

Pengembangan Program SAS/IML

$\tau\rho$

Subscripting

- Mengakses elemen, baris, kolom dan bagian dari suatu matriks
- Menggunakan operator pereduksian untuk membuat matriks baru
- Operator yang digunakan `matriks[row,column]`

Latihan 1

- Tentukan output dari program berikut:

```
proc iml;  
  reset print;  
  A={4 5 6,3 2 1,9 8 7,1 0 8};  
  
  - b=A[3,3];  
  - c=A[9];  
  - D=A[,2:3];  
  - E=A[{1 4},];  
  - B=A;  
    B[loc(A>3)]=1;  
  - row=nrow(A);  
    col=ncol(A);  
    rows=1||nrow(A);  
    cols=1||ncol(A);  
    corners=A[rows,cols];
```

Subscript Reduction Operators

Operator	Function
+	Addition
#	Multiplication
<>	Maximum
><	Minimum
<:>	Index of Maximum
>:<	Index of Minimum
:	Mean
##	Sum of Square

Latihan 2

- Tentukan output dari program berikut:

```
proc iml;  
  reset print;  
  P={4 5 6,3 2 1,9 8 7,1 0 8};
```

- Q =P[,+];
- Q1=P[+];
- R =P[,+][><,];
- iR=P[,+][>:<,];
- R1=iR||R;
- print R1[colname={index,'min total column'}];

Latihan 3

- Dari matriks P pada latihan 3, tentukan standard deviasi dari setiap kolom dari matriks P .

Jawaban 3

```
M=P[:,];
```

```
N=P[##,];
```

```
SD_col=sqrt((N-(nrow(P)*(M##2)))/(nrow(P)-1));
```

Iterative and Conditional Processing

- Do

 - do;

 - IML statements

 - end;

- If-then/else

 - if <expression> then <statement1>;

 - else <statement2>;

Latihan 4

```
proc iml;  
  reset print;  
  y = 8;  
  
  do while(y < 11);  
    y = y + 2;  
  end;
```

```
y = 8;  
do until(y > 12);  
  y = y + 2;  
end;
```

```
proc iml;  
  x=9;  
  if x>6 then x=1;  
  else if x<=6 & x>2 then x=2;  
  else x=3;  
  print x;
```

Module

- General form of an IML module :

START <name> <(arg1, arg2,...)>

 <GLOBAL(arg1, arg2,...)>;

module IML statement

FINISH <name>;

RUN name <(arg1, arg2,...)>;

CALL name <(arg1, arg2,...)>

Latihan 5

```
proc iml;  
x={2 3,6 7};  
y={8 9,1 3};
```

```
start s0;  
s={1 1,1 1};  
x=s*x;  
finish;
```

```
run s0;  
print x y s;
```

```
proc iml;  
x={2 3,6 7};  
y={8 9,1 3};
```

```
start s1(x);  
s={1 1,1 1};  
x=s*x;  
finish;
```

```
run s1(y);  
print x y s;
```

Latihan 6

```
proc iml;  
p=10; q=25;  
r=40; s=50;  
  
start m(x,y)  
global(s);  
a=x*y; b=y+x;  
x=100; s=40;  
y=b;  
finish m;  
run m(p,q);  
print p q r s;
```

P	Q	R	S
100	35	40	40

Terima kasih 😊