Project GPU : Path merge

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1 Introduction

Introduction

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Keywords

CUDA · Stream · Merging

- We have to finish the code
- Then work on the report
- Finally work on the beamer

Path merged : thread 0

		$B[0]$	$B[1]$	$B[2]$	$B[3]$	$B[4]$	$B[5]$	$B[6]$
		4	7	8	10	12	13	14
$A[0]$	1	1	1	1	1	1	1	1
$A[1]$	2	1	1	1	1	1	1	1
$A[2]$	5	0	1	1	1	1	1	1
$A[3]$	6	0	1	1	1	1	1	1
$A[4]$	6	0	1	1	1	1	1	1
$A[5]$	9	0	0	0	1	1	1	1
$A[6]$	11	0	0	0	0	1	1	1
$A[7]$	15	0	0	0	0	0	0	0
$A[8]$	16	0	0	0	0	0	0	0

x

y

1. Calcul de P et K :

Path merged : thread 0

		$B[0]$	$B[1]$	$B[2]$	$B[3]$	$B[4]$	$B[5]$	$B[6]$
		4	7	8	10	12	13	14
$A[0]$	1	1	1	1	1	1	1	1
$A[1]$	2	1	1	1	1	1	1	1
$A[2]$	5	0	1	1	1	1	1	1
$A[3]$	6	0	1	1	1	1	1	1
$A[4]$	6	0	1	1	1	1	1	1
$A[5]$	9	0	0	0	1	1	1	1
$A[6]$	11	0	0	0	0	1	1	1
$A[7]$	15	0	0	0	0	0	0	0
$A[8]$	16	0	0	0	0	0	0	0

x

y

1. Calcul de P et K :
   $\longrightarrow$ P=(0,0)

Path merged : thread 0

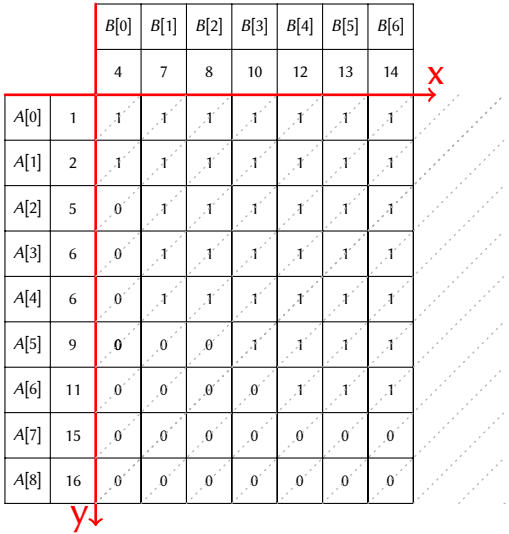
		B[0]	B[1]	B[2]	B[3]	B[4]	B[5]	B[6]
		4	7	8	10	12	13	14
A[0]	1	1	1	1	1	1	1	1
A[1]	2	1	1	1	1	1	1	1
A[2]	5	0	1	1	1	1	1	1
A[3]	6	0	1	1	1	1	1	1
A[4]	6	0	1	1	1	1	1	1
A[5]	9	0	0	0	1	1	1	1
A[6]	11	0	0	0	0	1	1	1
A[7]	15	0	0	0	0	0	0	0
A[8]	16	0	0	0	0	0	0	0

x

y

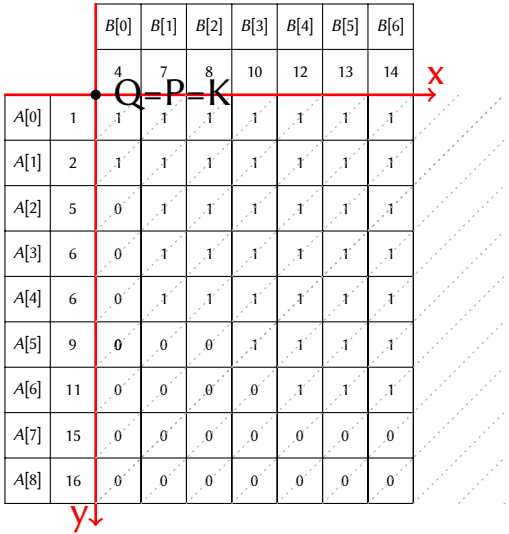
1. Calcul de P et K :
   - ⟶ P=(0,0)
   - ⟶ K=(0,0)

Path merged : thread 0



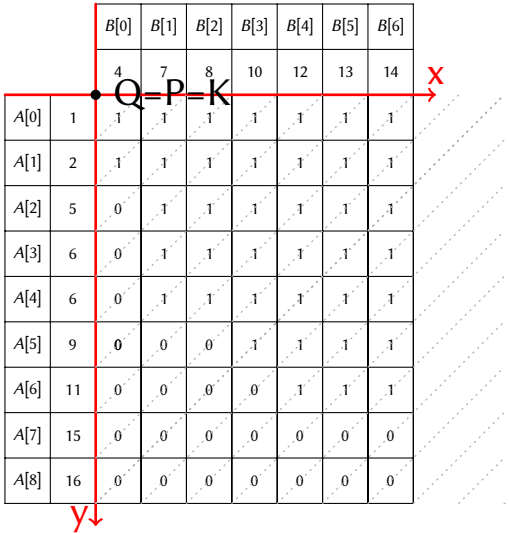
1. Calcul de P et K :
   - ⟶ P=(0,0)
   - ⟶ K=(0,0)
2. offset = 0

Path merged : thread 0



1. Calcul de P et K :
   - ⟶ P=(0,0)
   - ⟶ K=(0,0)
2. offset = 0
3. Q = (0,0)

Path merged : thread 0



1. Calcul de P et K :
   - $\longrightarrow$ P=(0,0)
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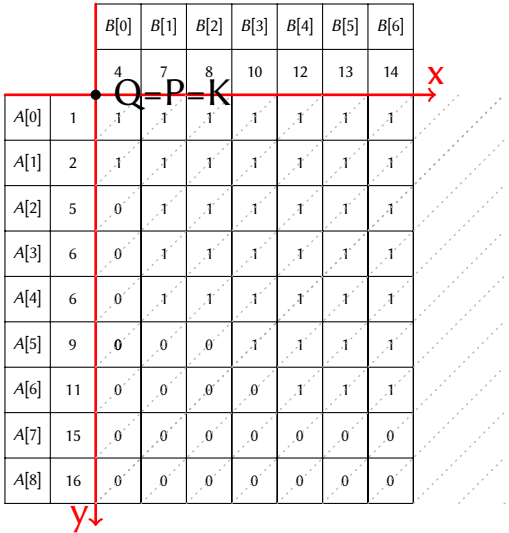
3. Q = (0,0)
4. $A[Q_y] < B[Q_x]$

