Here we denote variables by numbers and negation by overlining.

The model stack (the partial interpretation being explored) grows to the right.

Five clauses:

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The model stack (the partial interpretation being explored) grows to the right.

Five clauses:

$$\overline{1}\lor2$$
, $\overline{3}\lor4$, $\overline{4}\lor\overline{2}\lor\overline{1}\lor\overline{7}$, $\overline{5}\lor\overline{6}$, $6\lor\overline{5}\lor\overline{2}$

Here we denote variables by numbers and negation by overlining.

The model stack (the partial interpretation being explored) grows to the right.

$$\begin{array}{lll} \overline{1} \lor 2, \ \overline{3} \lor 4, \ \overline{4} \lor \overline{2} \lor \overline{1} \lor \overline{7}, \ \overline{5} \lor \overline{6}, \ 6 \lor \overline{5} \lor \overline{2} & \Rightarrow & \text{(Decide)} \\ \overline{1} \lor 2, \ \overline{3} \lor 4, \ \overline{4} \lor \overline{2} \lor \overline{1} \lor \overline{7}, \ \overline{5} \lor \overline{6}, \ 6 \lor \overline{5} \lor \overline{2} & \Rightarrow & \end{array}$$

Here we denote variables by numbers and negation by overlining.

The model stack (the partial interpretation being explored) grows to the right.

Here we denote variables by numbers and negation by overlining.

The model stack (the partial interpretation being explored) grows to the right.

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Model Stack: Five clauses:
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Here we denote variables by numbers and negation by overlining.

The model stack (the partial interpretation being explored) grows to the right.

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Model Stack: Five clauses:
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\overline{1} \lor 2, \overline{3} \lor 4, \overline{4} \lor \overline{2} \lor \overline{1} \lor \overline{7}, \overline{5} \lor \overline{6}, 6 \lor \overline{5} \lor \overline{2}
                                                                                                                                                                                                                     (Decide)
                                                  \overline{1} \vee 2, \overline{3} \vee 4, \overline{4} \vee \overline{2} \vee \overline{1} \vee \overline{7}, \overline{5} \vee \overline{6}, 6 \vee \overline{5} \vee \overline{2}
                                                                                                                                                                                                \Rightarrow
                                                                                                                                                                                                                     (UnitPropagate)
                                                  \overline{1} \lor 2, \overline{3} \lor 4, \overline{4} \lor \overline{2} \lor \overline{1} \lor \overline{7}, \overline{5} \lor \overline{6}, 6 \lor \overline{5} \lor \overline{2}
                                                                                                                                                                                                \Rightarrow
                                                                                                                                                                                                                     (Decide)
12
                                                  \overline{1} \vee 2, \overline{3} \vee 4, \overline{4} \vee \overline{2} \vee \overline{1} \vee \overline{7}, \overline{5} \vee \overline{6}, 6 \vee \overline{5} \vee \overline{2}
                                                                                                                                                                                                \Rightarrow
                                                                                                                                                                                                                     (UnitPropagate)
123
                                                  \overline{1} \lor 2, \overline{3} \lor 4, \overline{4} \lor \overline{2} \lor \overline{1} \lor \overline{7}, \overline{5} \lor \overline{6}, 6 \lor \overline{5} \lor \overline{2}
1234
                                                                                                                                                                                                \Rightarrow
```

Here we denote variables by numbers and negation by overlining.

The model stack (the partial interpretation being explored) grows to the right.

