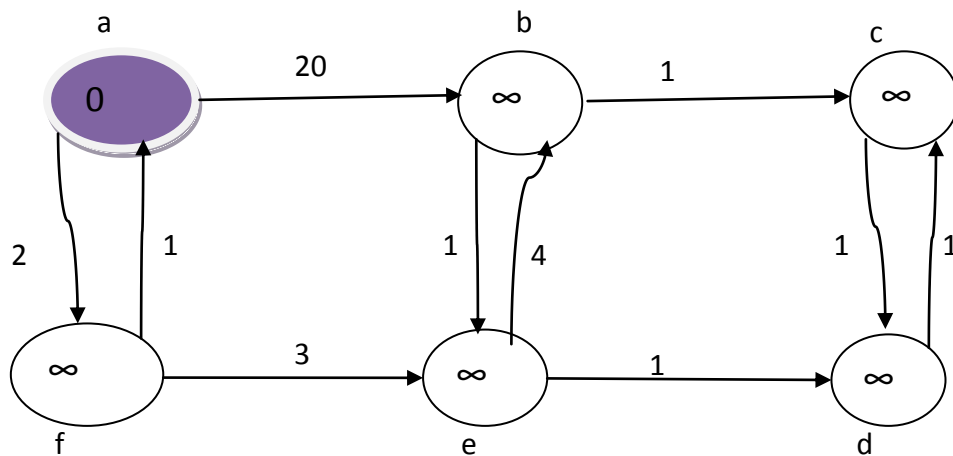Dijkstra's algorithm:

Fig.1: Initialize-Single-Source(G,a)

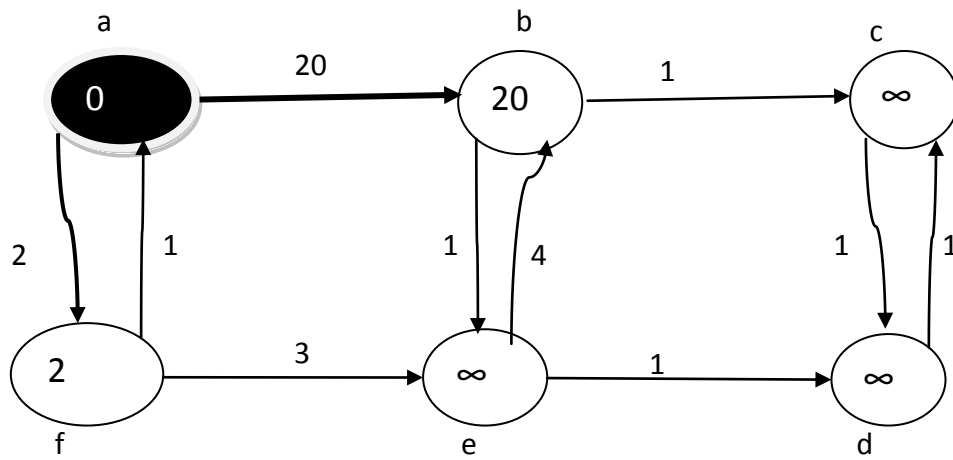   for each vertex v $\in$ G.v
          v.d = ∞
           v.p = NIL
       a.d = 0
    S = 0
    while {a, b, c, d, e, f} $\notin$ S
       choose a $\in$ V \ S,
       u = a
       for all v = {b,f} $\in$ vierus[a]
      Relax (a,v,w)
       b.d = 0 + 20 = 20, 20 < ∞
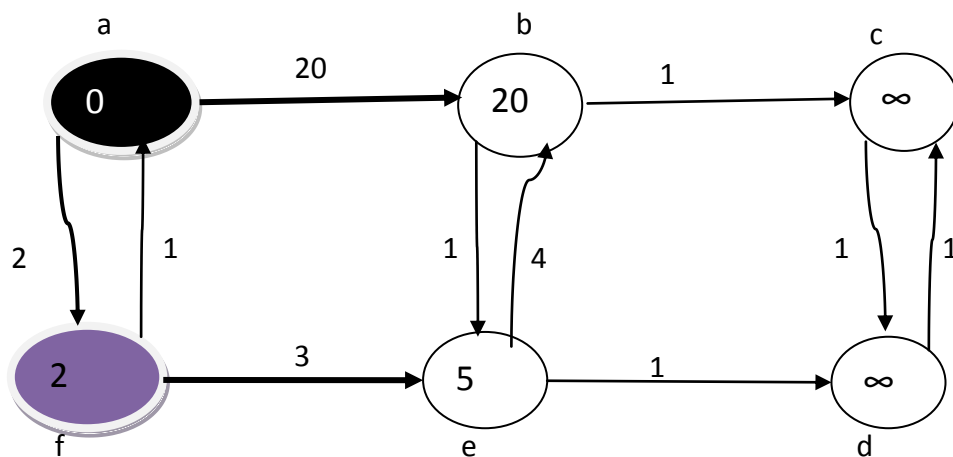   f.d = 0+2 = 2, 2 < ∞

