

**Toma**

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# Toma: Theorem prover based on ordered maximal completion

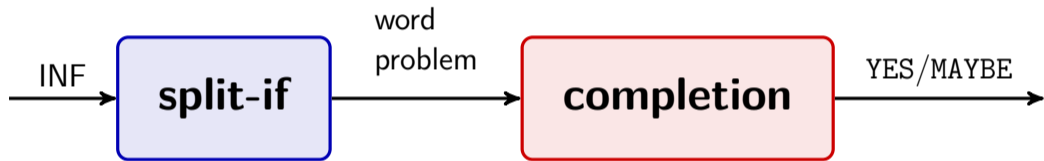


Equational theorem prover Toma

<https://www.jaist.ac.jp/project/maxcomp/>

## Architecture

Toma solves CoCo INF problem as follows:



- 1 INF problem is transformed into word problem by *split-if* encoding (Claessen and Smallbone, 2018).
- 2 Word problem is solved by new variant of maximal ordered completion:
  - maximal ordered completion (Winkler and Moser, 2018) plus
  - maximal completion with inter-reduction (Hirokawa, 2021)

## Example

Toma outputs ground-complete ordered rewrite system as witness:

```
$ toma --inf 831.trs
```

```
YES
```

```
...
```

```
f4(x201,x112) -> false__
```

```
f3(pin(x12)) -> false__
```

```
pout(b) -> pin(a)
```

```
pout(c) -> pin(b)
```

```
...
```

Since true\_\_ and false\_\_ are not joinable,  
the original problem is infeasible.