```
\overline{1} \lor 2, \overline{3} \lor 4, \overline{4} \lor \overline{2} \lor \overline{1} \lor \overline{7}, \overline{5} \lor \overline{6}, 6 \lor \overline{5} \lor \overline{2}
                                                                                                                                                                                                                 (Decide)
                                                 \overline{1} \vee 2, \overline{3} \vee 4, \overline{4} \vee \overline{2} \vee \overline{1} \vee \overline{7}, \overline{5} \vee \overline{6}, 6 \vee \overline{5} \vee \overline{2}
                                                                                                                                                                                            \Rightarrow
                                                                                                                                                                                                                 (UnitPropagate)
                                                 \overline{1} \lor 2, \overline{3} \lor 4, \overline{4} \lor \overline{2} \lor \overline{1} \lor \overline{7}, \overline{5} \lor \overline{6}, 6 \lor \overline{5} \lor \overline{2}
12
                                                                                                                                                                                            \Rightarrow
                                                                                                                                                                                                                (Decide)
                                                 \overline{1} \vee 2, \overline{3} \vee 4, \overline{4} \vee \overline{2} \vee \overline{1} \vee \overline{7}, \overline{5} \vee \overline{6}, 6 \vee \overline{5} \vee \overline{2}
                                                                                                                                                                                            \Rightarrow
                                                                                                                                                                                                                 (UnitPropagate)
123
                                                \overline{1} \vee 2, \overline{3} \vee 4, \overline{4} \vee \overline{2} \vee \overline{1} \vee \overline{7}, \overline{5} \vee \overline{6}, 6 \vee \overline{5} \vee \overline{2}
                                                                                                                                                                                                                 (UnitPropagate)
1234
                                                                                                                                                                                            \Rightarrow
                                                 \overline{1} \lor 2, \overline{3} \lor 4, \overline{4} \lor \overline{2} \lor \overline{1} \lor \overline{7}, \overline{5} \lor \overline{6}, 6 \lor \overline{5} \lor \overline{2}
12347
                                                                                                                                                                                            \Rightarrow
```

Here we denote variables by numbers and negation by overlining.

The model stack (the partial interpretation being explored) grows to the right.

