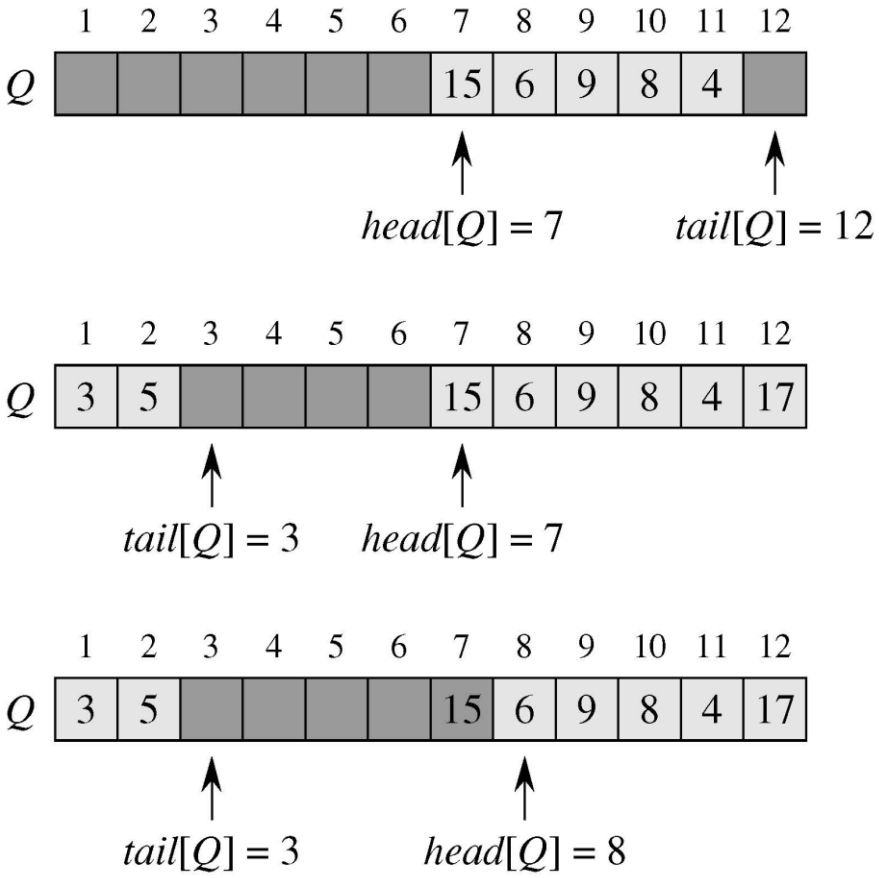
Tiefensuche

Elementare Datenstrukturen

Warteschlange - Queue



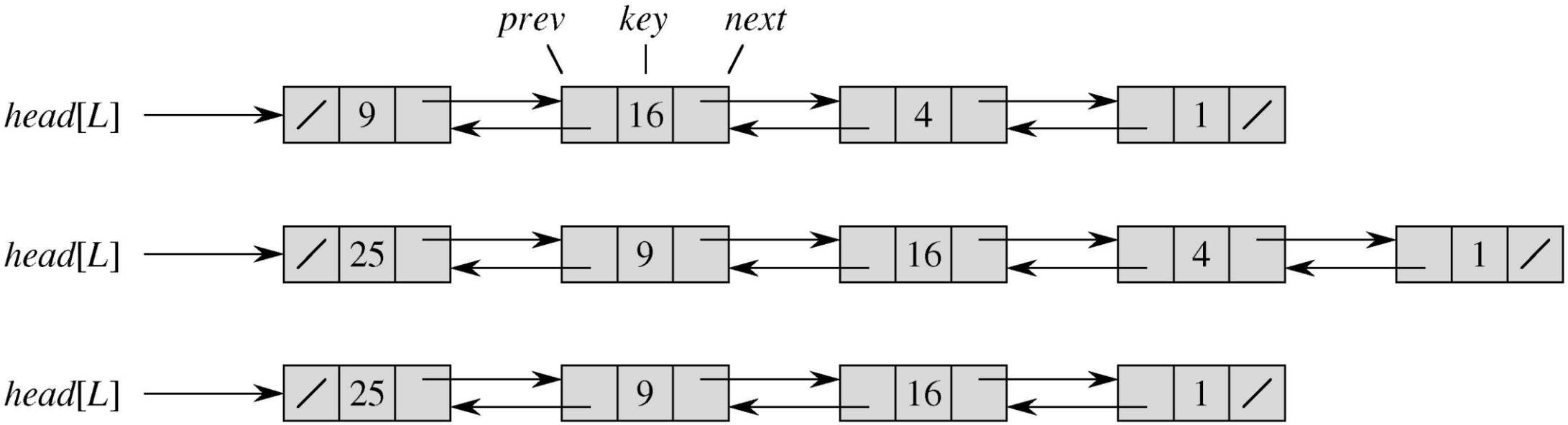
ENQUEUE(Q, x)

```
1  Q[tail[Q]] ← x
2  if tail[Q] = length[Q]
3      then tail[Q] ← 1
4      else tail[Q] ← tail[Q] + 1
```

DEQUEUE(Q)

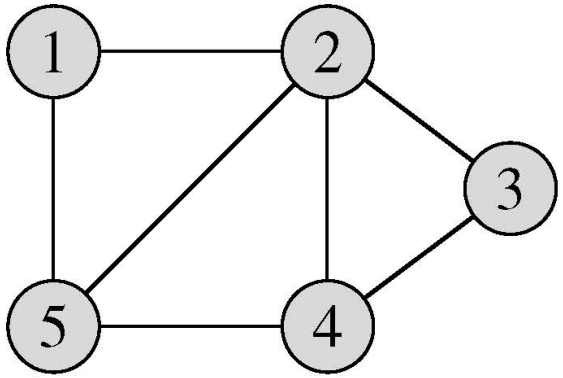
```
1  x ← Q[head[Q]]
2  if head[Q] = length[Q]
3      then head[Q] ← 1
4      else head[Q] ← head[Q] + 1
5  return x
```

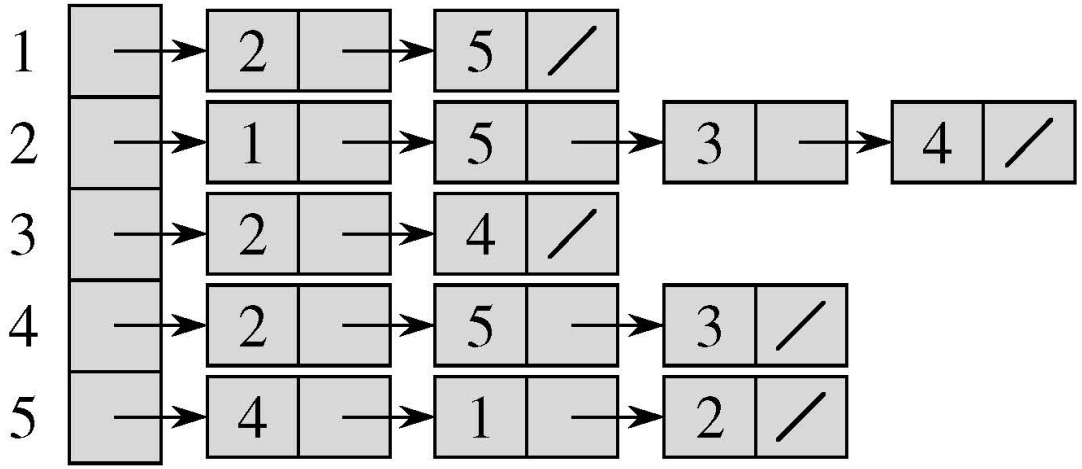
Verkettete Liste – Linked List



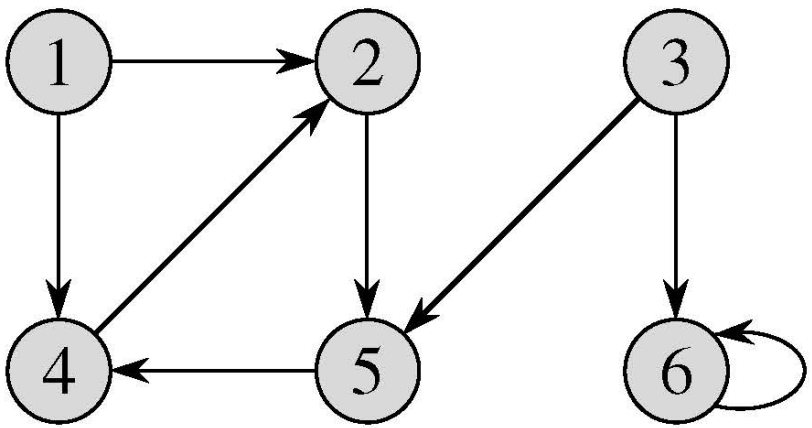
Darstellung von Graphen

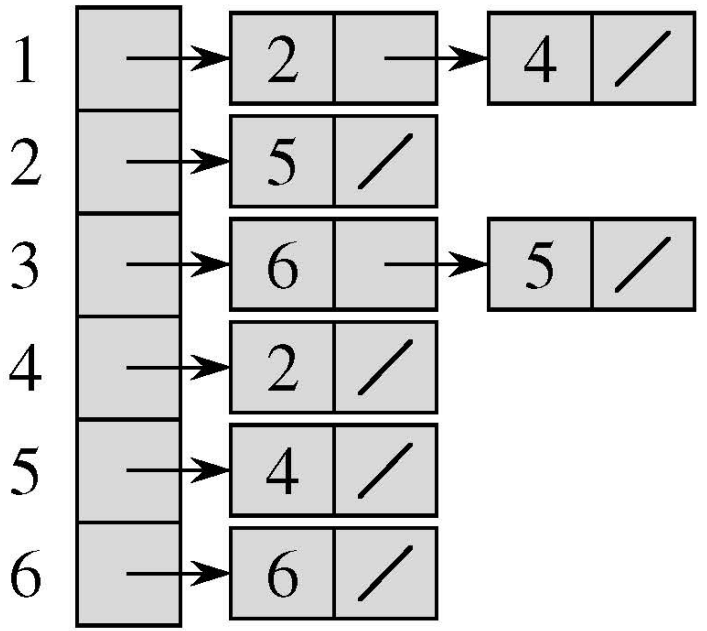
Adjazenzliste I



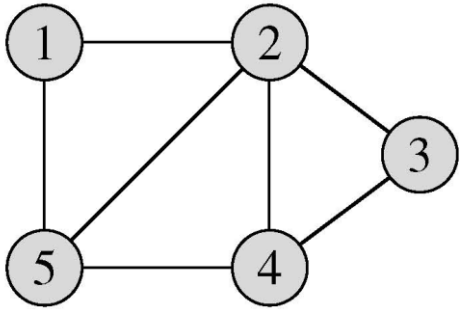


Adjazenzliste II



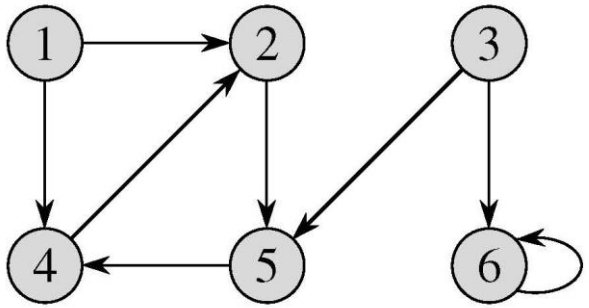


Adjazenzmatrix I



	1	2	3	4	5
1	0	1	0	0	1
2	1	0	1	1	1
3	0	1	0	1	0
4	0	1	1	0	1
5	1	1	0	1	0

Adjazenzmatrix II

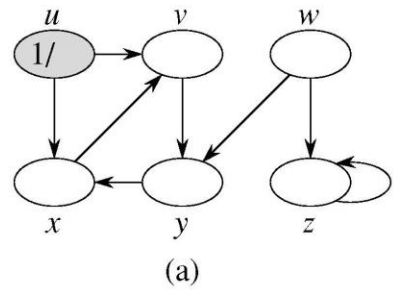


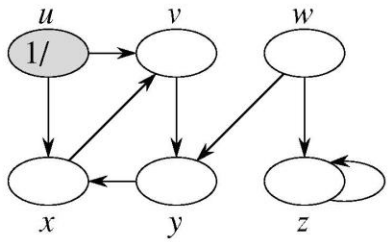
	1	2	3	4	5	6
1	0	1	0	1	0	0
2	0	0	0	0	1	0
3	0	0	0	0	1	1
4	0	1	0	0	0	0
5	0	0	0	1	0	0
6	0	0	0	0	0	1

DFS

