Chapter - 3

Variables:

Variables act as a container, they hold something.

Variables come in two flavours:

- Primitive
- Object Reference

Primitive Variables:

1. Boolean ⇒ (JVM Specific)
2. Char ⇒ 2 bytes
3. Numeric (all are signed)
    a. Integer:
        i. byte ⇒ 8 bits
        ii. short ⇒ 2 bytes
        iii. int ⇒ 4 bytes
        iv. long ⇒ 8 bytes
    b. Floating point (size may vary)
        i. float ⇒ 4 bytes
        ii. Double ⇒ 8 bytes

    (Note: Anything with a floating point is double unless you use ‘f’)

- **Be sure that the value can fit into the variable:**
  int x = 24;
  byte b = x;
  // won’t work

  ⇒ Actually it should work, because the value 24 can fit into the byte variable.
  But, it won’t work.
  Because, we can’t expect the compiler to know the value of the variable.
  It will just be checking on the variable type.

Whereas, pouring a small cup into a big one wouldn't be a problem.

Nomenclature of a variable:

- It must start with a letter, underscore or a dollar sign.
- Java reserved words cannot be used as Variable names.

Object Reference Variable:

- There is no such thing as an Object Variable, it's just an Object Reference Variable.
- They hold bits to represent a way to access an object.

3 steps of Object Declaration, Creation, and Assignment:

Dog myDog = new Dog();

1. Tells the JVM to **allocate space for a reference variable** and name it as myDog.
2. Tells the JVM to **allocate space for the new Dog Object** on the heap.
3. **Assigns the new Dog to the reference variable myDog.**

Behaviour of Reference Variable:

- All the Object Reference Variables are of the same size, but the size varies according to JVM.
- No arithmetic Stuff can be done with Reference variables.
- Once declared, then it will never be able to point to anything other than the instances of the same object.
- If marked as final, then it can never be reprogrammed to anything else but that one and only one particular object instance.

Arrays:

1. Array is an **object**, whether it is declared to hold primitives or object references.