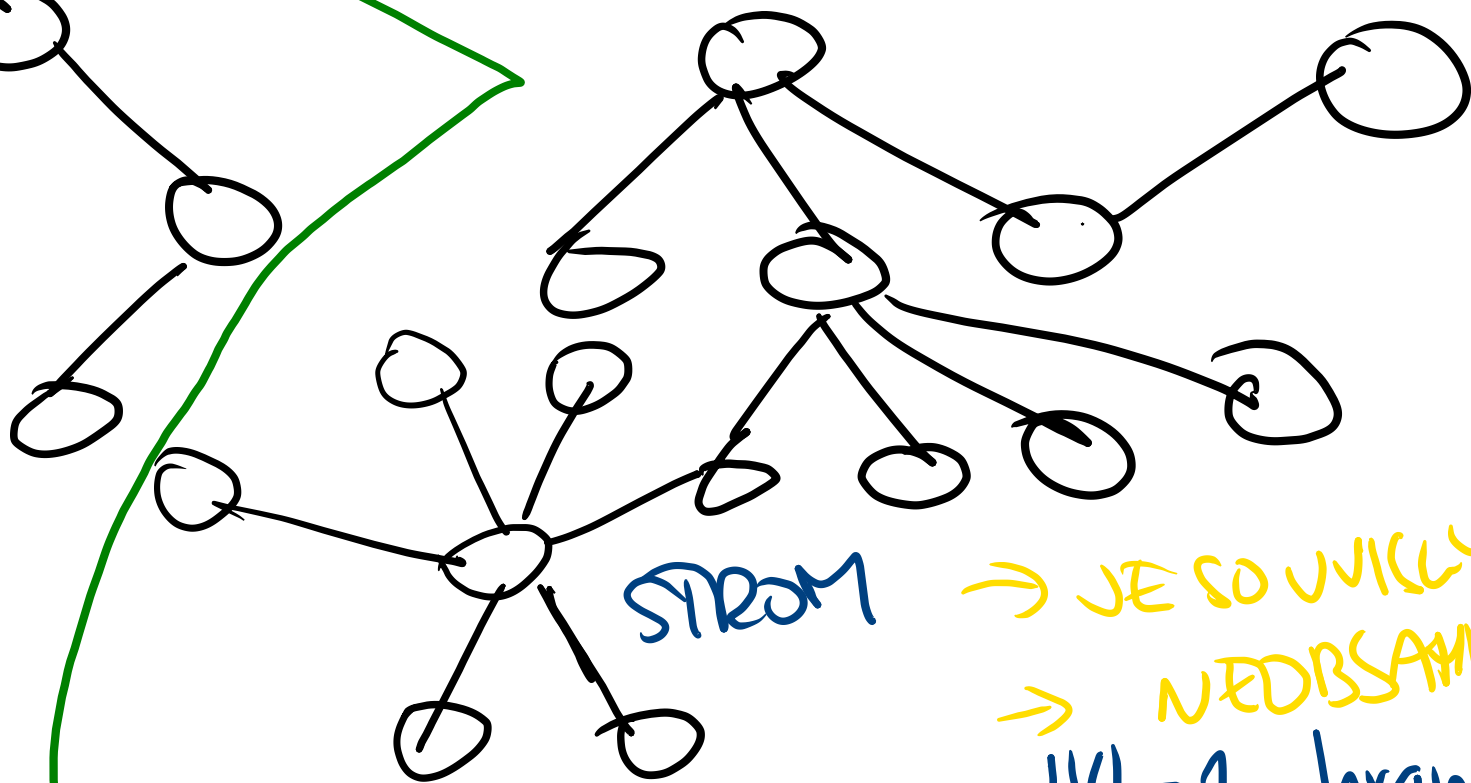
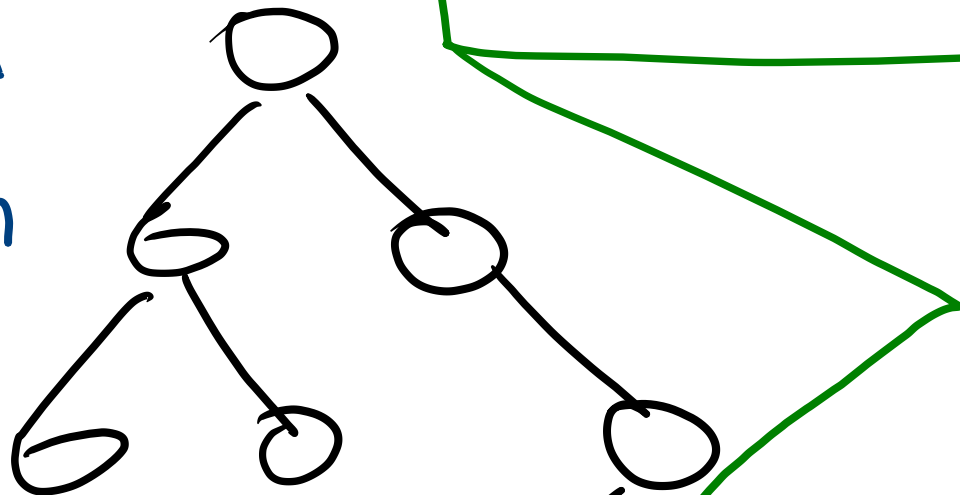
