

# 6 Sequential Logic

## Student Group

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# 6. Sequential Logic

“I Know What You Did Last Cycle”

## 6.1 State Diagram, State Transition Diagram

### 6.1.1 Motivation

The diagrams of different states are well known from physics for example the state diagram (or better: phase diagram) of water, where its three states are: solid ice, liquid water and gaseous steam. The possible state transitions are due to temperature increase or decrease.

In [figure 9](#) image (1) the states of water are shown on the temperature axis. When only the state transitions are relevant, the states are simplified to a circle, showing the state name and behaviour. The transitions are depicted as arrows, where the needed condition is written onto (See [figure 9](#) image (2) ). This diagram is called **state transition diagram**.



Fig. 9: States of Water

For matter not only the dimension “temperature” is important, but also the “pressure”. The full phase diagram is shown in [figure 10](#) image (1). By this, another variable is available and more transitions. These can be drawn into the state transition diagram ([figure 10](#) image (2)).

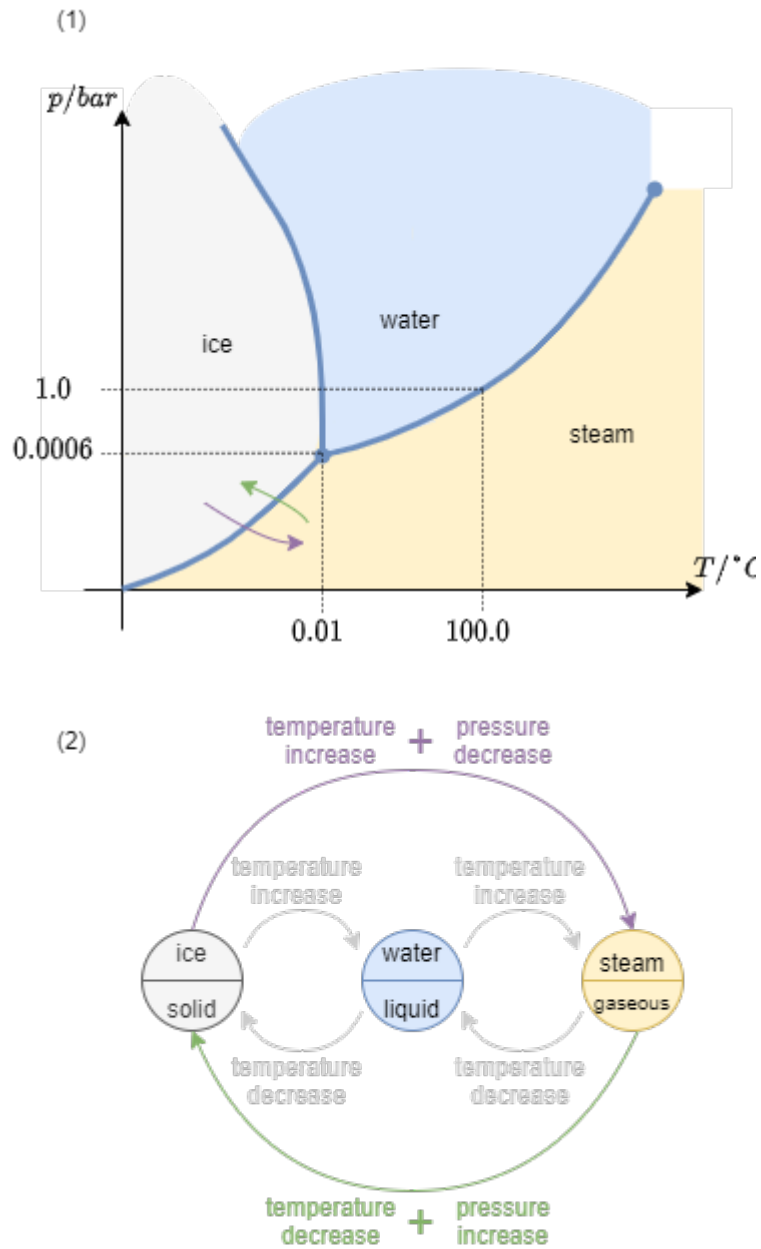


Fig. 10: States of Water

### 6.1.2 Simple logic Example

In German, often one has to pay for entering the toilet.



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Fig. 11: Entrance Fee for Toilets

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