Fig.2: S = S $\cup$ a

Fig.3:

while {b, c, d, e, f} ∉ S
    choose f ϵ V \ S,
    u = f
    for all v = {e} ϵ vierus[f]
    Relax (f,v,w)
    e.d = 2 +3 = 5, $5 < \infty$

Fig.4: S = S ∪ f
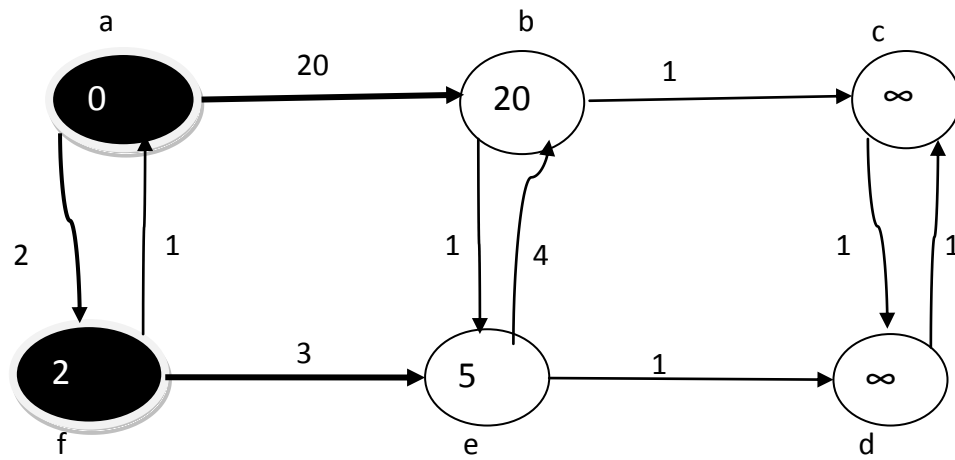
Fig.5:

while {b, c, d,e} ∉ S

    choose e ∈ V \ S,

    u = e

    for all v = {b,d} ∈ vierus[e]

   Relax (e,v,w)

    d.d = 5 +1 = 6, 6 < ∞

    b.d = 5 +4 = 9, 9 < 20
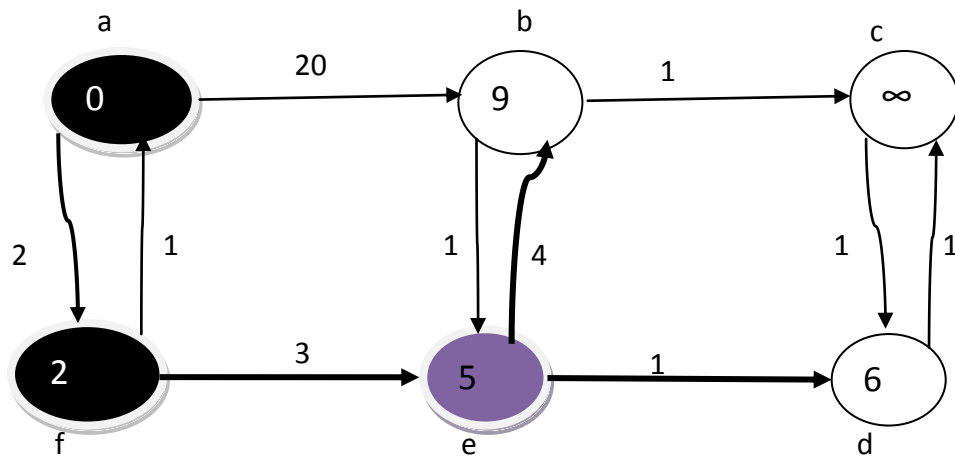
Fig.6: S = S ∪ *e*
    while {b, c, d} ∉ S
        choose b ϵ V \ S,
        u = b
        for all v = {c} ϵ vierus[b]
       Relax (b,v,w)
        c.d = 9 +1 = 10, 10 < ∞
    S = S ∪ *b*
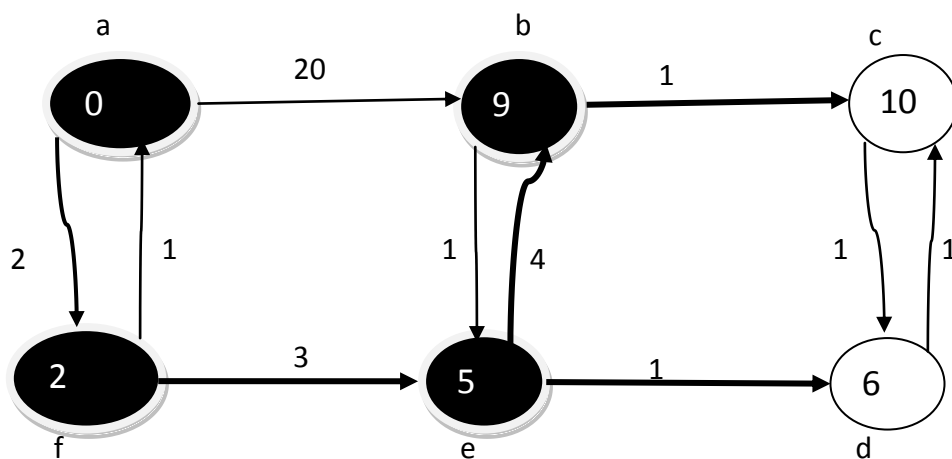
Fig.7:
    while {c, d} ∉ S

