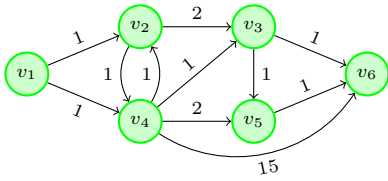
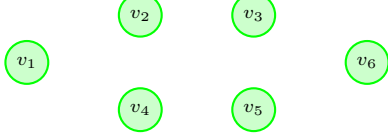


Alg. Dijkstry:

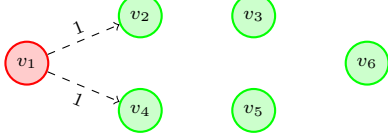
Graf:



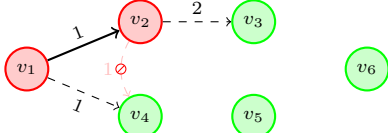
Krok 0,  $S = \emptyset$ ,  
 $D_{v_1 v_1} = 0, D_{v_1 v_2} = D_{v_1 v_3} = D_{v_1 v_4} = D_{v_1 v_5} = D_{v_1 v_6} = \infty$ :



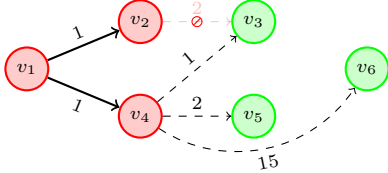
Krok 1,  $S = \{v_1\}$ ,  
 $D_{v_1 v_1} = 0; D_{v_1 v_2} = 1, D_{v_1 v_4} = 1, D_{v_1 v_3} = D_{v_1 v_5} = D_{v_1 v_6} = \infty$ :



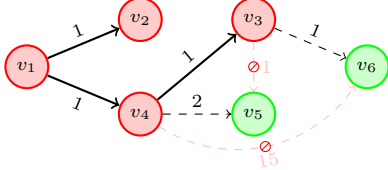
Krok 2,  $S = \{v_1, v_2\}$ ,  
 $D_{v_1 v_1} = 0, D_{v_1 v_2} = 1; D_{v_1 v_4} = 1, D_{v_1 v_3} = 3, D_{v_1 v_5} = D_{v_1 v_6} = \infty$ :



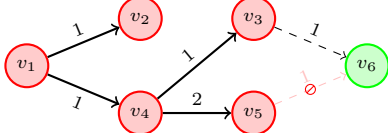
Krok 3,  $S = \{v_1, v_2, v_4\}$ ,  
 $D_{v_1 v_1} = 0, D_{v_1 v_2} = D_{v_1 v_4} = 1; D_{v_1 v_3} = 2, D_{v_1 v_5} = 3, D_{v_1 v_6} = 16$ :



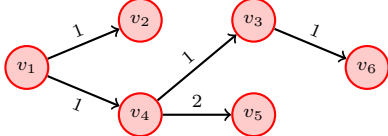
Krok 4,  $S = \{v_1, v_2, v_3, v_4\}$ ,  
 $D_{v_1 v_1} = 0, D_{v_1 v_2} = 1 = D_{v_1 v_4} = 1, D_{v_1 v_3} = 2$ ;  
 $D_{v_1 v_5} = 3, D_{v_1 v_6} = 4$ :



Krok 5,  $S = \{v_1, v_2, v_3, v_4, v_5\}$ ,  
 $D_{v_1 v_1} = 0, D_{v_1 v_2} = 1 = D_{v_1 v_4} = 1, D_{v_1 v_3} = 2, D_{v_1 v_5} = 3$ ;  
 $D_{v_1 v_6} = 3$ :

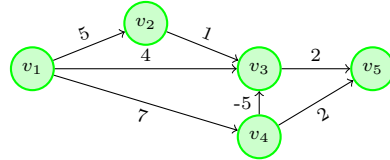


Krok 6,  $6 = N, S = \{v_1, v_2, v_3, v_4, v_5, v_6\}$ ,  
 $D_{v_1 v_1} = 0, D_{v_1 v_2} = 1 = D_{v_1 v_4} = 1, D_{v_1 v_3} = 2, D_{v_1 v_5} = D_{v_1 v_6} = 3$ :

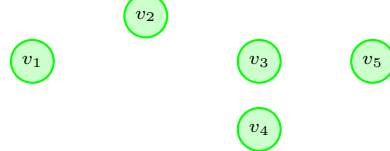


Zmodyfikowany alg. Dijkstry:

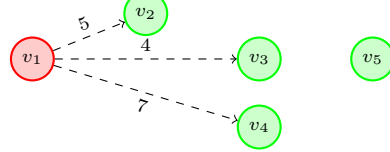
Graf:



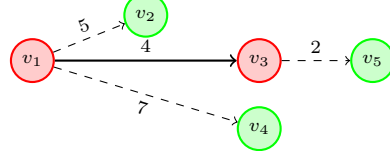
Krok 0,  $S = \emptyset$ ,  
 $D_{v_1 v_1} = 0, D_{v_1 v_2} = D_{v_1 v_3} = D_{v_1 v_4} = D_{v_1 v_5} = \infty$ :