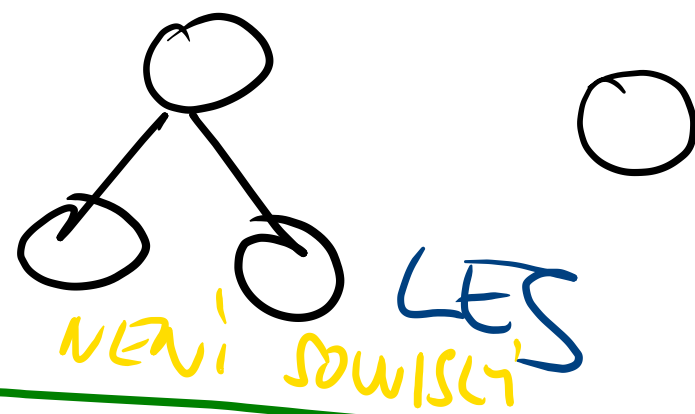
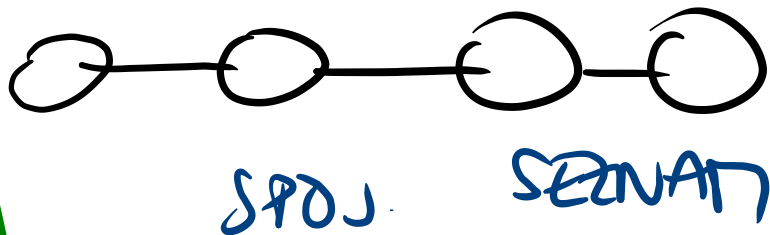


