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Pemrograman Komputer

Praktikum Matriks

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Introduction of Matrix

- $s = [1\ 3\ 5\ 2];$
- $s = [1, 3, 5, 2];$

1	3	5	2
---	---	---	---
- $s = [1\ 2\ 3\ 4; 5\ 6\ 7\ 8; 9\ 10\ 11\ 12]$

1	2	3	4
5	6	7	8
9	10	11	12

Introduction of Matrix

- $A=[1\ 2\ 3\ 4]$
- $B=[5\ 6\ 7\ 8]$
- $C=B'$

```
Command Window
>> A=[1 2 3 4]

A =

     1     2     3     4

>> B=[5 6 7 8]

B =

     5     6     7     8
```

```
>> C=B'

C =

     5
     6
     7
     8
```

Introduction of Matrix

- $A*C$

$$\begin{bmatrix} 1 & 2 & 3 & 4 \end{bmatrix} * \begin{bmatrix} 5 \\ 6 \\ 7 \\ 8 \end{bmatrix}$$

- $C*A$

$$\begin{bmatrix} 5 \\ 6 \\ 7 \\ 8 \end{bmatrix} * \begin{bmatrix} 1 & 2 & 3 & 4 \end{bmatrix}$$

```
Command Window
```

```
>> A*C
```

```
ans =
```

```
    70
```

```
>> C*A
```

```
ans =
```

```
     5    10    15    20
     6    12    18    24
     7    14    21    28
     8    16    24    32
```

Matriks Khusus

- ones(n)
- ones(m,n)
- zeros(n)
- zeros(m,n)
- eye(n)
- rand(n),
- rand(m,n)
- randn(n),
- randn(m,n)
- []

Introduction of Matrix

- $A=[1\ 2\ 3\ 4;5\ 6\ 7\ 8;9\ 10\ 11\ 12]$
- $B=[A;13\ 14\ 15\ 16]$
- $C=A(:,2)$
 ":" means All

```
Command Window
>> A=[1 2 3 4;5 6 7 8;9 10 11 12]

A =

     1     2     3     4
     5     6     7     8
     9    10    11    12

>> B=[A;13 14 15 16]

B =

     1     2     3     4
     5     6     7     8
     9    10    11    12
    13    14    15    16

>> C=A(:,2)

C =

     2
     6
    10
```

Introduction of Matrix

- $D=A([1\ 3],:)$
Select the row 1 & 3
- $E=A(:,[2\ 4])$
Select the column 2 & 4

```
Command Window
>> A=[1 2 3 4;5 6 7 8;9 10 11 12]

A =

     1     2     3     4
     5     6     7     8
     9    10    11    12

>> D=A([1 3],:)

D =

     1     2     3     4
     9    10    11    12

>> E=A(:,[2 4])

E =

     2     4
     6     8
    10    12
```

Introduction of Matrix

- “[]” means \emptyset
- $A(:,3)=[]$

```
Command Window
>> A

A =

     1     2     3     4
     5     6     7     8
     9    10    11    12

>> A(:,3)=[]

A =

     1     2     4
     5     6     8
     9    10    12
```

Introduction of Matrix

- $A = \text{magic}(5)$
- $B = A(:, 1:3)$
- $C = A(2:4, [1 \ 4 \ 5])$

```
>> B=A(:,1:3)
```

```
B =
```

```
    17    24     1
    23     5     7
     4     6    13
    10    12    19
    11    18    25
```

```
Command Window
```

```
>> A=magic(5)
```

```
A =
```

```
    17    24     1     8    15
    23     5     7    14    16
     4     6    13    20    22
    10    12    19    21     3
    11    18    25     2     9
```

```
>> C=A(2:4,[1 4 5])
```

```
C =
```

```
    23    14    16
     4    20    22
    10    21     3
```

Introduction of Matrix

- $a = \text{zeros}(4,4,3)$
- $a(:, :, 1) = 1$
- $a(:, :, 2) = 5$
- $a(:, :, 3) = 7$

```
Command Window
```

```
>> a=zeros(4,4,3)
```

```
a(:, :, 1) =
```

```
    0    0    0    0
    0    0    0    0
    0    0    0    0
    0    0    0    0
```

```
a(:, :, 2) =
```

```
    0    0    0    0
    0    0    0    0
    0    0    0    0
    0    0    0    0
```

```
a(:, :, 3) =
```

```
    0    0    0    0
    0    0    0    0
    0    0    0    0
    0    0    0    0
```

```
a(:, :, 1) =
```

```
    1     1     1     1
    1     1     1     1
    1     1     1     1
    1     1     1     1
```

```
a(:, :, 2) =
```

```
    5     5     5     5
    5     5     5     5
    5     5     5     5
    5     5     5     5
```

```
a(:, :, 3) =
```

```
    7     7     7     7
    7     7     7     7
    7     7     7     7
    7     7     7     7
```