Path merged : thread 0



1. Calcul de P et K :
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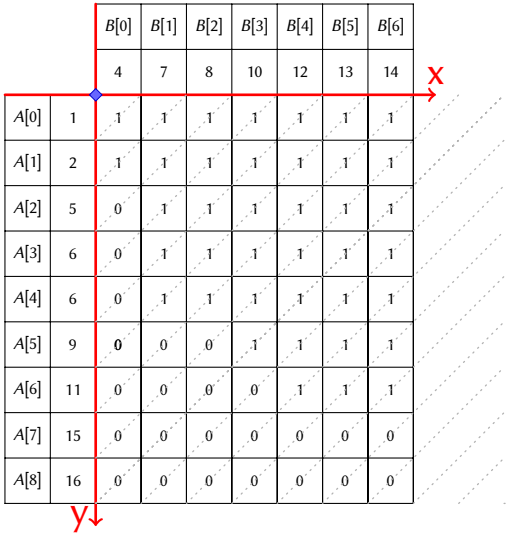
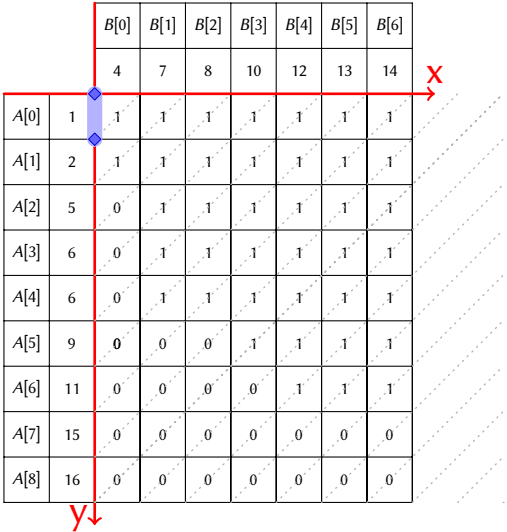
3. Q = (0,0)
4. $A[Q_y] < B[Q_x]$
5. $M[i] = A[Q_y]$

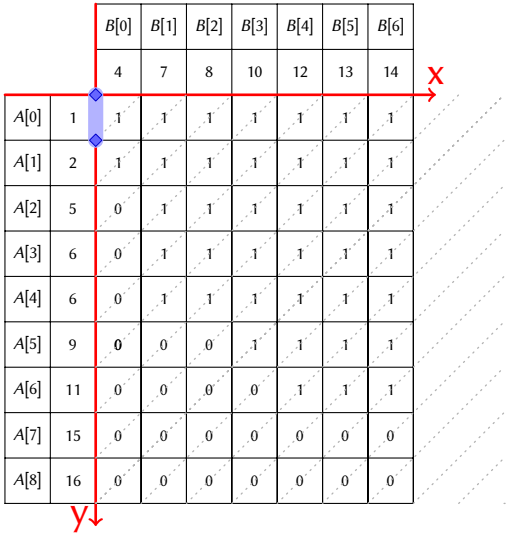
Path merged : thread 0,path



Path merged : thread 0,path

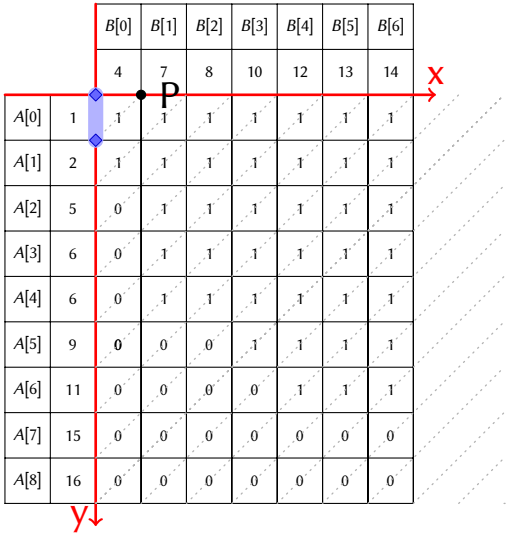


Path merged : thread 1



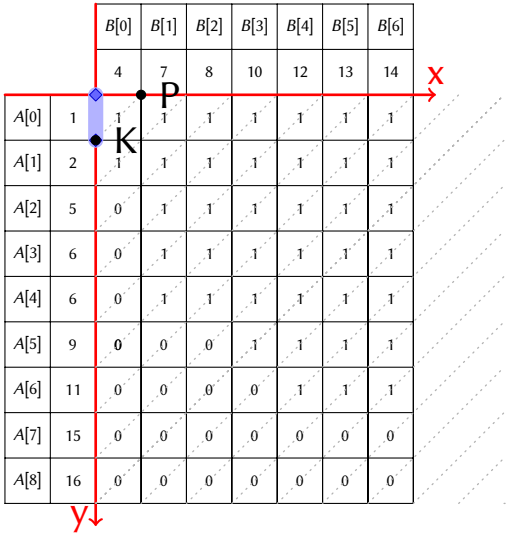
1. Calcul de P et K :

Path merged : thread 1



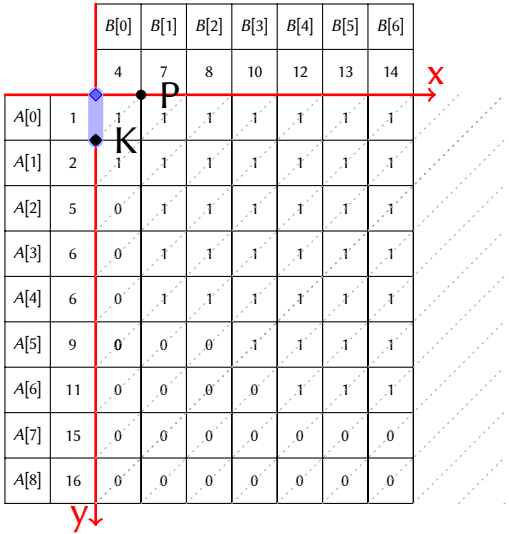
1. Calcul de P et K :
   $\longrightarrow$ P=(1,0)

Path merged : thread 1



1. Calcul de P et K :
   - ⟶ P=(1,0)
   - ⟶ K=(0,1)

Path merged : thread 1



1. Calcul de P et K :
   - ⟶ P=(1,0)
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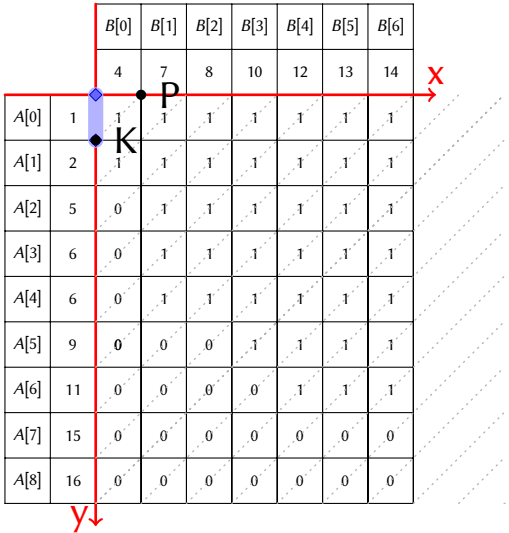

