Algorithmen und Datenstrukturen II
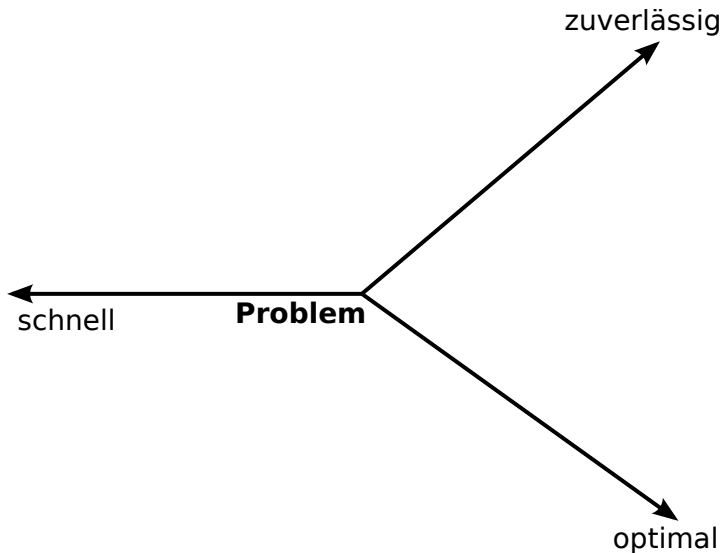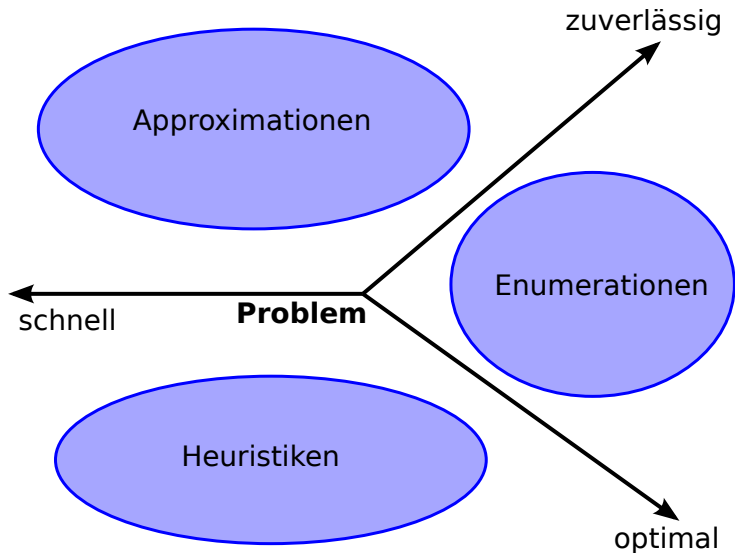## Übung 3

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Approximation und Komplexität

Approximation und Komplexität

Algorithmus 1

```
 1: function MVC1(G)
 2:     C ← ∅
 3:     E' ← E(G)

 4:     while E' ≠ ∅ do
 5:         {u, v} ← arbitrary edge from E'
 6:         C ← C ∪ {v}
 7:         E' ← {e ∈ E' | v ∉ e}
 8:     end while

 9:     return C
10: end function
```

Algorithmus 2

```
1: function MVC2(G)
2:     C ← ∅
3:     E' ← E(G)

4:     while E' ≠ ∅ do
5:         {u, v} ← edge from E' with maximum |{v} ∩ E'|
6:         C ← C ∪ {v}
7:         E' ← {e ∈ E' | v ∉ e}
8:     end while

9:     return C
10: end function
```

Algorithmus 3

```
 1: function MVC3(G)
 2:     C ← ∅
 3:     E' ← E(G)

 4:     while E' ≠ ∅ do
 5:         {u, v} ← arbitrary edge from E'
 6:         C ← C ∪ {u, v}
 7:         E' ← {e ∈ E' | e ∩ {u, v} = ∅}
 8:     end while

 9:     return C
10: end function
```

Algorithmus 4

```
 1: function MVC4(G, C = ∅, C̄ = ∅)
 2:     if C is VC of G then
 3:         return C
 4:     end if

 5:     C* ← ⊥

 6:     for v ∈ V(G) \ (C ∪ C̄) do
 7:         C₁ ← MVC4(G, C ∪ {v}, C̄)
 8:         C₂ ← MVC4(G, C, C̄ ∪ {v})
 9:         C* ← smallest VC of C*, C₁, and C₂
10:     end for

11:     return C*
12: end function
```

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