→ "Static" Keyword

* Variables
* static block
* static method ()

1. Local
2. ~~static~~
3. instance ←

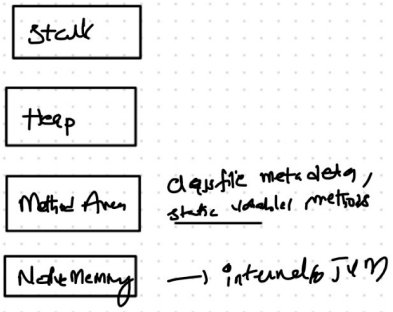
Static Variable :

→ We can make a variable as "static", when it is common for all the instances of that particular class

→ Static variables are also called as "class Variables"

→ The memory for the static variables will be allocated inside the method area (during the time of class loading)

→ Static variables improves memory management




```
class Indian {
    String name;
    byte age;
    long UID;
    static String primeMinister;
}
```

Type

Prime Minister

→ one = new Indian()
→ Sri = new Indian()
⋮
n

Note:

(1) Before java 1.8, static variables are get created in special memory area is called "permanent Generation" in method area

(2) After 1.8, they removed & stored in method area itself

(3) Even for static variable default values are allocated.

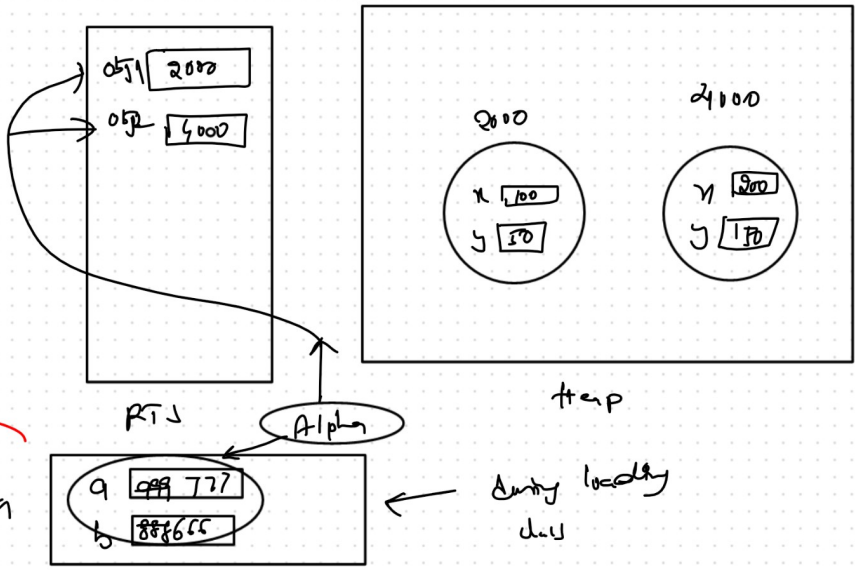
Memory Mapping

```
→ Obj1 = new Alpha()
→ Obj2 = new Alpha()
  S.O.P()
→ obj1.x = 100;
  obj1.y = 50;
  obj1.a = 999;
  obj1.b = 888;

  obj2.x = 200;
  obj2.y = 150;
→ obj2.a = 777; ←
→ obj2.b = 666;

  S.O.P()
  . . .
```

Same copy



Notes

* Static variables can be accessed with the help of 2 types
  1) Object Reference
  2) Class Name

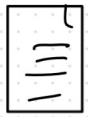
① `obj1.a = 100`

② `Alpha.a = 10`

Valid

* In the example programs we can compile the code by writing the command

$ javac StaticVariable.java



* The compiler produce 2 class files
  1) Alpha.class
  2) StaticVariable.class

→ We can give main prog to the JVM by writing this command

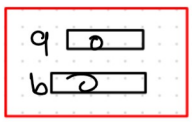
$ java StaticVariable ←

→ The Alpha.class file is loaded by the JVM implicitly whenever the obj of Alpha is created → new Alpha()

Flow Alpha → Static variable ① → Static Block ② → Static method ③

JVM

Method Area



Blocks in Java :

There are 2 types of blocks in Java.

1. Instance Block
2. Static Block

Instance Block

```
{
=
=
}
```

Static Block

```
static {
=
=
}
```

method {

}

(1)

a) Instance blocks are written inside the class & outside the method

b) Instance Blocks are executed every time when we create an object

c) If we create 10 objects the 10 times the instance blocks gets executed

(2)

(1) Static blocks are declared inside the class & out side the method

(2) Static Blocks are executed during the time of class loading. & it gets executed only once

Note:

(1) Before loading the class [Main], it checks for any static variable & then for Static blocks, if static variable is present it created variables in method Area & if static blocks are present then they are executed after this it checks for static method() and this the main reason why main method() gets executed

→ reason behind to keep main method() static

Static variables
static blocks
static methods
JVM → (main())

(2) In the example program, when ever the obj of the type [Alpha] is created, it loads the class Alpha in the method Area [Application loading] & then it checks for Static variable then it proceeds to check for the static blocks, so that's the reason static block gets executed first even before we create obj

③ After static creation is done obj checks for the instance variable and it loads them to heap Area after it proceeds for any instance blocks, if present then executed

④ If the same type of another object (obj2) is created, it doesn't load once again the class of that type into method Area & it doesn't executes the static variable & static blocks. - -