

Exercises week 2

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Exercise 11

Exercise 12

Exercise 13

Exercise 14

Exercise 15

Exercise 16

Learn how to end a program safely

How do you end a program in such a situation?

In main wordt een object geconstruct en een functie aangeroepen die throwt. Deze functie doet vervolgens hetzelfde net als de functie daar weer in. In het diepste nested level wordt de throw operator daadwerkelijk aangeroepen, de exception gethrowd en vervolgens gerethrowd. Zodra de exception gethrowd wordt en de exception het try-block verlaat, wordt de destructor aangeroepen, net als in de levels daarboven. Op deze manier worden alle constructed objects netjes vernietigd.

De volgende code verduidelijkt dit,

demo/demo.h

```
1 | #ifndef EX16_DEMO_H
2 | #define EX16_DEMO_H
3 |
4 | class Demo
5 | {
6 |     public:
7 |         Demo();
8 |         ~Demo();
9 | };
10 |
11 | #endif
```

demo/demo.ih

```
1 | #include "demo.h"
2 |
3 | #include <iostream>
4 |
5 | using namespace std;
```

demo/demo.cc

```
1 | #include "demo.ih"
```

```

2 |
3 | Demo::Demo()
4 | {
5 |     cout << "Constructor called\n";
6 | }

```

demo/destructor.cc

```

1 | #include "demo.ih"
2 |
3 | Demo::~~Demo()
4 | {
5 |     cout << "Destructor called\n";
6 | }

```

main.ih

```

1 | #include <iostream>
2 |
3 | #include "demo/demo.h"
4 |
5 | using namespace std;
6 |
7 | void function1();
8 | void function2();
9 | void function3();

```

main.cc

```

1 | #include "main.ih"
2 |
3 | int main()
4 | try
5 | {
6 |     Demo demo1;
7 |     function1();
8 |     cout << "Not executed\n";
9 | }

```

```

10 | catch (...)
11 | {
12 |     cout << "Program stops\n";
13 | }

```

function1.cc

```

1 | #include "main.ih"
2 |
3 | void function1()
4 | try
5 | {
6 |     Demo demo2;
7 |     function2();
8 |     cout << "Not executed\n";
9 | }
10 | catch (...)
11 | {
12 |     throw;
13 | }

```

function2.cc

```

1 | #include "main.ih"
2 |
3 | void function2()
4 | try
5 | {
6 |     Demo demo3;
7 |     function3();
8 |     cout << "Not executed\n";
9 | }
10 | catch (...)
11 | {
12 |     throw;
13 | }

```


function3.cc

```
1 | #include "main.ih"
2 |
3 | void function3()
4 | try
5 | {
6 |     Demo demo4;
7 |     throw "Exception at deepest level is thrown";
8 |     cout << "Not executed\n";
9 | }
10 | catch (char const *message)
11 | {
12 |     cout << message << '\n';
13 |     throw;
14 | }
```

Exercise 17

Exercise 18

Exercise 19