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Principles of AI Planning

Exercise Sheet 3

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Exercise 3.1: STRIPS Regression

a) Consider the STRIPS planning tasks with:

$$A = \{a, b, c, d, e\}$$

$$I = \{a \mapsto 0, b \mapsto 1, c \mapsto 0, d \mapsto 1, e \mapsto 1\}$$

$$\gamma = a \wedge d$$

$$O = \{o_1, o_2, o_3\}$$

$$o_1 = \langle b \wedge d, c \wedge e \wedge \neg d \rangle$$

$$o_2 = \langle b, a \wedge \neg c \wedge \neg d \rangle$$

$$o_3 = \langle a, d \rangle$$

Solve this problem with a breadth-first search using the STRIPS regression method.

Exercise 3.2: Problem modeling

The plan obtained by the custom planner with the PDDL program was the following:

```
(move g b)  
(sample-rock b r1)  
(move b c)  
(sample-rock c r2)  
(move c d)  
(sample-rock d r3)  
(move d e)  
(sample-rock e r4)  
(move e g)  
(move g f)  
(move f a)  
(transmit-data a r4)  
(transmit-data a r3)  
(transmit-data a r2)  
(transmit-data a r1)
```

We can notice the obtained plan with the custom planner is optimal as it satisfies the problem conditions with the least cost.