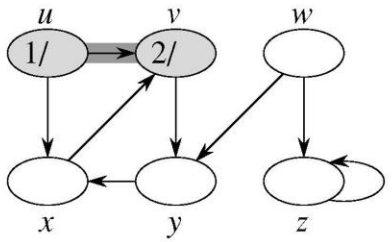
```
DFS(G)
1   for each vertex u ∈ V[G]
2         do color[u] ← WHITE
3            π[u] ← NIL
4   time ← 0
5   for each vertex u ∈ V[G]
6         do if color[u] = WHITE
7               then DFS-VISIT(u)
```

```
DFS-VISIT(u)
1  color[u] ← GRAY          ▷ White vertex u has just been discovered.
2  time ← time + 1
3  d[u] ← time
4  for each v ∈ Adj[u]      ▷ Explore edge (u, v).
5       do if color[v] = WHITE
6            then π[v] ← u
7                 DFS-VISIT(v)
8  color[u] ← BLACK         ▷ Blacken u; it is finished.
9  f[u] ← time ← time + 1
```

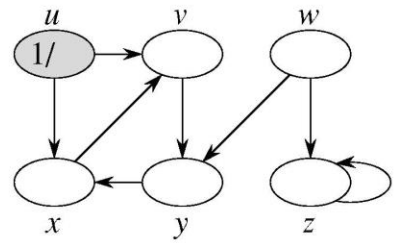

u
v
w
1/
x
y
z
(a)



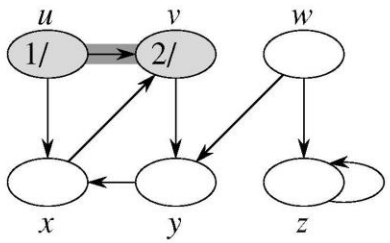
(a)



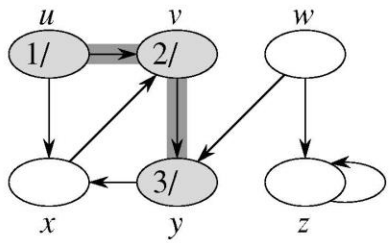
(b)



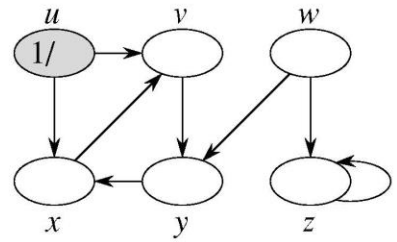
(a)