```
\overline{1} \lor 2, \overline{3} \lor 4, \overline{4} \lor \overline{2} \lor \overline{1} \lor \overline{7}, \overline{5} \lor \overline{6}, 6 \lor \overline{5} \lor \overline{2}
                                                                                                                                                                                                                 (Decide)
                                                 \overline{1} \vee 2, \overline{3} \vee 4, \overline{4} \vee \overline{2} \vee \overline{1} \vee \overline{7}, \overline{5} \vee \overline{6}, 6 \vee \overline{5} \vee \overline{2}
                                                                                                                                                                                             \Rightarrow
                                                                                                                                                                                                                 (UnitPropagate)
                                                 \overline{1} \lor 2, \overline{3} \lor 4, \overline{4} \lor \overline{2} \lor \overline{1} \lor \overline{7}, \overline{5} \lor \overline{6}, 6 \lor \overline{5} \lor \overline{2}
12
                                                                                                                                                                                             \Rightarrow
                                                                                                                                                                                                                 (Decide)
                                                 \overline{1} \vee 2, \overline{3} \vee 4, \overline{4} \vee \overline{2} \vee \overline{1} \vee \overline{7}, \overline{5} \vee \overline{6}, 6 \vee \overline{5} \vee \overline{2}
                                                                                                                                                                                             \Rightarrow
                                                                                                                                                                                                                 (UnitPropagate)
123
                                                 \overline{1} \lor 2, \overline{3} \lor 4, \overline{4} \lor \overline{2} \lor \overline{1} \lor \overline{7}, \overline{5} \lor \overline{6}, 6 \lor \overline{5} \lor \overline{2}
1234
                                                                                                                                                                                             \Rightarrow
                                                                                                                                                                                                                 (UnitPropagate)
1 2 3 4 \overline{7} \overline{1} \lor 2, \overline{3} \lor 4, \overline{4} \lor \overline{2} \lor \overline{1} \lor \overline{7}, \overline{5} \lor \overline{6}, 6 \lor \overline{5} \lor \overline{2}
                                                                                                                                                                                                                 (Decide)
                                                                                                                                                                                             \Rightarrow
                                                 \overline{1} \lor 2, \overline{3} \lor 4, \overline{4} \lor \overline{2} \lor \overline{1} \lor \overline{7}, \overline{5} \lor \overline{6}, 6 \lor \overline{5} \lor \overline{2}
123475
                                                                                                                                                                                             \Rightarrow
```

Here we denote variables by numbers and negation by overlining.

The model stack (the partial interpretation being explored) grows to the right.

Model Stack: Five clauses: $\overline{1} \lor 2$, $\overline{3} \lor 4$, $\overline{4} \lor \overline{2} \lor \overline{1} \lor \overline{7}$, $\overline{5} \lor \overline{6}$, $6 \lor \overline{5} \lor \overline{2}$ (Decide) \Rightarrow $\overline{1} \vee 2$, $\overline{3} \vee 4$, $\overline{4} \vee \overline{2} \vee \overline{1} \vee \overline{7}$, $\overline{5} \vee \overline{6}$, $6 \vee \overline{5} \vee \overline{2}$ \Rightarrow (UnitPropagate) $\overline{1}\lor2$, $\overline{3}\lor4$, $\overline{4}\lor\overline{2}\lor\overline{1}\lor\overline{7}$, $\overline{5}\lor\overline{6}$, $6\lor\overline{5}\lor\overline{2}$ 12 \Rightarrow (Decide) $\overline{1} \vee 2$, $\overline{3} \vee 4$, $\overline{4} \vee \overline{2} \vee \overline{1} \vee \overline{7}$, $\overline{5} \vee \overline{6}$, $6 \vee \overline{5} \vee \overline{2}$ (UnitPropagate) 123 \Rightarrow $\overline{1} \vee 2$, $\overline{3} \vee 4$, $\overline{4} \vee \overline{2} \vee \overline{1} \vee \overline{7}$, $\overline{5} \vee \overline{6}$, $6 \vee \overline{5} \vee \overline{2}$ 1234 \Rightarrow (UnitPropagate) $\overline{1} \lor 2$, $\overline{3} \lor 4$, $\overline{4} \lor \overline{2} \lor \overline{1} \lor \overline{7}$, $\overline{5} \lor \overline{6}$, $6 \lor \overline{5} \lor \overline{2}$ 12347 (Decide) \Rightarrow 1234 $\overline{7}$ 5 $\overline{1}$ $\sqrt{2}$, $\overline{3}$ $\sqrt{4}$, $\overline{4}$ $\sqrt{2}$ $\sqrt{1}$ $\sqrt{7}$, $\overline{5}$ $\sqrt{6}$, 6 $\sqrt{5}$ $\sqrt{2}$ (UnitPropagate) \Rightarrow 1234756 $\overline{1} \vee 2$, $\overline{3} \vee 4$, $\overline{4} \vee \overline{2} \vee \overline{1} \vee \overline{7}$, $\overline{5} \vee \overline{6}$, $6 \vee \overline{5} \vee \overline{2}$ CONFLICT!

Here we denote variables by numbers and negation by overlining.

The model stack (the partial interpretation being explored) grows to the right.

