**Datatype**

**Datatype specifies the type of data which variable can hold.**

**Datatype classified as**

1. **Primitive Datatype**

Variables of a primitive type. Variables for all primitive datatypes are declared using data type name.

int i;

double d=20.22; //i and d are primitive variables.

|  |  |  |  |
| --- | --- | --- | --- |
| Primitive  Datatype | Default Value | Default Size | Range |
| byte | **0** | **1 byte** | **((-2^7) to (2^7)-1)**  **-128 to 127** |
| short | **0** | **2 byte** | **((-2^15) to (2^15)-1)**  **-32,768 to 32,767** |
| int | **0** | **4 byte** | **((-2^31) to (2^31)-1)**  **-2147483648 to 2147483647** |
| long | **0** | **8 byte** | **((-2^63) to (2^63)-1)**  **-9223372036854775808 to**  **9223372036854775807** |
| float | **0.0** | **4 byte** | **Single-Precision**  **32-bit (4 bytes) floating point 1.4E-45 to 3.4028235E38** |
| double | **0.0** | **8 byte** | **Double-Precision**  **64-bit (8 bytes) floating point 4.9E-324 to 1.7976931348623157E308** |
| char | **nullchar**  **(/u0000)** | **2 byte** | **0 to 65535 (UNICODE)** |
| boolean | **false** | **1 bit** |  |

**Note:** Java follows Unicode character set. Unicode stands for “Universal International Standard Character Encoding” which supports 65536 characters. First 128 char are same as ASCII char set.

In Unicode, character holds 2 byte, so java also uses 2 byte for characters.

1. **Non Primitive Datatype (Reference variable)-**

Variables derived from a class/ any type or create using class/ type name.

String s;

Orange o1 = new Orange();

“s and o1 are reference variables”.

Apple a1;

Car c1;

Demo d1;

What to store for a1?

a1 is a variable of type Apple and can hold something which is of type apple.

Apple a1 = new Apple();

Technically, the reference variable will hold the address (point to) of the object it has been assigned.

**Object**

“Object is an instance of class. It is a real time entity”.

We can create using new keyword.

Orange o1 = new Orange();

new Orange();

new Orange();

Orange o2 = new Orange();

**Why string is called a derived data type?**

**Since string variable holds data of type string and since it is derived from class String, so it is called as derived datatype.**

**Where can we use null?**

**What is default value of a reference variable?**

**How can you remove the reference of an object from a variable?**

* **We can use null for a reference variable.**
* **Default value for any reference variable is null.**
* **By assigning null.**