1. Calcul de P et K :
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   - ⟶ K=(0,1)
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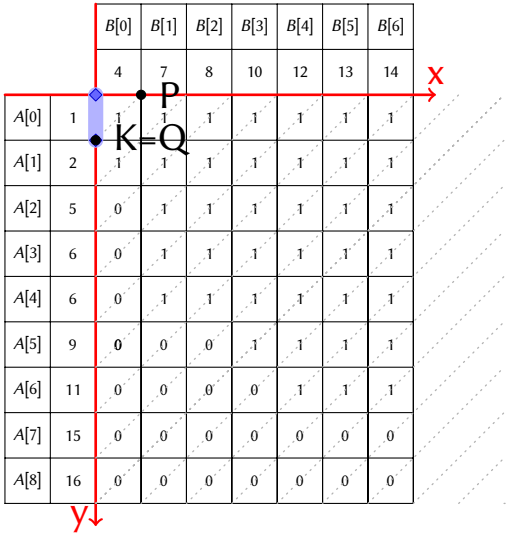
3. Q = (0,1)

Path merged : thread 1



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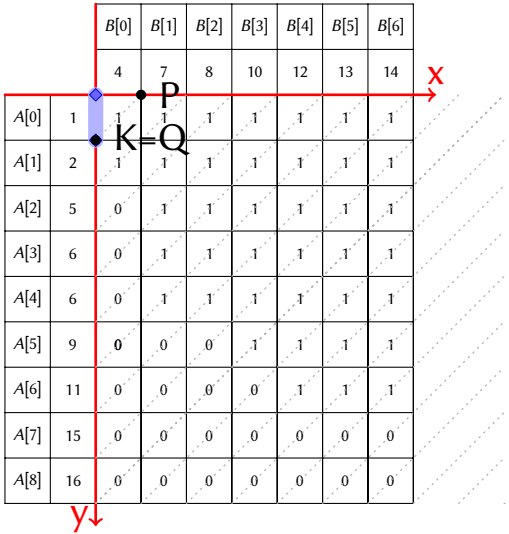

1. Calcul de P et K :
   - $\longrightarrow$ P=(1,0)
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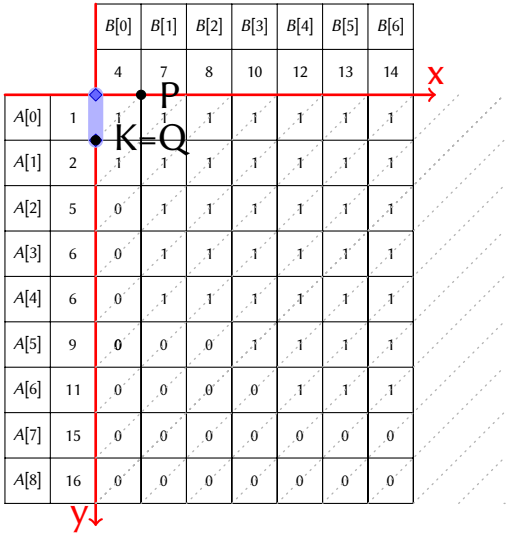
2. offset = 0
3. Q = (0,1)
4. $A[Q_y]<B[Q_x]$

Path merged : thread 1



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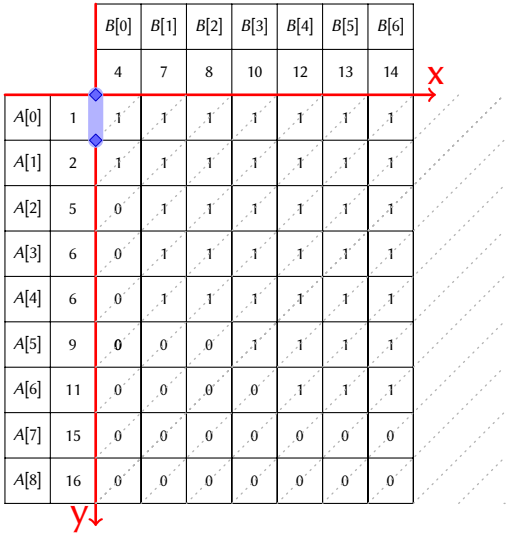
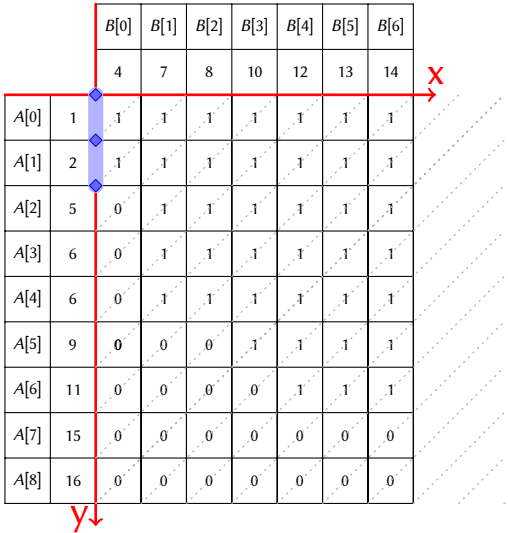
5. $M[i] = A[Q_y]$

Path merged : thread 1, path



Path merged : thread 1, path



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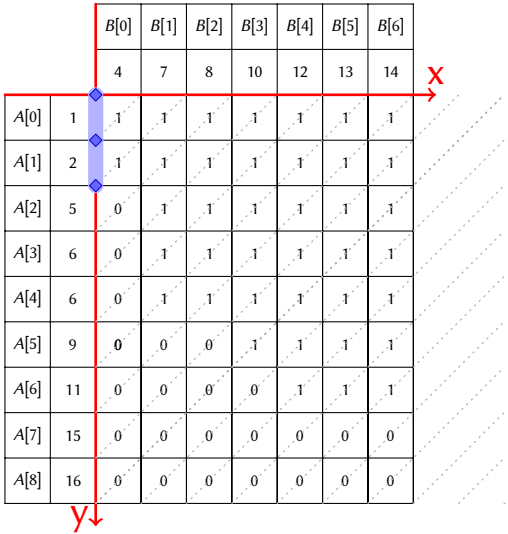
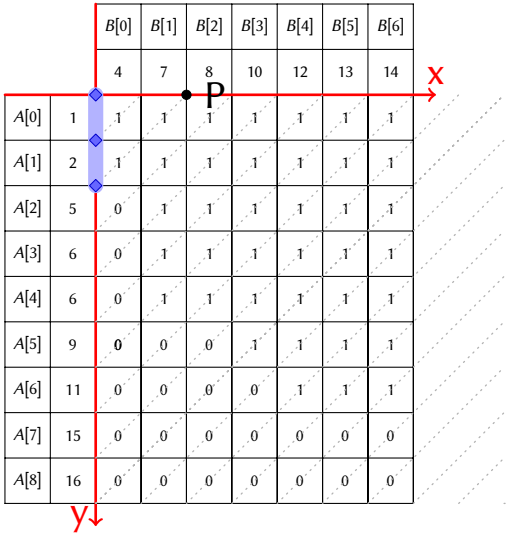


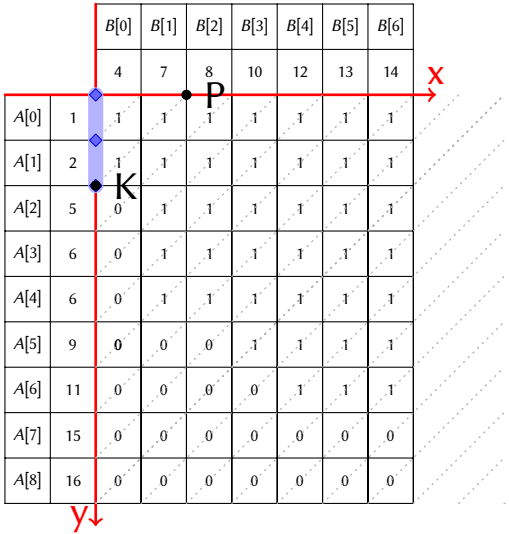
1. Calcul de P et K :