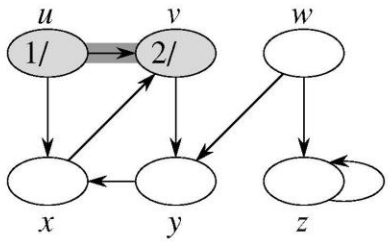
(b)



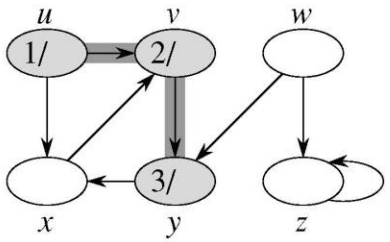
(c)



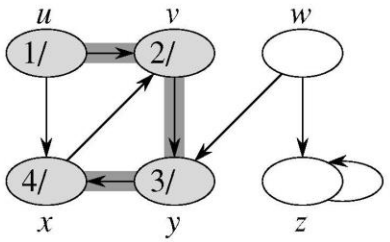
(a)



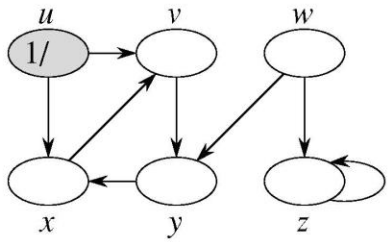
(b)

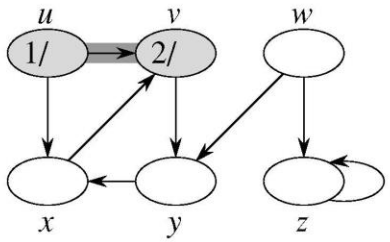


(c)



(d)


u
v
w
1/
x
y
z
(a)


u
v
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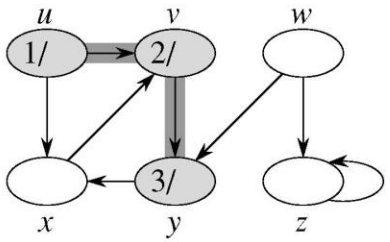
(b)


u
v
w
1/
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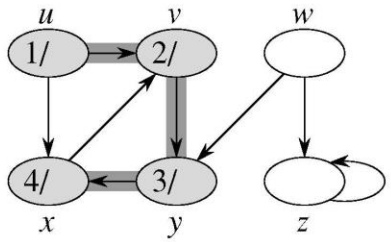
(c)


u
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x
y
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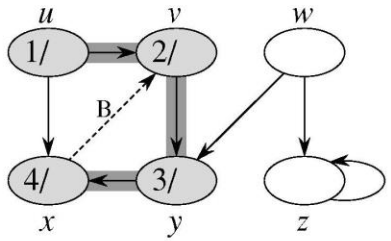
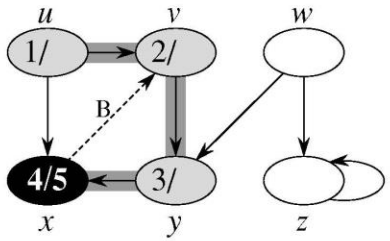
(d)


u
v
w
1/
2/
B
4/
3/
x
y
z
(e)


