

a) How many times is the default constructor called in the main of the following code? (1 pt)  
(exam 19 June 2021)

☒ 1 time: at line 7

☐ 1 time: at line 9

☐ 2 times: at lines 7 and 9

☐ 3 times: at lines 7, 9 and 11

☐ Never

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```
1. class Y {  
2.     // the five basic operations are overwritten  
3. };  
  
4. void f1(Y y) { }  
  
5. void f2(Y &y) { }  
  
6. int main() {  
7.     Y y1;  
8.     Y y2=y1;  
9.     f1(y1);  
10.    f1(std::move(y1));  
11.    return 0;  
12. }
```

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b) In which lines a constructor is called? (1pt)

(exam 5 July 2021)

- ☐ Default constr. at line 8, copy constr. at line 10, move constr. at line 12
- ☐ Default constr. at line 8, copy constr. at line 9 and at line 11
- ☐ Default constr. at line 8, move constr. at line 10 and at line 11
- ☒ Two times default constr. at line 8, copy constr. at line 9 and at line 10
- ☐ Two times default constr. at line 8, copy constr. at line 10, move constr. at line 12
- ☐ Two times default constr. at line 8, move constr. at line 9, 11 and 12

\*\*\*

```
1. #include <iostream>

2. class X {

3.     //with the five base operations: default/copy/move constructors, move/copy assignment, destructor};

4. void f1(X x) { }

5. void f2(X &x) { }

6. void f3(X &&x){ }

7. int main() {
8.     X x1, x2;
9.     X x3 = x1;
10.    f1(x2);
11.    f2(x3);
12.    f3(std::move(x2));
13.    return 0;
14. }
```

c) How many times is the destructor called in the main of the following code? (1pt)

*(exam 5 July 2021)*

- ☐ One time: at line 14
- ☐ Two times: both at lines 14
- ☒ Three times: one time at line 8, two times at line 14
- ☐ Four times: one time at line 8, one time at line 9, two times at lines 14
- ☐ Five times: one time at line 8, one time at line 9, three times at line 14

```
1. class X {
2.     //with the five base operations: default/copy/move constructors, move/copy assignment, destructor};
3. };
4. void f1(X x) { }
5. void f2(X &x) { }
6. int main() {
7.     X x1;
8.     f1(x1);
9.     f2(x1);
10.    X *x2 = new X;
11.    X x3;
12.    x3 = (std::move(x1));
13.    return 0;
14. }
```

d) How many assignments are done in the main of the following code? (1 pt)

*(exam 2 September 2021)*

☐ 1 time: move assignment at line 7;

☒ 1 time: copy assignment at line 7;

☐ 2 times: move assignment at line 7 and copy assignment at line 9

☐ 2 times: copy assignment at line 7 and move assignment at line 9

☐ 2 times: copy assignment at line 7 and copy assignment at line 9

☐ 2 times: move assignment at line 7 and move assignment at line 9

1. `class Y { //with the five base operations: default/copy/move constructors, move/copy assignment, destructor };`
2. `void f1(Y y) { }`
3. `Y f2(Y &y) { Y ay; return ay; }`
4. `void f3(Y y1, Y &y2){ }`
5. `int main() {`
  6. `Y y1, y2, y3;`
  7. `y1=y2;`
  8. `f3(y1, y3);`
  9. `Y y4 = f2(y1);`
  10. `return 0;`
11. `}`

e) Assignments and constructors: what is called in line Y y5 = f1(y1); of the main? (1 pt)

*(exam 17 January 2022)*

```
#include <iostream>
```

```
class Y { };
```

```
Y f1(Y &y) { Y ay(y); return ay; }
```

```
int main() {
```

```
    Y y1;
```

```
    Y y5 = f1(y1);
```

```
    return 0;
```

```
}
```

A) Move assignment

B) Move constructor

C) Copy assignment

**D) Copy constructor**