

Solutions to exercises from Lecture 13 Arguing

TEK5010 Multiagent systems 2020

Question 1

a) Give an example of a rationally justifiable position.

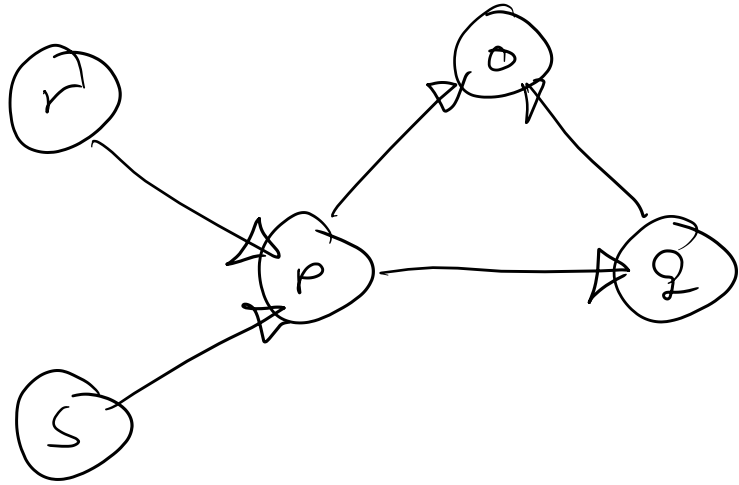
This is a Dung-style argumentation system:

- 1) Nodes are arguments
- 2) Arrows are relations between arguments,
arrow from A to B means A attacks B

A rationally justifiable position is typically

- 1) Conflict free
- 2) Mutually defensive
- 3) Admissible set
- 4) Preferred extensions
- 5) Grounded extensions

* Conflict free: A position S is conflict free if no member of S attacks any other member of S .



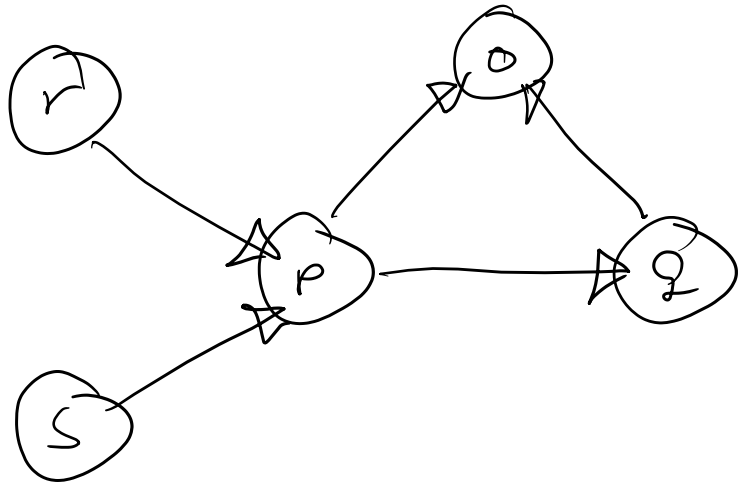
r, o, p, q, o

rq, ro, rs

sq, so

rsq, rso

* Mutually defensive: A position S is mutually defensive if every element of S that is attacked is defended by some element of S .



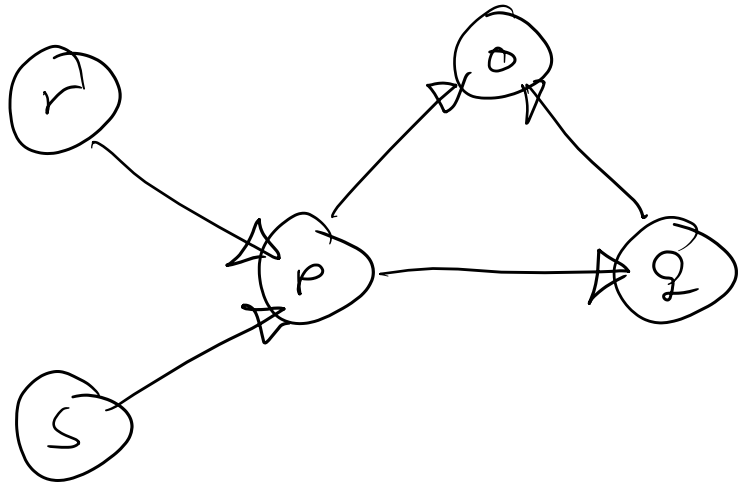
r, s

rq, rs

sq

rsq

* Admissible set : A position S that is conflict free and mutually defensive is an admissible set and internally consistent.