Path merged : thread 2



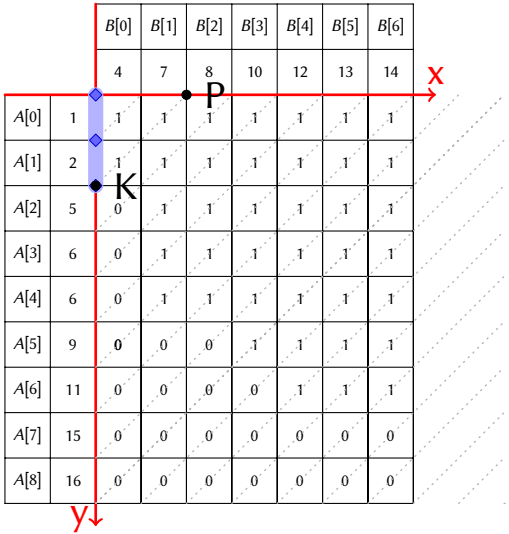
1. Calcul de P et K :
   $\longrightarrow$ P=(2,0)

Path merged : thread 2



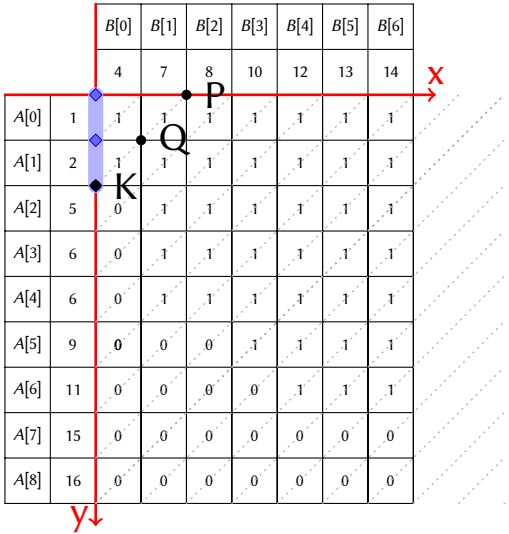
1. Calcul de P et K :
   - ⟶ P=(2,0)
   - ⟶ K=(0,2)

Path merged : thread 2



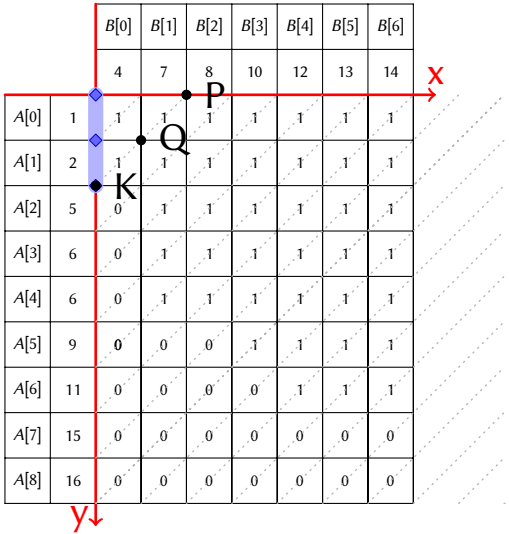
1. Calcul de P et K :
   - $\longrightarrow$ P=(2,0)
   - $\longrightarrow$ K=(0,2)
2. offset = 1

Path merged : thread 2



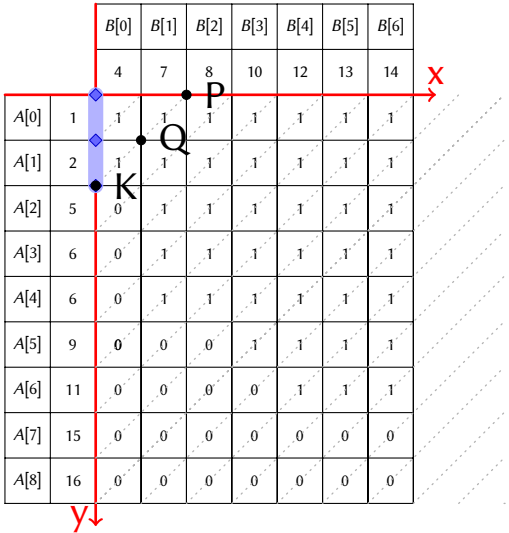
1. Calcul de P et K :
   - $\longrightarrow$ P=(2,0)
   - $\longrightarrow$ K=(0,2)
2. offset = 1
3. Q = (1,1)

Path merged : thread 2



1. Calcul de P et K :
   - $\longrightarrow$ P=(2,0)
   - $\longrightarrow$ K=(0,2)
2. offset = 1
3. Q = (1,1)
4. P = $(Q_x\text{-}1, Q_y\text{+}1)$=(0,2)

Path merged : thread 2



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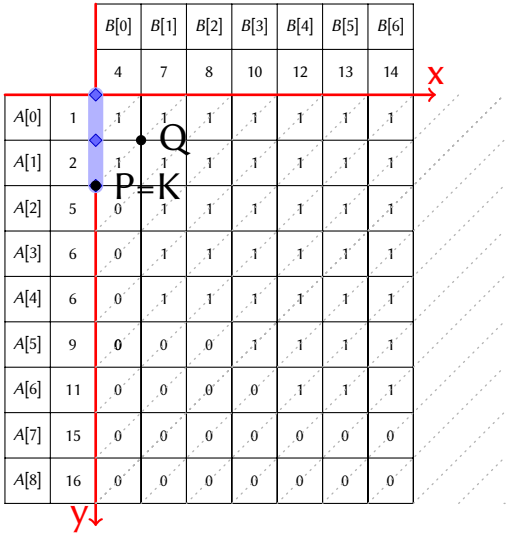
Path merged : thread 2



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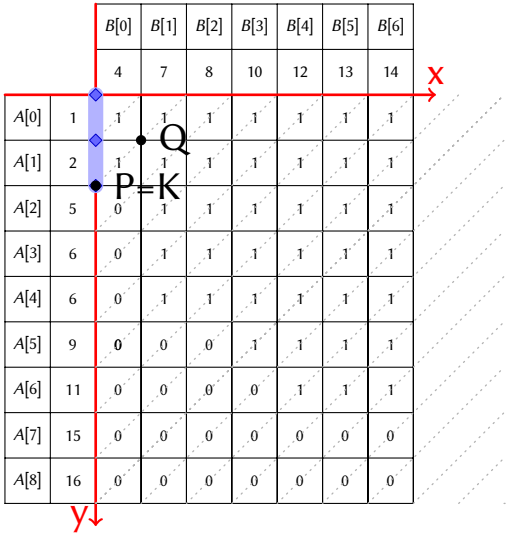
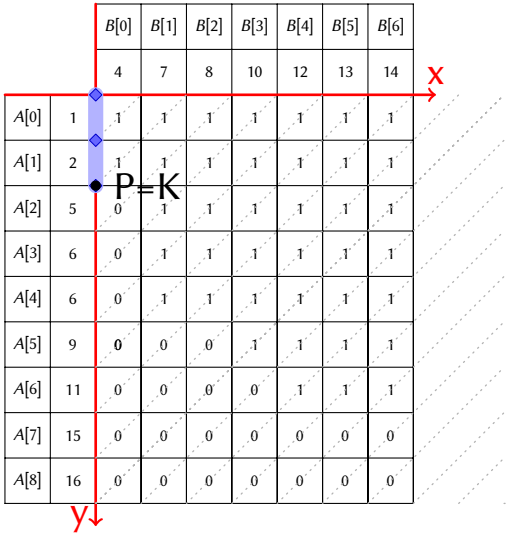
Path merged : thread 2



