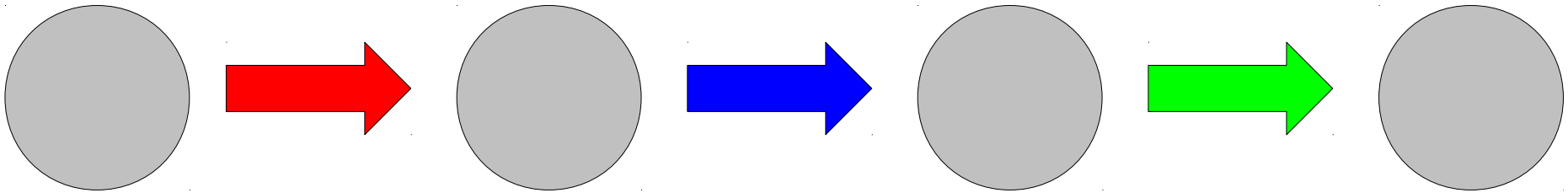
Bedingungsvariablen

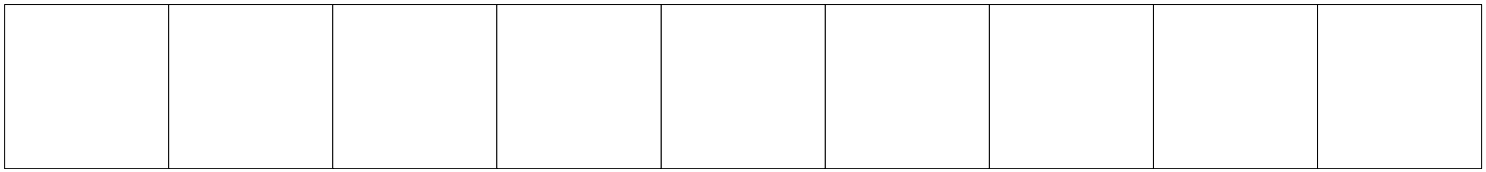
Für das Proseminar:
Konzepte von Betriebssystemkomponenten

Sebastian Rachuj

20.06.2013

Motivation





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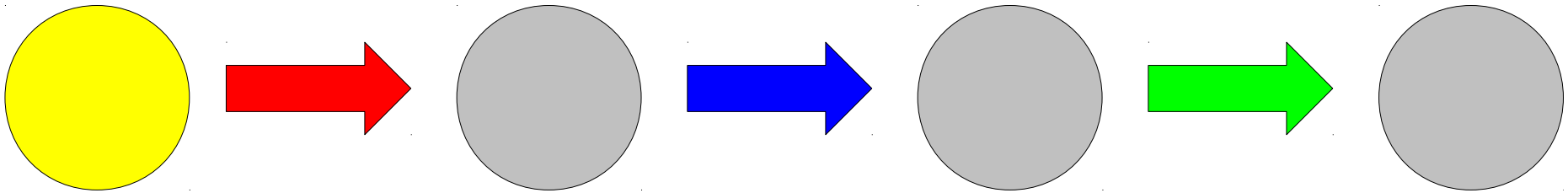

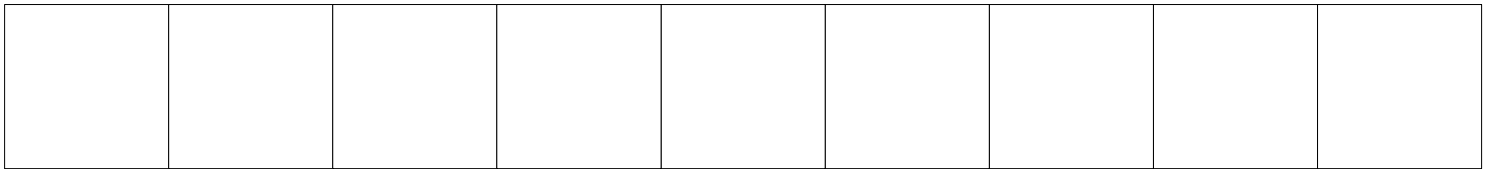

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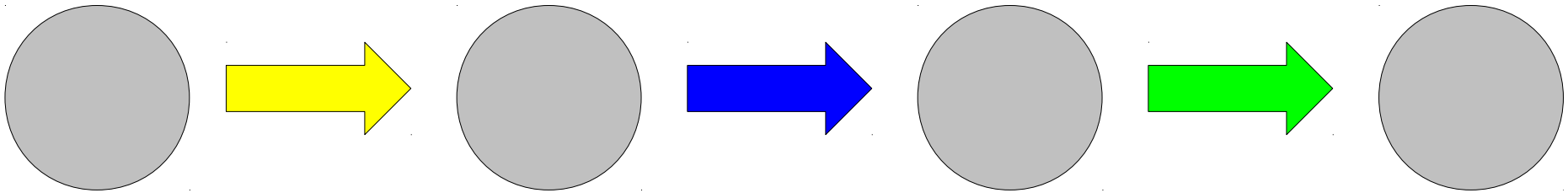

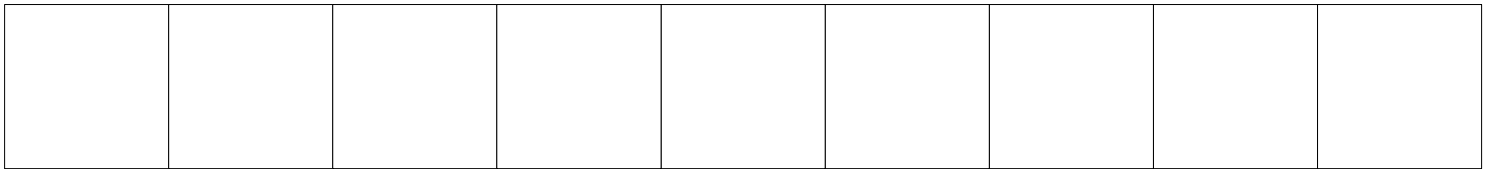

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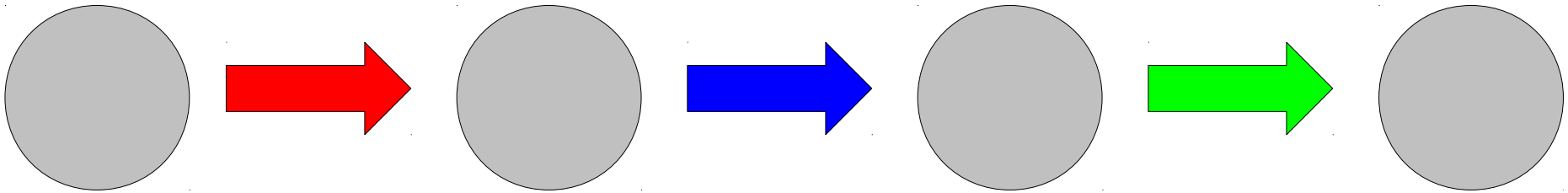

