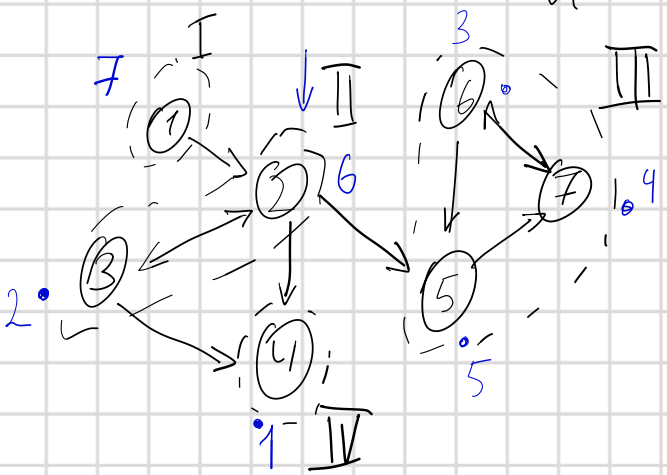
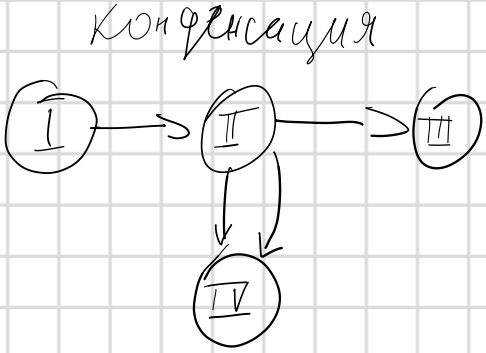
# Лекция 2 "Компоненты сильной связности"

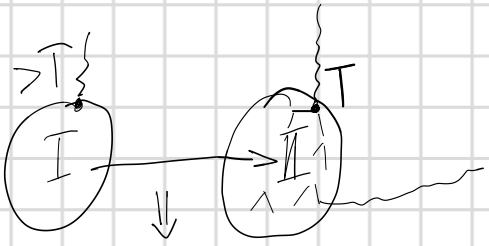
// ориент гр

$V \rightsquigarrow U$

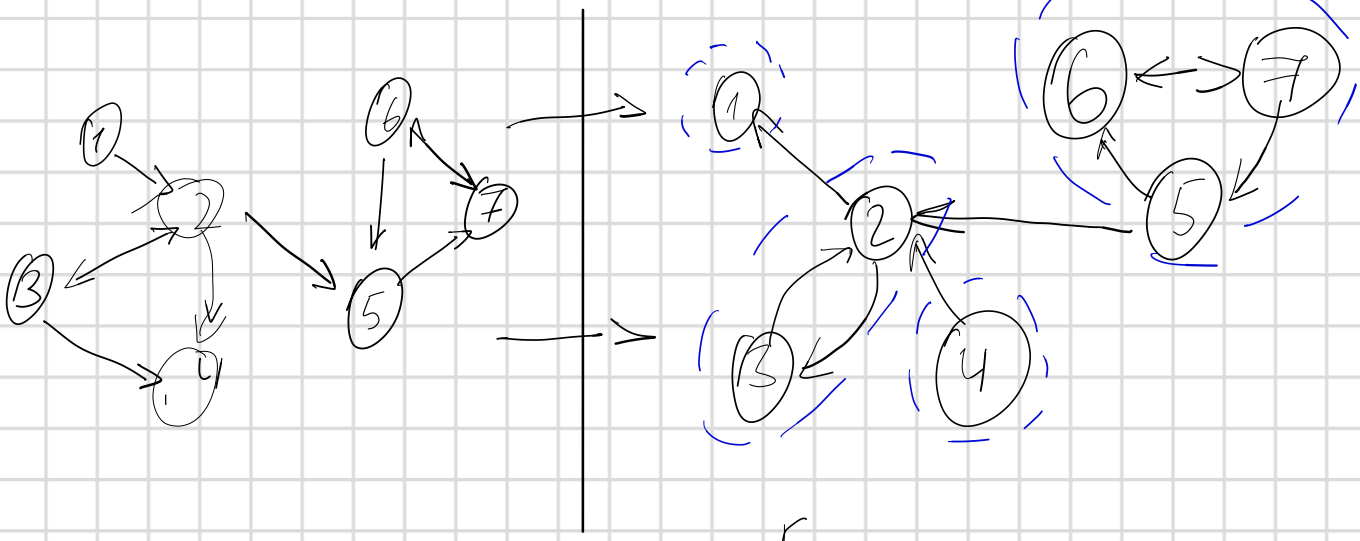
$U \rightsquigarrow V$




$\max t_{out_I} > \max t_{out_{II}}$




$U \rightsquigarrow V$

$V \rightsquigarrow U$

$V^r \rightsquigarrow U^r$

$U^r \rightsquigarrow V^r$

```
dfs (v)
    used[v] = 1
    for (auto to : g[v])
        if (! used[to])
            dfs (to)
    ord.p.b(v)
```

```
main()
    for (i = 0; i < n; i++)
        if (! used[i])
            dfs(i)
    reverse(ord)
    for (i : ord)
        if (! used[i])
            dfs2(i, c)
            c++
```

```
dfs2(v, c)
    cmp[v] = c
    for (to, gr[v])
        if (! used[to])
            dfs2(to, c)
    for (u, v : e)
        cmp[u] -> cmp[v]
```

## 2-SAT

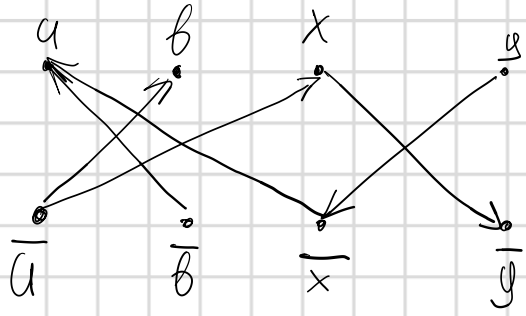
Sat is fiability

$O(n+m)$


$(a \wedge b) \wedge (\bar{x} \vee \bar{y}) \wedge (a \vee x) = 1$

$a \vee b = (\bar{a} \to b) \wedge (\bar{b} \to a)$

$(\bar{a} \to b) \wedge (\bar{b} \to a) \wedge (x \to \bar{y}) \wedge (y \to \bar{x}) (\bar{a} \to x) (\bar{x} \to a) = 1$




$x = 1 \quad \bar{x} = 0$

$x = 0 \quad \bar{x} = 1$

$x \rightsquigarrow \bar{x}$ $2\bar{x} \rightsquigarrow x$

1) $x \rightsquigarrow \bar{x}$ $x = 0$ Нет

2) $\bar{x} \rightsquigarrow x$ $x = 1$ решений

3) 0

```
if (cmp[Id[x]] < cmp[Id[x̄]])
    val[x] = 0
else:
    val[x] = 1
```

$1 = x \rightsquigarrow y = 0$ $\quad \bar{y} = 1$

$cmp[x] \leq cmp[y] < cmp[\bar{y}] \leq cmp[x] \leq cmp[\bar{x}]$

---

Attention!!!

Женя лох и пидор хихи