1. Calcul de P et K :
   - ⟶ P=(2,0)
   - ⟶ K=(0,2)
2. offset = 1
3. Q = (1,1)
4. P = (Q_x-1,Q_y+1)=(0,2)
5. On recommence

Path merged : thread 2



P=K=(0,2)

6 offset = 0

Path merged : thread 2

		B[0]	B[1]	B[2]	B[3]	B[4]	B[5]	B[6]
		4	7	8	10	12	13	14
A[0]	1	1	1	1	1	1	1	1
A[1]	2	1	1	1	1	1	1	1
A[2]	5	0	1	1	1	1	1	1
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A[6]	11	0	0	0	0	1	1	1
A[7]	15	0	0	0	0	0	0	0
A[8]	16	0	0	0	0	0	0	0

x

y

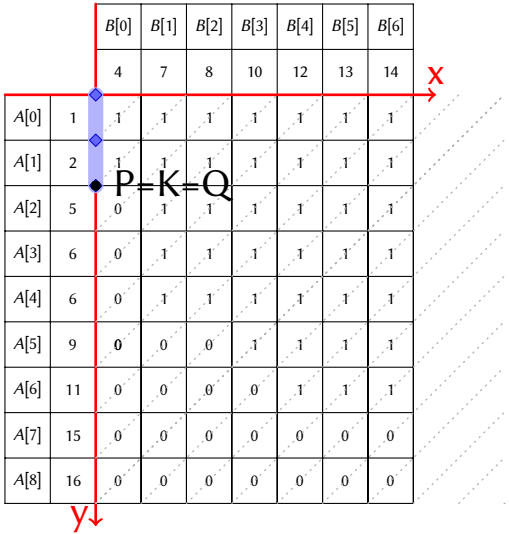
P=K

P=K=(0,2)

6 offset = 0

7 Q = (O,2)

Path merged : thread 2



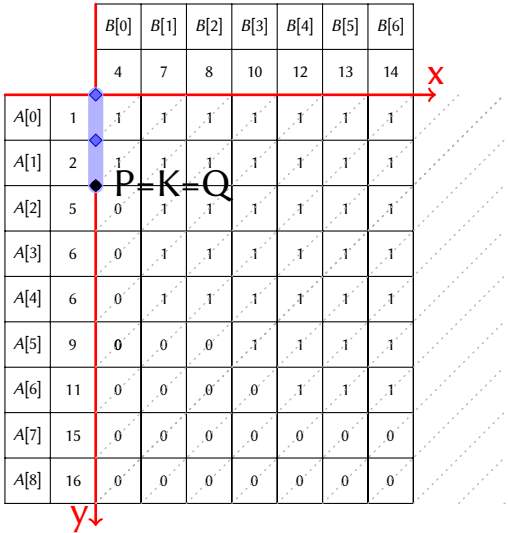
P=K=(0,2)

6 offset = 0

7 Q = (O,2)

8 $A[Q_y] > B[Q_x]$

Path merged : thread 2



P=K=(0,2)

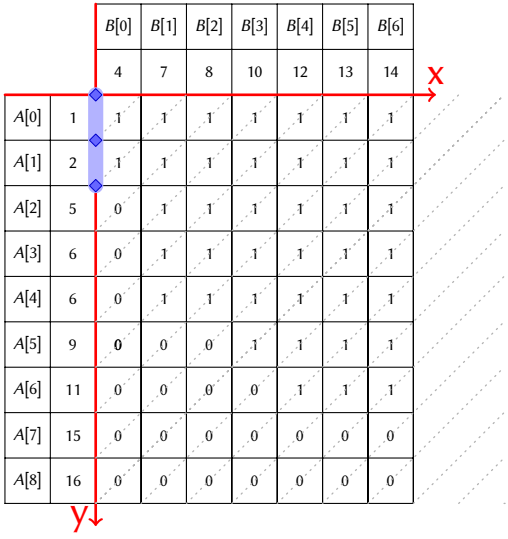
6 offset = 0

7 Q = (O,2)

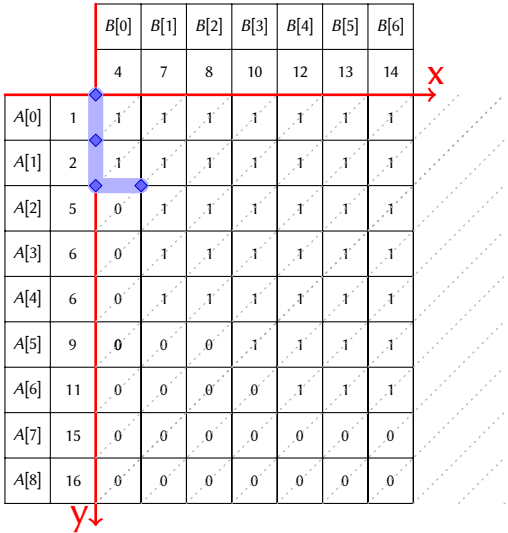
8 $A[Q_y] > B[Q_x]$

9 $M[i] = B[Q_x]$

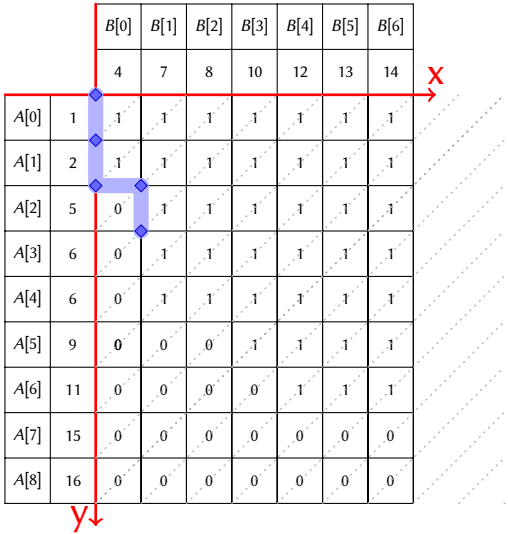
Path merged : thread 2, path



Path merged : thread 2, path



Skipping to thread 9



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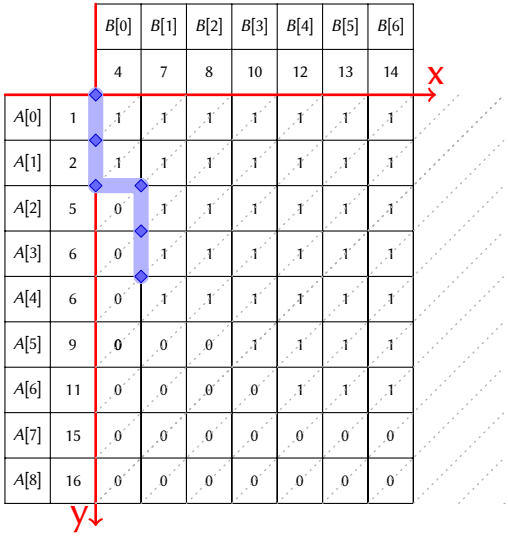