u
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2/
B
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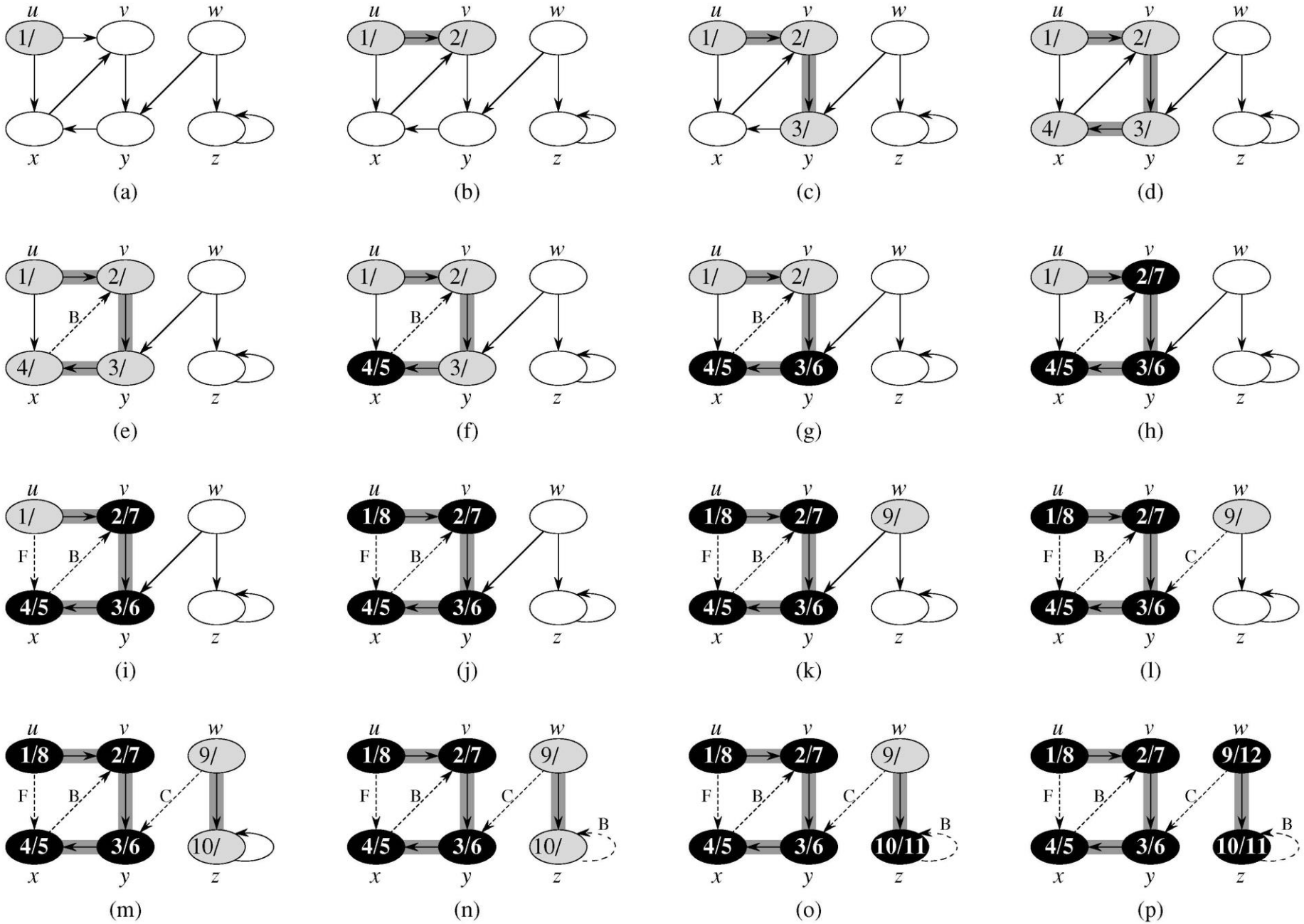
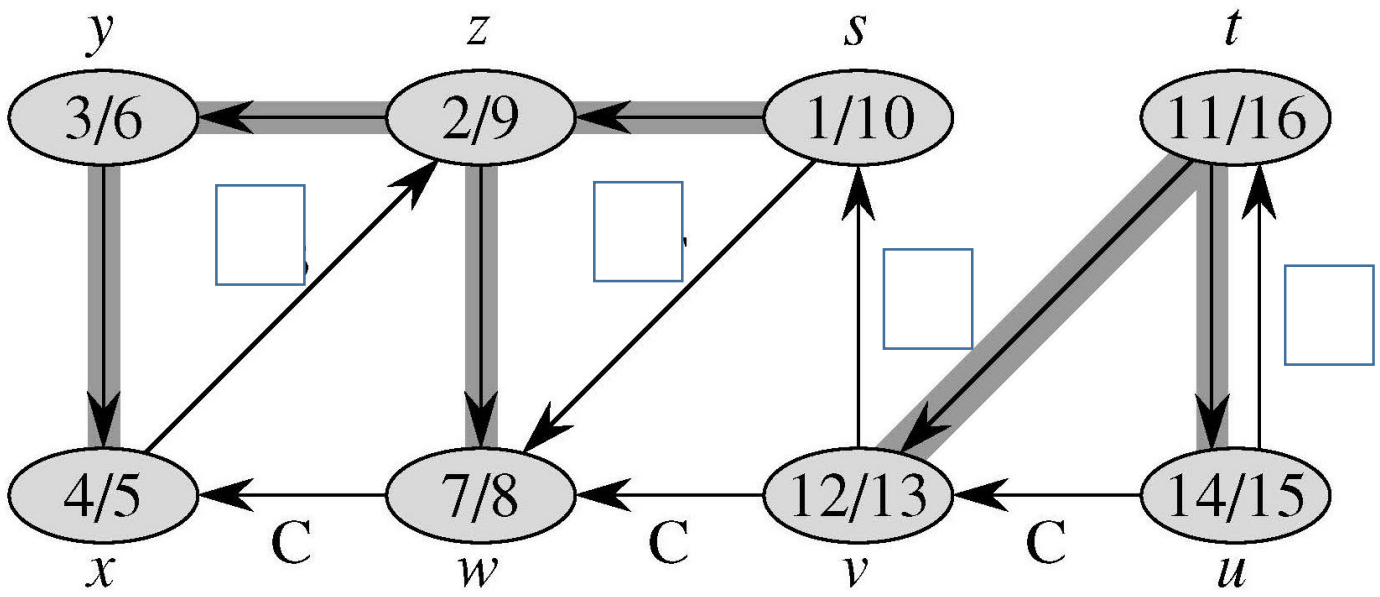
3/
x
y
z
(f)


u v w
1/
x y z
(a)
u v w
1/ 2/
x y z
(b)
u v w
1/ 2/ 3/
x y z
(c)
u v w
1/ 2/ 4/ 3/
x y z
(d)
u v w
1/ 2/ B 4/ 3/
x y z
(e)
u v w
1/ 2/ B 4/5 3/
x y z
(f)
u v w
1/ 2/ B 4/5 3/6
x y z
(g)
u v w
1/ 2/7 B 4/5 3/6
x y z
(h)
u v w
1/ 2/7 F B 4/5 3/6
x y z
(i)
u v w
1/8 2/7 F B 4/5 3/6
x y z
(j)
u v w
1/8 2/7 9/ F B 4/5 3/6
x y z
(k)
u v w
1/8 2/7 9/ F B C 4/5 3/6
x y z
(l)
u v w
1/8 2/7 9/ F B C 4/5 3/6 10/
x y z
(m)
u v w
1/8 2/7 9/ F B C 4/5 3/6 10/ B
x y z
(n)
u v w
1/8 2/7 9/ F B C 4/5 3/6 10/11 B
x y z
(o)
u v w
1/8 2/7 9/12 F B C 4/5 3/6 10/11 B
x y z
(p)

