DAY-27

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NON STATIC VARIABLES AND NON STATIC METHODS

new KEYWORD IN JAVA

- THE JAVA new KEYWORD IS USED TO CREATE AN INSTANCE OF CLASS
- IN OTHER WORDS, IT **INSTANTIATES** A CLASS BY ALLOCATING MEMORY FOR A NEW OBJECT AND RETURNING A REFERENCE TO THAT MEMORY.
- SYNTAX :

```
new ClassName();
```

ACCESSING NON STATIC MEMBERS

- TO ACCESS NON STATIC MEMBERS OF ONE CLASS, IN ANOTHER CLASS , WE HAVE FOLLOW THESE STEPS

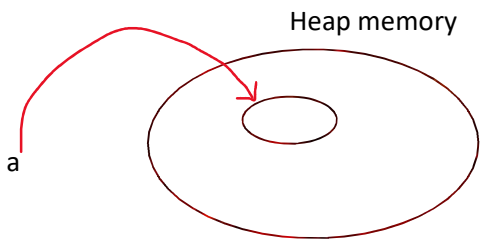
1. INTIALLY, NON STATIC MEMBERS WILL NOT BE IN EXISTANCE, TO BRING THESE INTO EXISTENCE, USER HAS TO CREATE OBJECT OR INSTANCE OF CLASS EXPLICITLIY

   ```
   new ClassName();
   ```

   AND REFER IT WITH REFERENCE VARIABLE OF SAME CLASS TYPE

   ```
   ClassName Reference_variable_name =  new ClassName();
   ```

2. THE PROCESS OF CREATING OBJECT/INSTANCE OF A CLASS IS KNOWN AS **INSTANTIATION**
3. WHEN JVM ENCOUNTERS THE OBJECT CREATION STATEMENT, FIRST IT CREATES OBJECT THE CLASS AND THEN , LOAD ALL THE NON STATIC MEMBERS OF CLASS INTO THIS OBJECT AND THEN , PUSH THIS OBJECT TO HEAP AREA/MEMORY.
4. THIS OBJECT WILL BE REFFERED BY REFERENCE VARIABLE WHICH THE USER SPECIFIED WHILE OBJECT CREATION



5. WE CAN ACCESS ANY OF NON STATIC MEMBERS OF CLASS USING REFERENCE VARIABLE

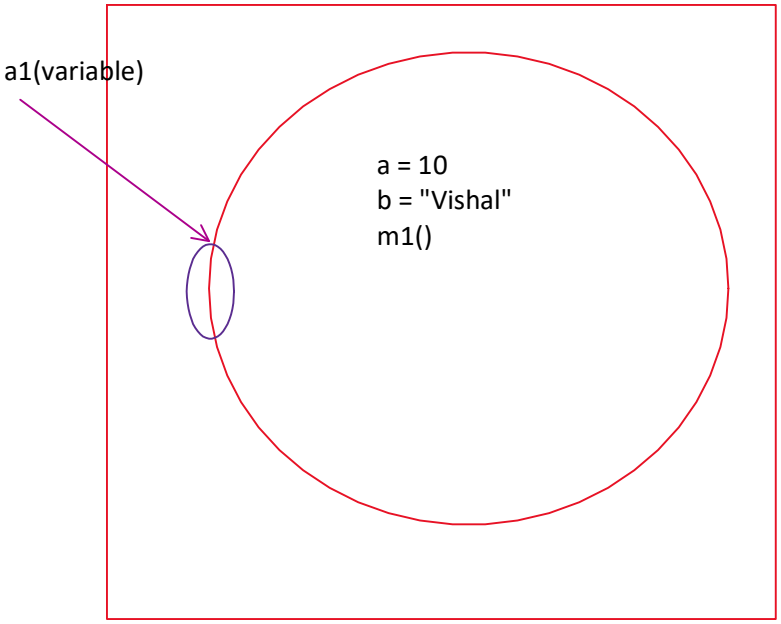
```
class Test1
{

	int a = 10;
	String b = "Vishal";

	public void m1()
	{
		System.out.println("Hi");
	}


	public static void main(String[] args)
	{
		Test1 a1 = new Test1();
	}


}
```



Test1 a1 = new Test1();

- IT CREATES THE OBEJCT OF A CLASS TEST1 AND RETURNS A REFERENCE VARIABLE TO IT
- REFERNCE TO THE OBJECT WILL BE STORED IN A REFERENCE VARIABLE a1 WHICH IS OF TYPE OF TEST1(CLASS TEST1 IS A NON PRIMITIVE DATATYPE)

- ACCESSING NON STATIC MEMBERS IN THE SAME CLASS

```
class Test1
{

	int a = 10;
	String b = "Vishal";

	public void m1()
	{
		System.out.println("Hi");
	}


	public static void main(String[] args)
	{
		Test1 a1 = new Test1();

		System.out.println(a1.a);
		System.out.println(a1.b);
		a1.m1();
```

```
	}


}
```

- ACCESSING NON STATIC MEMBERS IN DIFFERENT CLASS

```
class Test1
{

	int a = 10;
	String b = "Yoga Priya";

	public void m1()
	{
		System.out.println("Hi");
	}

}

class Test2
{
	public static void main(String[] args)
	{
		Test1 a1 = new Test1();

		System.out.println(a1.a);
		System.out.println(a1.b);
		a1.m1();

	}
}
```