```
\overline{1} \lor 2, \overline{3} \lor 4, \overline{4} \lor \overline{2} \lor \overline{1} \lor \overline{7}, \overline{5} \lor \overline{6}, 6 \lor \overline{5} \lor \overline{2}
                                                                                                                                                                                                    (Decide)
                                                                                                                                                                                 \Rightarrow
                                              \overline{1} \vee 2, \overline{3} \vee 4, \overline{4} \vee \overline{2} \vee \overline{1} \vee \overline{7}, \overline{5} \vee \overline{6}, 6 \vee \overline{5} \vee \overline{2}
                                                                                                                                                                                 \Rightarrow
                                                                                                                                                                                                    (UnitPropagate)
                                              \overline{1}\lor2, \overline{3}\lor4, \overline{4}\lor\overline{2}\lor\overline{1}\lor\overline{7}, \overline{5}\lor\overline{6}, 6\lor\overline{5}\lor\overline{2}
12
                                                                                                                                                                                 \Rightarrow
                                                                                                                                                                                                    (Decide)
                                              \overline{1} \vee 2, \overline{3} \vee 4, \overline{4} \vee \overline{2} \vee \overline{1} \vee \overline{7}, \overline{5} \vee \overline{6}, 6 \vee \overline{5} \vee \overline{2}
                                                                                                                                                                                                    (UnitPropagate)
123
                                                                                                                                                                                 \Rightarrow
                                              \overline{1} \vee 2, \overline{3} \vee 4, \overline{4} \vee \overline{2} \vee \overline{1} \vee \overline{7}, \overline{5} \vee \overline{6}, 6 \vee \overline{5} \vee \overline{2}
1234
                                                                                                                                                                                 \Rightarrow
                                                                                                                                                                                                    (UnitPropagate)
                                              \overline{1} \lor 2, \overline{3} \lor 4, \overline{4} \lor \overline{2} \lor \overline{1} \lor \overline{7}, \overline{5} \lor \overline{6}, 6 \lor \overline{5} \lor \overline{2}
12347
                                                                                                                                                                                                    (Decide)
                                                                                                                                                                                 \Rightarrow
1234\overline{7}5 \overline{1}\sqrt{2}, \overline{3}\sqrt{4}, \overline{4}\sqrt{2}\sqrt{1}\sqrt{7}, \overline{5}\sqrt{6}, 6\sqrt{5}\sqrt{2}
                                                                                                                                                                                                    (UnitPropagate)
                                                                                                                                                                                 \Rightarrow
1234756
                                              \overline{1} \vee 2, \overline{3} \vee 4, \overline{4} \vee \overline{2} \vee \overline{1} \vee \overline{7}, \overline{5} \vee \overline{6}, 6 \vee \overline{5} \vee \overline{2}
                                                                                                                                                                                                    (Backtrack)
