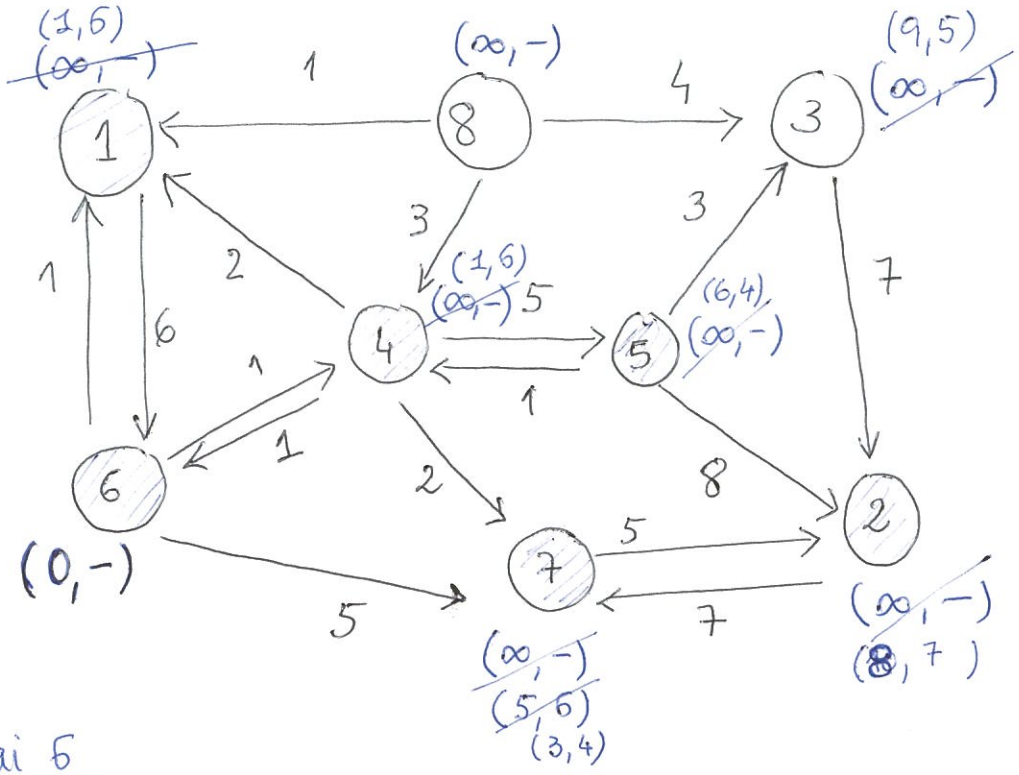
2)

s = 6

Algoritmo de Dijkstra



Sai 6

atualiza 1, 4 e 7

Sai 1 (empate com 4, mas tem identificador menor)

não atualiza nenhum

Sai 4

atualiza 5 e 7

Sai 7

atualiza 2

Sai 5 atualiza 3 (porque 2 não muda)

