UNIT 1

ASSIGMENT 2

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Assignment Title: Basic concepts of Java Programming with classes and objects.

Aim: Write a program to create a class Student2 along with two methods getData (), printData () to get the value through argument and display the data in printData. Create the two objects s1, s2 to declare and access the values from class

STtest Pre-Requisites: C/C++

Objective: To demonstrate concept of object oriented programming paradigm and Java including Simple Java Program, Java Tokens, Java Statements, Constants, variables, data types. Declaration of variables, Giving values to variables

Outcomes: Students are able to Understand and Apply Object oriented features and Java concepts

Theory:

Classes and Objects.

- Object – Objects have states and behaviors. Example: A dog has states - color, name, breed as well as behaviors – wagging the tail, barking, eating. An object is an instance of a class.
- Class – A class can be defined as a template/blueprint that describes the behavior/state that the object of its type support.
- Objects in Java
- Let us now look deep into what are objects. If we consider the real-world, we can find many objects around us, cars, dogs, humans, etc. All these objects have a state and a behavior.
- If we consider a dog, then its state is - name, breed, color, and the behavior is - barking, wagging the tail, running.
- If you compare the software object with a real-world object, they have very similar characteristics.
- Software objects also have a state and a behavior. A software object's state is stored in fields and behavior is shown via methods.
- So in software development, methods operate on the internal state of an object and the object-to-object communication is done via methods.

Classes in Java

A class is a blueprint from which individual objects are created.

Following is a sample of a class.

Example

```
public class Dog {
  String  breed;
  int age;
  String color;

  void barking() {
  }

  void hungry() {
  }

  void sleeping() {
  }
```

A class can contain any of the following variable types.

- Local variables − Variables defined inside methods, constructors or blocks are called local variables. The variable will be declared and initialized within the method and the variable will be destroyed when the method has completed.
- Instance variables − Instance variables are variables within a class but outside any method. These variables are initialized when the class is instantiated. Instance variables can be accessed from inside any method, constructor or blocks of that particular class.
- Class variables − Class variables are variables declared within a class, outside any method, with the static keyword.

Creating an Object

As mentioned previously, a class provides the blueprints for objects. So basically, an object is created from a class. In Java, the new keyword is used to create new objects.

There are three steps when creating an object from a class −

- Declaration − A variable declaration with a variable name with an object type.
- Instantiation − The 'new' keyword is used to create the object.
- Initialization − The 'new' keyword is followed by a call to a constructor. This call initializes the new object.

```
public class Puppy {
  public Puppy(String name) {
    // This constructor has one parameter, name.
    System.out.println("Passed Name is :" + name
```

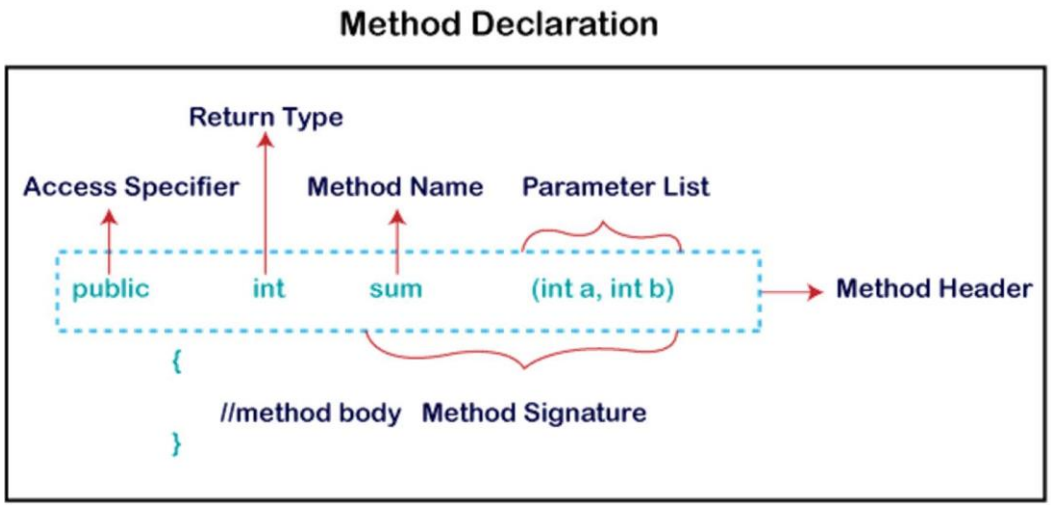
Example

```
  }

  public static void main(String []args) {
    // Following statement would create an object myPuppy
    Puppy myPuppy = new Puppy( "tommy" );
  }
}
```

What is a method in Java?

A method is a block of code or collection of statements or a set of code grouped together to perform a certain task or operation. It is used to achieve the reusability of code. We write a method once and use it many times. We do not require to write code again and again. It also provides the easy modification and readability of code, just by adding or removing a chunk of code. The method is executed only when we call or invoke it.




```
//user defined method
public static void findEvenOdd(int num)
{
//method body
if(num%2==0)
System.out.println(num+" is even");
else
System.out.println(num+" is odd");
}
```

Algorithm/Steps:

- Create a class Student2
- Define required variables

- Define method getdata()
- Define method printdata()
- Define class STest
- Create the objects
- Access the values from Class STest

Conclusion:

Hence we studied the basic programming of java with classes and objects.

FAQs.

1. Explain how to create a class?
2. What is the role of public static void main() method?
3. Difference between structure and classes?
4. What is the meaning of instance variables and local variables?
5. How to declare and define methods in java?
6. Explain the process to create objects in Java?

CODE: -

```java
package unit1;

public class Student {

    public static void main(String[] args) {
        Student2 s1=new Student2();
        Student2 s2=new Student2();
        s1.getdata(101,"kavya");
        s2.getdata(102,"bavesh");
        s1.printdata();
        s2.printdata();

}
}

     class Student2 {
            int rollno;
            String name;
            public void getdata(int rollno,String name)
            {
                this.rollno=rollno;
                this.name=name;
            }
            void printdata()
            {
                System.out.print("roll no. is "+rollno+" and name is "+name+"\n");
            }
     }
```

OUTPUT:-

```
roll no. is 101 and name is kavya
roll no. is 102 and name is bavesh
```