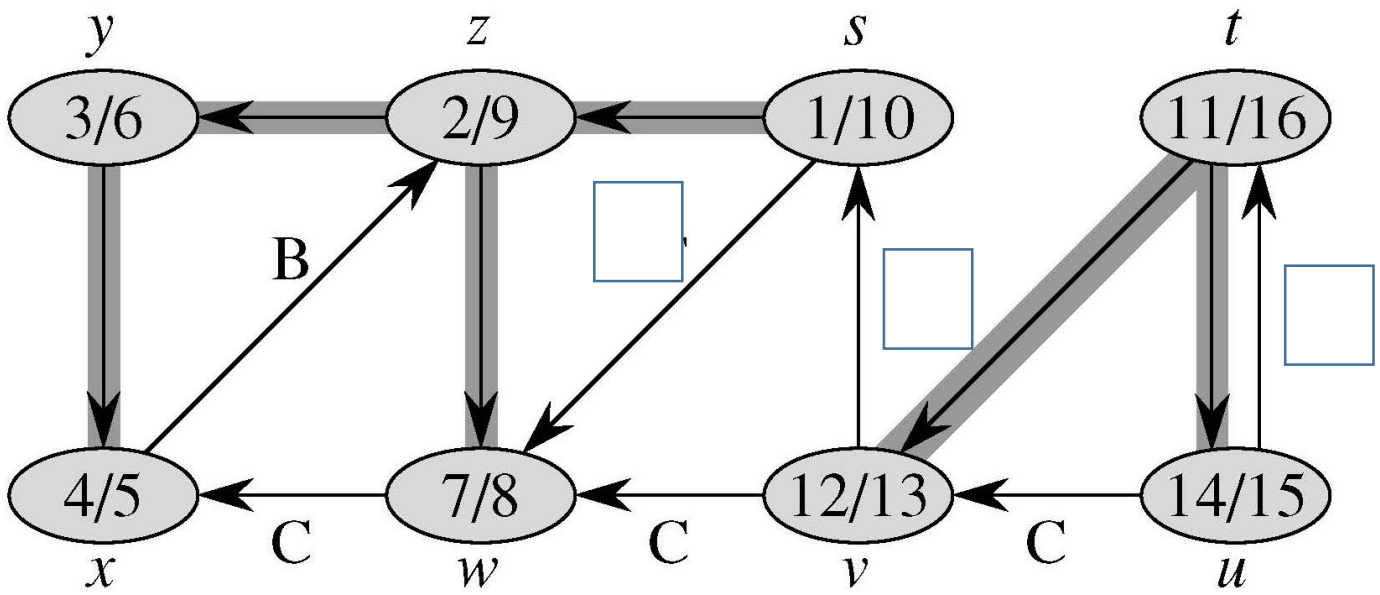
DFS Kantentypen

(a)



