SNS COLLEGE OF TECHNOLOGY

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Coimbatore - 641035.

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Department of Computer Applications

Course Code: 23CAT606

Course Name: Java Programming

Unit I: Java Fundamentals

Topic 4: Class

Java Fundamentals

01 Package

02 Java Program Structure

03 Data type

04 Operators

05 Control Statements

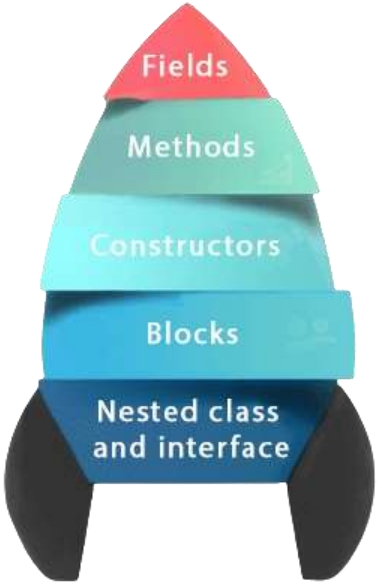
06 Looping

07 Conditional statements

Class

A class is a group of objects which have common properties.

It is a template or blueprint from which objects are created.



Syntax to declare a class:

```
class <class_name>{
    field/Data Memeber;
    method/Member functions;
}
```

Instance variable in Java

A variable which is created inside the class but outside the method is known as an instance variable.

Method in Java

In Java, a method is like a function which is used to expose the behavior of an object.

Advantage of Method

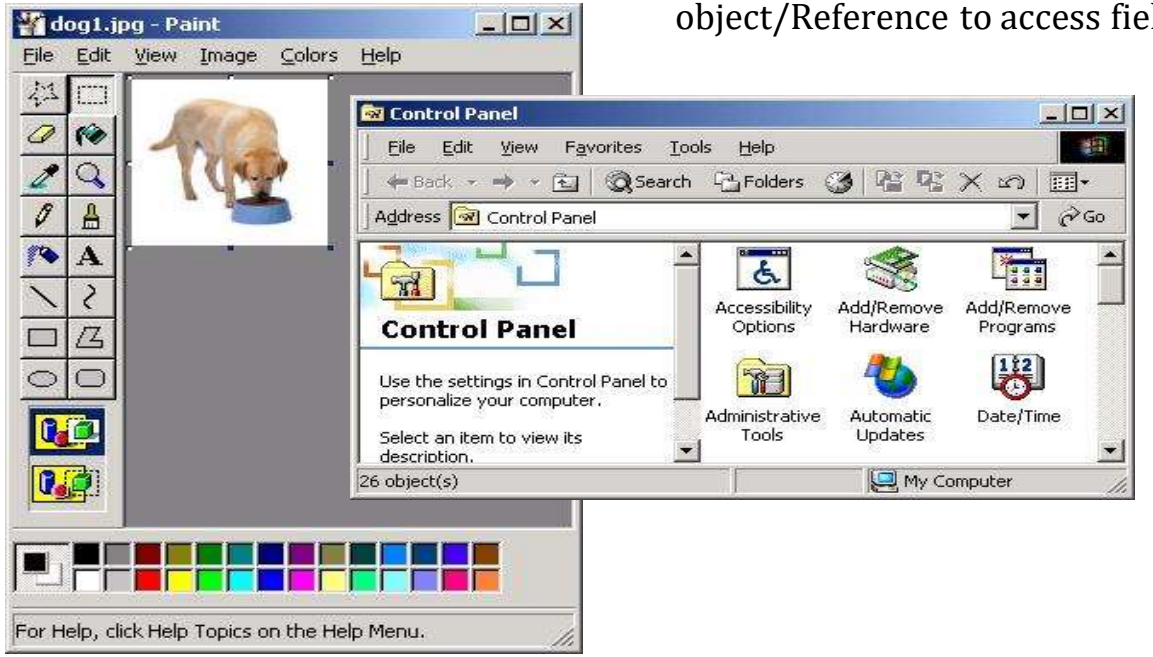
1. Code Reusability
2. Code Optimization

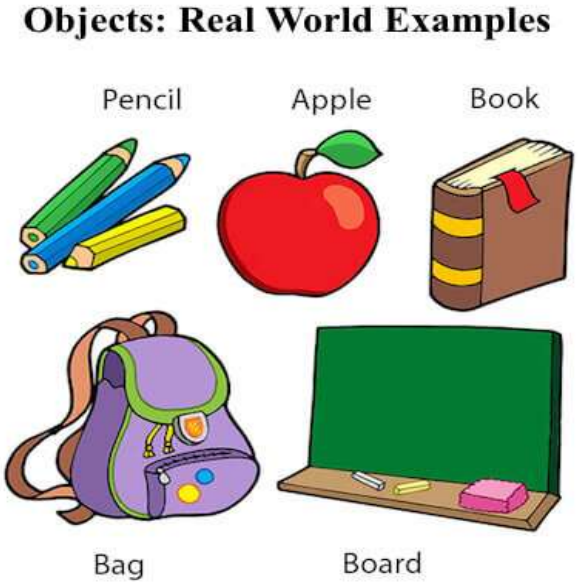
new keyword in Java

The new keyword is used to allocate memory at runtime. All objects get memory in Heap memory area.