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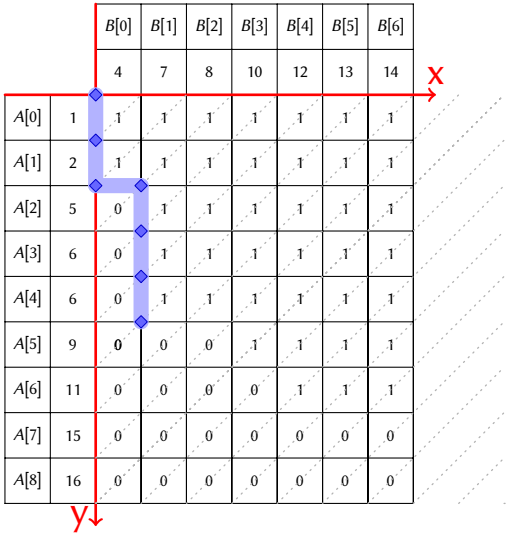

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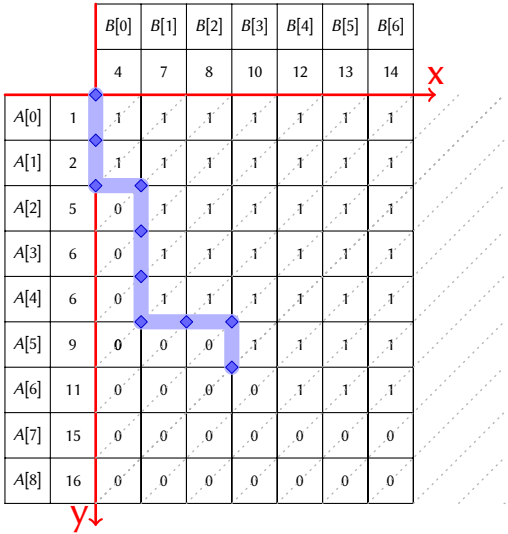
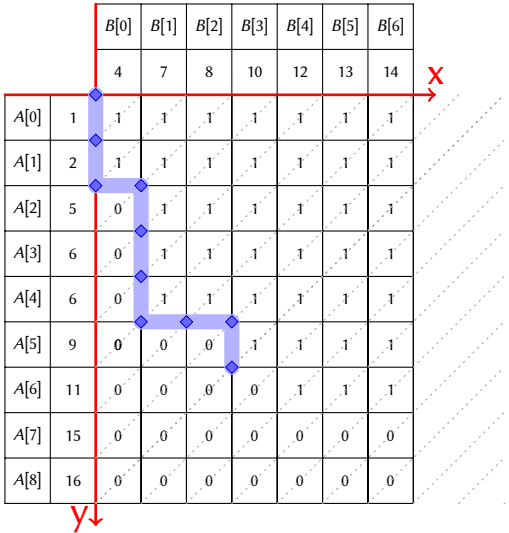
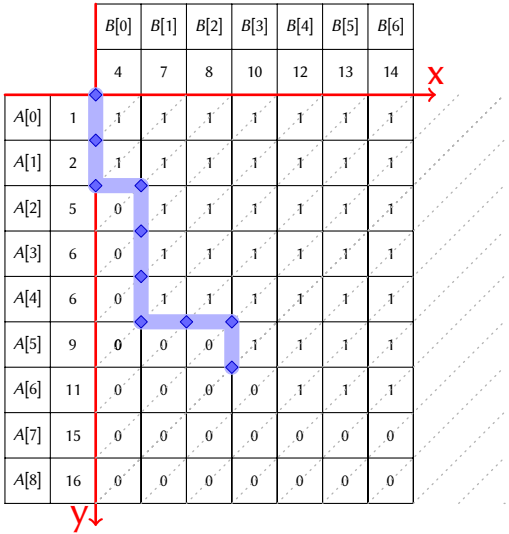


Skipping to thread 9

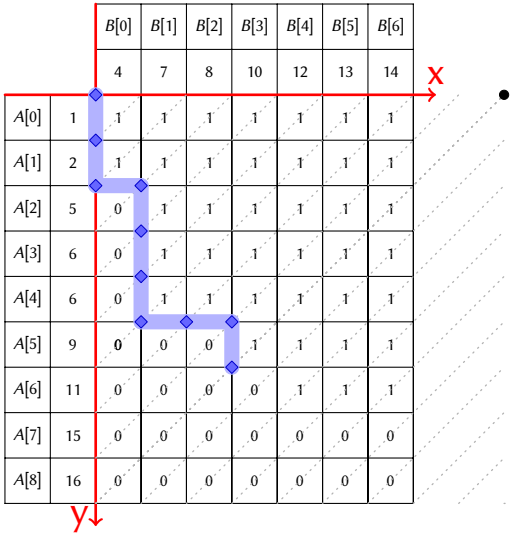


Path merged : thread 9



1. Calcul de P et K :

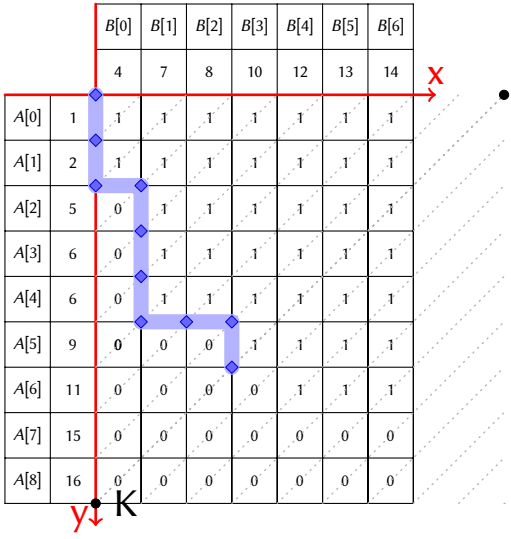
Path merged : thread 9



- P

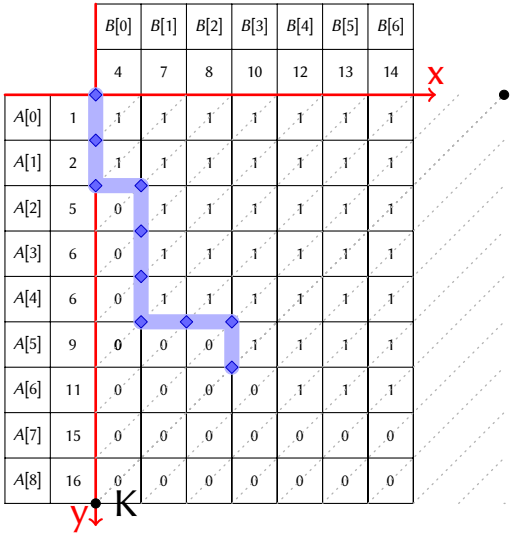
1. Calcul de P et K :
   → P=(9,0)