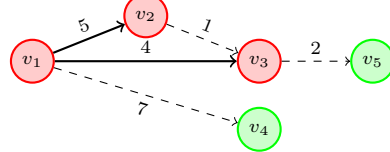
Krok 1,  $S = \{v_1\}$ ,  
 $D_{v_1 v_1} = 0; D_{v_1 v_3} = 4, D_{v_1 v_2} = 5, D_{v_1 v_4} = 7, D_{v_1 v_5} = \infty$ :



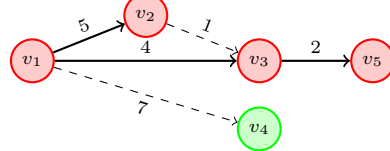
Krok 2,  $S = \{v_1, v_3\}$ ,  
 $D_{v_1 v_1} = 0, D_{v_1 v_3} = 4; D_{v_1 v_2} = 5, D_{v_1 v_4} = 7, D_{v_1 v_5} = 6$ :



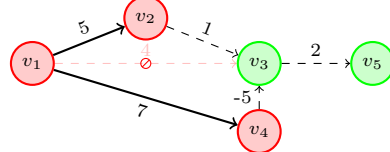
Krok 4,  $S = \{v_1, v_2, v_3\}$ ,  
 $D_{v_1 v_1} = 0, D_{v_1 v_2} = 5, D_{v_1 v_3} = 4; D_{v_1 v_5} = 6, D_{v_1 v_4} = 7$ :



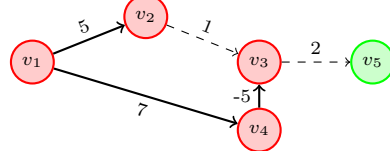
Krok 5,  $S = \{v_1, v_2, v_3, v_5\}$ ,  
 $D_{v_1 v_1} = 0, D_{v_1 v_2} = 5, D_{v_1 v_3} = 4, D_{v_1 v_5} = 6; D_{v_1 v_4} = 7$ :



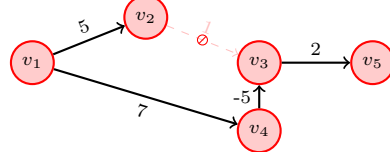
Krok 6,  $S = \{v_1, v_2, v_3, v_4\}$ ,  
 $D_{v_1 v_1} = 0, D_{v_1 v_2} = 5, D_{v_1 v_4} = 7; D_{v_1 v_3} = 2, D_{v_1 v_5} = 6$ :



Krok 7,  $S = \{v_1, v_2, v_3, v_4\}$ ,  
 $D_{v_1 v_1} = 0, D_{v_1 v_2} = 5, D_{v_1 v_3} = 2, D_{v_1 v_4} = 7; D_{v_1 v_5} = 4$ :

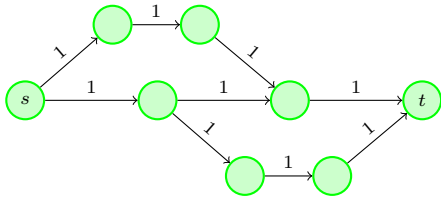


Krok 8,  $8 \geq N, S = \{v_1, v_2, v_3, v_4\}$ ,  
 $D_{v_1 v_1} = 0, D_{v_1 v_2} = 5, D_{v_1 v_3} = 2, D_{v_1 v_4} = 7, D_{v_1 v_5} = 4$ :

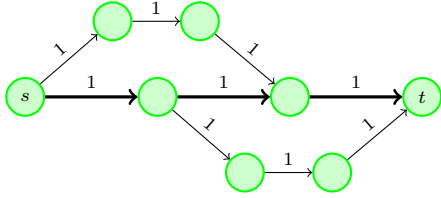


Alg. Bhandari'ego:

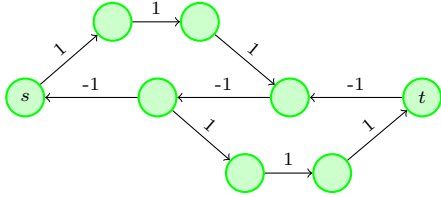
Graf:



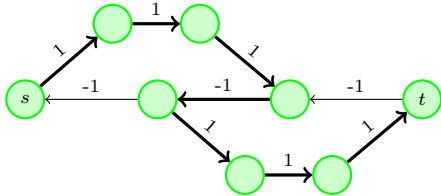
Krok 1, znalezienie najkrótszej ścieżki między punktami:



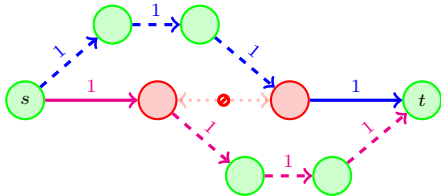
Krok 2, odwrócenie zwrotu oraz wartości wag na najkrótszej ścieżce:



Krok 3, znalezienie najkrótszej ścieżki między punktami, ale w zmodyfikowanym grafie:



Krok 4, usunięcie nakładającego się segmentu, naprzemienne pokolorowanie segmentów ścieżek:



Krok 5, złożenie pary najkrótszych ścieżek z jednokolorowych fragmentów:

