

Exercise 1

Use a box-and-arrow diagram for the following program to explain what it prints out:

```
#include <stdio.h>

int foo(int *bar, int **baz) {
    *bar = 5;
    *(bar+1) = 6;
    *baz = bar+2;
    return *((*baz)+1);
}

int main(int argc, char **argv) {
    int arr[4] = {1, 2, 3, 4};
    int *ptr;

    arr[0] = foo(&(arr[0]), &ptr);
    printf("%d %d %d %d %d\n",
           arr[0], arr[1], arr[2], arr[3], *ptr);
    return 0;
}
```

main

```
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}
```

ptr	???
-----	-----

arr[0]	???
--------	-----

arr[1]	???
--------	-----

arr[2]	???
--------	-----

arr[3]	???
--------	-----

main

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ptr	???
-----	-----

arr[0]	1
--------	---

arr[1]	2
--------	---

arr[2]	3
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arr[3]	4
--------	---

main

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ptr	???
-----	-----

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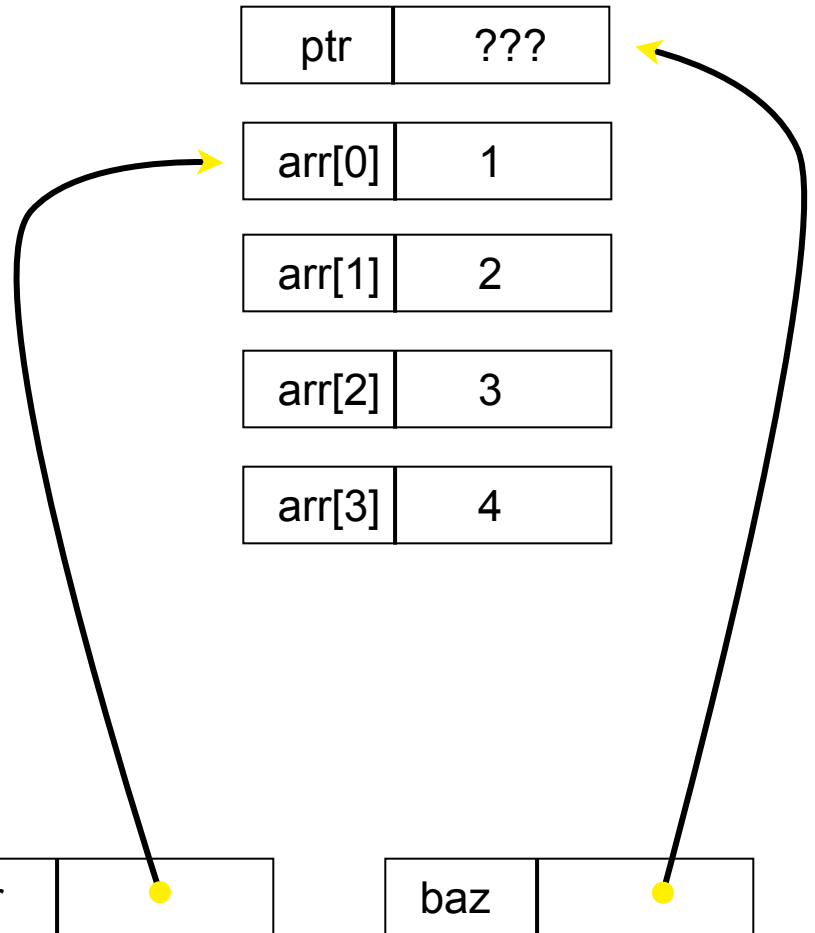
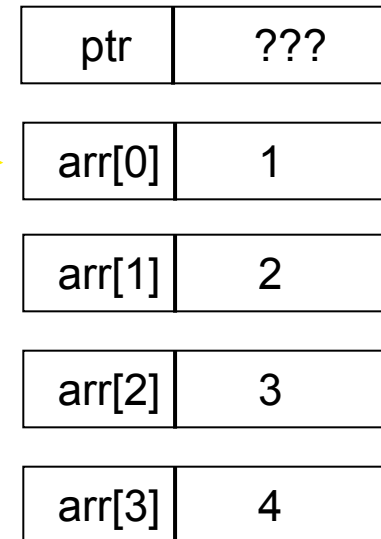
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    return 0;
}

```

foo



main



