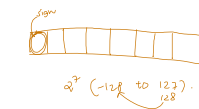


① Typecasting: Typecasting is the process of assigning one primitive value to another primitive value. Compiler does the conversion.

int  $\rightarrow$  4 bytes  
long  $\rightarrow$  8 bytes  
short  $\rightarrow$  2 bytes  
char  $\rightarrow$  1 byte  
double  $\rightarrow$  8 bytes  
float  $\rightarrow$  4 bytes



byte (8 bits)   short (16 bits)   int (32 bits)   long (64 bits)



-128  
-127  
-126  
:  
127  
128

32 bits  $\rightarrow -2^{31}$  to  $2^{31}-1$



loss of precision/loss of information.

compiler automatically typecast  $\rightarrow$  widening / upcasting /

ex: int  $x = 1000;$   
long  $y = x;$    Implicit-casting

compiler prevents:   narrowing /  
downcasting /  
explicit-casting

ex: long  $y = 10;$   
int  $z = (\text{int}) y;$

**widening:**

byte  $\rightarrow$  short  $\rightarrow$  int  $\rightarrow$  long  $\rightarrow$  float  $\rightarrow$  double.

char  $\rightarrow$  short  
6 bits   16 bits  
8 bits   10000

loss of precision

let  $x = \text{MAX} + 1$

**Narrowing**

byte  $\leftarrow$  short  $\leftarrow$  int  $\leftarrow$  long  $\leftarrow$  float  $\leftarrow$  double.

↓   80   40   20   15  
long   40   second large   20

I addition:  
80   40   20  
↓   120   60   40  
long   short   double

II and:  
80   40   20  
↓   120   60   40  
long   short   double

III and:  
long   40   second large   20  
↓   10

Q. Greatest and second greatest:

num = 6

10  
30  
45  
9  
6  
10  
o/p: 45  
30

num = 5

10  
40  
85  
23  
2  
o/p: 85  
40