Ford Fulkerson algorithm

[abbr]

FFA

[intro]

It is an algorithm that solves a maximum flow in a flow network.

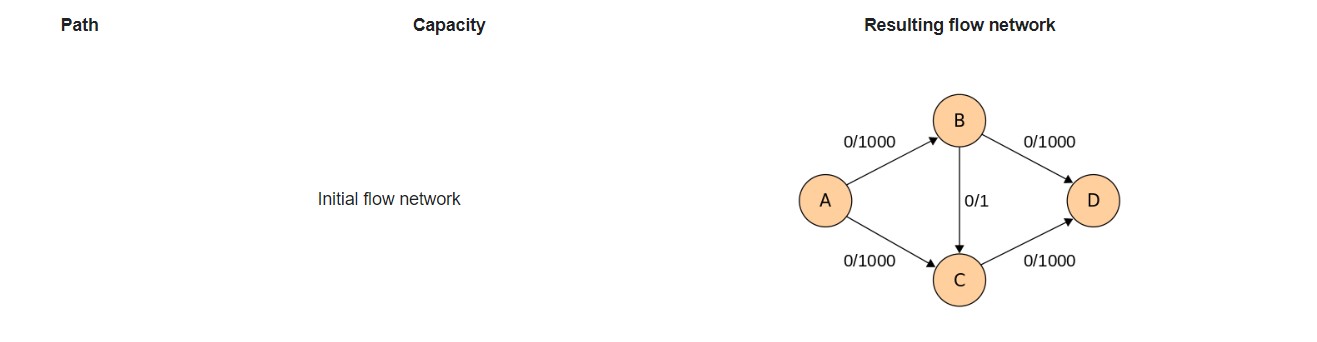
[analysis]

Time complexity:

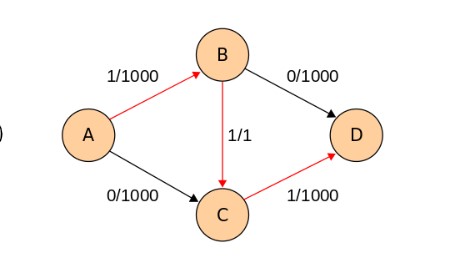
[analogy]

[E.g.]

The original flow graph.



After 1st round



[step]

[pseudo code]

**Algorithm** Ford–Fulkerson

**Inputs** Given a Network {\displaystyle G=(V,E)} with flow capacity *c*, a source node *s*, and a sink node *t*

**Output** Compute a flow *f* from *s* to *t* of maximum value

1. {\displaystyle f(u,v)\leftarrow 0} for all edges {\displaystyle (u,v)}
2. While there is a path *p* from *s* to *t* in {\displaystyle G\_{f}}, such that {\displaystyle c\_{f}(u,v)>0} for all edges {\displaystyle (u,v)\in p}:
   1. Find {\displaystyle c\_{f}(p)=\min\{c\_{f}(u,v):(u,v)\in p\}}
   2. For each edge {\displaystyle (u,v)\in p}
      1. {\displaystyle f(u,v)\leftarrow f(u,v)+c\_{f}(p)} (*Send flow along the path*)
      2. {\displaystyle f(v,u)\leftarrow f(v,u)-c\_{f}(p)} (*The flow might be "returned" later*)

[ref]

Document:

my note (maximum-flow)

website

[Ford–Fulkerson algorithm - Wikipedia](https://en.wikipedia.org/wiki/Ford%E2%80%93Fulkerson_algorithm)