Assignment NO. 6

① **Method overloading** : Process of defining method with same name and different signature is called as method overloading.

- And methods which take part in method overloading are called as overloaded method.

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② **Rules for method overloading** :

- Basically there are four rules, are as follows:

① If name of method and types of parameters passed to the method are same then number of arguments passed to the methods must be different.

② If name of methods & number of parameters passed to the method are same then type of at least one parameter must be different

③ If name of methods and number of parameters passed to the method are same then order of type of parameters must be different

④ only on basis of different return type we cannot give same name to the method.

- **How does Java determine which overloaded method to call?**

The Compiler distinguishes overloaded methods by their signatures, a combination of the methods name and the number, types and order of its parameters but not its return type. If the compiler looked only at method names during compilation.

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③ **Static keyword** :

- It indicates a particular member is not an instance, but rather a part of a type.
- It means it will create only one instance of that static member that's shared across all instances of the class.

Static Method	Non-Static Method
① Belongs to the class itself not to instances	Belongs to each instance of the class.
② Access using classs name	Access using instance of class.
③ Allocated memory only once	Allocated memory for each instance of class.
④ Directly access Static member functions.	Can access static and non static both

④ - Static method can be overloaded but not over-rriden in java.

- The Static field in java, when we declare a field Static, exactly a single ~~day~~ copy of that field is created and Shared among all instances of that class.

⑤ The Static keyword in java is mainly used for memory management. The Static keyword in java is used to Share the same variable or method of a given class. The user can use Static keyword with variable, method, block & nested class.

⑥ Final keyword :

- The final keyword is used to indicate that a variable, method or class cannot be Modified or extended.
- That is we can't change anything, after applying final keyword.

⑦ - No we can't override a final method, the method that are declared as final cannot be overridden or hide.
- The final keyword serves as a non-access modifier applicable to classes, methods and variables.

(8) - This keyword :

- This keyword refers to current object in a method or Constructor.

- This keyword is used in constructor and methods to eliminate the Confusion between classe attributes and parameters with the same name.

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(9) Widening Conversion :

- Widening Conversion occurs when a value of one type is converted to another type that is of equal or greater size.

ex:- int to float

- Narrowing Conversion :

- Narrowing Conversion occurs when a value of one type is converted to another type that is of a smaller size

ex: double ⟶ int

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(10) - Widening Conversion example :

```
Public static void main (String[] args) {
 int IntegerNumber = 123456;
 long longNumber = integerNumber;
System.out.println("long: " + longNumber);
}
```

- Narrowing Conversion example :-

```
Public static void main (String[] args) {
 long longNumber = 121;
 int integerNumber = (int) longNumber;
System.out.println("Integer Number: " + integerNumber);
}
```

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(11) Java handles potential loss of precision during narrowing conversions as, this type of casting requires a manual operation using the target data type in parantheses. So java requires you to explicitly specify this

(12) Automatic Widening Conversion :

- widening Conversions takes place when two data types are automatically Converted, it happens when the two data types are compatible, when we assign value of Smaller data type to bigger data type
- byte → Short → char → int → long → float → double

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(13) - Widening Conversions preserve the source value but Can change its representation,

- It occurs if you convert from an integral type to decimal or from Char to String.