GRAF

$$G = (V, E)$$

$$|V| = n$$

$$|E| = m$$



→ JE SPOWISZY!
→ NEDOBRAWE
 $|V| - 1$ hran

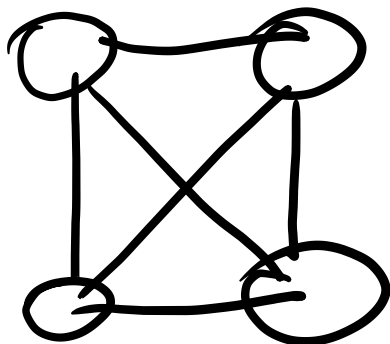
CYKLUS

СЛУЖИ

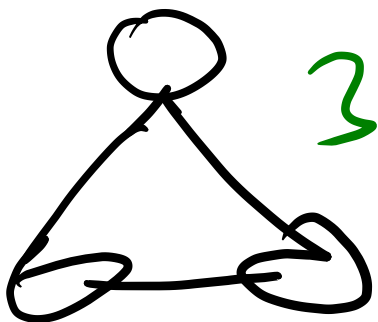
ГРАФ



$$\begin{pmatrix} |V| \\ 2 \end{pmatrix}$$

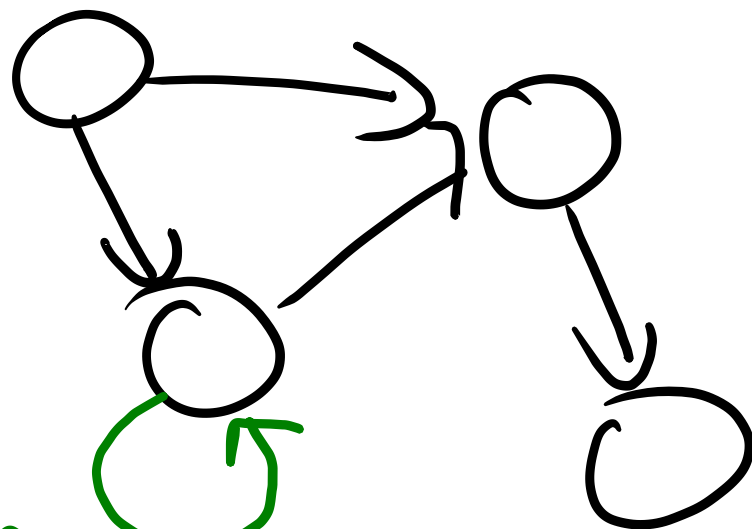


6



ОРИЕНТОВАННИ

ГРАФ