Sai 2 não atualiza nenhum

Sai 3 não atualiza nenhum

finalmente sai 8

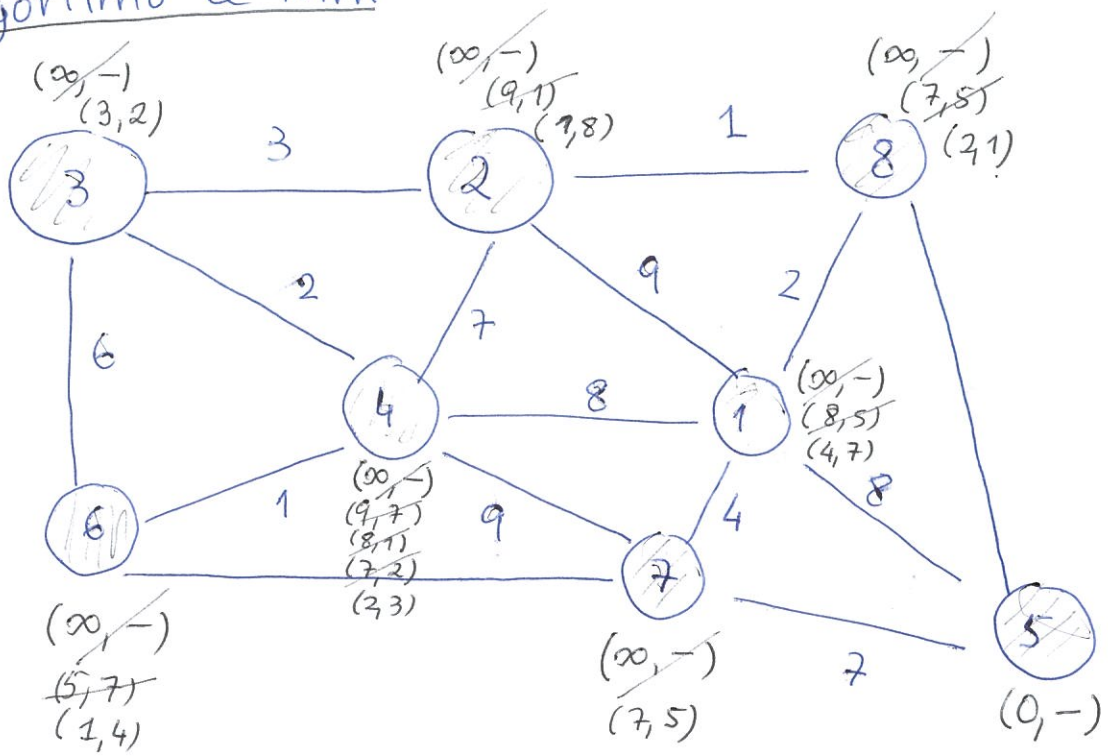
FINAL: (dist) = [1, 8, 9, 1, 6, 0, 3, ∞]

Os pares colocados nos nós indicam os valores de (dist, pai). Os que estão cortados são os intermédios que foram substituídos.

O vetor p que é pedido corresponde ao vetor pai.

(p) = [6, 7, 5, 6, 4, -1, 4, -1]
1 ou zero

(3) Algoritmo de Prim



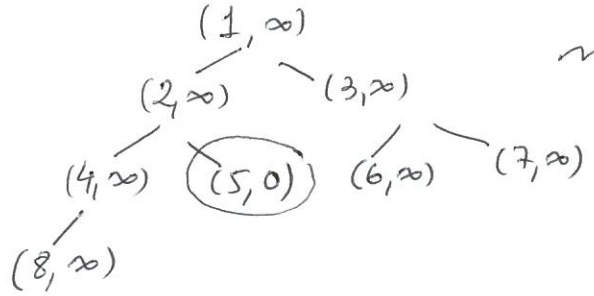
ORDEM DE SAÍDA DA FILA:

Nós:	5	7	1	8	2	3	4	6	
dist:	0	7	4	2	1	3	2	1	distâncias finais
pai:	–	5	7	1	8	2	3	4	pais finais

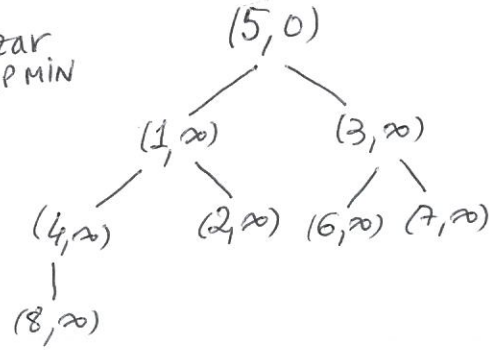
2.5 val

---

construção da HeapMin Inicial

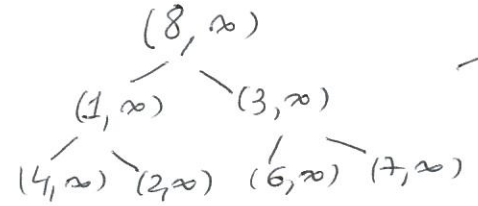


após finalizar MAKE HEAP MIN

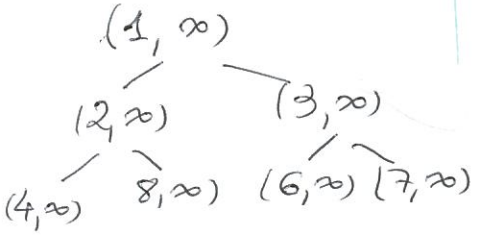


1.5 val

EXTRACT MIN retira $v = 5$

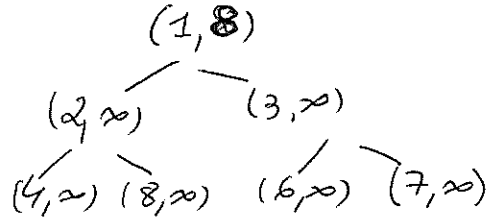


após finalizar EXTRACT MIN (heapify(1))