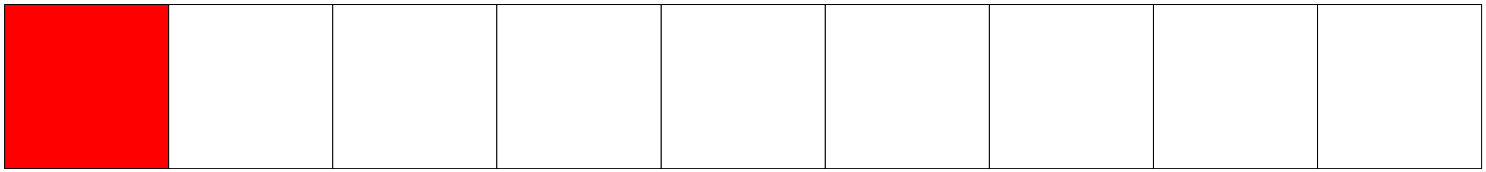

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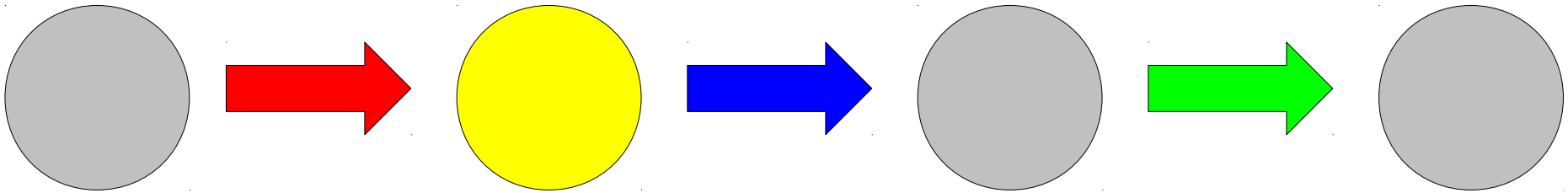

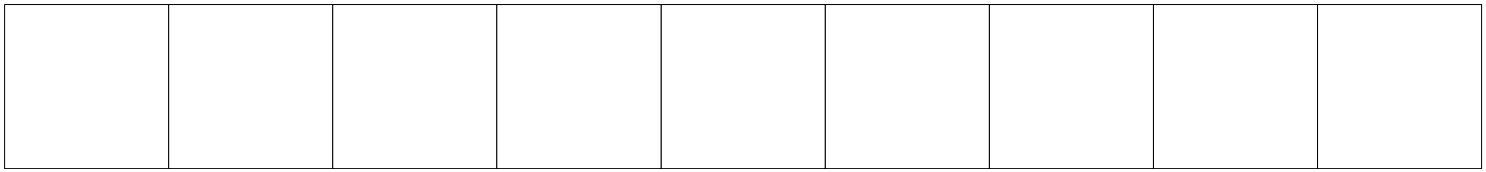

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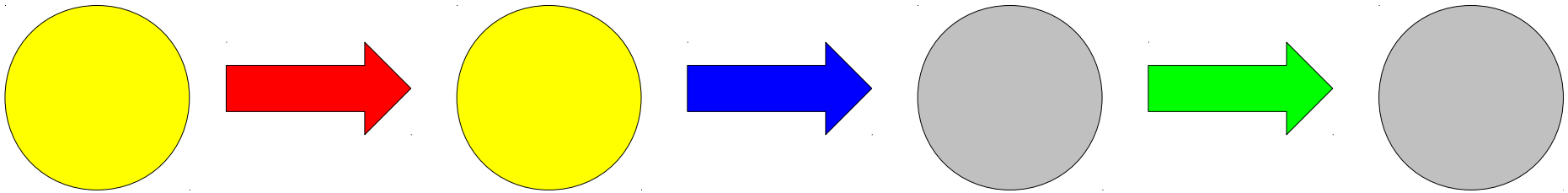

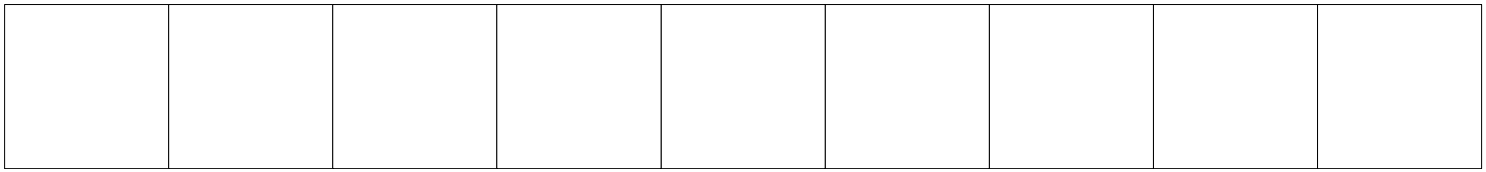

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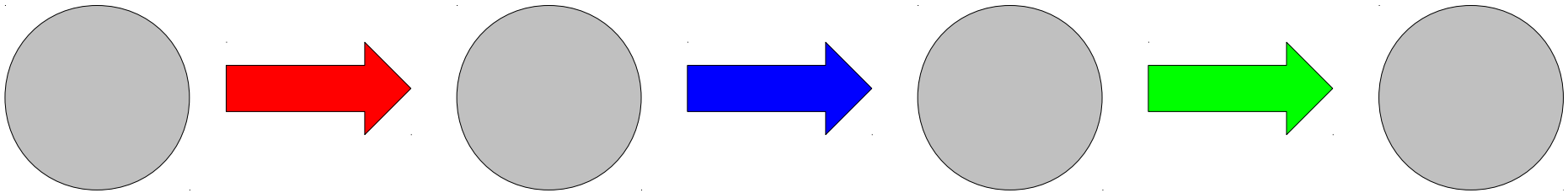