```

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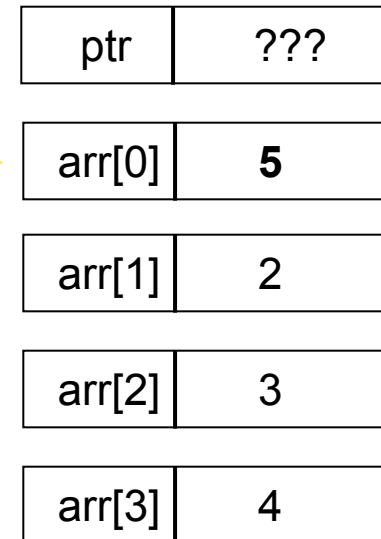
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foo



main



```

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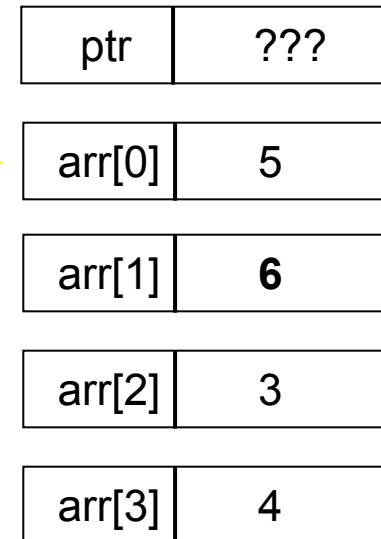
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    printf("%d %d %d %d %d\n",
           arr[0], arr[1], arr[2], arr[3], *ptr);
    return 0;
}

```

foo



main

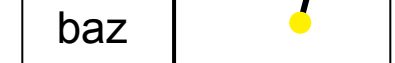


```
#include <stdio.h>
```

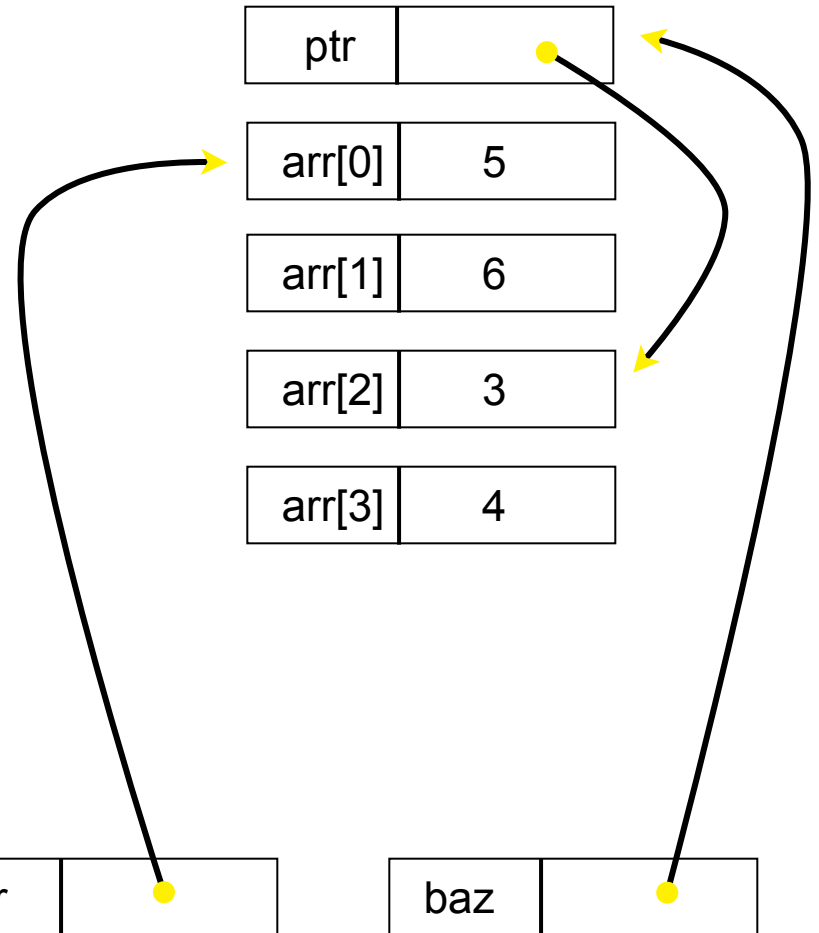
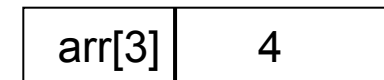
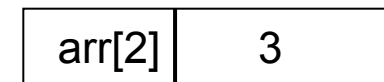
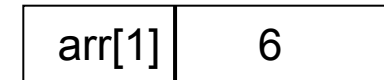
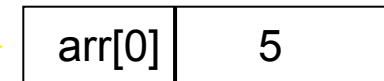
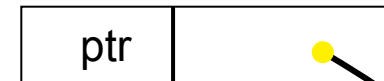
```
int foo(int *bar, int **baz) {  
    *bar = 5;  
    *(bar+1) = 6;  
    *baz = bar+2;  
    return *((*baz)+1);  
}
```