                                                                                                                                                                                 \Rightarrow
```

Here we denote variables by numbers and negation by overlining.

Five clauses:

The model stack (the partial interpretation being explored) grows to the right.

$\overline{1} \lor 2$, $\overline{3} \lor 4$, $\overline{4} \lor \overline{2} \lor \overline{1} \lor \overline{7}$, $\overline{5} \lor \overline{6}$, $6 \lor \overline{5} \lor \overline{2}$ (Decide) \Rightarrow $\overline{1} \vee 2$, $\overline{3} \vee 4$, $\overline{4} \vee \overline{2} \vee \overline{1} \vee \overline{7}$, $\overline{5} \vee \overline{6}$, $6 \vee \overline{5} \vee \overline{2}$ \Rightarrow (UnitPropagate) $\overline{1} \lor 2$, $\overline{3} \lor 4$, $\overline{4} \lor \overline{2} \lor \overline{1} \lor \overline{7}$, $\overline{5} \lor \overline{6}$, $6 \lor \overline{5} \lor \overline{2}$ 12 \Rightarrow (Decide) $\overline{1} \vee 2$, $\overline{3} \vee 4$, $\overline{4} \vee \overline{2} \vee \overline{1} \vee \overline{7}$, $\overline{5} \vee \overline{6}$, $6 \vee \overline{5} \vee \overline{2}$ (UnitPropagate) 123 \Rightarrow $\overline{1} \vee 2$, $\overline{3} \vee 4$, $\overline{4} \vee \overline{2} \vee \overline{1} \vee \overline{7}$, $\overline{5} \vee \overline{6}$, $6 \vee \overline{5} \vee \overline{2}$ 1234 \Rightarrow (UnitPropagate) 12347 $\overline{1} \vee 2$, $\overline{3} \vee 4$, $\overline{4} \vee \overline{2} \vee \overline{1} \vee \overline{7}$, $\overline{5} \vee \overline{6}$, $6 \vee \overline{5} \vee \overline{2}$ (Decide) \Rightarrow

 $\overline{1} \vee 2$, $\overline{3} \vee 4$, $\overline{4} \vee \overline{2} \vee \overline{1} \vee \overline{7}$, $\overline{5} \vee \overline{6}$, $6 \vee \overline{5} \vee \overline{2}$

 $\overline{1} \vee 2$, $\overline{3} \vee 4$, $\overline{4} \vee \overline{2} \vee \overline{1} \vee \overline{7}$, $\overline{5} \vee \overline{6}$, $6 \vee \overline{5} \vee \overline{2}$

 $\overline{1} \vee 2$, $\overline{3} \vee 4$, $\overline{4} \vee \overline{2} \vee \overline{1} \vee \overline{7}$, $\overline{5} \vee \overline{6}$, $6 \vee \overline{5} \vee \overline{2}$

Model Stack:

123475

123475

 $123475\overline{6}$

 \Rightarrow

 \Rightarrow

(UnitPropagate)

(Backtrack)

Here we denote variables by numbers and negation by overlining.

The model stack (the partial interpretation being explored) grows to the right.

Model Stack: Five clauses: $\overline{1} \lor 2$, $\overline{3} \lor 4$, $\overline{4} \lor \overline{2} \lor \overline{1} \lor \overline{7}$, $\overline{5} \lor \overline{6}$, $6 \lor \overline{5} \lor \overline{2}$ (Decide) \Rightarrow $\overline{1} \vee 2$, $\overline{3} \vee 4$, $\overline{4} \vee \overline{2} \vee \overline{1} \vee \overline{7}$, $\overline{5} \vee \overline{6}$, $6 \vee \overline{5} \vee \overline{2}$ \Rightarrow (UnitPropagate) $\overline{1} \lor 2$, $\overline{3} \lor 4$, $\overline{4} \lor \overline{2} \lor \overline{1} \lor \overline{7}$, $\overline{5} \lor \overline{6}$, $6 \lor \overline{5} \lor \overline{2}$ 12 \Rightarrow (Decide) $\overline{1} \lor 2$, $\overline{3} \lor 4$, $\overline{4} \lor \overline{2} \lor \overline{1} \lor \overline{7}$, $\overline{5} \lor \overline{6}$, $6 \lor \overline{5} \lor \overline{2}$ (UnitPropagate) 123 \Rightarrow $\overline{1} \vee 2$, $\overline{3} \vee 4$, $\overline{4} \vee \overline{2} \vee \overline{1} \vee \overline{7}$, $\overline{5} \vee \overline{6}$, $6 \vee \overline{5} \vee \overline{2}$ 1234 \Rightarrow (UnitPropagate) 12347 $\overline{1} \vee 2$, $\overline{3} \vee 4$, $\overline{4} \vee \overline{2} \vee \overline{1} \vee \overline{7}$, $\overline{5} \vee \overline{6}$, $6 \vee \overline{5} \vee \overline{2}$ (Decide) \Rightarrow 123475 $\overline{1} \vee 2$, $\overline{3} \vee 4$, $\overline{4} \vee \overline{2} \vee \overline{1} \vee \overline{7}$, $\overline{5} \vee \overline{6}$, $6 \vee \overline{5} \vee \overline{2}$ (UnitPropagate) \Rightarrow 1234756 $\overline{1}$ \vee 2, $\overline{3}$ \vee 4, $\overline{4}$ \vee $\overline{2}$ \vee $\overline{1}$ \vee $\overline{7}$, $\overline{5}$ \vee $\overline{6}$, 6 \vee $\overline{5}$ \vee $\overline{2}$ (Backtrack) \Rightarrow 123475 $\overline{1} \lor 2$, $\overline{3} \lor 4$, $\overline{4} \lor \overline{2} \lor \overline{1} \lor \overline{7}$, $\overline{5} \lor \overline{6}$, $6 \lor \overline{5} \lor \overline{2}$ (Decide) \Rightarrow

Here we denote variables by numbers and negation by overlining.

The model stack (the partial interpretation being explored) grows to the right.