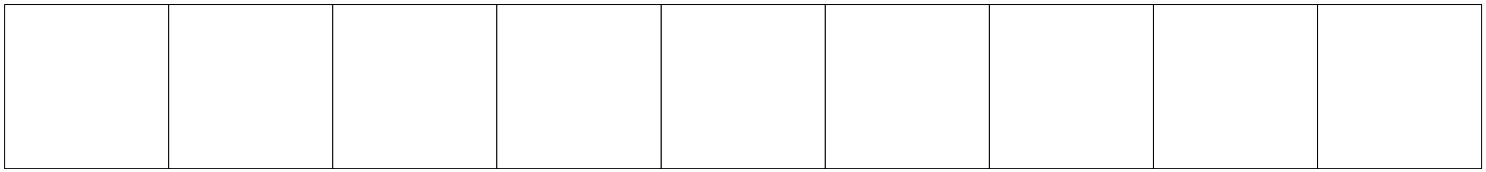

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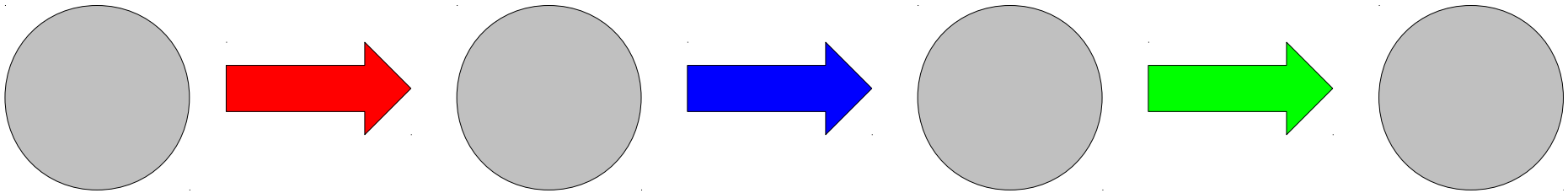

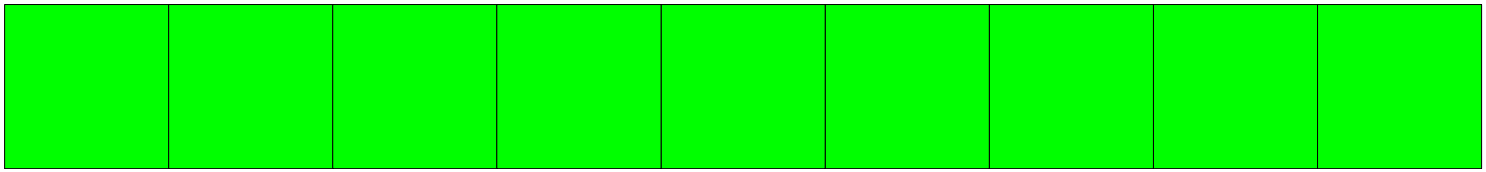

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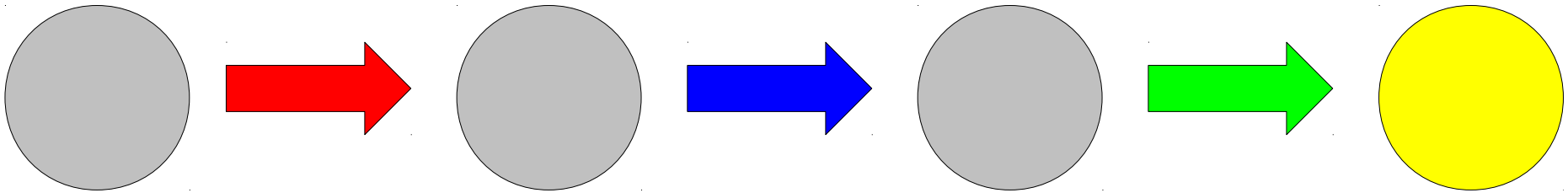

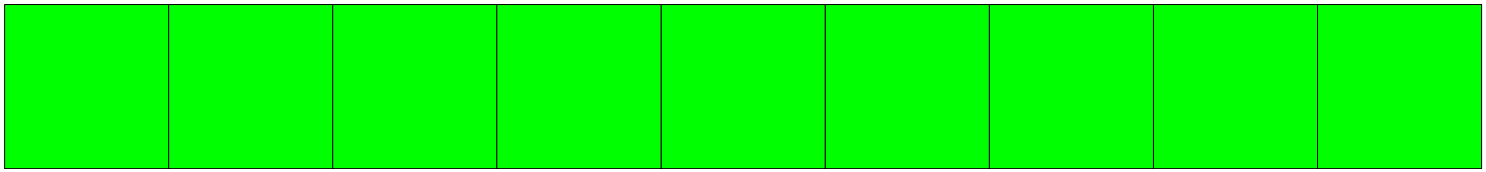

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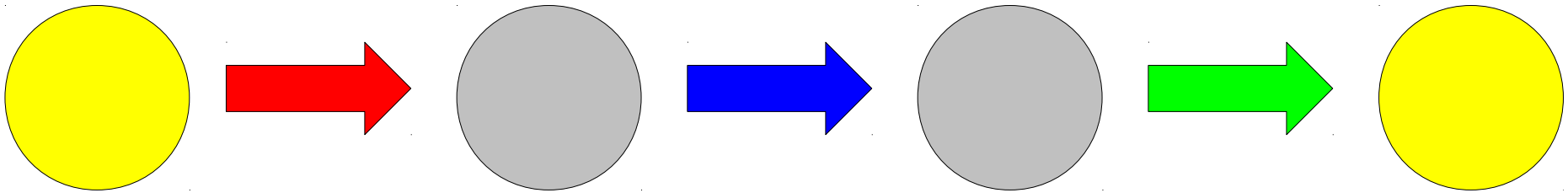

