

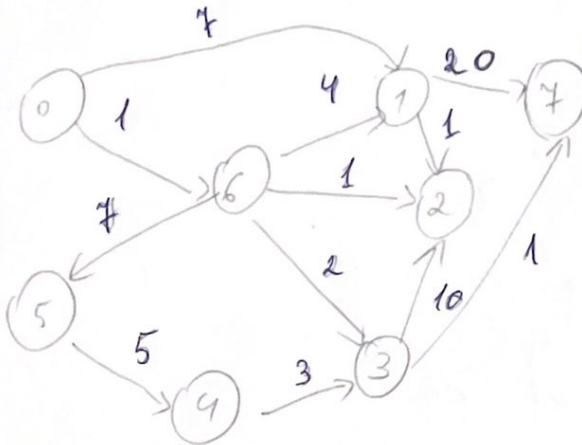
Practical work Nr. 4

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Problem 4

gr. 811

input 1.txt



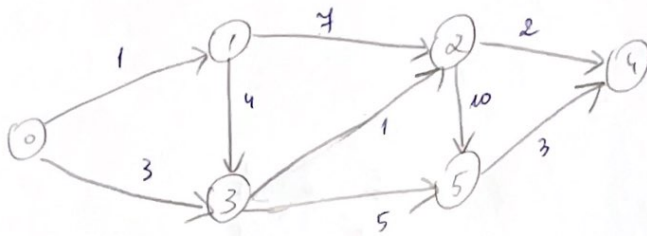
A DAG with
8 vertices and
12 edges

Topological sorting using predecessor counting algorithm.

	x, y	count : dictian.	queue : list	sorted : list
initialization		<pre> 0 1 2 3 4 5 6 7 0 2 3 2 1 1 1 2 </pre>	<pre> <--- 0 <--- </pre>	[]
iteration 1	x=0 y=6 y=1	<pre> 0 1 2 3 4 5 6 7 0 1 3 2 1 1 0 2 </pre>	<pre> <--- 1 <--- <--- 6 <--- </pre>	[0]
iteration 2	x=6 y=1 y=2 y=3 y=5	<pre> 0 1 2 3 4 5 6 7 0 0 2 1 1 0 0 2 </pre>	<pre> <--- 1 <--- <--- 1 5 <--- </pre>	[0, 6]
iteration 3	x=1 y=7 y=2	<pre> 0 1 2 3 4 5 6 7 0 0 1 1 1 1 0 1 </pre>	<pre> <--- 5 <--- </pre>	[0, 6, 1]
iteration 4	x=5 y=4	<pre> 0 1 2 3 4 5 6 7 0 0 1 1 1 0 0 1 </pre>	<pre> <--- 1 <--- <--- 4 <--- </pre>	[0, 6, 1, 5]
iteration 5	x=4 y=3	<pre> 0 1 2 3 4 5 6 7 0 0 1 0 0 0 0 1 </pre>	<pre> <--- 1 <--- <--- 3 <--- </pre>	[0, 6, 1, 5, 4]
iteration 6	x=3 y=2 y=7	<pre> 0 1 2 3 4 5 6 7 0 0 0 0 0 0 0 0 </pre>	<pre> <--- 1 <--- <--- 2 7 <--- </pre>	[0, 6, 1, 5, 4, 3]
iteration 7	x=2	— 1 —	<pre> <--- 7 <--- </pre>	[0, 6, 1, 5, 4, 3, 2]
iteration 8	x=7	— " —	<pre> <--- <--- </pre>	[0, 6, 1, 5, 4, 3, 2, 7] size of sort = 8 => DAG

size of sorted = 8 \Rightarrow Graph is a DAG

input 2.txt



A DAG with
6 vertices and 8 edges

Topological sortings: 0, 1, 3, 2, 5, 4
or 0, 3, 1, 2, 5, 4

Results:

① $x = 0$ $y = 4$

path: [0, 1, 2, 5, 4]

cost: 21

② $x = 3$ $y = 5$

path: [3, 2, 5]

cost: 11