

## # Operators

MVC

### ① Incremental Operators

~~shorter history~~ Post ++      ~~verbosely~~ (perform & increment)  
 a++ , a--  
 ++a ; --a (increment & perform)

### ② Arithmetic operators

\* , / , % , + , -

### ③ Bitwise operator

& , | , ~ , ^ , << , >> , >>>

### ④ Relational operator

< , <= , > , >= , == , !=

### ⑤ logical $\Rightarrow$ & & || ||

$\Rightarrow$  We can perform arithmetical operation of on self form of int , float , double & char but not on boolean

~~Also you always have to perform arithmetic operations on either variable / literal of same type~~

~~int + int  $\Rightarrow$  valid~~

~~int + float  $\Rightarrow$  Error~~

You can also perform decimal modulo on the decimal values also

⊗ you have to been

Precedence  $\text{++}, \text{--}, \%, /, *, +, -$   
Postfix

for practice

You can perform

byte + byte	short + short
byte + short	short + int
, int + int	byte + int

at last result always will be of type int  
as int is base of all above types

Result

int $x = \text{byte} + \text{short}$	int $x = \text{char} + \text{short}$
int $x = \text{short} + \text{int}$	int $x = \text{char} + \text{int}$
float $x = \text{int} + \text{float}$	double $x = \text{float} + \text{double}$
float $x = \text{long} + \text{float}$	double $x = \text{long} + \text{float}$

i) #lossy conversion

assigning a attribute of higher size to datatype  
lower size which cause error

$$n^2 + 2n + 1$$

$$n \times n \times n$$

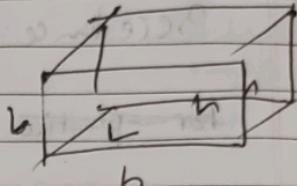
$$n(n+1) + (n+1)(n+1) c$$

$$ax^2 + bx + c = 0$$

$$S_1 = \frac{-b + \sqrt{b^2 - 4ac}}{2a}$$

$$S_2 = \frac{-b - \sqrt{b^2 - 4ac}}{2a}$$

$$\text{volume} \Rightarrow l b h$$



Area

DAA

In Java incremental operators works on every type but it will not lead to change in datatype.

→ On boolean we can't perform incremental or decremental operators.

~~for (int i = 0; i < 10; i++)~~

~~System.out.println("Hello " + i);~~

# Bitwise Operators

④ while declaring the datatype of the float write

float a = 12.56f;

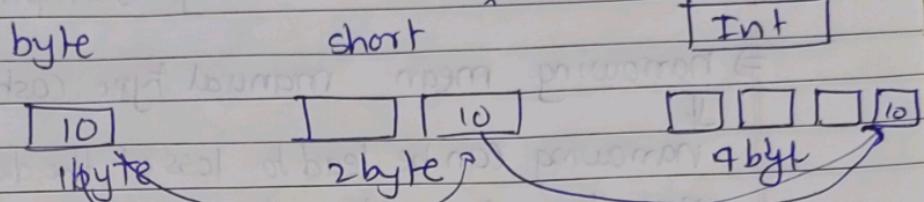
~~Note~~

If you not write that f there so you will left over & you have ~~got~~ gone as 12.56 only will seen as double but you want a float \*r

## Learn Dynamic Programming

#widening & narrowing

Ex:



So can we fit 1 byte of data of datatype byte in short yes easily

So processing of mapping data from a datatype of variable of another datatype having more storage is widening

$\Rightarrow$  Same byte  $\Rightarrow$  Int Widening process.  
short  $\Rightarrow$  Int

widening can be done by compiler automatically.

Here 2 important things are there for widening

- $\Rightarrow$  Size
- $\Rightarrow$  Compatibility

If both possible that can be done by compiler itself else we have do it manually explicitly

widening = Upcasting  
narrowing  $\Rightarrow$  Downcasting

Boolean can't be assigned to anyone

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Bigger datatype value = Smaller datatype value

force = typecast

↓  
widening  $\Rightarrow$  Implicit

$\Rightarrow$  narrowing mean manual type casting

↓

narrowing can be lead to loss of the data & you may face the problem due to that

Ex

float f = 10.5f ;

int z = (int) f ;

S.O. println(z)

$\Rightarrow$  10 output we lose 0.5 data