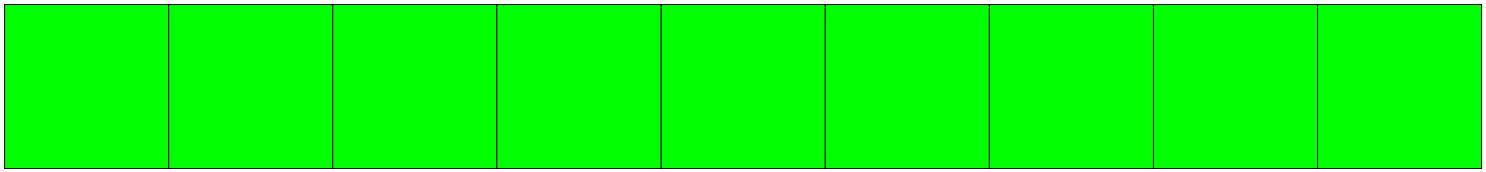

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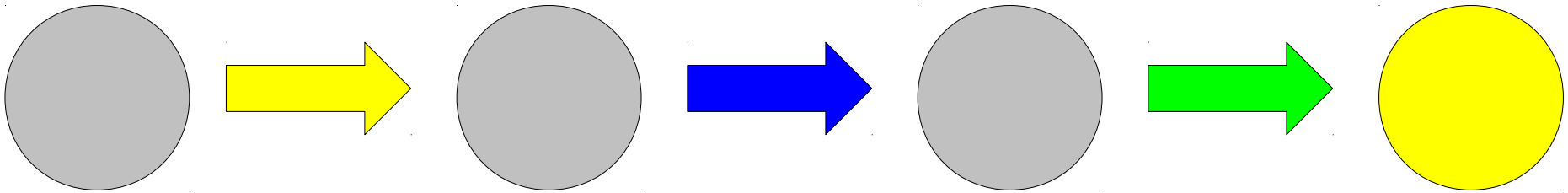

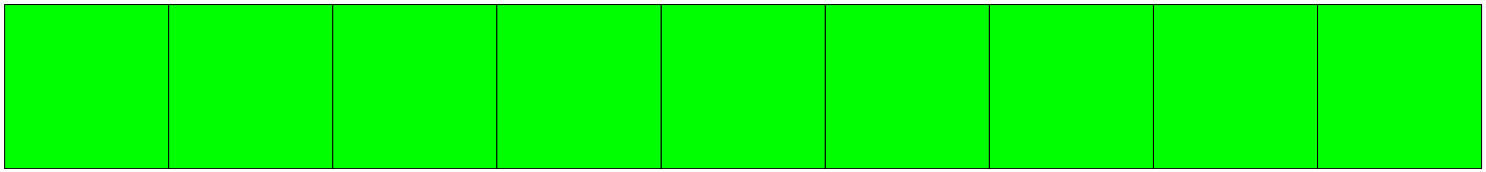

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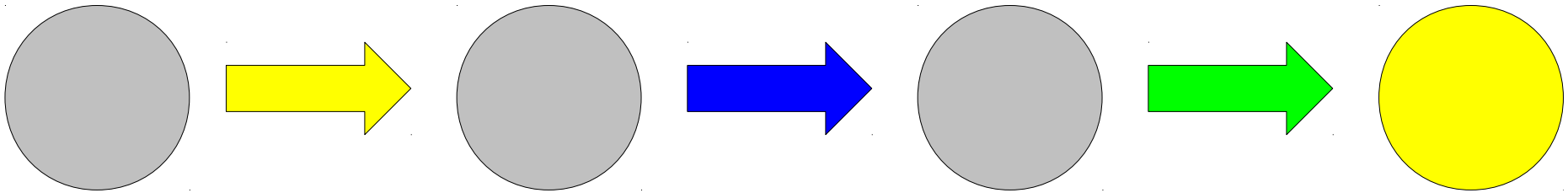

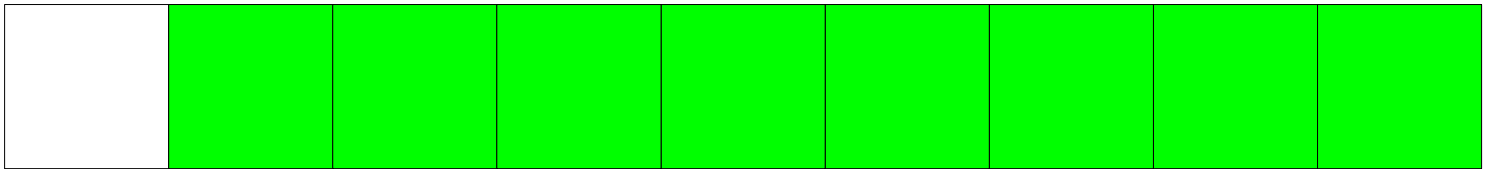

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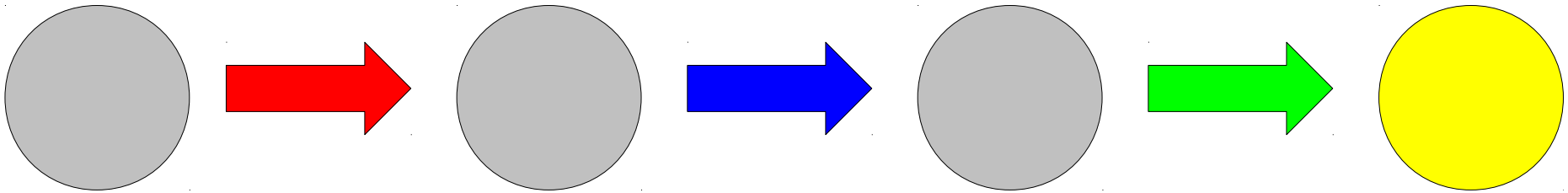

