$x > 5$ π

Variable

- changing

Solve for x

constant variables

type var name value

int X = 3; ← My Class

int X(3);

int X{3};

Assigns value from the right to the left.

Math:

X - 5 = 3

X = 8

CSC1

value of 3 to the variable X minus the constant 5

X = 3+5 fine

Solves for value the right side before assigning value to the left side

Only assign to a single variable

define variable in this class

int x; ← no defined value

int y=5; ← 5 is assigned to y

~~y = 3+x;~~ // throws an error

X = 3+y; //set/assign val

y = 8; //change val

Data types 2^{64}

1. Integers - int

- unsigned int (no negative)
- signed int (neg & pos)

$2^{n \text{ bytes}} - 1$

$2^4 - 1$

$16 - 1 = 15$

0 0 0 0 = 0 0 0 0 1 = 1

2^3 2^2 2^1 2^0

1 1 1 1

8 4 2 1

8+4+2+1 = 15

2 = 0 0 1 0 5 = 0 1 0 1

3 = 0 0 1 1

4 = 0 1 0 0

2^{64} long

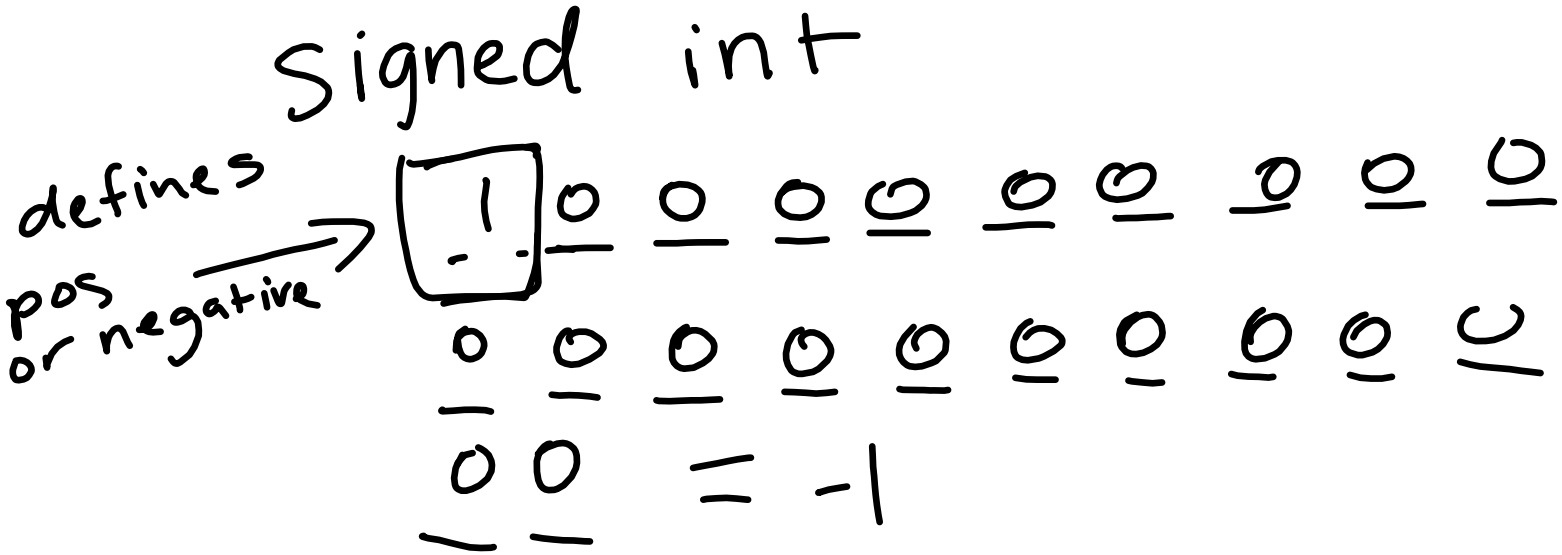
0-63 all pos
-32 - 31 neg & pos

18,446,744,073,709,551,616

2^{32} int

4 294 967 296

$2^{32}-1$


Signed int
defines
pos
or negative
1 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 = -1

short
long

2. bool ← Boolean
true or false

0 false
1 true

3. char ← Symbol

numerical value

'a' (97) ← ASCII table

'A' (65)

'@'

'0' (48)

zero

'1'

0-255

8 bytes

Decimal

1. float - single point precision
2. double - double point precision

BigDecimal

'1' != 1

1 == 1.0 depends on language

'1' == 49

'b' == 98

'C' == 67 ← capital

```
void main(){
                    parameter list

    return; //optional
}
int main(){
 return 0; //mandatory
 }
```

Rules for Variable Names

1. must start w/ a letter or an underscore
2. can contain upper, lower case letters, underscores, and numbers only
3. MUST BE SEMI DESCRIPTIVE
4. MUST BE UNIQUE...

```
int   a;  //a^2 + b^2 = c^2
int   b;
int   c;
int   a1; //another equation

bool  a1_bool;
```

Bill runs 3 miles

~~x=3;~~ //miles Run

~~num of miles~~ Bill Runs=3;

Bill_miles=3;