Exercise 6.1 (Stability of $h_{\text{add}}$, 5 points)
Show that it is important to test for stability when computing $h_{\text{add}}$ by giving an example where you get an unnecessarily high overestimation when not performing this test.

*Hint:* The solution to this exercise is a planning task and its relaxed planning graph where $h_{\text{add}}$ is higher in the goal node in layer $k$ than in the goal node of layer $j > k$.

Exercise 6.2 (Relaxed planning graph and heuristics, 1+1+1+2 points)
Consider the relaxed planning task $\Pi^+$ with variables $A = \{a, b, c, d, e\}$, operators $O = \{o_1, o_2, o_3\}$, $o_1 = \langle d, c \land (c \triangleright e) \rangle$, $o_2 = \langle c, a \rangle$, $o_3 = \langle a, b \rangle$, goal $\gamma = b \land e$ and initial state $s = \{(a \mapsto 0), (b \mapsto 0), (c \mapsto 0), (d \mapsto 1), (e \mapsto 0)\}$. Solve the following exercises by drawing the relaxed planning graph for the lowest depth $k$ that is necessary to extract a solution.

(a) Calculate $h_{\text{max}}(s)$ for $\Pi^+$.
(b) Calculate $h_{\text{add}}(s)$ for $\Pi^+$.
(c) Calculate $h_{\text{sa}}(s)$ for $\Pi^+$.
(d) Calculate $h_{\text{FF}}(s)$ for $\Pi^+$.

You may and should solve the exercise sheets in groups of two. Please state both names on your solution.