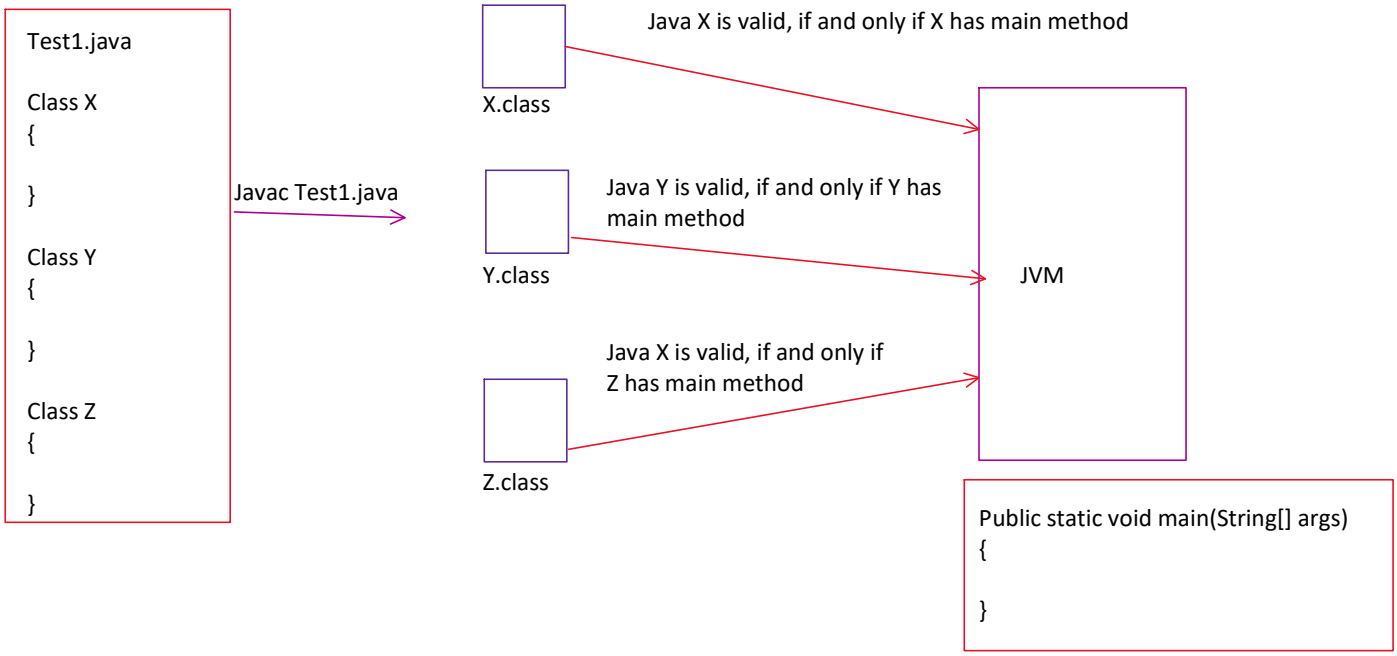
DAY-25

17 July 2023 15:06

SELECTION -2

OOPS CONCEPTS

CAN MULTIPLE CLASSES BE WRITTEN IN SAME PROGRAM



IMPORTANT CONCLUSIONS

- A SINGLE SOURCE FILE CAN HAVE MULTIPLE CLASSES
- WE CAN COMPILE ALL THE THESE CLASSES PRESENT IN A SINGLE SOURCE FILE AT ONCE
- AFTER SUCCESSUL COMPILATION NUMBER OF BYTE-CODE FILES/ .CLASS FILES GENERATED IS EQUAL TO THE NUMBER OF CLASSES PRESENT IN SOURCE FILE
- WE CAN NOT EXECUTE ALL THE CLASSES PRESENT IN A SINGLE SOURCE FILE AT ONCE , WE HAVE EXECUTE THEM ONE BY ONE
- A CLASS WILL EXECUTE IF AN ONLY IF MAIN METHOD IS PRESENT IN A CLASS
- IF THE MAIN METHOD IS NOT PRESENT IN A CLASS, IT WILL COMPILE SUCCESSFULLY BUT IT WILL NOT EXECUTE AND WE GET RUN TIME ERROR
- IF MAIN METHOD IS NOT PRSENT ACCORDING TO THE JVM STANDARD SYNTAX, IT WILL NOT BE TREATED AS MAIN METHOD AND WE WILL GET RUN TIME ERROR

```
class X
{
        //no main method ----> run time error
}

class Y
{
        //no main method ----> run time error
}
```

```
class Z
{
	public static void main(String[] args)
	{
		System.out.println("Good afternoon");
	}

}
```

SCOPE OF VARIABLES

JAVA SUPPORTS THE FOLLOWING VARIABLES WITH DIFFERENT SCOPE

1. STATIC VARIABLE
2. NON-STATIC VARIABLE
3. LOCAL VARIABLE

```
class Test1
{
	static double b = 9.16;

	String s = "BitsQ";

	public static void main(String[] args)
	{
		int a = 10;
		System.out.println(a);
	}
}
```

STATIC MEMBER

- A DATA MEMBER WHICH IS DECLARED AND INTIALIZED WITHIN A CLASS BUT OUTSIDE THE MAIN METHOD AND IT IS DECLARED WITH THE KEY-WORD **STATIC** IS CALLED **STATIC DATA MEMBER.**

NON-STATIC MEMBER

- A DATA MEMBER WHICH IS PRESENT INSIDE THE CLASS BUT OUTSIDE THE METHODS IS CALLED AS NON-STATIC MEMBER, IT IS NOT DECLARED WITH STATIC KEYWORD

LOCAL VARIABLE

- VARIABLE WHICH ARE DECLARED AND INTIALIZED WITHIN SCOPE OF METHOD ARE CALLED AS LOCAL VARIABLE
- THESE ARE NEITHER STATIC NOR NON STATIC

SCOPE OF METHODS

METHODS ALSO HAVE 2 TYPES OF SCOPE

1. STATIC
2. NON STATIC

NON STATIC METHOD

- METHODS WHICH ARE DECLARED WITHOUT THE STATIC KEYWORD ARE CALLED AS NON STATIC METHOD

EXAMPLE :

```
class Test1
{
	public void m1()
	{
		int a = 10;
		System.out.println(a);
	}
}
```

STATIC METHOD

- METHOD WHICH ARE DECLARED WITH THE STATIC KEYWORD ARE CALLED STATIC METHOD

EXAMPLE :

```
class Test1
{
	public static void m2()
	{
		int b = 11;
		System.out.println(b);
	}
}
```

- INSIDE A CLASS WE CAN WRITE ANY / ALL OF THE FOLLOWING

  i. STATIC DATA MEMBERS
  ii. NON STATIC DATA MEMBERS
  iii. STATIC METHODS
  iv. NON STATIC METHODS

```
class Test1
{
	static int a;
	float f;

	public static void main(String[] args)
	{
		int n = 3;
		System.out.println(n);
	}
}
```

- DECLARING THE STATIC OR NON STATIC VARIABLE WITHOUT INITIALIZING CAN BE COMPILED AND EXECUTED.

1. CAN WE COMPILE AN EMPTY CLASS ?

   YES

2. CAN WE EXECUTE AN EMPTY CLASS ?

   NO

3. WHAT IS COMPULSORY TO EXECUTE A CLASS FILE ?

MAIN METHOD