ER2024

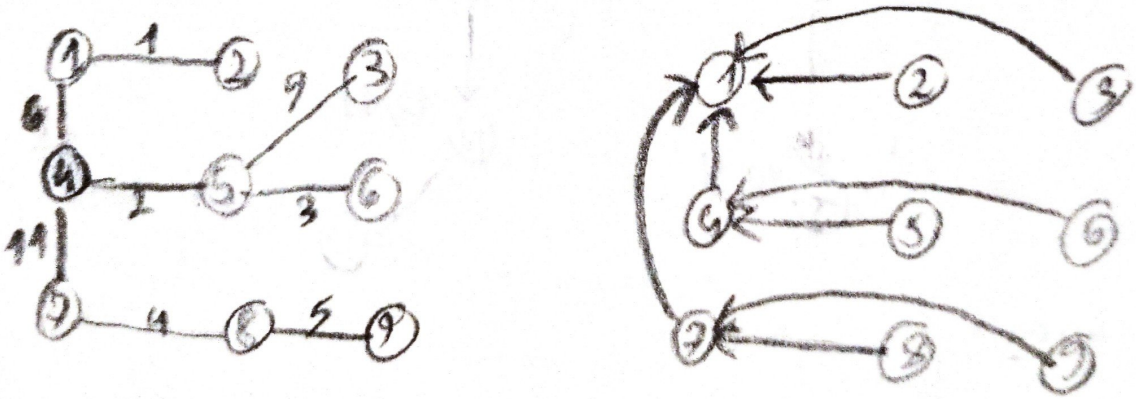
① $n>0$, $0<K\leq n$ $\}$ $P(n,K) = P(n-1,K-1)+P(n-1,K)$

```
function P(n, K)
    if (n == 1 or K == 1 or K == n)
        return 1
    for cur in 1, ..., n:
        return (P(n-1, K-1) + P(n-1, K))

function main(n):
    for i in 1, ..., n:
        for j in 1, ..., i:
            print(P(i, j))
        print("\n")
```

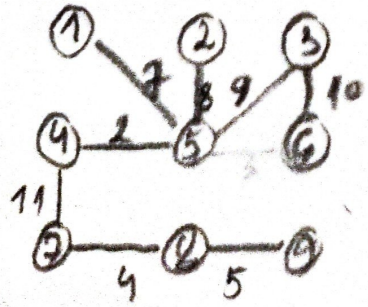
②

(a)



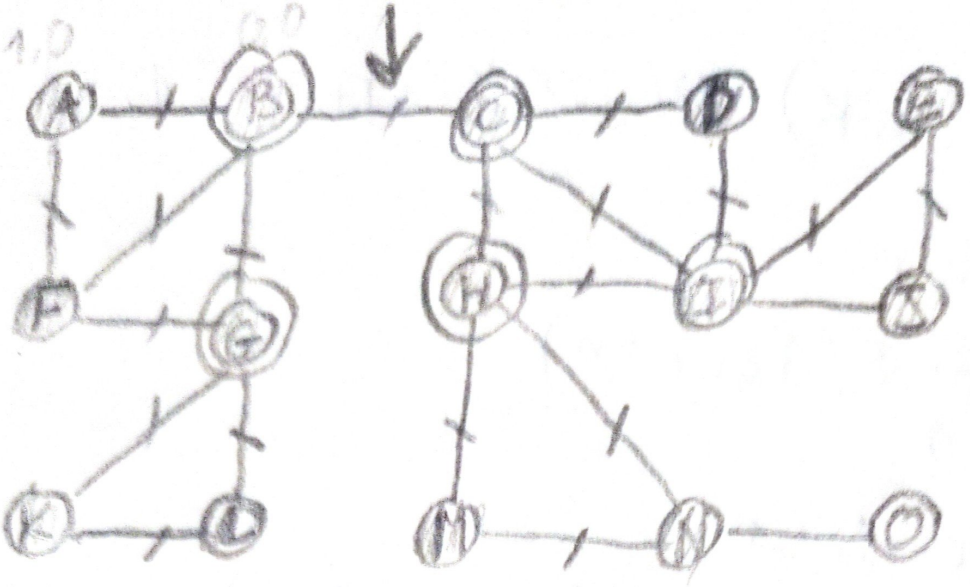
(b)