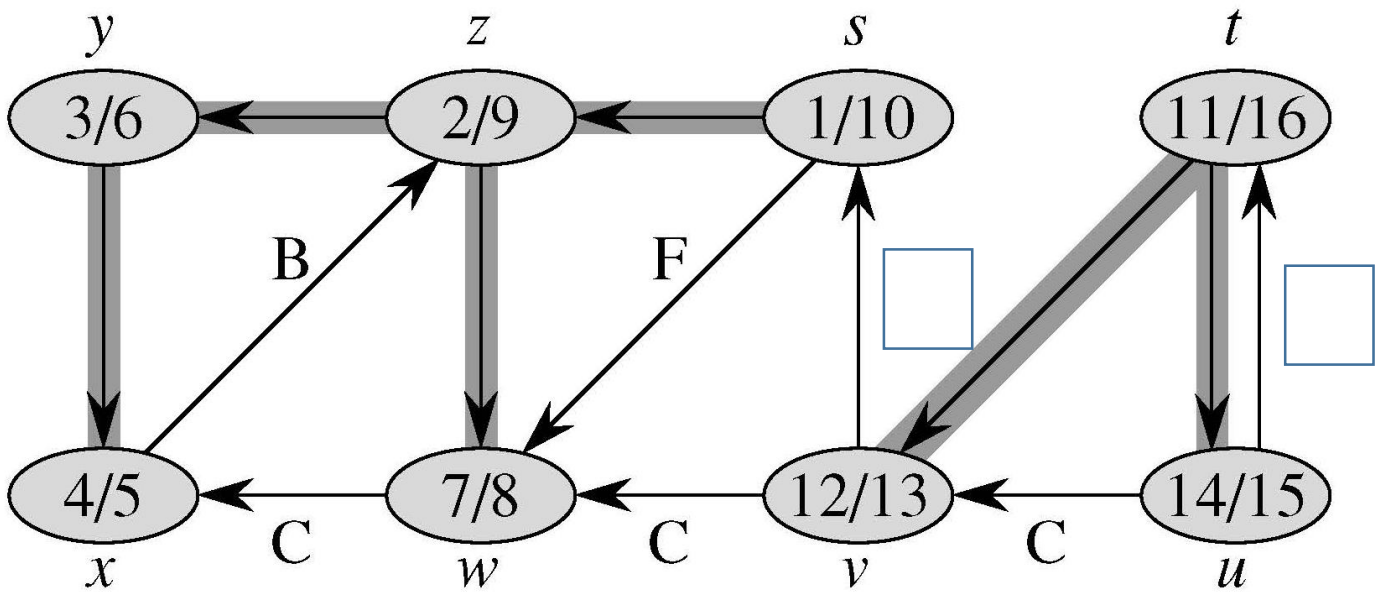
DFS Kantentypen

(a)



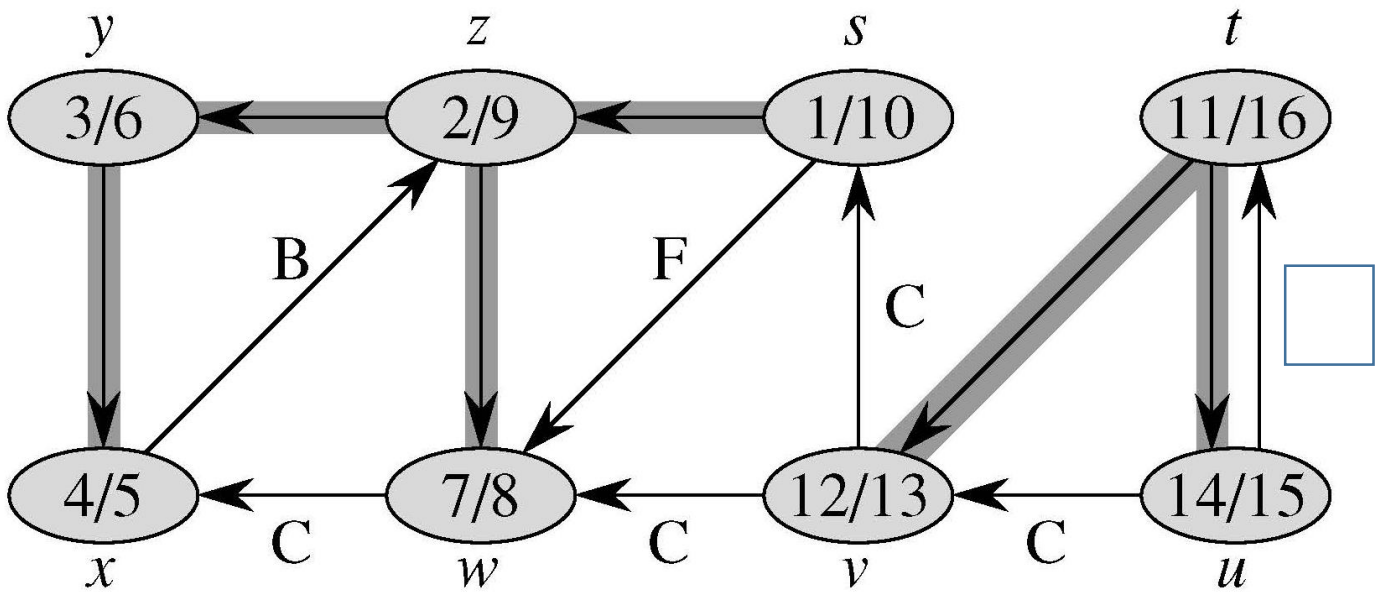
DFS Kantentypen

(a)