Path merged : thread 9



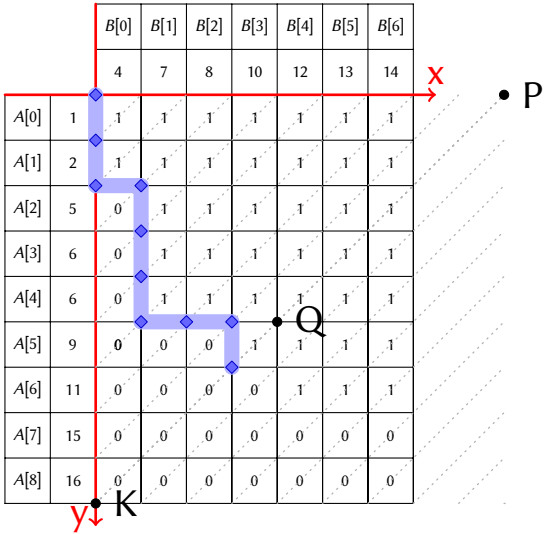
1. Calcul de P et K :
   - ⟶ P=(9,0)
   - ⟶ K=(0,9)

Path merged : thread 9



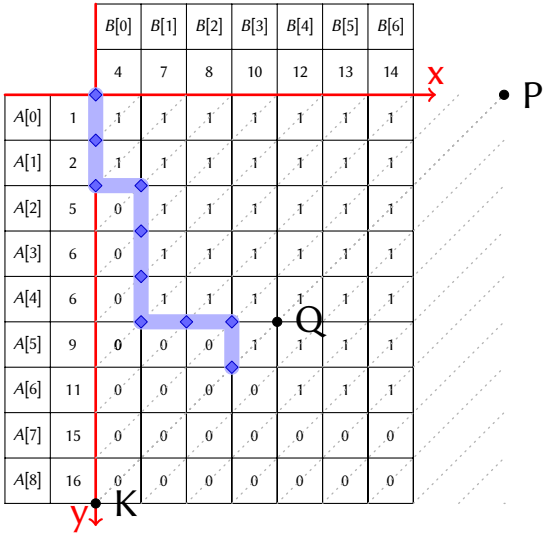
1. Calcul de P et K :
   - ⟶ P=(9,0)
   - ⟶ K=(0,9)
2. offset = 3

Path merged : thread 9



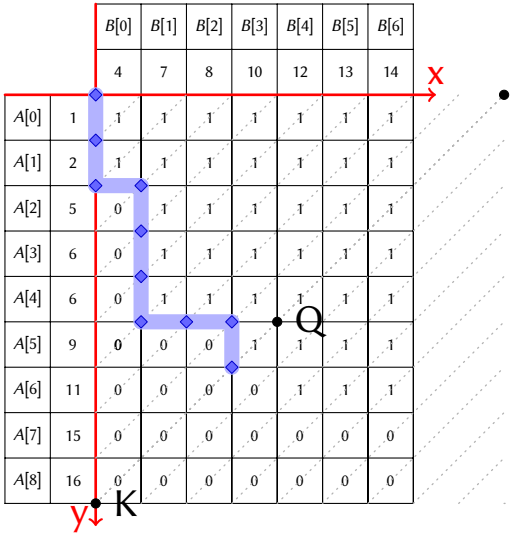
1. Calcul de P et K :
   - ⟶ P=(9,0)
   - ⟶ K=(0,9)
2. offset = 3
3. Q = (5,4)

Path merged : thread 9



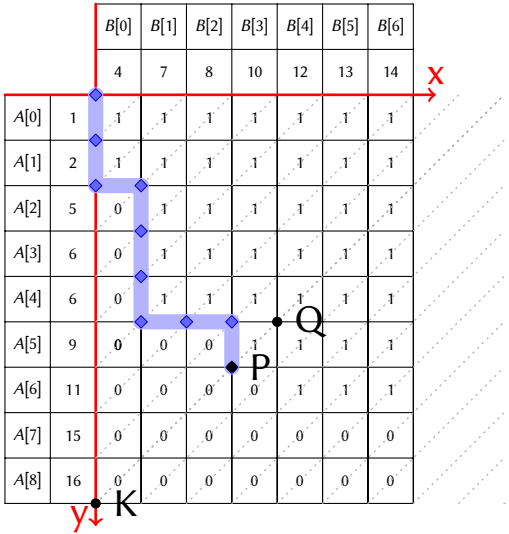
1. Calcul de P et K :
   - ⟶ P=(9,0)
   - ⟶ K=(0,9)
2. offset = 3
3. Q = (5,4)
4. P = $(Q_x\text{-}1, Q_y\text{+}1)$=(4,5)

Path merged : thread 9



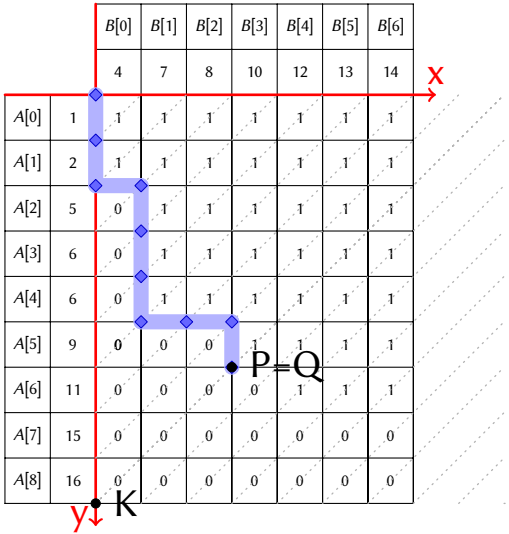
1. Calcul de P et K :
   - $\longrightarrow$ P=(9,0)
   - $\longrightarrow$ K=(0,9)
2. offset = 3
3. Q = (5,4)
4. P = $(Q_x\text{-}1, Q_y\text{+}1)$=(4,5)

Path merged : thread 9



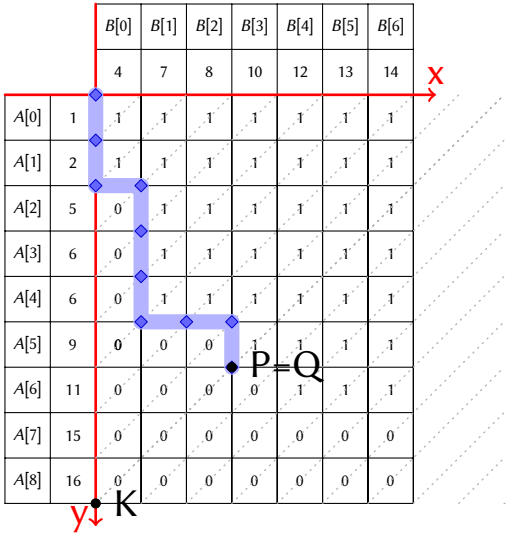
1. Calcul de P et K :
   - ⟶ P=(9,0)
   - ⟶ K=(0,9)
2. offset = 3
3. Q = (5,4)
4. P = (Q_x-1,Q_y+1)=(4,5)
5. Q = P =(4,5)