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foo



main




```

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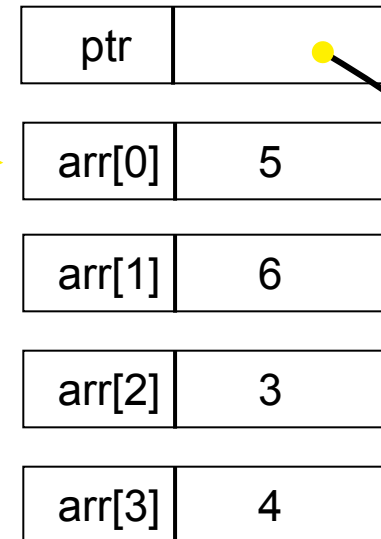
    arr[0] = foo(&arr[0]), &ptr);
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           arr[0], arr[1], arr[2], arr[3], *ptr);
    return 0;
}

```

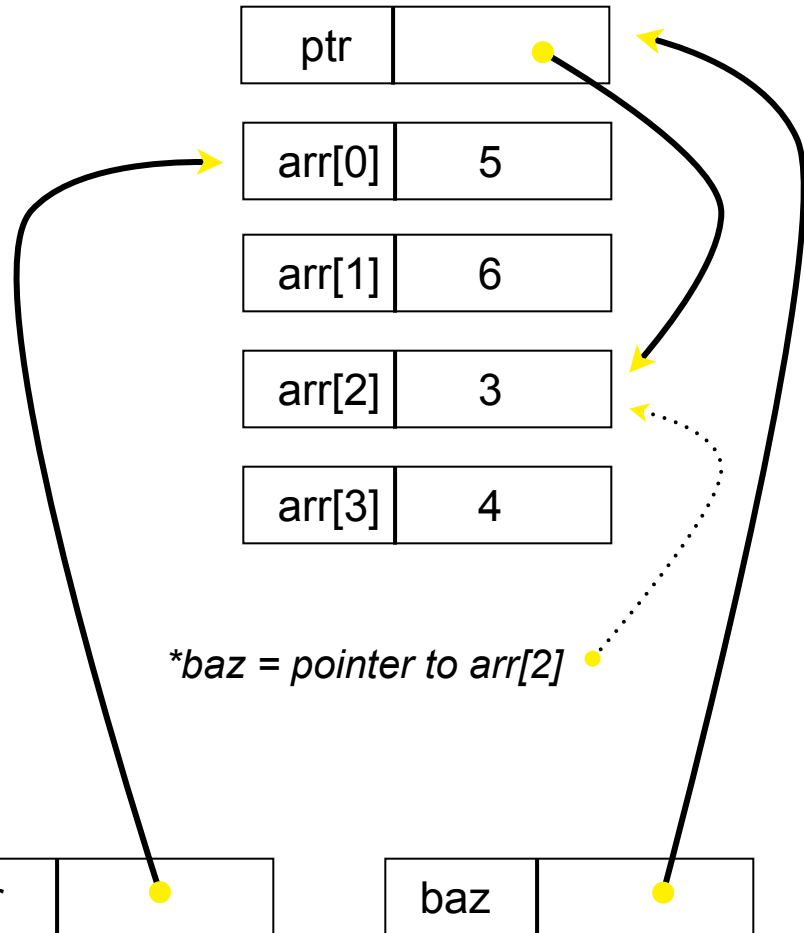
foo



main



**baz = pointer to arr[2]* •



```

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int foo(int *bar, int **baz) {