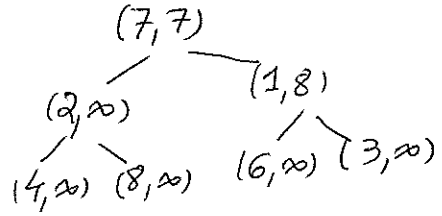


ATUALIZAR dist e pai para adjacentes do nó 5

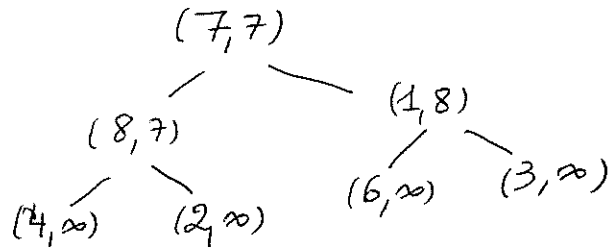
dist [1] = 8
após decreasekey



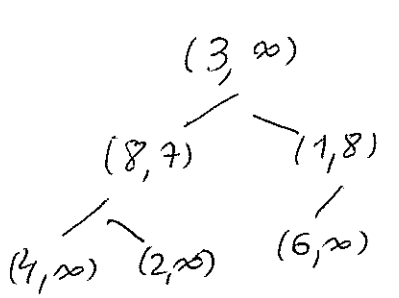
dist [7] = 7
após decreasekey



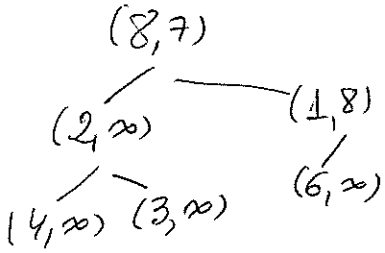
dist [8] = 7
após decreasekey



EXTRACT MIN retira nó 7 = v

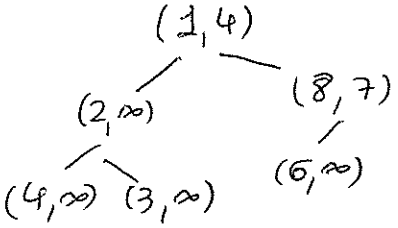


HEAPIFY(1)
em extract MIN obtém

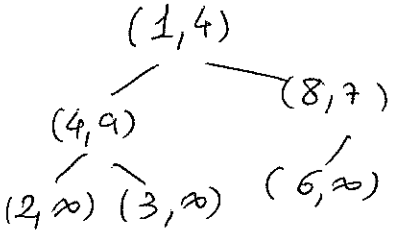


Atualização de dist dos adjacentes do nó 7

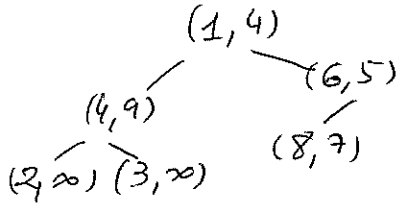
dist [1] = 4
após decreasekey



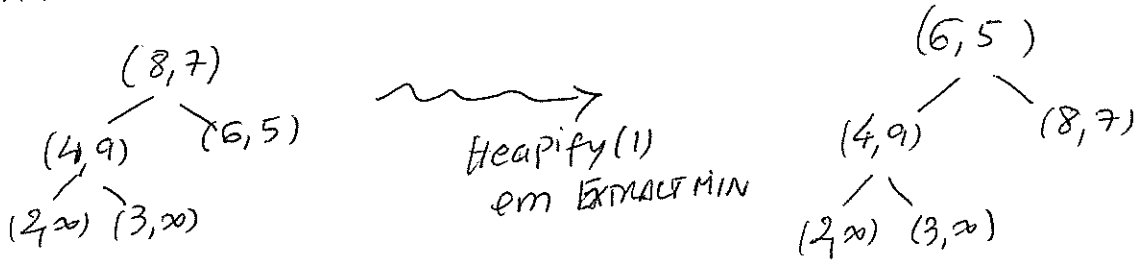
dist [4] = 9
após decreasekey



dist [6] = 5
após decreasekey obtém

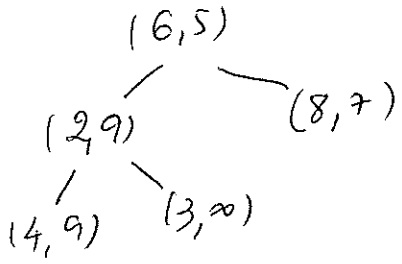


- EXTRACT MIN RETIRA (1) = v

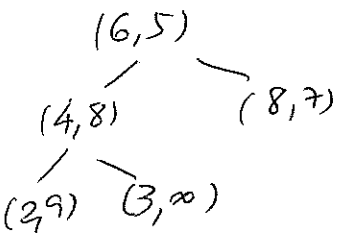