СИЧКА

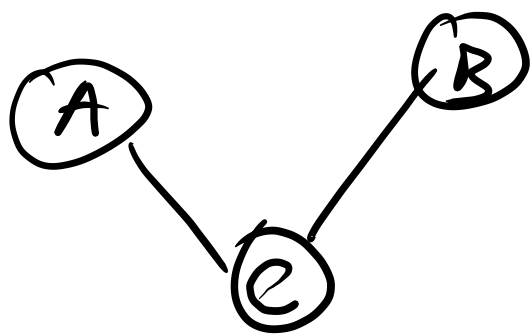
REPRESENTACE

MATICE SOUSEDNOSTI

	A	B	C
A	0	0	1
B	0	0	1
C	1	1	0

$$|V| \times |V|$$

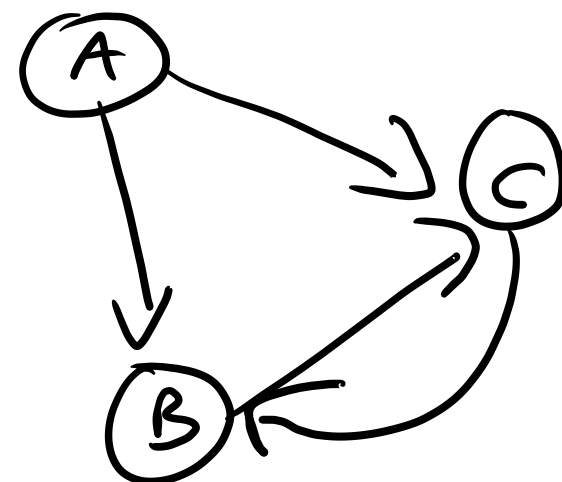
$$G = (V, \bar{E})$$



STUPEŇ

A: 1
B: 1
C: 2

VRCHOLY

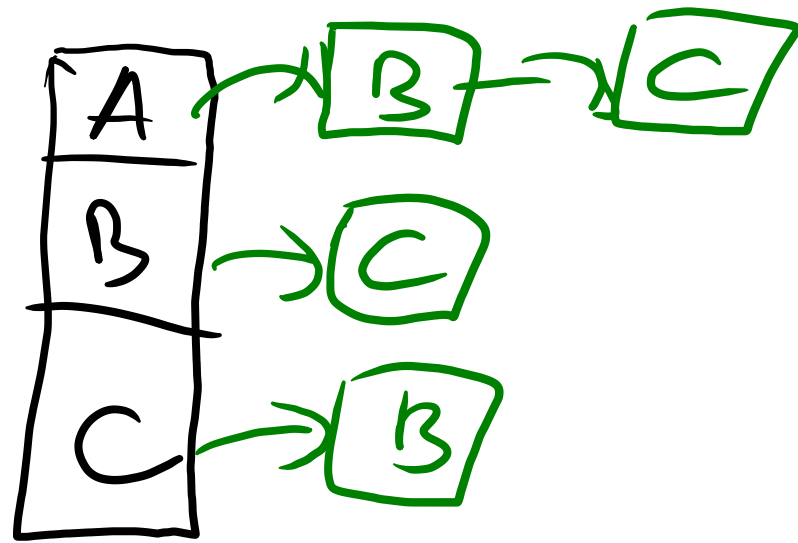
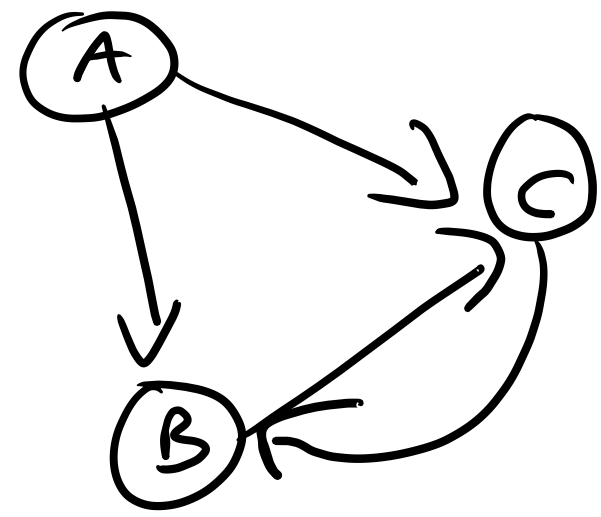


