First Java Program - Input, Output, Debugging & Data types

* File name Demo.java
  ↓
  Class name - Demo
  ↳ good practice to make initial capital

* public - means can be used and called from anywhere

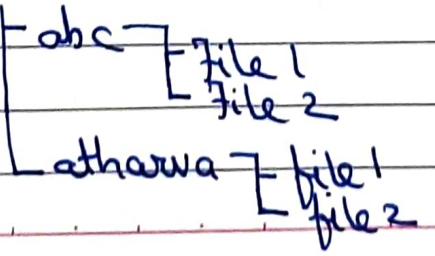
* functions - also known as methods
  ↳ Block of code

* void - method should not have return type

* String[] args - Command line arguements
  ↳ array
  ↓
  array of sequence of characters passed to main functions

* .class file always saved in same location
  ↓
  to change -d flag is used
  ↓
  e.g. javac -d <path> Demo.java

* package - com.atharva OR com.abc



* System.out.println("Hello");

var

System → class

println → funct^n / method

this means that print the output on standard output stream → here terminal

* println - adds new line
* print - does not add new line

* Scanner input = new Scanner(System.in)

Scanner → Class that allows us to take input

new → creating object

System.in → take i/p from standard input (here keyboard)

* Primitive - means any data type that cannot be broke further

⇒ int rno = 64; → 4 bytes
char let = 'a';
float n = 98.671; → 4 bytes
double n = 45678.12345 → 8 bytes
long n = 4567812345L → 8 bytes
boolean res = true;

* String → double quotes " "
* Char → single quotes ' '

* float → f at end → 98.6f
* long → L at end → 12345L
* default → decimal → float ✗
  ↳ double ✓
  ↳ int ✓
  ↳ long ✗

* Integer wrapper class - provide additional features
  ↳ create primitive data type to object

* Comment in java - ignored lines of code
  ↳ will not execute
  ↳ start with //

* int (a) = (10) → literal
  ↳ identifier

* Literals - syntactic representation of boolean, char, int, or string data
  → here 10 is integer literal

* Identifiers - They are the names of variables, methods, class, package, interface.

* Type casting and Type conversion

* Widening or automatic Type conversion
  ↳ Smaller data type to bigger datatype
  → byte → short → int → long → float → double

* Narrowing / Explicit conversion
  ↳ larger data type to smaller data type
  → double, float, long, int, short, byte

e.g.

```
double d = 100.04;  → 100.04
long l = (long) d;  → 100
int i = (int) d;    → 100
```

* Automatic Type promotion in expression-

→ While evaluating expressions, the intermediate value may exceed the range of operands & hence the expression value will be promoted.

→ Some conditions -

1) Java automatically promotes each byte, short, char to int when evaluating expression.
2) Long, float / double the whole expression is promoted to long, float or double.

e.g. after solving expression

```
(f*b) + (i/c) - (d*s)
```

we get

float + int - double = double

converted to bigger one

* Explicit type casting in expressions:

→ If we want to store large value into smaller data types

e.g.

```
byte b= 50;
b= (byte) (b*2) → type casting int to byte
```

* If...else syntax in java

```
if (condition) {
        // block of code
} else {
        // block of code
}
```

* for loop syntax

```
for (statement 1; statement 2; statement 3) {
        // code block
}
```