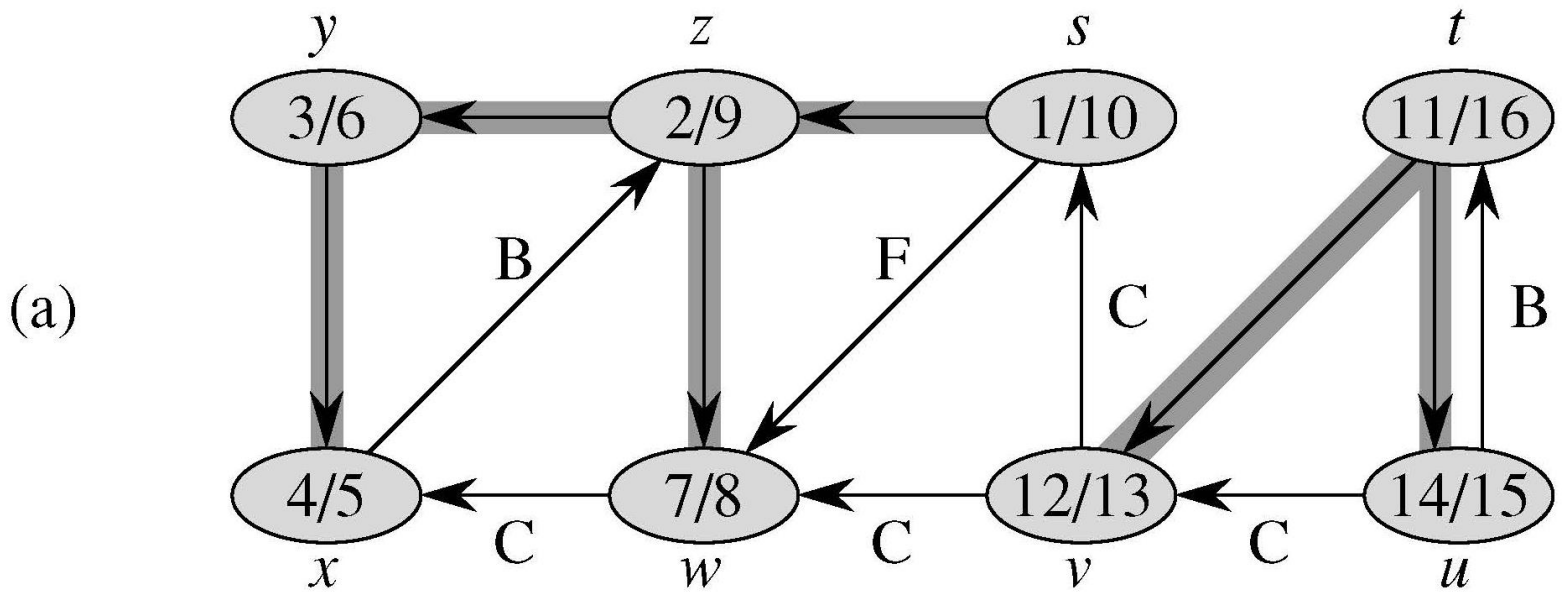


DFS Kantentypen

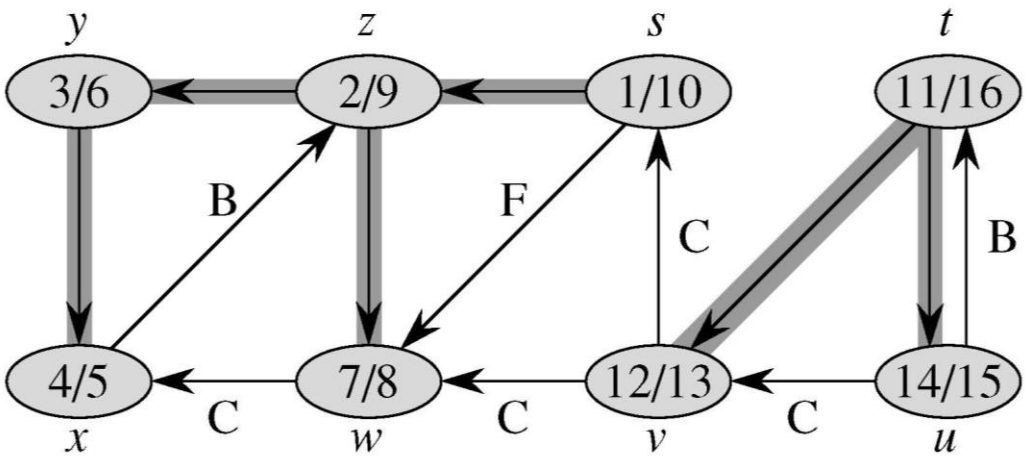
(a)

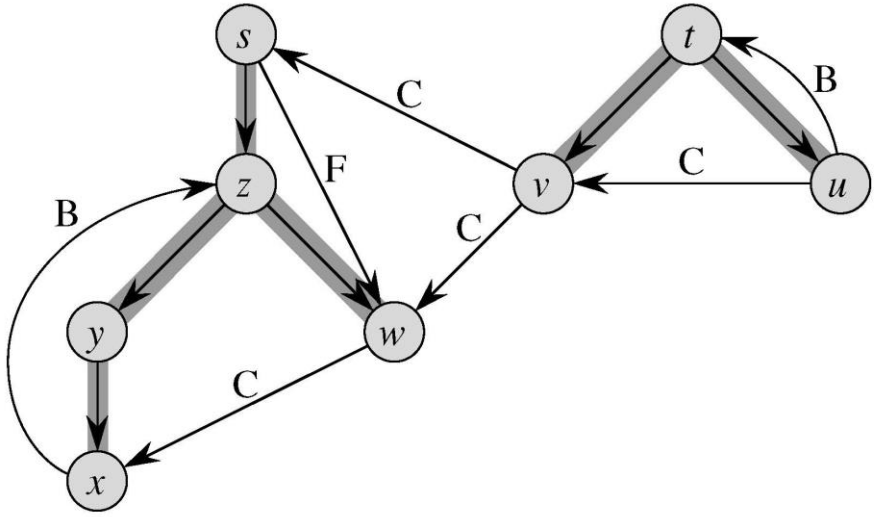


DFS Kantentypen



DFS Kantentypen





DFS Klammerstruktur