Path merged : thread 9



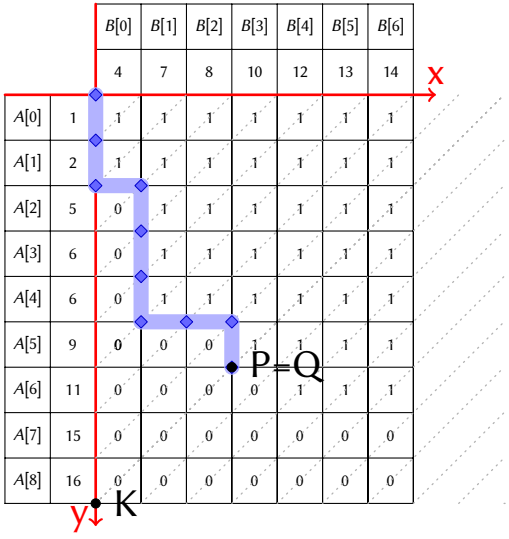
1. Calcul de P et K :
   - $\longrightarrow$ P=(9,0)
   - $\longrightarrow$ K=(0,9)
2. offset = 3
3. Q = (5,4)
4. P = $(Q_x\text{-}1, Q_y\text{+}1)$=(4,5)
5. Q = P =(4,5)

Path merged : thread 9



7 $A[Q_y] > B[Q_x]$

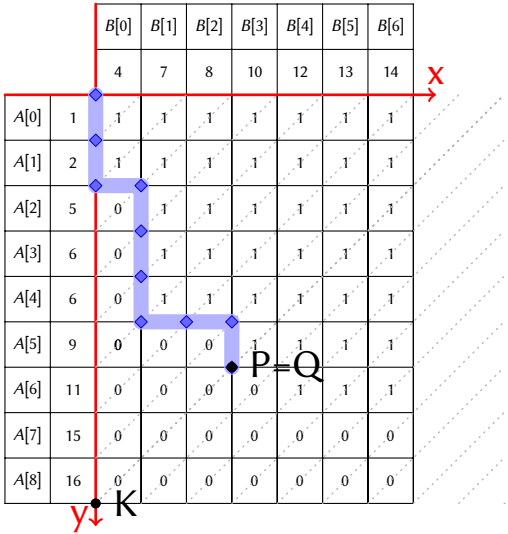
Path merged : thread 9



7 A[Q_y>B[Q_x]

8 M[9]=B[Q_x]

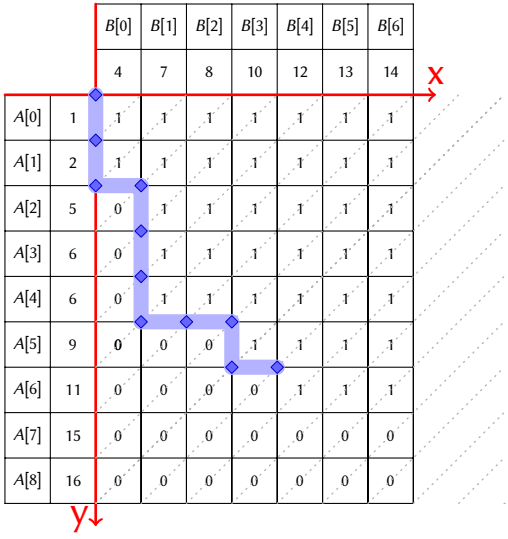
Path merged : thread 9



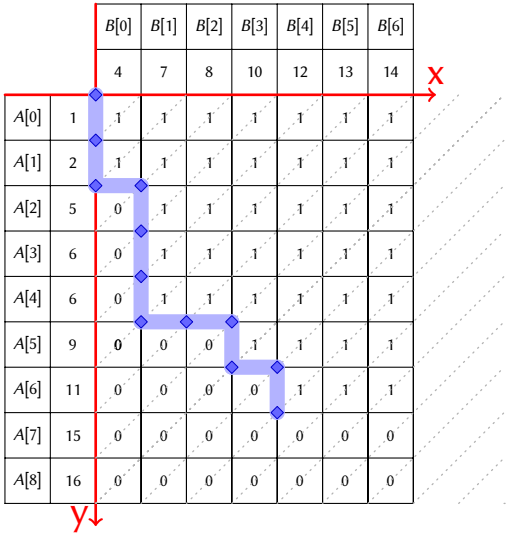
7 A[Q_y>B[Q_x]

8 M[9]=B[Q_x]

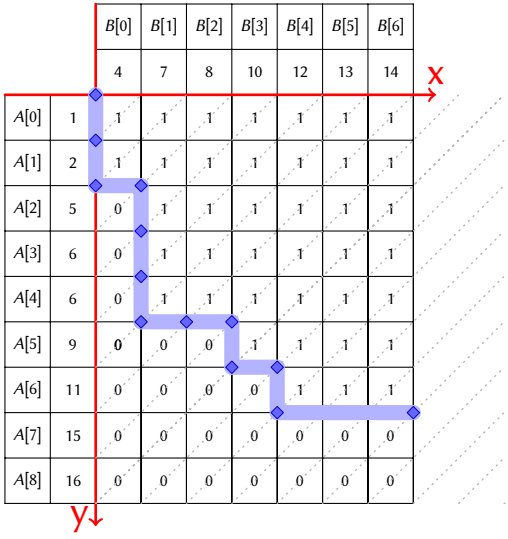
Path merged : thread 9, path



Path merged : thread 9, path



Path merged : thread 9, path



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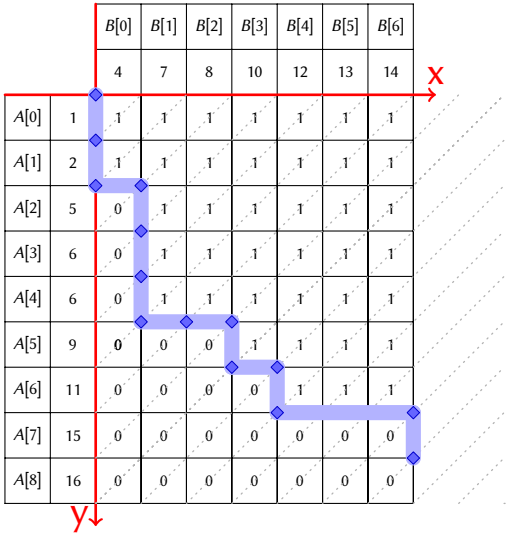
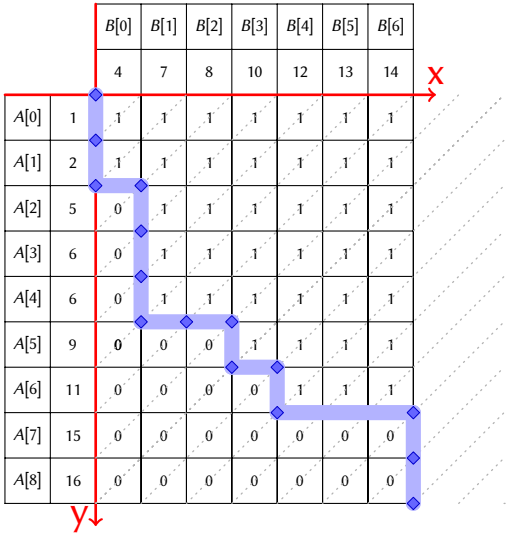


Path merged : thread 9, path



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