More Operators

Arithmetic Operators

Operator	Meaning	Example
+	Addition	3 + x
-	Subtraction	p – q
*	Multiplication	6 * i
/	Division	10 / 4
%	Mod (remainder)	11 % 8

Modular Arithmetic

- 15 mod 4
- 87 mod 14
- 1023 mod 12

- 15 % 4 → 3
- 87 % 14 → 3
- 1023 % 12 → 3

Arithmetic Precedence

- Parentheses, from inner ones out
- *, /, %
- +, -

- 2 + 3 * 12 % 9 – 4 / 2

Relational Operators

Operator	Meaning	Example
==	Equal to	if (x == 100)
!=	Not equal to	if (age != 21)
>	Greater than	if (salary > 30000)
<	Less than	if (grade < 65)
>=	Greater than or equal to	if (age >= 16)
<=	Less than or equal to	if (height <= 6)

Logical Operators

Operator	Meaning	Example
!	NOT	if (!found)
&&	AND	if (x < 3 && y > 4)
||	OR	if (age < 2 || height < 4)

Truth Tables

A	!A
T	F
F	T

Truth Tables

A	B	A && B
T	T	T
T	F	F
F	T	F
F	F	F

Truth Tables

A	B	A || B
T	T	T
T	F	T
F	T	T
F	F	F

Truth Tables

A	B	C	!A && B || C
T	T	T	T
T	T	F	F
T	F	T	T
T	F	F	F
F	T	T	T
F	T	F	T
F	F	T	T
F	F	F	F

Assignment Operators

Operator	Example	Meaning
=	x = 2	Simple assignment
+=	x += 4	x = x + 4
-=	y -= 6	y = y – 6
*=	p *= 5	p = p * 5
/=	n /= 10	n = n / 10
%=	n %= 10	n = n % 10
++	k++	k = k + 1

Operator Precedence

- (1) !, ++
- (2) *, /, %
- (3) +, -
- (4) <, >, <=, >=
- (5) ==, !=
- (6) &&
- (7) ||
- (8) =, +=, -=, *=, /=, %=

Which of these are conditions?

- x
- x = 100
- x==100
- x!=100
- x>100
- x<100
- x>=100
- x<=100
- x+100
- x-100
- x/100
- x%100
- x+=100
- x = x + 1
- x = 100 | 99
- x == 10 || 20
- x==1||x==2
- x==1 & x==2
- x==1&&x ==2
- !x=1
- !100
- !x==1
- true
- false