choose d ϵ V \ S,
u = d
for all v = {c} ϵ vierus[d]
Relax (f,v,w)
c.d = 6 +1 = 7, 7 < 10
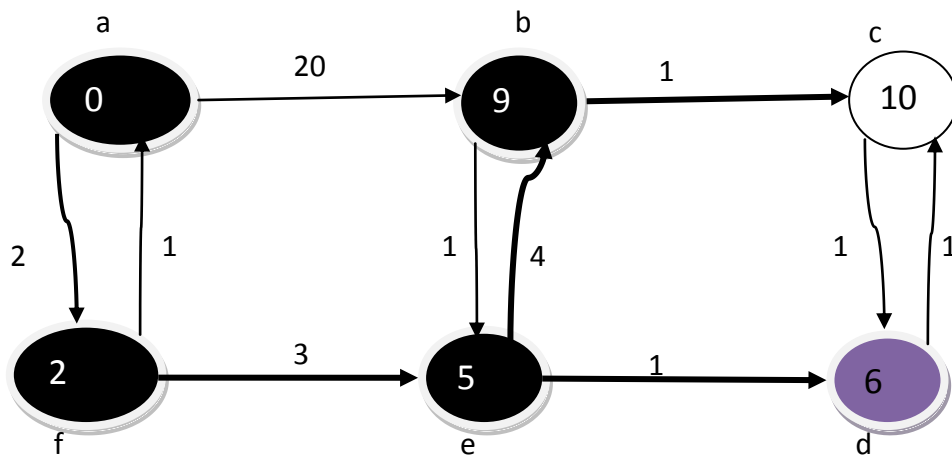
Fig.6: S = S ∪ d
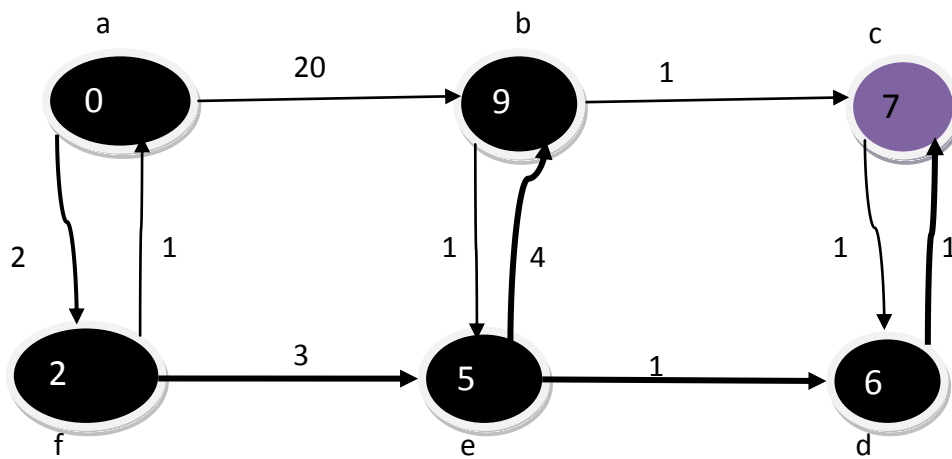
Fig.7:
choose c ϵ V \ S,

u = c
   all v = Ø ∈ vierus[c]
  Relax (c,v,w)

At the end S = {a, f, e, b, d, c}}

```
        a                          b                        c
  ┌──────────┐      20      ┌──────────┐      1      ┌──────────┐
  │    0     │ ───────────> │    9     │ ──────────> │    7     │
  └──────────┘              └──────────┘             └──────────┘
    2 │    │ 1          1 │    │ 4            1 │    │ 1
      v    │              v    │                v    │
  ┌──────────┐      3     ┌──────────┐     1     ┌──────────┐
  │    2     │ ─────────> │    5     │ ────────> │    6     │
  └──────────┘            └──────────┘           └──────────┘
       f                       e                      d
```

Shortest path: a -- > f -- > e -- > b
                       e -- > d -- > c