	A	B	C
A	0	1	1
B	0	0	1
C	0	1	0

UŠTUPNÍ S.V. → SLOUPKY
MŠTUPNÍ S.V. → ŘÁDKY

$$\bar{A}^T = A \Rightarrow A \text{ je symetrická}$$

SEMANA NABLEDNÍKŮ

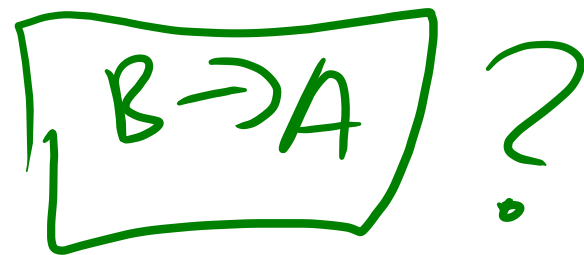


$$|E| > |V|$$

$$|V| - 1 \quad \dots \quad O(|V|^2)$$

PARĚT : $O(|V| + |E|)$

EXISTENCE HRAN : $O(|E|)$
 $O(|V|)$



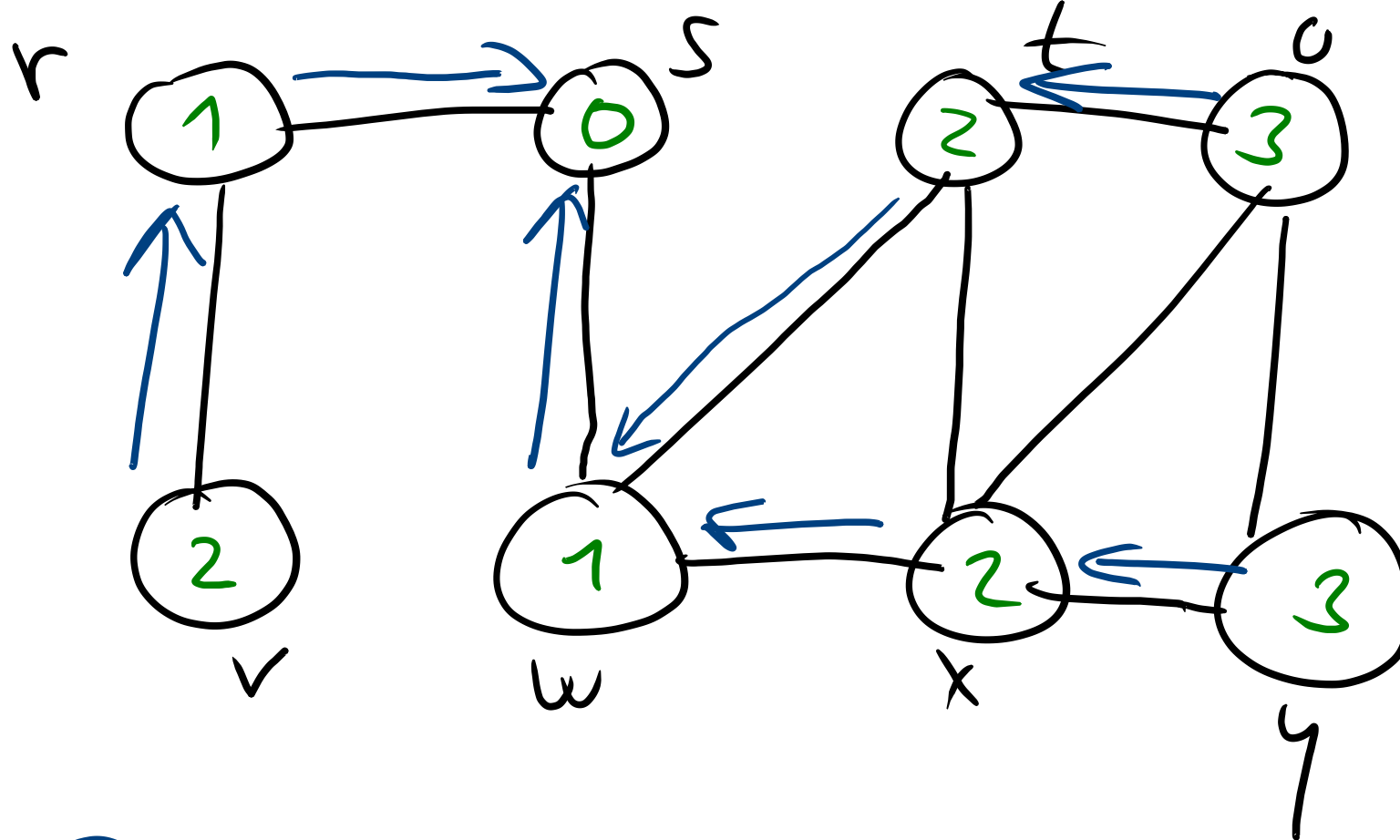
PRŮCHOD GRAFEM

BFS

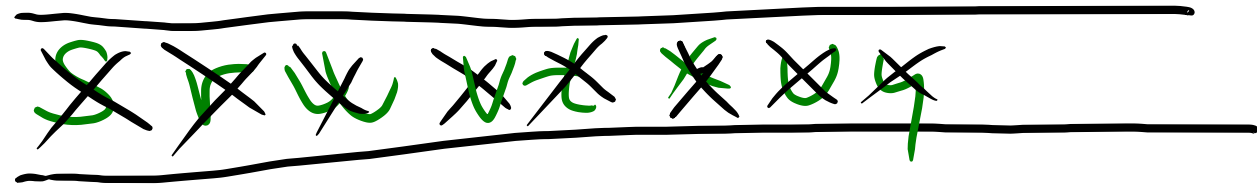
```

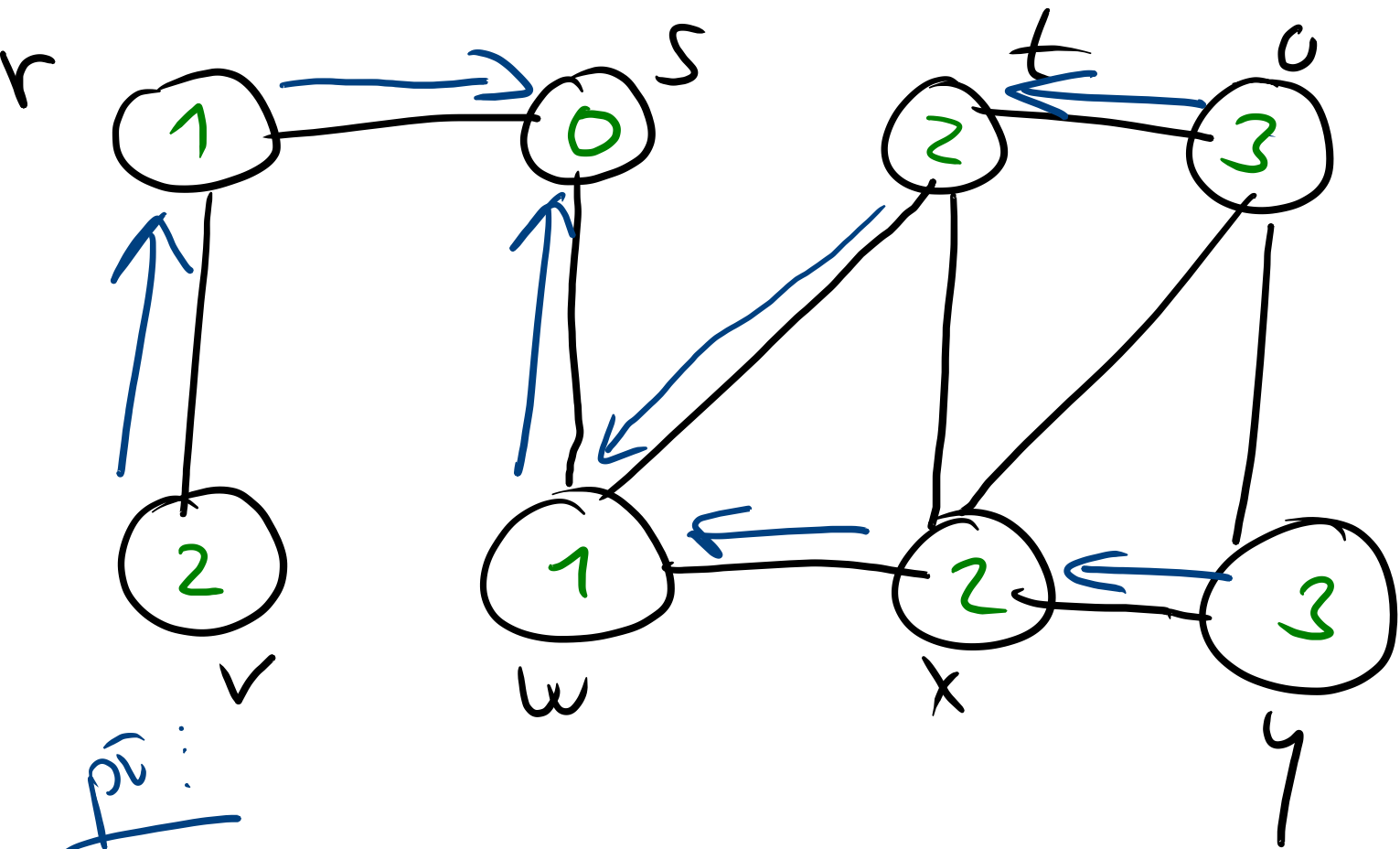
function BFS(G,u) is
  Necht Q je prázdna fronta
  Enqueue(Q,u)
  Označ u jako navštívený
  while Q není prázdna do
    v ← Dequeue(Q)
    for all (v,w) ∈ E do
      if w není navštívený then
        Označ w jako navštívený
        Enqueue(Q,w)
      fi
    done
  done
end
  
```

u.d = vzdálenost od ujdouho
 v.dokm
 u.p = předchůdce



Q:





pr:

$$w.p = s$$

$$v.p = r$$

$$y.p = x$$

$$\begin{aligned} \text{PRINT-PATH}(G, s, v) &= \\ &= s, w, t, v \end{aligned}$$

PRINT-PATH(G, s, t)

IF $s == t$:

PRINT(s)

ELSE:

PRINT-PATH($G, s, t.p$)

PRINT(t)

```
function BFS(G,u) is
  Necht Q je prazdna fronta
  Enqueue(Q,u)
```

```
  Oznac u jako navstiveny
  while Q není prazdna do
```

```
    M  $v \leftarrow$  Dequeue(Q)  $\rightarrow$  konstantni |V|
```

```
      for all  $(v,w) \in E$  do
```

```
        if  $w$  není navstiveny then
```

```
          Oznac  $w$  jako navstiveny
```

```
          Enqueue(Q,w)
```

```
        fi
```

```
      done
```

```
    done
```

```
  end
```