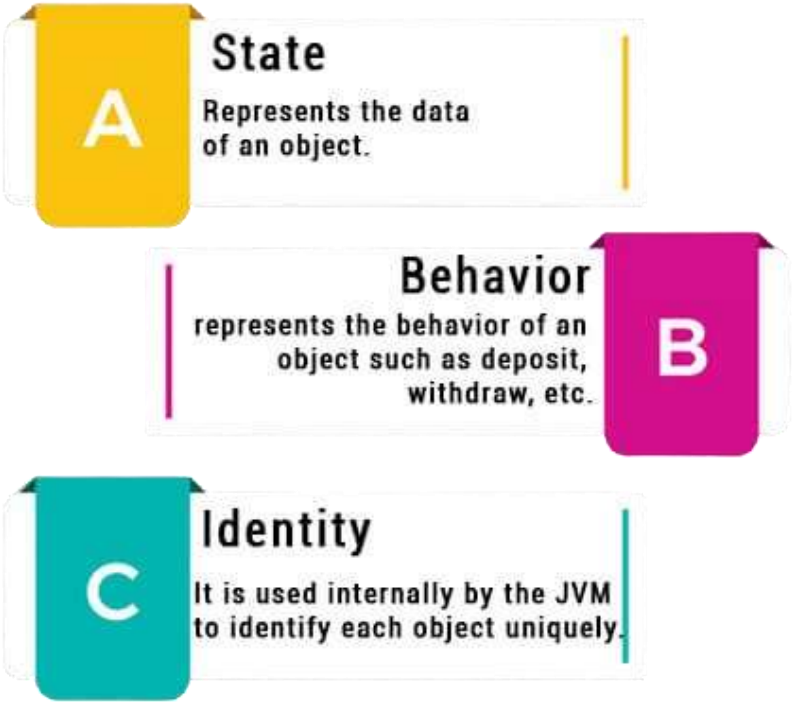
What is an object in Java

An entity that has state and behavior is known as an object/Reference to access field and methods inside the class





Three characteristics of Object



Object Definitions

An object is an instance of a class. A class is a template or blueprint from which objects are created. So, an object is the instance(result) of a class.

1. An object is a real-world entity.
2. An object is a runtime entity.
3. The object is an entity which has state and behavior.
4. The object is an instance of a class

```
// Java Class example
class Student {

    // data member (also instance variable)
    int id;

    // data member (also instance variable)
    String n;

    public static void main(String args[]) {

        // creating an object of
        // Student
        //Student s1 = new Student();
        System.out.println(s1.id);
        System.out.println(s1.n);
    }
}
```

3 Ways to initialize object

1. By reference variable
2. By method
3. By constructor

1. By reference variable

```
class Student{
                int id;
                String name;
               }
class TestStudent2{
      public static void main(String args[]){
            Student s1=new Student();
             s1.id=101;
             s1.name="Sonoo";
             System.out.println(s1.id+" "+s1.name);
                 }
}
```

2. By method

```
class Student{
                int rollno;
                String name;
                void insertRecord(int r, String n){
                              rollno=r;
                               name=n;
                 }
                 void displayInformation(){
                              System.out.println(rollno+" "+name);}
                }
class TestStudent4{
      public static void main(String args[]){
                Student s1=new Student();
                Student s2=new Student();
                s1.insertRecord(111,"Karan");
                s2.insertRecord(222,"Aryan");
                s1.displayInformation();
                s2.displayInformation();
                }
}
```

3 Ways to initialize object

1. By reference variable
2. By method
3. By constructor

3. By Constructor

```
class Bike1{
        Bike1()
        {
                System.out.println("Bike is created");
        }

public static void main(String args[]){
        Bike1 b=new Bike1();
        }
}
```

Anonymous object

Anonymous simply means nameless. An object which has no reference is known as an anonymous object. It can be used at the time of object creation only.

```
new Calculation();
```

Creating multiple objects by one type only

```
Rectangle r1=new Rectangle(), r2=new Rectangle();
```

```
class Calculation{
        void fact(int  n){
                int fact=1;
                for(int i=1;i<=n;i++){
                        fact=fact*i;
                }
                System.out.println("factorial is "+fact);
        }
public static void main(String args[]){
                new Calculation().fact(5);
}
}
```


Summary
1
2
3