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    *baz = bar+2;
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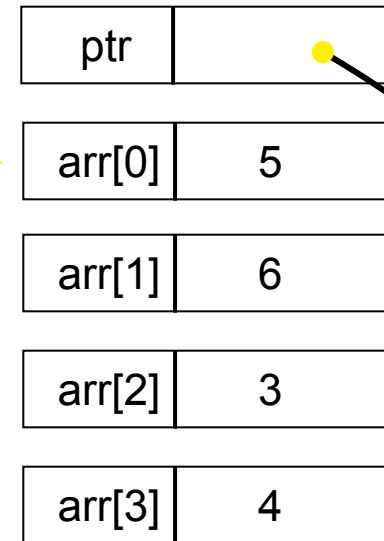
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           arr[0], arr[1], arr[2], arr[3], *ptr);
    return 0;
}

```

foo



main



*(*baz)+1 = pointer to arr[3]*



```

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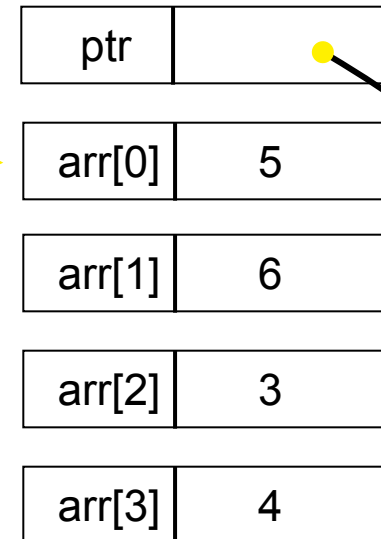
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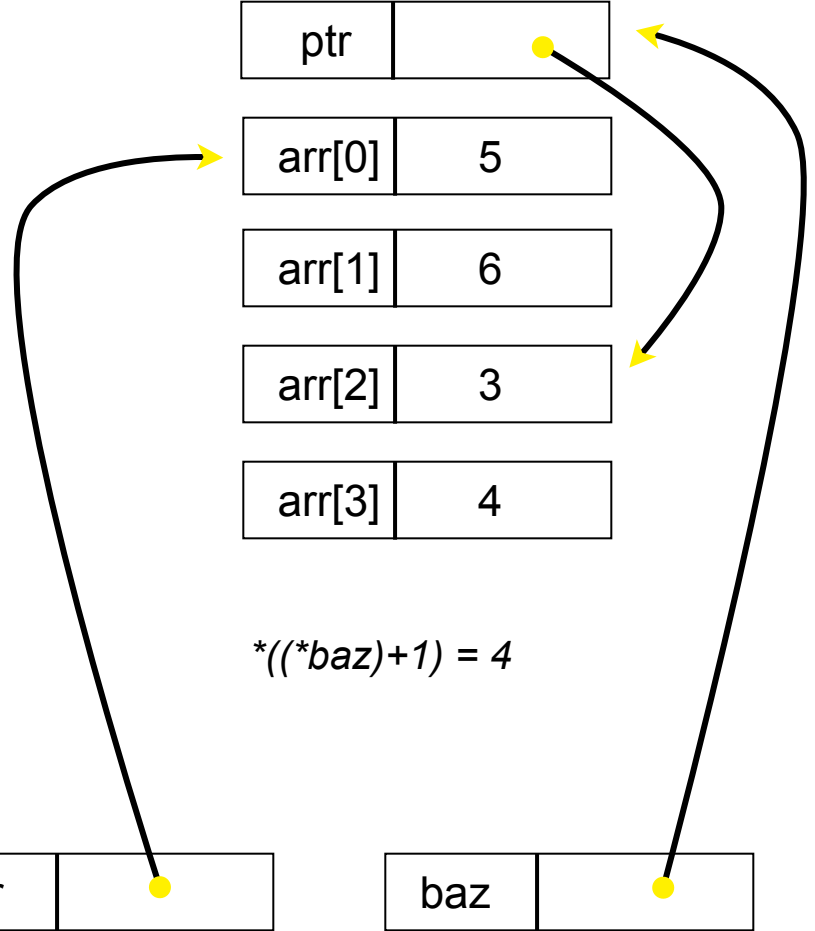
foo



main



$*((*baz)+1) = 4$