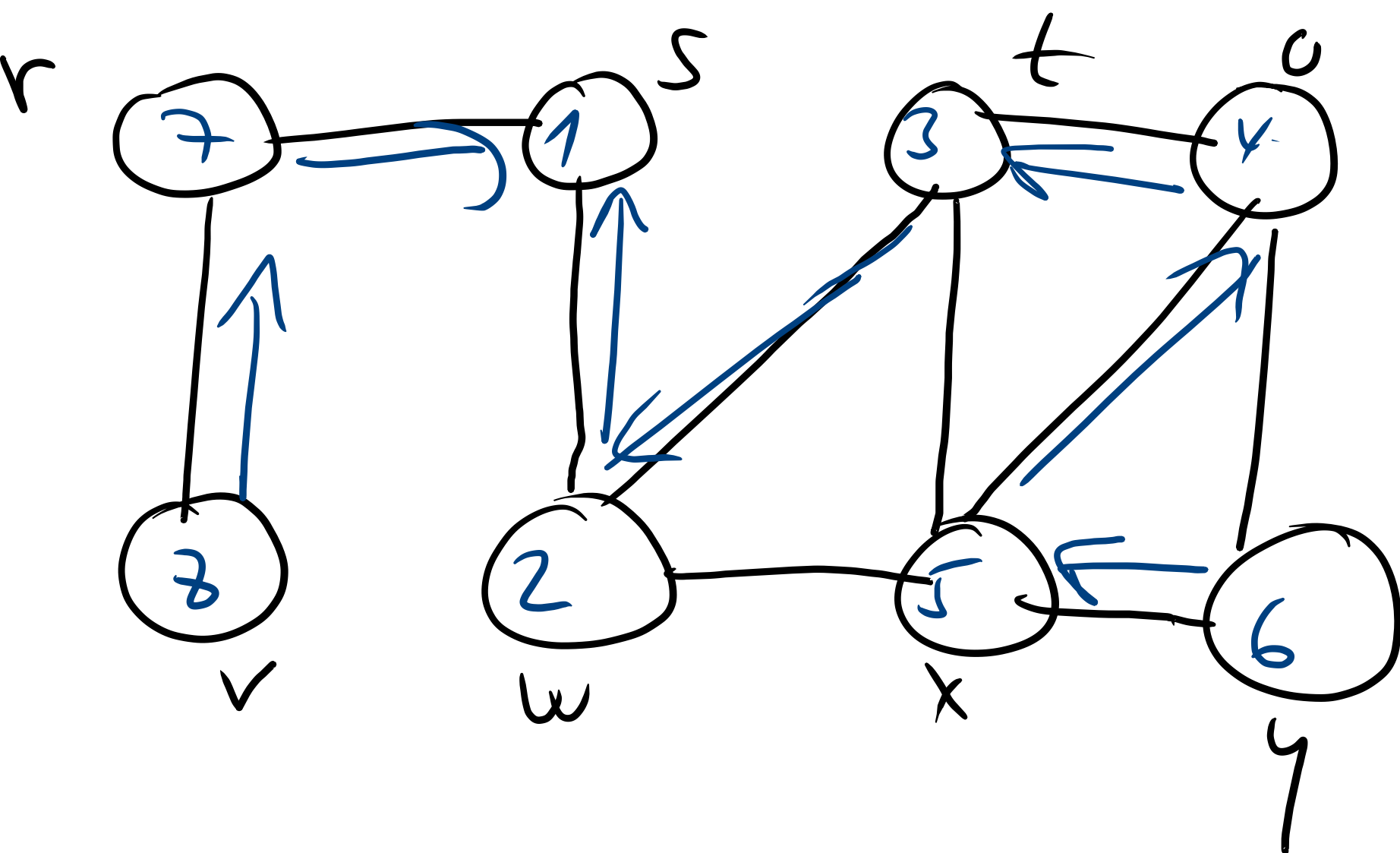
~~$O(|E|)$~~

$O(1)$
 \Rightarrow
konstantni |V|

KAZDY VRTOL SE DO STANE
DO FRONTY POUZE 1
iteraci while cyklu

konstantni
operace

$O(|V| + |E|)$



ZASOBNIK:

A:

B()

D()

B:

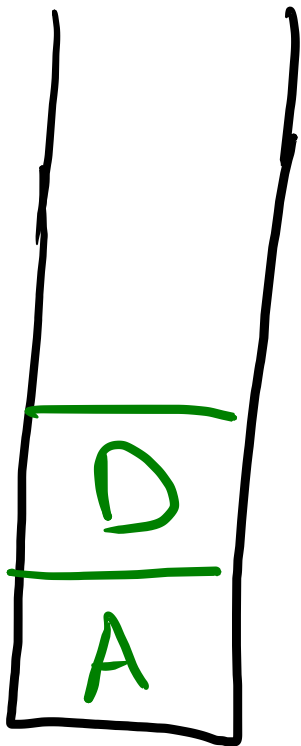
C()

C:

D()

D:

\emptyset

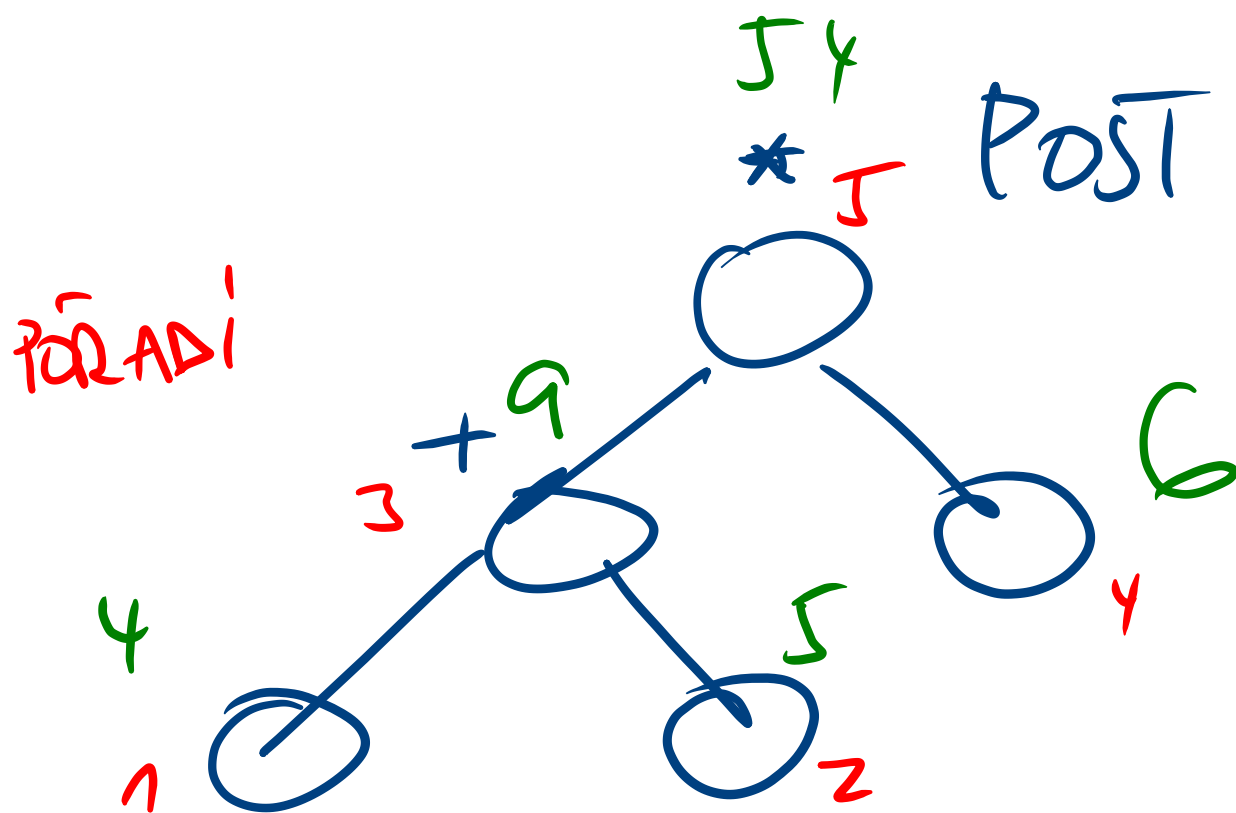


A()

DFS

IN-ORDER DFS → SEŘAŽENÁ POŘADNOST

NA BST



POST-ORDER DFS

$$(4+5)*6$$