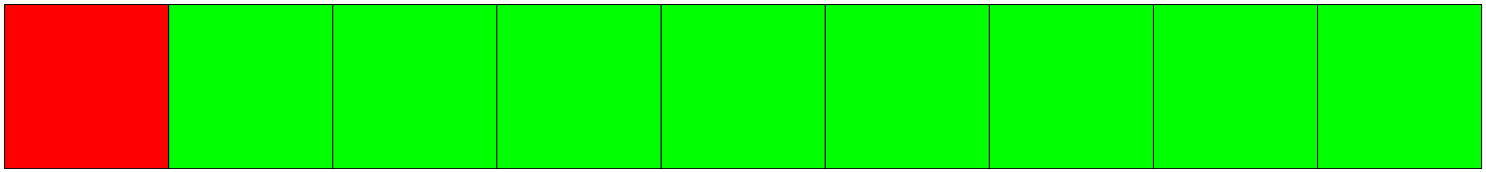

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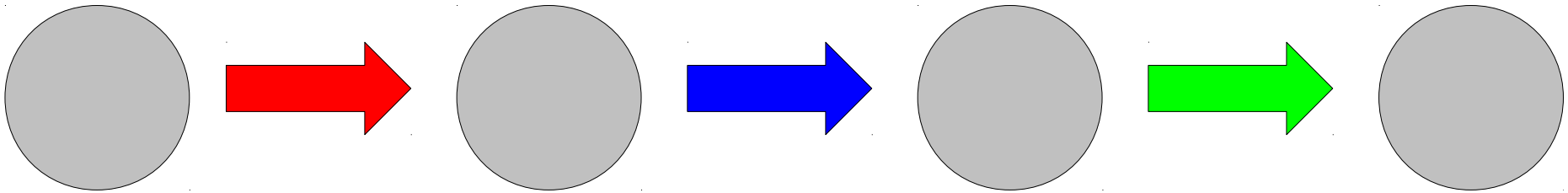

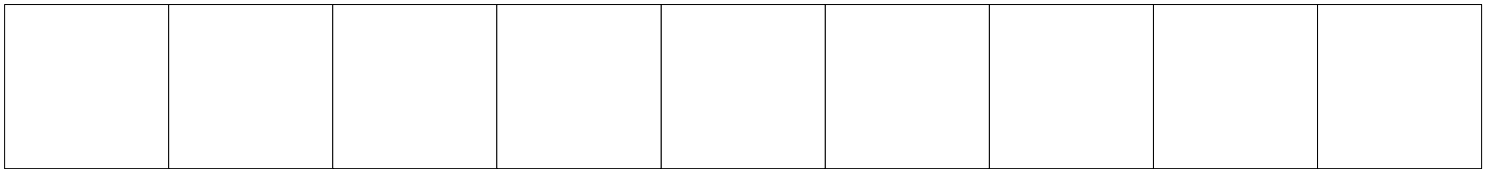

Inhalt

Sequentielle Prozesse

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```
void produce(void* x[], size_t s) {
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- Invarianten möglich
- Gleiche Ausgabedaten bei gleichen Eingabedaten

Parallele Prozesse

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- Strukturierung wünschenswert

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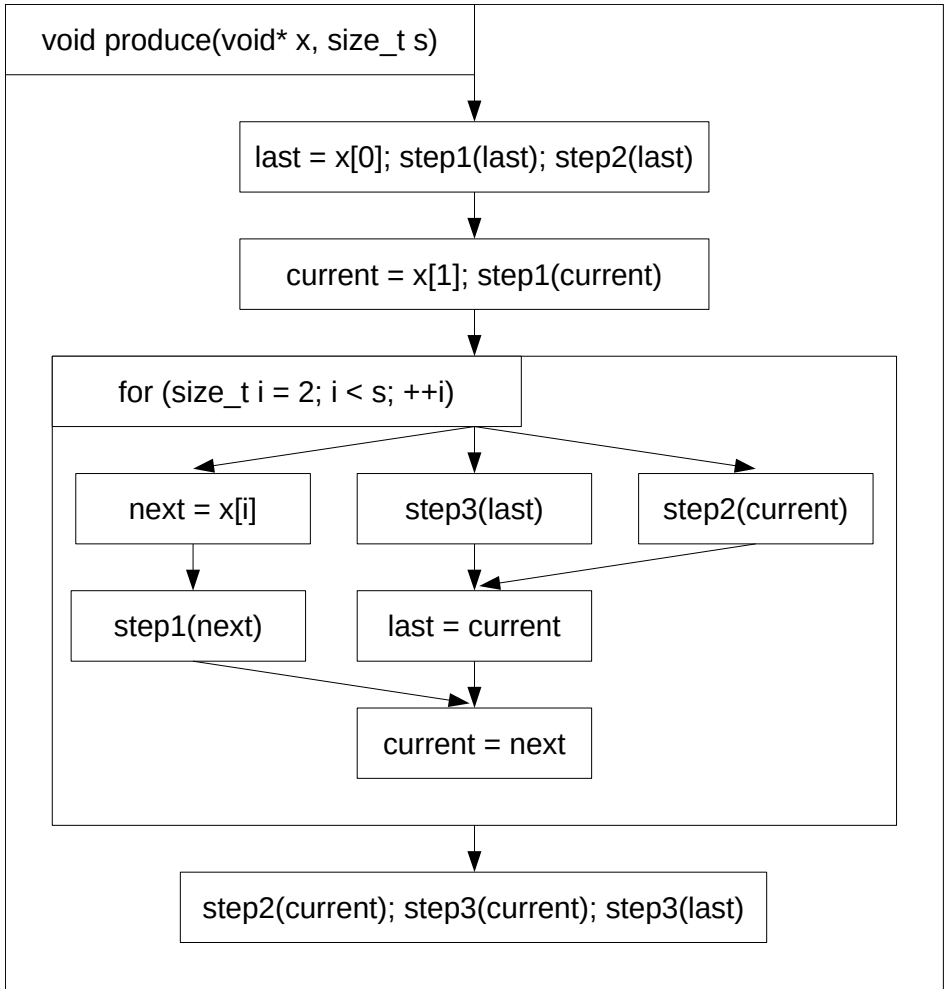