- ATUALIZA DIST para adjacentes do nó 1

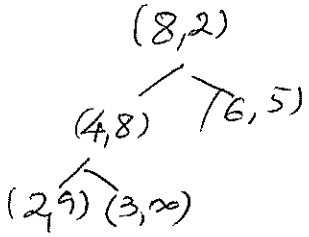
dist [2] = 9
após decrease key



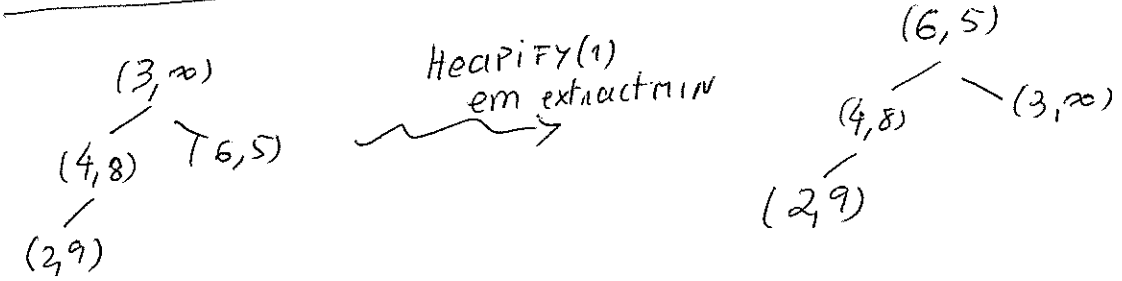
dist [4] = 8
após decreasekey



dist [8] = 2
após decreasekey

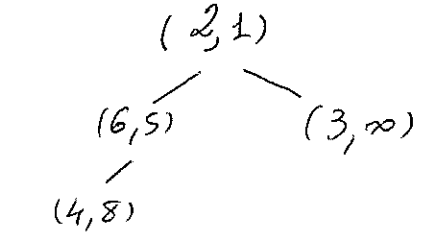


- EXTRACT MIN retira v = 8

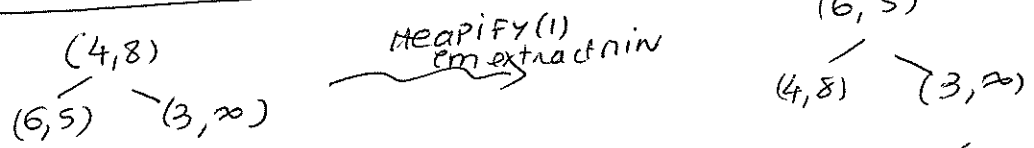


- atualiza adjacentes de nó 8

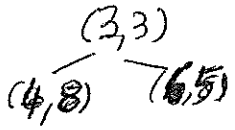
dist [2] = 1
após decreasekey



- EXTRACT MIN RETIRA v = 2



- Atualiza dist [3] = 3 e após decreasekey obtém:



- EXTRACT MIN retira (v=3)

(6,5)
/
(4,8)

já satisfaz heap property

- decreasekey dist[4] = 2

(4,2)
/
(6,5)

- retira nó 4 em extract min

(6,5)

- atualiza dist[6] = 1 e após decrease key fica:

(6,1)

- extract min retira (v=6)
e não há atualizações
fila fica vazia.