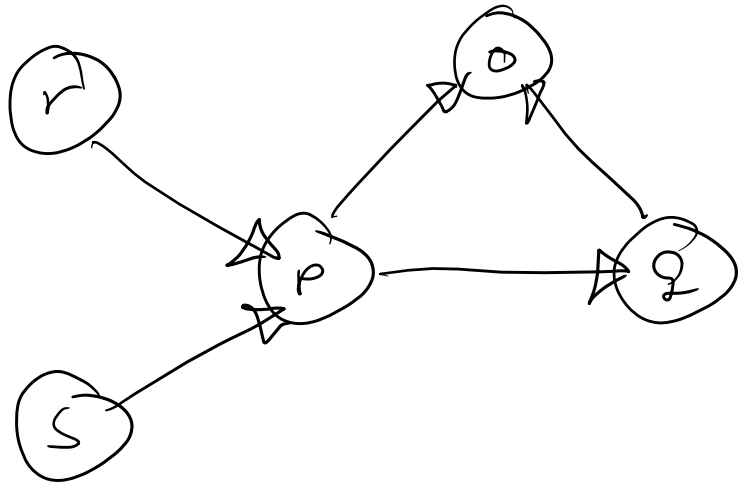
r, s

rq, rs

sq

rsq

* Preferred extensions: S is admissible but every superset of S is inadmissible



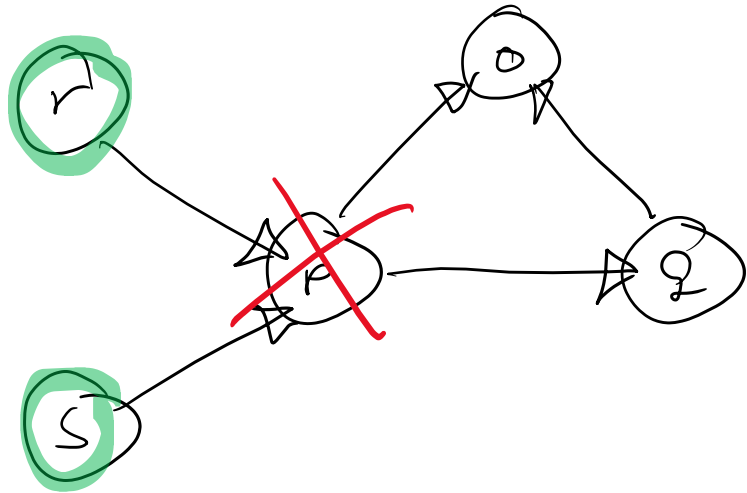
~~r, s~~

~~rq, rs~~

~~sp~~

rsq is the preferred extension

* Grounded extensions:

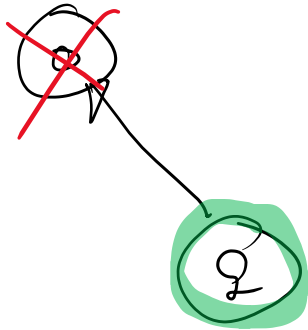


in: r, s, q

out: p, o

* Grounded extensions:

r



in: r, s, q

out: p, o

s

* Grounded extensions:

r

s

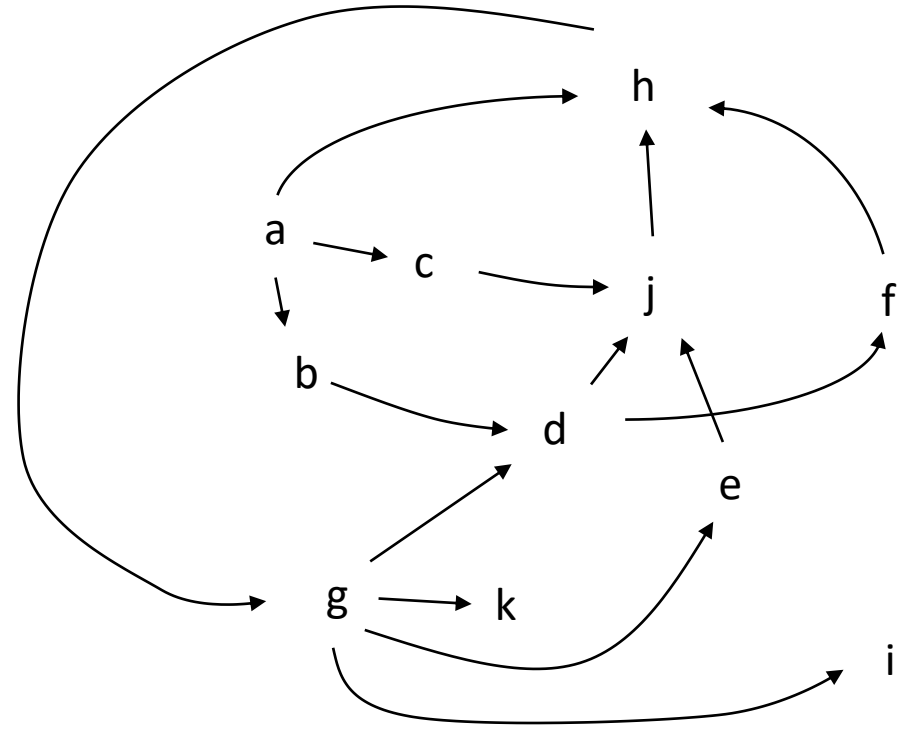
q

in: r, s, q

out: p, o

Question 2

a) Calculate the grounded extensions

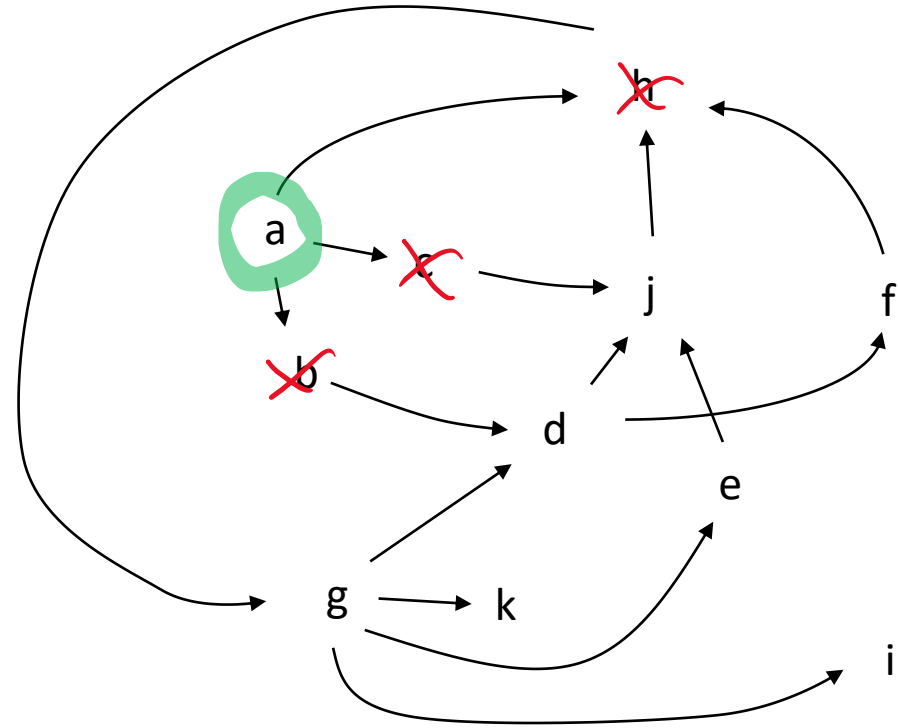


Question 2

a) Calculate the grounded extensions

in : a

out : b, c, h



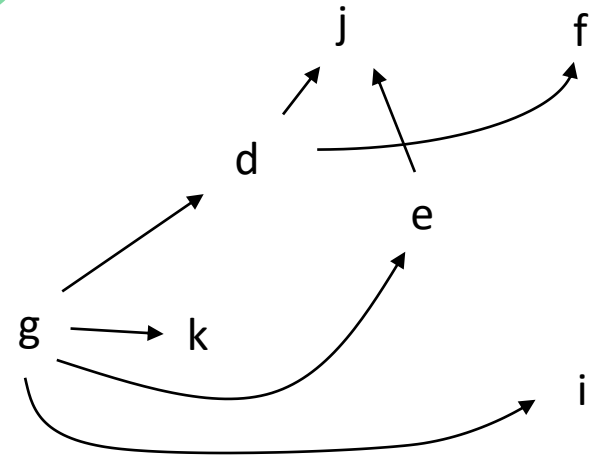
Question 2

a) Calculate the grounded extensions

in: a

out: b, c, h

a

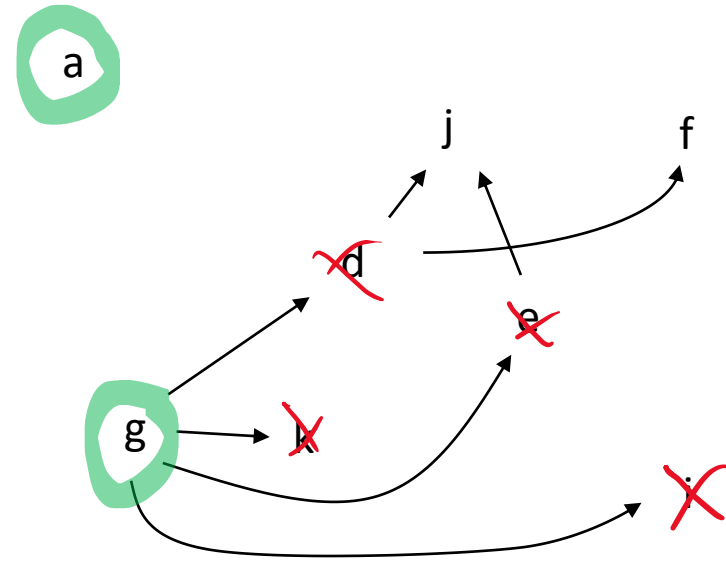


Question 2

a) Calculate the grounded extensions

in: a, g

out: b, c, h, d, e, k, i



Question 2

a) Calculate the grounded extensions

in: a, g

out: b, c, h, d, e, k, i

a

j

f

g

Question 2

a) Calculate the grounded extensions

in: a, g, j, f

out: b, c, h, d, e, k, i

a

j

f

g