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- Variablenunabhängigkeit

Parallele Prozesse

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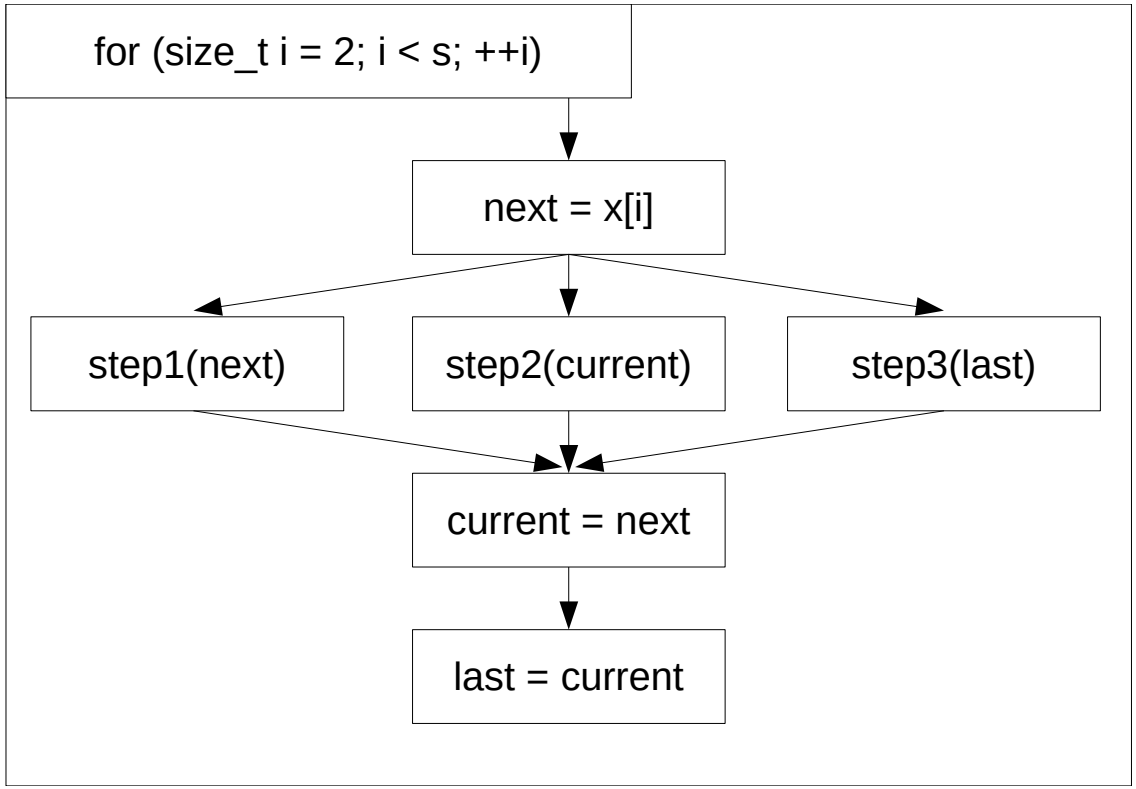
```
void produce(void* x[], size_t size) {
    void* next, current = x[0], last = x[1];
    step1(current);
    step1(last);
    step2(last);
    for(size_t i = 2; i < size; ++i) {
        next = x[i];
        parallel {
            step1(next);
            step2(current);
            step3(last);
        }
        last = current;
        current = next;
    }
}
```

Parallele Prozesse



Signale

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- Zulassen von wait und signal auf Variablen

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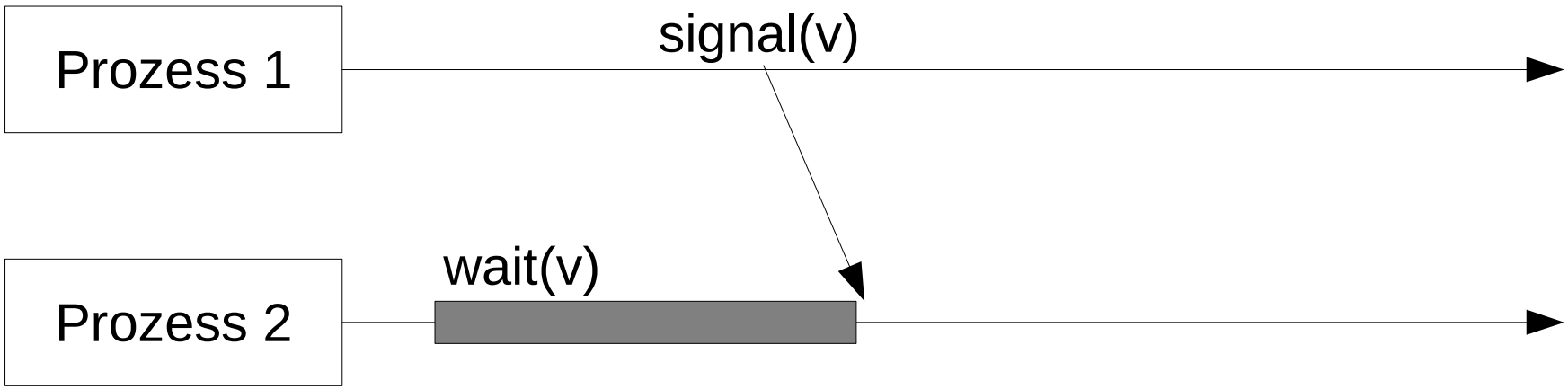