- ACCESSING NON STATIC VARIABLE IN A NON STATIC METHOD

```
class Test1
{

	int a = 10;
	String b = "Yoga Priya";

	public void m1()
	{
		System.out.println("Hi");
		System.out.println(a);

	}

	public static void main(String[] args)
	{
```

```
        Test1 a1 = new Test1();
        a1.m1();

    }

}
```

CREATING MULTIPLE OBJECTS AND REINTIALIZING THE NON-STATIC MEMBERS

```
class Test0
{
    int a = 10;
}


class Test1
{


    public static void main(String[] args)
    {
        Test0 a1 = new Test0();
        System.out.println(a1.a);

        a1.a = 40;
        System.out.println(a1.a);


        Test0 a2 = new Test0();
        System.out.println(a2.a);

        a2.a = 60;
        System.out.println(a2.a);


        Test0 a3 = new Test0();
        System.out.println(a3.a);

        a3.a = 80;
        System.out.println(a3.a);



    }

}
```

- WE CAN CREATE ANY NUMBER OF OBJECTS FOR THE CLASS
- EACH TIME WHEN WE CREATE THE OBJECT ALL THE NON STATIC MEMBERS OF THE CLASS WILL LOADED INTO THIS OBJECT BY JVM AND THEN THAT OBJECT WILL BE PUSHES TO HEAP MEMORY AND OBJECT IN HEAP MEMORY WILL

BE REFFERED BY THE REFRENCE VARIABLE WHICH WE HAVE SPECIFIED AT THE TIME OF OBJECT CREATION

***INTERVIEW QUESTIONS

1. WHERE ARE STATIC MEMBERS ALLOCATED THEIR MEMORY ?

   CLASS AREA/ CLASS MEMORY

2. WHERE ARE NON STATIC MEMBERS ALLOCATE THEIR MEMORY ?

   HEAP AREA/ HEAP MEMORY

3. STATIC MEMBERS ARE ALSO CALLED AS ?

   CLASS LEVEL MEMBERS

4. NON STATIC MEMBERS ARE ALSO CALLED AS ?

   OBJECT LEVEL/INSTANCE MEMBERS

5. PROCESS OF CREATING AN OBEJCT OF CLASS IS CALLED AS ?

   INSTANTIATION

6. HOW MANY OBJECTS CAN WE CREATE PER CLASS ?

   ANY NUMBER

7. INTIALLY NON STATIC MEMBERS WILL NOT BE IN EXISTENCE , HOW TO BRING THEM TO EXISTENCE ?

   BY CREATING OBJECT

8. USE OF new OBJECT

   CREATE AN OBJECT AND REFERENCE VARIABLE

9. HOW TO REFER TO AN OBJECT ?

   BY REFERENCE VARIABLE OF CLASS TYPE

WRITE A PROGRAM

1. IN WHICH THERE MUST BE 2 CLASS
   a. IN 1ST CLASS THERE MUST BE 2 METHODS
   b. ONE IS STATIC AND OTHER IS NON STATIC
   c. THE STATIC METHOD SHOULD READ THE NUMBER FROM THE USER
   d. THE NON STATIC METHOD SHOULD FIND THE NUMBER IS PERFECT NUMBER OR NOT

   a. IN THE 2ND CLASS CALL BOTH THE METHODS
   b. EXECUTION MUST TAKEN PLACE IN THE MAIN METHOD ONLY

1. IN WHICH THERE MUST BE 2 CLASS
    a. IN 1ST CLASS THERE MUST BE 2 METHODS
    b. ONE IS STATIC AND OTHER IS NON STATIC
    c. THE STATIC METHOD SHOULD READ THE PIN NUMBER FROM THE USER AND VERIFY IT
    d. IF THE PIN IS CORRECT THEN IN THE NON STATIC METHOD DEPOSIT SHOULD BE MADE TO THE ACCOUNT

    a. IN THE 2ND CLASS THERE SHOULD BE MAIN METHOD
    b. IN MAIN METHOD TOTAL BALANCE SHOULD BE DISPLAYED

IMPORTANT CONCLUSIONS

- STATIC MEMBERS OF THE CLASS BELONG TO ENTIRE CLASS WHEREAS NON STATIC MEMBERS OF A CLASS BELONG TO INDIVIDUAL OBJECTS LEVEL
- STATIC MEMBERS WILL BE LOADED INTO THE MEMORY AT CLASS LOADING TIME WHEREAS NON STATIC MEMBERS WILL BE LOADED INTO THE MEMORY AT THE TIME OF OBJECT CREATION
- IF WE WANT TO REPRESENET ANY COMMON INFORMATION ACROSS CLASS THEN , WE CAN DECLARE SUCH INFORMATION AS STATIC MEMBER, SO THAT COMMON INFORMATION IS MAINTAINED AT CLASS LEVEL.
- IF WE WANT TO REPRESENT INFORMATION WHICH ARE DIFFERENT AND UNIQUE FOR INDIVIDUAL OBJECTS THEN, WE REPRESENT SUCH INFORMATION AS NON STATIC MEMBERS , SO THAT INFORMATION IS AT INDIVIDUAL OBJECTS LEVEL

3. WRITE A PROGRAM

    TO PRINT THE DETAILS OF STUDENTS
    a. SCHOOL OR COLLEGE NAME SHOULD BE SAME FOR ALL THE STUDENTS
    b. NAME AND ID SHOULD BE ASSIGNED TO EACH STUDENTS
    c. CREATE ENTRY FOR 5 STUDENTS

4. WAJP ON EMPLOYEE CLASS WHICH HAS THE DETAILS OF COMPANY NAME , EMPLOYEE ID, DESIGNATION AND SALARY,. GIVE 5 INPUTS