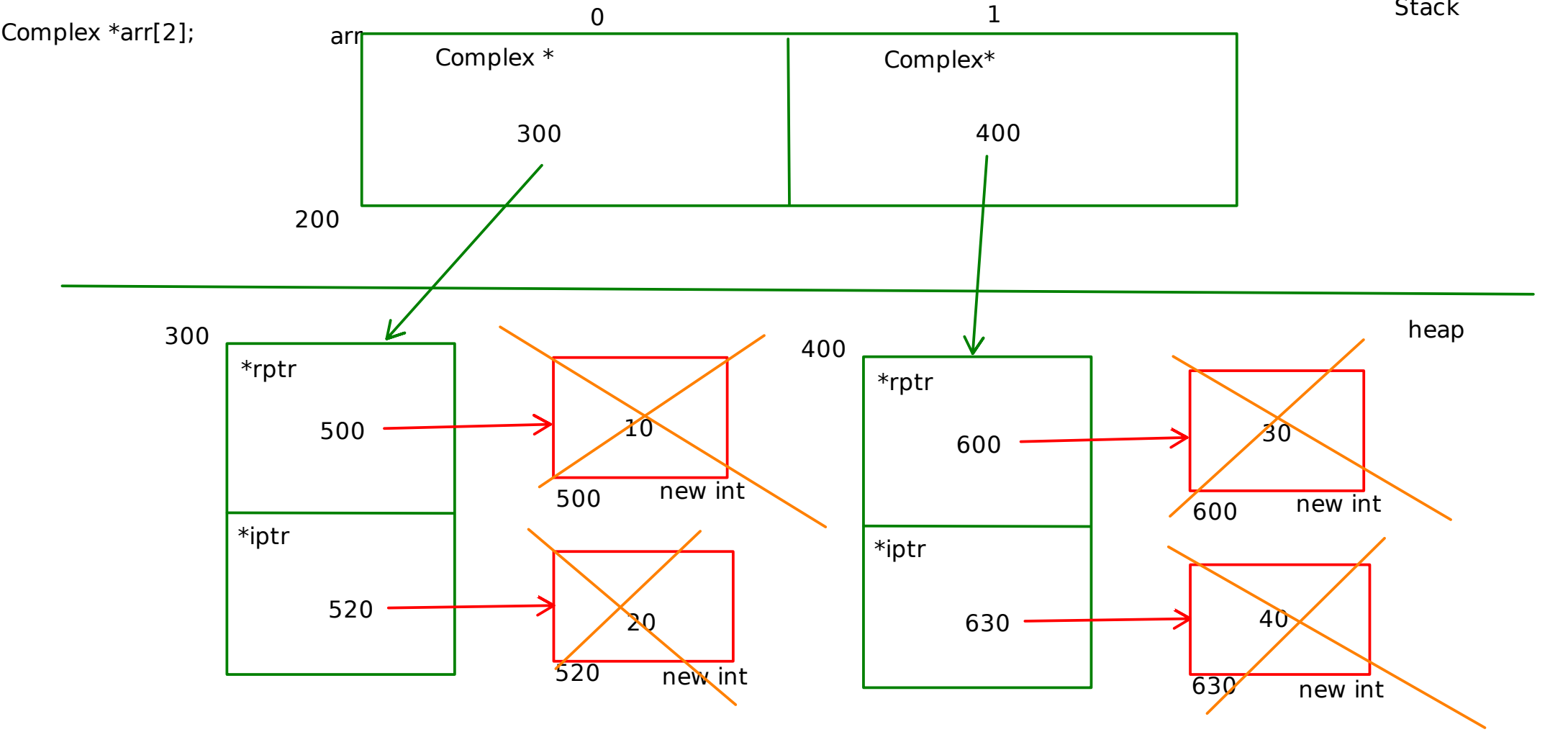## Complex arr[5];

stack

	0	1	2	3	4
real	10	30	50	70	90
imag	20	40	60	80	100

8 bytes

500   508
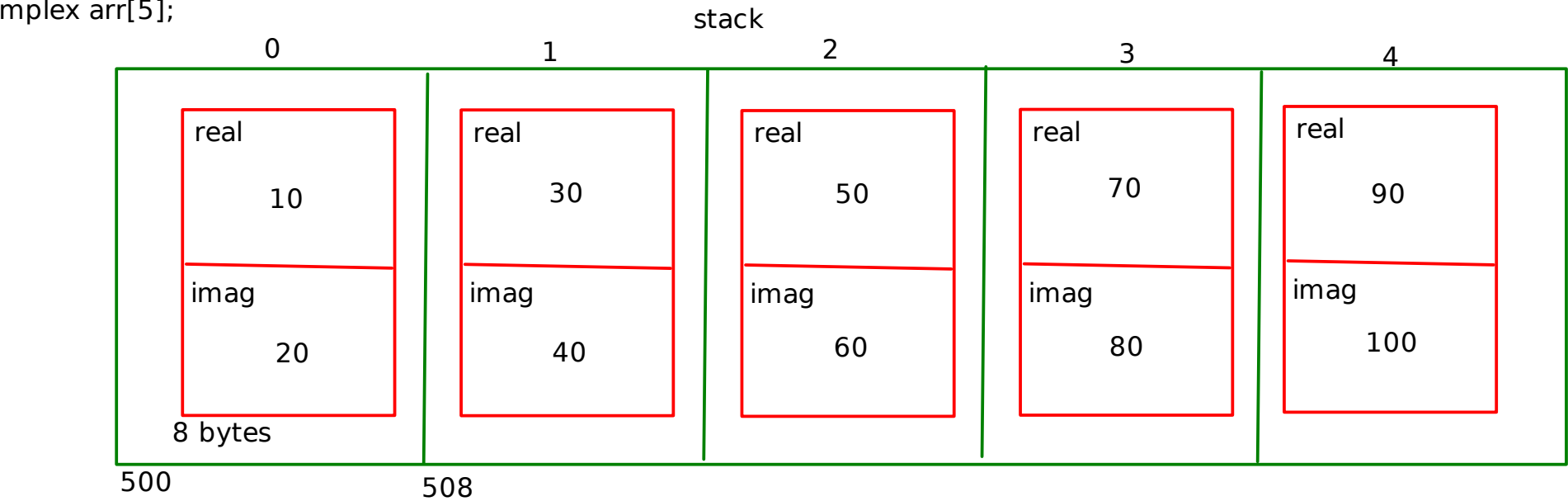
arr[0].

