Dasar - dasar pemrograman

Aritmatika

```
1 + 2
```

3

```
5 - 3
```

2

```
5.25 + 3.95
```

9.2

```
3 * 2
```

6

```
15 / 2
```

7.5

```
2 ^ 3
```

8

```
# operator modulus

15/2
```

7.5

```
15 %% 2
```

1

```
# urutan operasi
15 * 20 + 50 / 2
```

325

```
15 * 20 + (50 / 2)
```

325

```
15 * (20 + 50) / 2
```

525

Variabel

```
# komentar
v <- 10
```

```
print(v)
```

```
[1] 10
```

```
v
```

10

```
uang <- 100000
uang
```

1e+05

```
tiket.bioskop <- 2e5 # paling sering digunakan di komunitas R
tiket.bioskop
```

2e+05

```
tiketBioskop <- 2.05e5
tiketBioskop
```

205000

```
tiket_bioskop <-2.1e5
tiket_bioskop
```

210000

```
popcorn <- 5e4
popcorn
```

50000

```
tiket.bioskop <- tiket.bioskop + popcorn + 2e4
print(tiket.bioskop)
```

```
[1] 270000
```

Tipe - tipe data

Numerik

```
b <- 2
b
```

2

```
d <- 3.5
d
```

3.5

```
class(d)
```

'numeric'

```
class(b)
```

'numeric'

Integer dan float di R dianggap sebagai tipe data numerik

Logical

```
TRUE
```

TRUE

```
FALSE
```

FALSE

```
T
```

TRUE

```
F
```

FALSE

```
a <- TRUE
a
```

TRUE

```
class(a)
```

'logical'

Character

```
"Halo"
```

'Halo'

```
'Halo'
```

'Halo'

```
txt <- "Hello world!"
print(txt)
```

```
[1] "Hello world!"
```

```
class(txt)
```

'character'

Vektor

```
num <- c(1,2,3,4,5)
```

```
class(num)
```

'numeric'

```
txt <- c('a', 'b', 'c')
txt
```

1. 'a'
2. 'b'
3. 'c'

```
class(txt)
```

'character'

```
l <- c(T,F)
l
```

1. TRUE
2. FALSE

```
class(l)
```

'logical'

```
v1 <- c(TRUE, 10, 20)
v1
```

1. 1
2. 10
3. 20

```
class(v1) # logical dikonversi menjadi numeric
```

'numeric'

```
v2 <- c('a', 'b', 20)
v2
```

1. 'a'
2. 'b'
3. '20'

```
class(v2) # numeric dikonversi menjadi character
```

'character'

```
v3 <- c(TRUE, 128, 'Meteorologi')
v3
```

1. 'TRUE'
2. '128'
3. 'Meteorologi'

```
class(v3) # logical & numeric dikonversi menjadi character
```

'character'

```
# names : metode penamaaan vektor (metode 1)
hari <- c(1,2,3,4,5,6,7)
hari
```

1. 1
2. 2
3. 3
4. 4
5. 5
6. 6
7. 7

```
names(hari) <- c('sen', 'sel', 'rab', 'kam', 'jum', 'sab', 'min')
```

```
hari
```

```
sen
    1
sel
    2
rab
    3
kam
    4
jum
    5
sab
    6
min
    7
```

```
# names : metode penamaaan vektor (metode 2)
b <-  c('sen', 'sel', 'rab', 'kam', 'jum', 'sab', 'min')
names(hari) <- b
hari
```

```
sen
    1
sel
    2
rab
    3
kam
    4
jum
    5
sab
    6
min
```

7

```
hari['sen']
```

sen: 1

```
hari[1]
```

sen: 1

Operasi - operasi vektor

```
v1 <- c(1,2,3,4,5)
v2 <- c(6,7,8,9,10)
```

```
v1 + v2 # element-by-element
```

1. 7
2. 9
3. 11
4. 13
5. 15

```
v1 - v2
```

1. -5
2. -5
3. -5
4. -5
5. -5

```
v1 * v2
```

1. 6
2. 14
3. 24
4. 36
5. 50

```
v2 / v2
```

1. 1
2. 1
3. 1
4. 1
5. 1

```
sum(v1) # jumlah seluruh v1
```

15

```
mean(v1) # rata2 v1
```

3

```
sd(v1) # std v1
```

1.58113883008419

```
max(v2)
```

10

```
min(v2)
```

6

```
prod(v1) # mengalikan seluruh elemen di vektor
```

120

```
prod(v2)
```

30240

```
b <- sum(v1)
print(b)
```

```
[1] 15
```

Operator - operator perbandingan

```
4 > 5
```

FALSE

```
7 > 4
```

TRUE

```
10 >= 5
```

TRUE

```
7 <= 5
```

FALSE

```
8 == 8
```

TRUE

```
7 != 15
```

TRUE

```
7 != 7
```

FALSE

```
# Operator perbandingan pada vektor
v <- c(1,2,3,4,5)
v < 2
```

1. TRUE
2. FALSE
3. FALSE
4. FALSE
5. FALSE

```
v == 3
```

1. FALSE
2. FALSE
3. TRUE
4. FALSE
5. FALSE

```
v2 <- c(10,20,30,40,50)
v2
```

1. 10
2. 20
3. 30
4. 40
5. 50

```
v < v2
```

1. TRUE
2. TRUE
3. TRUE
4. TRUE
5. TRUE

Pengindeksan dan pemotongan vektor

```
v1 <- c(10,20,30,40,50)
v2 <- c('a', 'b', 'c', 'd', 'e')
```

```
v1[2] # pengindeksan dimulai dari 1
```

```
v1[5]
```

50

```
v2[c(3,4,5)]
```

1. 'c'
2. 'd'
3. 'e'

```
v3 <- c(1,2,3,4,5,6,7,8,9,10)
v3[7:10]
```

1. 7
2. 8
3. 9
4. 10

```
v3[3:5]
```

1. 3
2. 4
3. 5

```
b <- c(1,2,3,4,5,6)
names(b) <- c('I', 'G', 'D', 'O', 'R', 'E')
b
```

I
: 1

G
: 2

D
: 3

O
: 4

R
: 5

E
6

```
b[2]
```

G: 2

```
b['G']
```

G: 2

```
b[c(2,3)]
```

G
2
D
3

```
b[c('G', 'D')]
```

G
2
D
3

```
# Operator perbandingan
b
```

I
1
G
2
D
3
O
4
R
5
E

6

```
b[b > 3]
```

O

4

R

5

E

6

```
e <-  b > 3
```

```
b[e]
```

O

4

R

5

E

6