

HW2 Molecular Programming

M2IFCR07

2023.10.06 - Due on Fri. 10.13 before 13:30



You are asked to complete the exercise marked with a [★] and to send me your solutions to:

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as a PDF file named **HW2-Lastname.pdf** on **Fri. 10.13 before 13:30**.

[★] **Exercise 1 (Scale the wall).** Recall that a tile assembly system $\mathcal{T} = (T, \sigma, \tau)$ consists of a tile set T , a seed tile $\sigma \in T$ and a temperature $\tau \in \mathbb{N}$. Consider the situation in Fig. 1 consisting of a wall of height h .

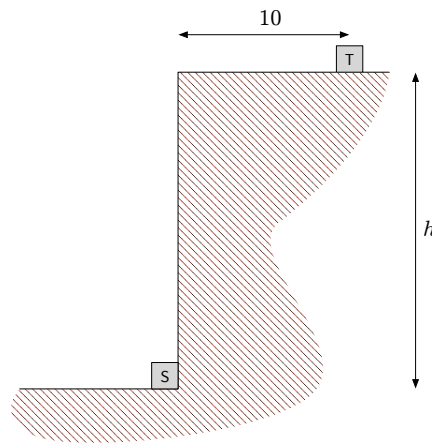


Figure 1: A wall of height h .

► **Question 1.1)** Can you find a tile assembly system \mathcal{T} for the abstract Tile Assembly Model (aTAM) where the rules are as follows?

- The seed tile is placed at position $S = (0, 0)$
- For all $h \in \mathbb{N}$, every terminal assembly of \mathcal{T} should place a tile at the target position $T = (10, h)$ and be of finite size
- \mathcal{T} may not place tiles to the right and below the cut of the plane shown in Figure 1.
- You may give an infinite sequence of glues such that the h -prefix of that sequence will appear on the wall, to help the tiles ‘climb up’.