```

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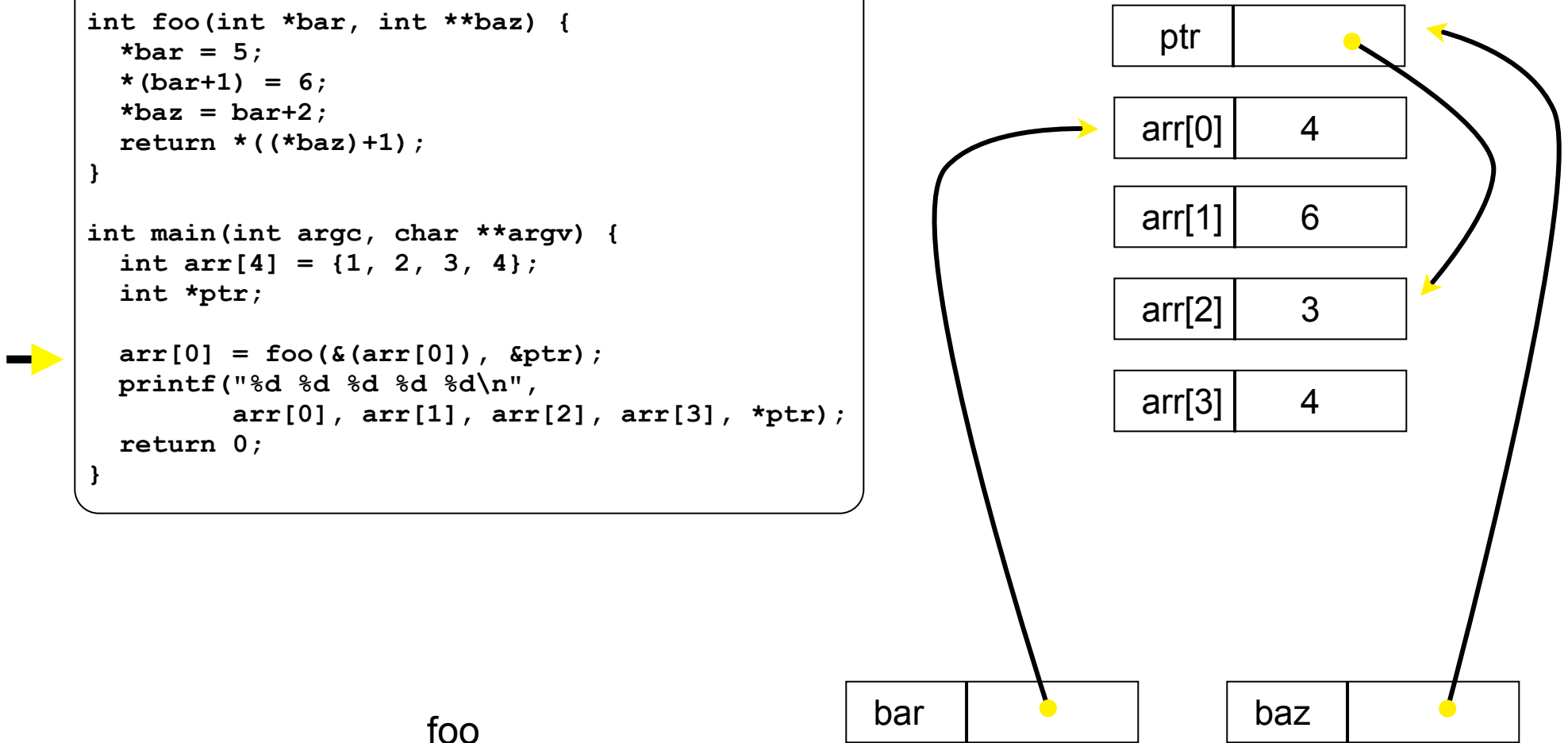
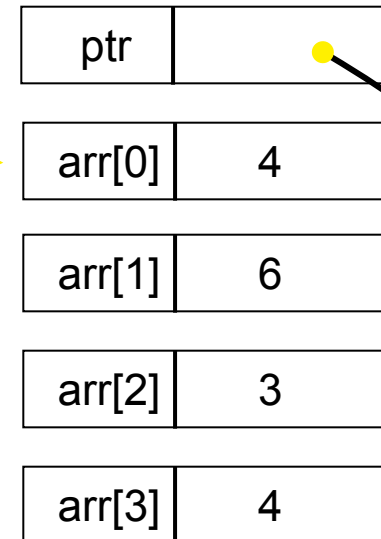
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foo



main



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```

foo

prints: 4 6 3 4 3

main