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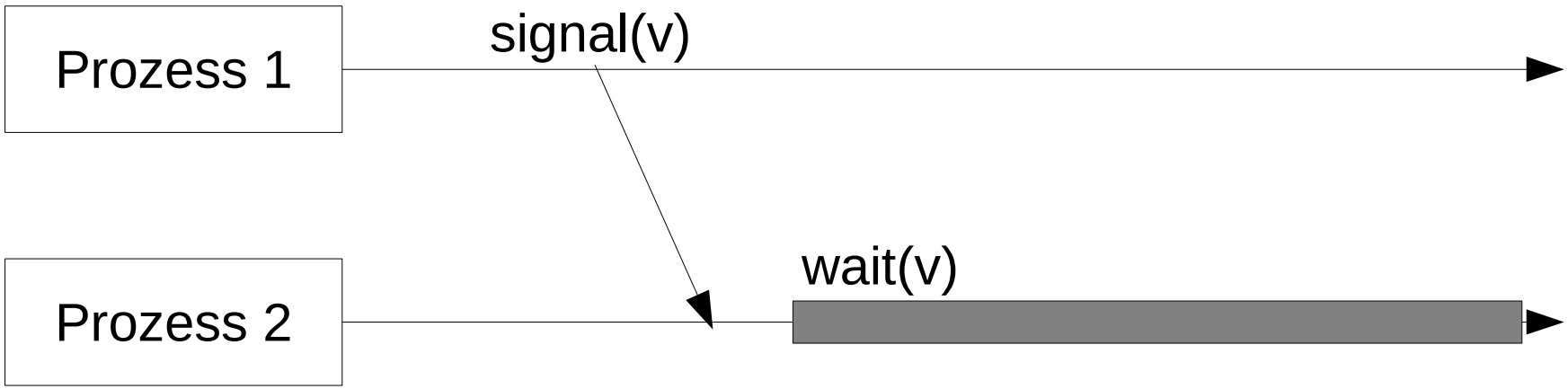
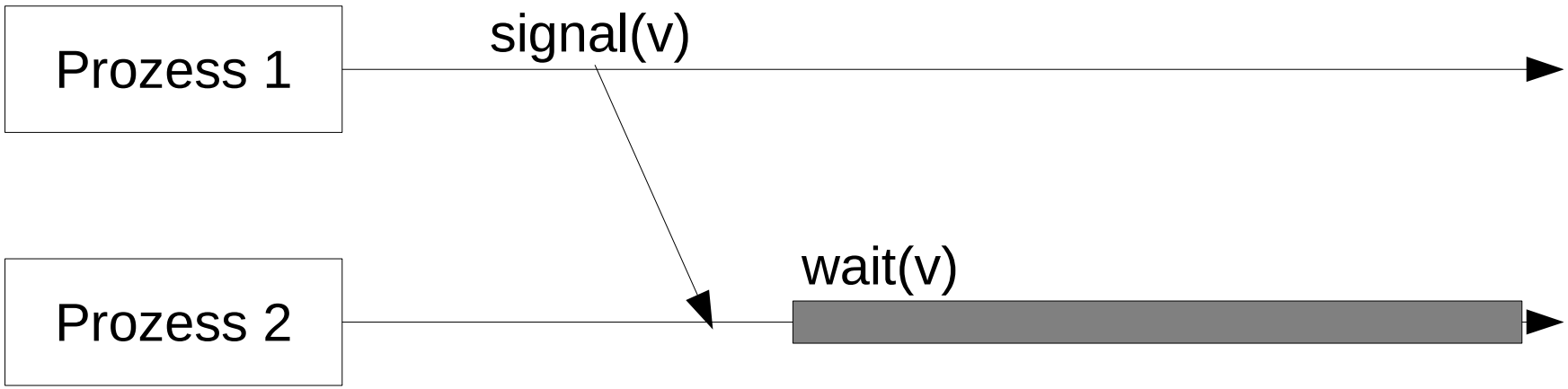


Signale

- Zulassen von wait und signal auf Variablen
- Lösungsansatz: Semaphore als Signalvariable



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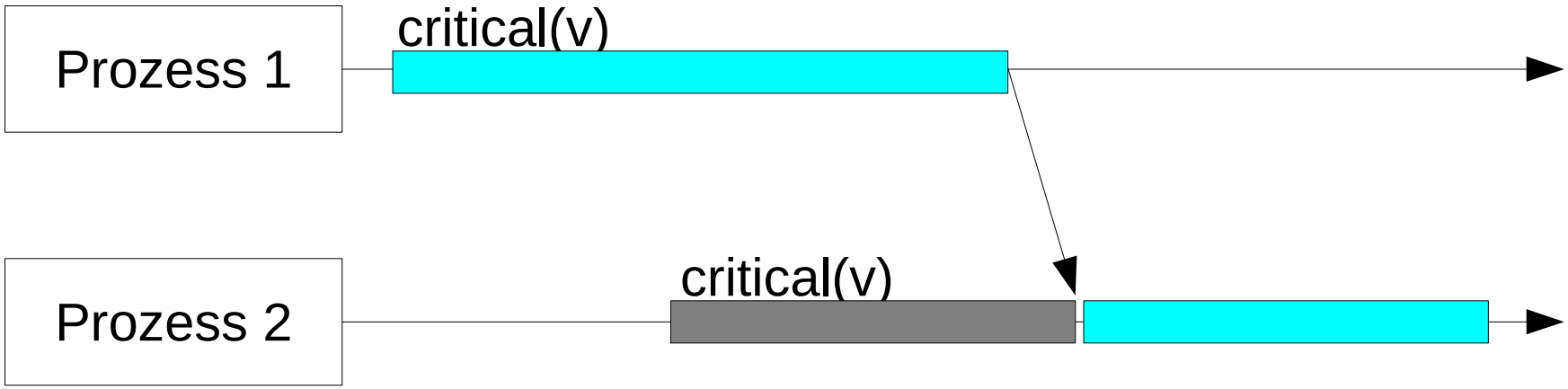

