

Exercise Week 05

GianAndrea Müller
`mailto:muellegi@student.ethz`

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Time Schedule

- 20' Self assessment 2
- 15' Korrektur
- 10' Standard Library
- 15' Referenzen mit Übung

Learning Objectives

- Kenntnis von Bibliotheken
- Verständnis von Referenzen

Standardbibliotheken

```
1 #include <cmath>
2 #include <iostream>
3 using namespace std;
4
5 int main(){
6     cout << pow(3.3,6.5) << endl;
7     cout << sqrt(9.1) << endl;
8     cout << abs(-3.0) << endl;
9 }
```

Standardbibliotheken

```
1 #include <cmath>
2 #include <iostream>
3 using namespace std;
4
5 int main(){
6     cout << pow(3.3,6.5) << endl;
7     //Berechnet 3.3^6.5
8     cout << sqrt(9.1) << endl;
9     //Berechnet die Wurzel von 9.1
10    cout << abs(-3.0) << endl;
11    //Berechnet den Absolutbetrag von (-3)
12 }
```

Standardbibliotheken

```
1 #include <iostream>
2 #include <cmath>
3 #include <cassert>
4 using namespace std;
5
6 int main(){
7     double x;
8     cin>>x; // try x = 2
9     assert(x > 0);
10
11     double sqrtx = sqrt(x);
12     cout << abs(sqrtx*sqrtx - x) << "\n";
13
14     return 0;
15 }
```

[#include <cassert>](#) [#include <cmath>](#)

Standardbibliotheken

```
1  bool in_circ_exp (double x, double y,  
    double r)  
2  {  
3      return sqrt(x*x + y*y) < radius;  
4  }  
5  
6  bool in_circ_cheap(double x, double y,  
    double r)  
7  {  
8      return x*x + y*y < radius*radius;  
9  }
```

Standardbibliotheken

```
1 #include <iostream>
2 #include <algorithm>
3
4 int main(){
5     cout << min(3.5,4.1) << "\n";
6     cout << max(3.4,9.1) << "\n";
7     return 0;
8 }
```

[#include <algorithm>](#)

Referenzen

```
1 void increment (int m) {  
2 m++;  
3 }  
4 int main () {  
5 int n = 3;  
6 increment (n);  
7 return 0;  
8 }
```

Referenzen

```
1  int i = 1;
2  int& j = i;
3  i++; // i = 2
4  j++; // i = 3
```

Referenzen

```
1 void increment (int& m) { //only line  
    changed  
2 m++;  
3 }  
4 int main () {  
5     int n = 3;  
6     increment (n);  
7     return 0;  
8 }
```

Funktionstypen

- Call by value

```
1 bool even (unsigned int a){  
2     while (a>=1) a-=2;  
3     return a != 1;  
4 }
```

- Call by reference

```
1 void half (int & b){  
2     b /= 2;  
3 }
```

Funktionstypen

```
1 // POST:  return value is the number of
2 //        distinct real solutions
3 //        of the equation  $ax^2+bx+c=0$ .
4 //        The solutions are written to s1
5 //        and s2.
6
7 int solve_quadratic_equation (const double
8     a, const double b, const double x,
9     double& s1, double& s2);
```

Letzte Seite

[assi-link](#)