

# PERTEMUAN 10

## MATRIKS (STUDI KASUS)

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Penjumlahan/pengurangan

Penjumlahan baris dan kolom

Pencarian elemen maksimum

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Matriks *Transpose*

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# Penjumlahan Matriks

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Procedure PenjumlahanMatriks (input M1, M2: Matriks,  
output M3: Matriks, input NBar, NKol: integer)

## Kamus

i: integer

j: integer

## Algoritma

For i  $\leftarrow$  1 to NBar do

For j  $\leftarrow$  1 to NKol do

$M3[i,j] \leftarrow M1[i,j] + M2[i,j]$

Endfor

Endfor



# Penjumlahan Baris dan Kolom

Procedure PenjumlahanBarisdanKolom (input/output M: Matriks, input NBar, NKol: integer)

## Kamus

i: integer

j: integer

## Algoritma

{ penjumlahan baris }

For i  $\leftarrow$  1 to NBar do

    M[i, NKol + 1]  $\leftarrow$  0

For j  $\leftarrow$  1 to NKol do

        M[i, NKol + 1]  $\leftarrow$  M[i, NKol + 1] + M[i,j]

Endfor

Endfor

{ penjumlahan kolom }

For j  $\leftarrow$  1 to NKol do

    M[NBar + 1, j]  $\leftarrow$  0

For i  $\leftarrow$  1 to NBar do

        M[NBar + 1, j]  $\leftarrow$  M[NBar + 1, j] + M[i,j]

Endfor

Endfor



# Pencarian Elemen Maksimum

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Procedure CariMaks (input M: Matriks, input NBar, Nkol: integer,  
output Maks: integer)

## Kamus

i: integer

j: integer

## Algoritma

Maks  $\leftarrow$  -9999 { nilai maksimum sementara }

for i  $\leftarrow$  1 to NBar do

for j  $\leftarrow$  1 to NKol do

if M[i,j] > Maks then

            Maks  $\leftarrow$  M[i,j]

endif

endfor

endfor



# Pencarian Elemen Tertentu

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procedure CariX (input Mat: Matriks, input NBar, NKol: integer, input x: integer, output idxBaris, idxKolom: integer)

## Kamus

i: integer  
j: integer  
ketemu: boolean

## Algoritma

```
i ← 1
ketemu ← false
while (i <= NBar) and (not ketemu) do
  j ← 1
  while (j <= NKol) and (not ketemu) do
    if Mat[i,j] = x then
      ketemu ← true
    else
      j ← j + 1
    endif
  endwhile
  if not ketemu then
    i ← i + 1
  endif
endwhile

if ketemu then
  idxBaris ← i
  idxKolom ← j
else
  idxBaris ← 0
  idxKolom ← 0
endif
endif
```



# Matriks Transpose

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Procedure Transpose (input M: Matriks, input NBar, NKol: integer,  
output MT: Matriks, output NBarT, NKolT: integer)

## Kamus

i: integer

j: integer

## Algoritma

NBarT  $\leftarrow$  NKol

NKolT  $\leftarrow$  NBar

for i  $\leftarrow$  1 to NBar do

for j  $\leftarrow$  1 to NKol do

        MT[j,i]  $\leftarrow$  M[i,j]

endfor

endfor



# Menampilkan Elemen Diagonal

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Procedure CetakDiagonal (input M: Matriks, input NBar, NKol: integer)

## Kamus

i: integer

j: integer

## Algoritma

```
for i  $\leftarrow$  1 to NBar do  
    for j  $\leftarrow$  1 to NKol do  
        if i=j then  
            output M[i,j]  
        endif  
    endfor  
endfor
```



# Pengujian Matriks Nol

function MatriksNol (input Mat: Matriks, input NBar, NKol : integer) → boolean

## Kamus

i: integer  
j: integer  
nol: boolean

## Algoritma

```
i ← 1
nol ← true
while (i <= NBar) and (nol) do
  j ← 1
  while (j <= NKol) and (nol) do
    if Mat[i,j] <> 0 then
      nol ← false
    else
      j ← j+1
    endif
  endwhile
  if nol then
    i ← i+1
  endif
endwhile

return nol
```