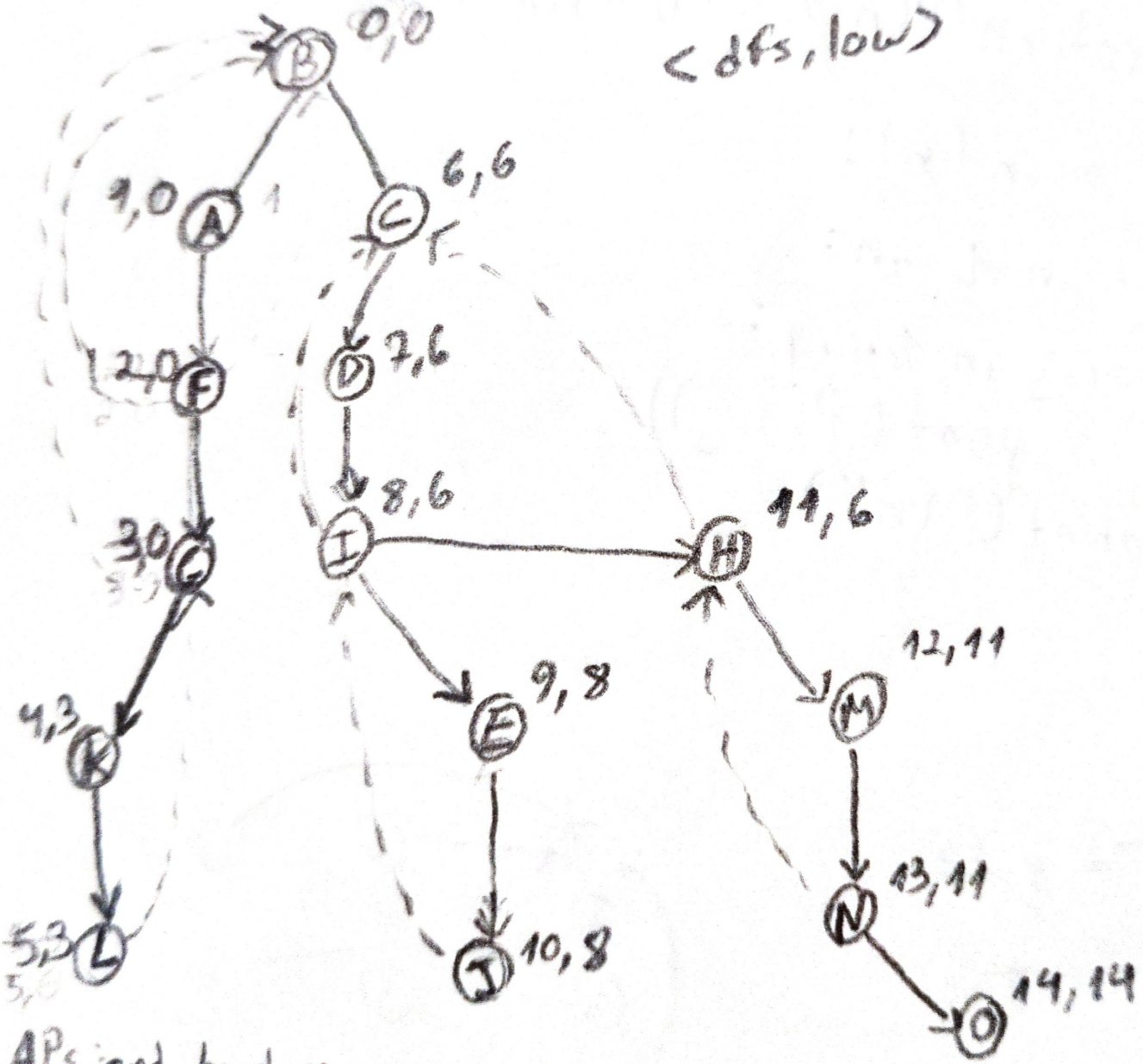
	1	2	3	4	5	6	7	8	9
d =	∞	∞	0	∞	∞	∞	∞	∞	∞
	16	17		11	9	10	22	26	31



5 6 4 1 2 7 8 9

③





APs and bridges

<N,O>

G, H, I, C, B, <B,C>

④

```
function D(n, m, d):
    for idx in 0, ..., n:
        dp[idx, 0] = ∞
    for idx in 0, ..., m:
        dp[0, idx] = ∞
    for i in 1, ..., n:
        dp[
        for j in 1, ..., m:
            dp[i, j] = 0; m1, m2, m3 = ∞
            if i-1 > 1
                m1 = dp[i-1, j]
            if j-1 > 1
                m2 = dp[i, j-1]
            if (j-1 > 1) and (i-1) > 1):
                m3 = dp[i-1, j-1]
            dp[i, j] = d[i] + min(m1, m2, m3)
    return dp[n, m]
```

call D(n, n, d)

Temporal: $O(n^2)$

Espacial: $O(n^2)$