Bedingte kritische Abschnitte

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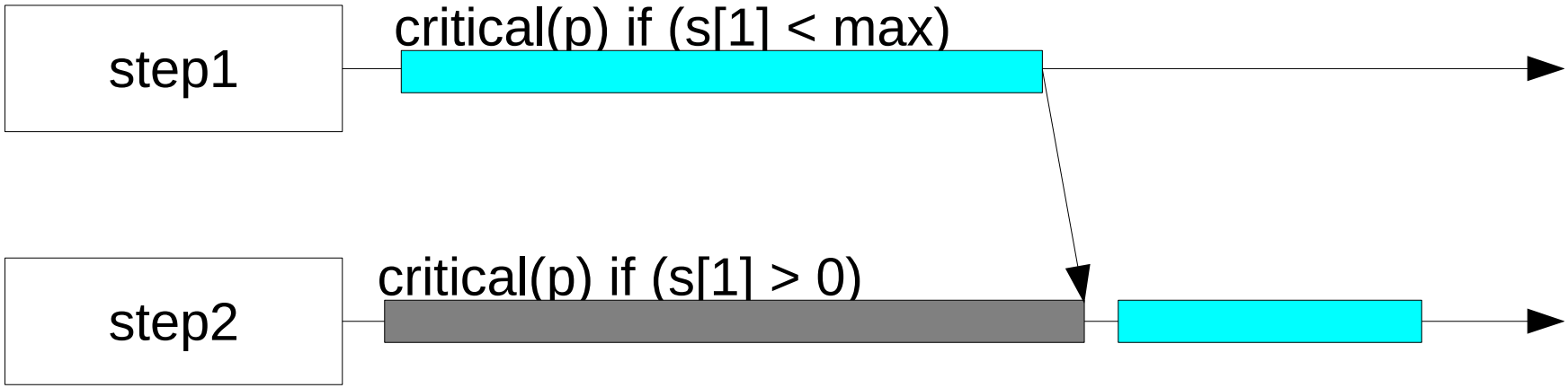

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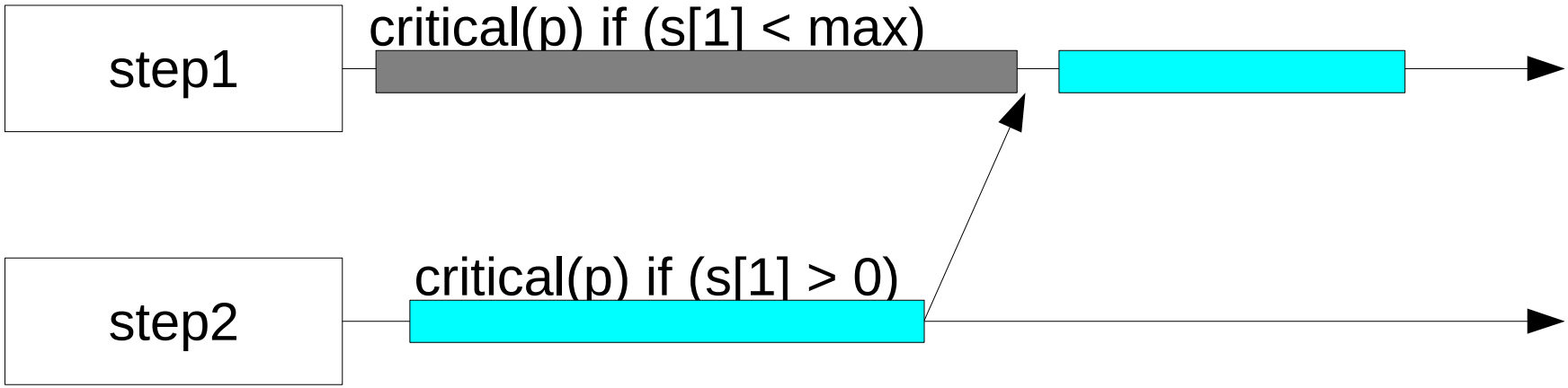

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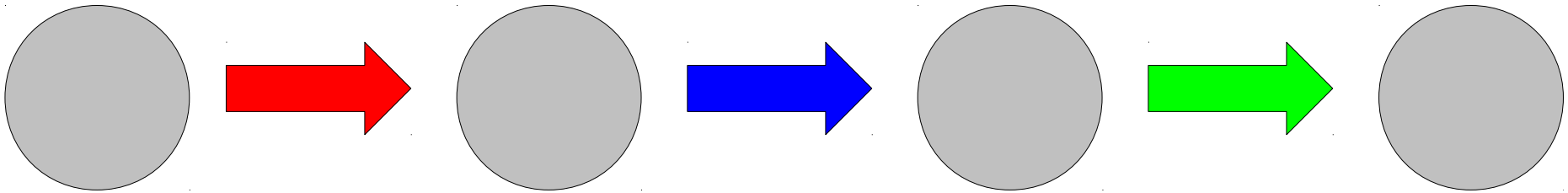

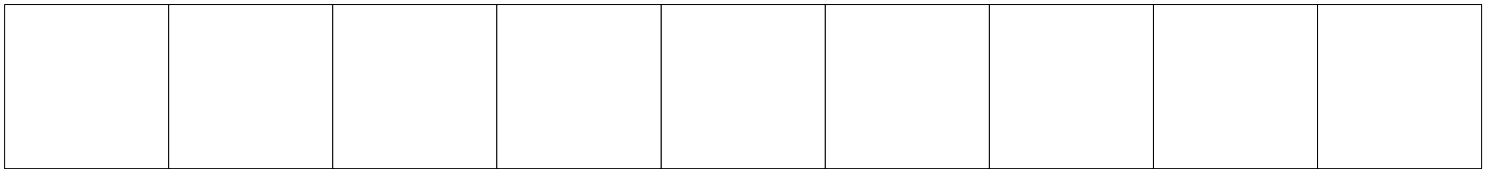

Zusammenfassung

- Strukturierte sequentielle Prozesse
- Strukturierte parallele Prozesse
- Ereignismitteilung mittels Signalen
- Austausch von Daten mit kritischen Abschnitten
- Bedingte kritische Abschnitte (Bedingungsvariablen)

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Denkanstöße:

- Gezeigte Sprachkonstrukte in heutigen Sprachen
- Ähnlichkeit des Beispiels zu jbuffer $\Rightarrow$ Wartefreie Synchronisation besser?