2) Array of dynamic objects

Complex *arr[5];

stack

arr

	0	1	2	3	4
Complex *	200	400	250	380	430

arr[0] = new Complex;
arr[1] = new Complex;

500

heap

delete arr[0];

real 10	real 30	real 50	real 70	real 90
imag 20	imag 40	imag 60	imag 80	imag 100

200   400   250   380   430
new Complex; new Complex; new Complex; new Complex; new Complex;
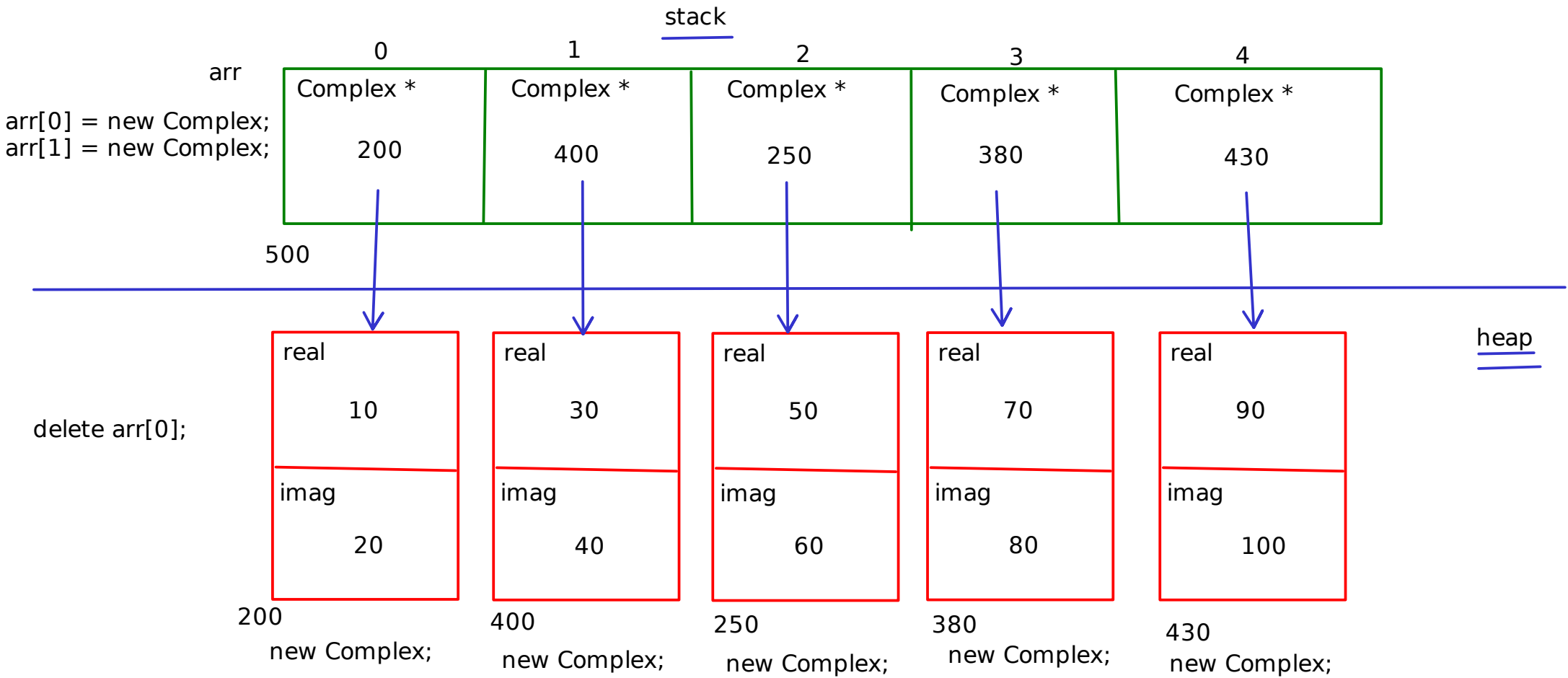
3) Complex **arr = new Complex*[5];

stack

500

Complex **arr

heap

	0	1	2	3	4
Complex *	200	400	250	380	430

500

delete arr[i];
delete[] arr;

real 10	real 30	real 50	real 70	real 90
imag 20	imag 40	imag 60	imag 80	imag 100

200   400   250   380   430
new Complex; new Complex; new Complex; new Complex; new Complex;

Complex *arr[2];

arr

0	1
Complex *	Complex*
300	400

200

Stack

heap

300

*rptr

500

*iptr

520

10

500   new int

20

520   new int

400

*rptr

600

*iptr

630

30

600   new int

40

630   new int

Complex arr[5]; -> Considering the demo12 complex class