```
Model Stack:
                                                        Five clauses:
                                                  \overline{1} \lor 2, \overline{3} \lor 4, \overline{4} \lor \overline{2} \lor \overline{1} \lor \overline{7}, \overline{5} \lor \overline{6}, 6 \lor \overline{5} \lor \overline{2}
                                                                                                                                                                                                           (Decide)
                                                                                                                                                                                       \Rightarrow
                                                  \overline{1} \vee 2, \overline{3} \vee 4, \overline{4} \vee \overline{2} \vee \overline{1} \vee \overline{7}, \overline{5} \vee \overline{6}, 6 \vee \overline{5} \vee \overline{2}
                                                                                                                                                                                       \Rightarrow
                                                                                                                                                                                                           (UnitPropagate)
                                                 \overline{1} \lor 2, \overline{3} \lor 4, \overline{4} \lor \overline{2} \lor \overline{1} \lor \overline{7}, \overline{5} \lor \overline{6}, 6 \lor \overline{5} \lor \overline{2}
  12
                                                                                                                                                                                                           (Decide)
                                                                                                                                                                                       \Rightarrow
                                                  \overline{1} \vee 2, \overline{3} \vee 4, \overline{4} \vee \overline{2} \vee \overline{1} \vee \overline{7}, \overline{5} \vee \overline{6}, 6 \vee \overline{5} \vee \overline{2}
                                                                                                                                                                                                           (UnitPropagate)
  123
                                                                                                                                                                                       \Rightarrow
                                                  \overline{1} \vee 2, \overline{3} \vee 4, \overline{4} \vee \overline{2} \vee \overline{1} \vee \overline{7}, \overline{5} \vee \overline{6}, 6 \vee \overline{5} \vee \overline{2}
  1234
                                                                                                                                                                                       \Rightarrow
                                                                                                                                                                                                           (UnitPropagate)
  12347
                                                 \overline{1} \vee 2, \overline{3} \vee 4, \overline{4} \vee \overline{2} \vee \overline{1} \vee \overline{7}, \overline{5} \vee \overline{6}, 6 \vee \overline{5} \vee \overline{2}
                                                                                                                                                                                                           (Decide)
                                                                                                                                                                                       \Rightarrow
  123475
                                                 \overline{1} \vee 2, \overline{3} \vee 4, \overline{4} \vee \overline{2} \vee \overline{1} \vee \overline{7}, \overline{5} \vee \overline{6}, 6 \vee \overline{5} \vee \overline{2}
                                                                                                                                                                                                           (UnitPropagate)
                                                                                                                                                                                       \Rightarrow
  1234756
                                                 \overline{1} \vee 2, \overline{3} \vee 4, \overline{4} \vee \overline{2} \vee \overline{1} \vee \overline{7}, \overline{5} \vee \overline{6}, 6 \vee \overline{5} \vee \overline{2}
                                                                                                                                                                                                           (Backtrack)
                                                                                                                                                                                       \Rightarrow
                                                 \overline{1} \vee 2, \overline{3} \vee 4, \overline{4} \vee \overline{2} \vee \overline{1} \vee \overline{7}, \overline{5} \vee \overline{6}, 6 \vee \overline{5} \vee \overline{2}
  123475
                                                                                                                                                                                                           (Decide)
                                                                                                                                                                                       \Rightarrow
                                                  \overline{1} \lor 2, \overline{3} \lor 4, \overline{4} \lor \overline{2} \lor \overline{1} \lor \overline{7}, \overline{5} \lor \overline{6}, 6 \lor \overline{5} \lor \overline{2}
   1234756
                                                                                                                                                                                                           solution found!
```