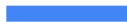


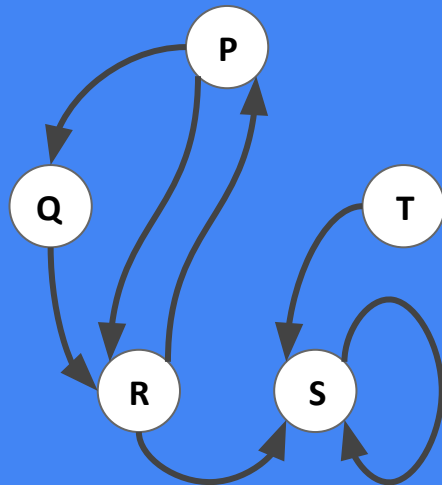
DeepDooop

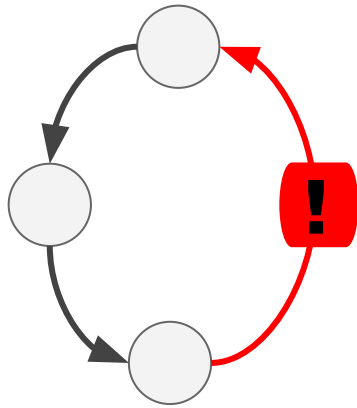


George Kastrinis

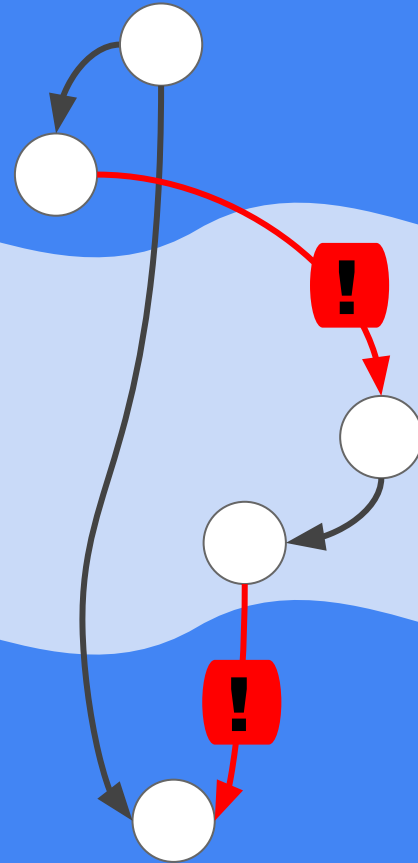
Datalog rule dependencies

```
Q(..) <- P(..).  
R(..) <- Q(..), P(..).  
P(..) <- R(..).  
S(..) <- R(..), T(..), S(..).
```

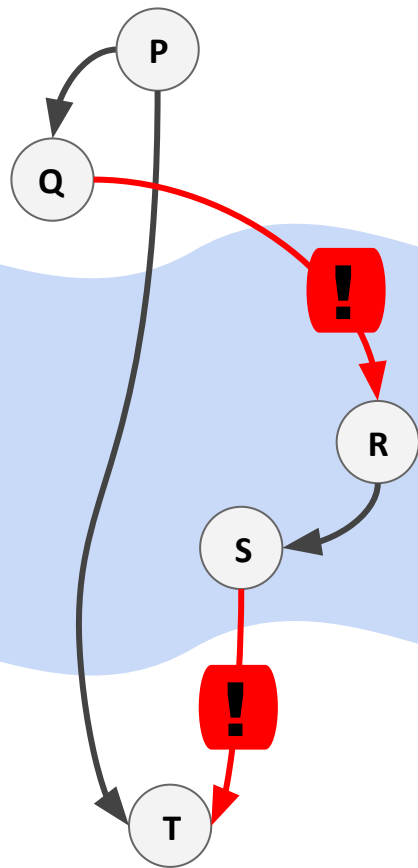




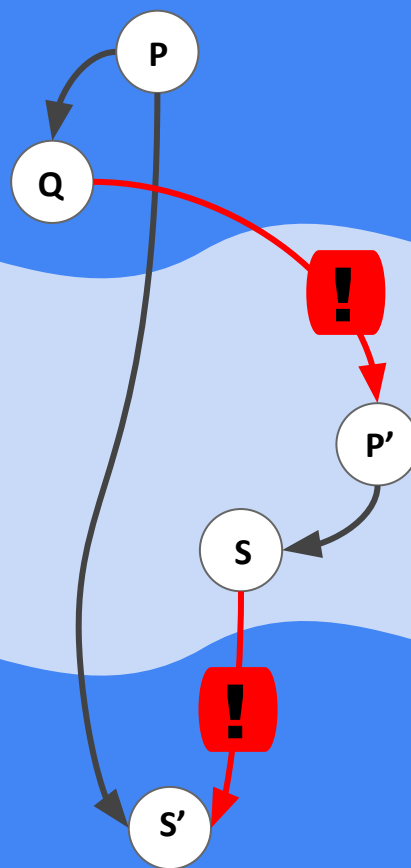
stratification



stratification



staging



Datalog extension

1. `P(..) <- Q(..), R@past(..)`
2. `P(..) <- W(..), !P@past(..)`



```
P:1(..) <- Q:1(..), R:0(..)  
P:2(..) <- W:2(..), !P:1(..)  
+ frame rules (demand driven)
```

Runtime script

- imperative
 - stage application
 - I/O with external processes
 - handling of frame rules
 - end result w/o stages
-

```
stage Process {  
  logic init.logic  
  logic rules.logic  
}
```

```
stage Analyze {  
  echo "analyzing..."  
  startTime  
  logic analysis.logic  
  endTime  
}
```

```
apply Process  
carry  
apply Analyze  
carry  
apply Process  
carry  
apply Analyze  
carry
```

```
apply External  
apply analyze
```

```
finalize
```

```
command External {  
  out = ..dir2  
  export ABC  
  
  in = ..dir3  
  import ABC2 as P2  
  
  `./foo -c 1 -d $out | ./bar -o $in`  
}
```

Runtime script