- **Name of Teacher:** Miss Nita N. Bargale
- **Class:** B.Sc. Computer Science (Entire)- III
- **Course Title:** Advanced Java programming

Introduction

- Java AWT (Abstract Windowing Toolkit) is an API to develop GUI or window-based application in java.

- Java AWT components are platform-dependent i.e. components are displayed according to the view of operating system.

- AWT is **heavyweight** i.e. its components uses the resources of system.

- The java.awt package provides classes for AWT API such as **TextField**, **Label**, **TextArea**, **RadioButton, CheckBox, Choice, List** etc.

AWT Hierarchy
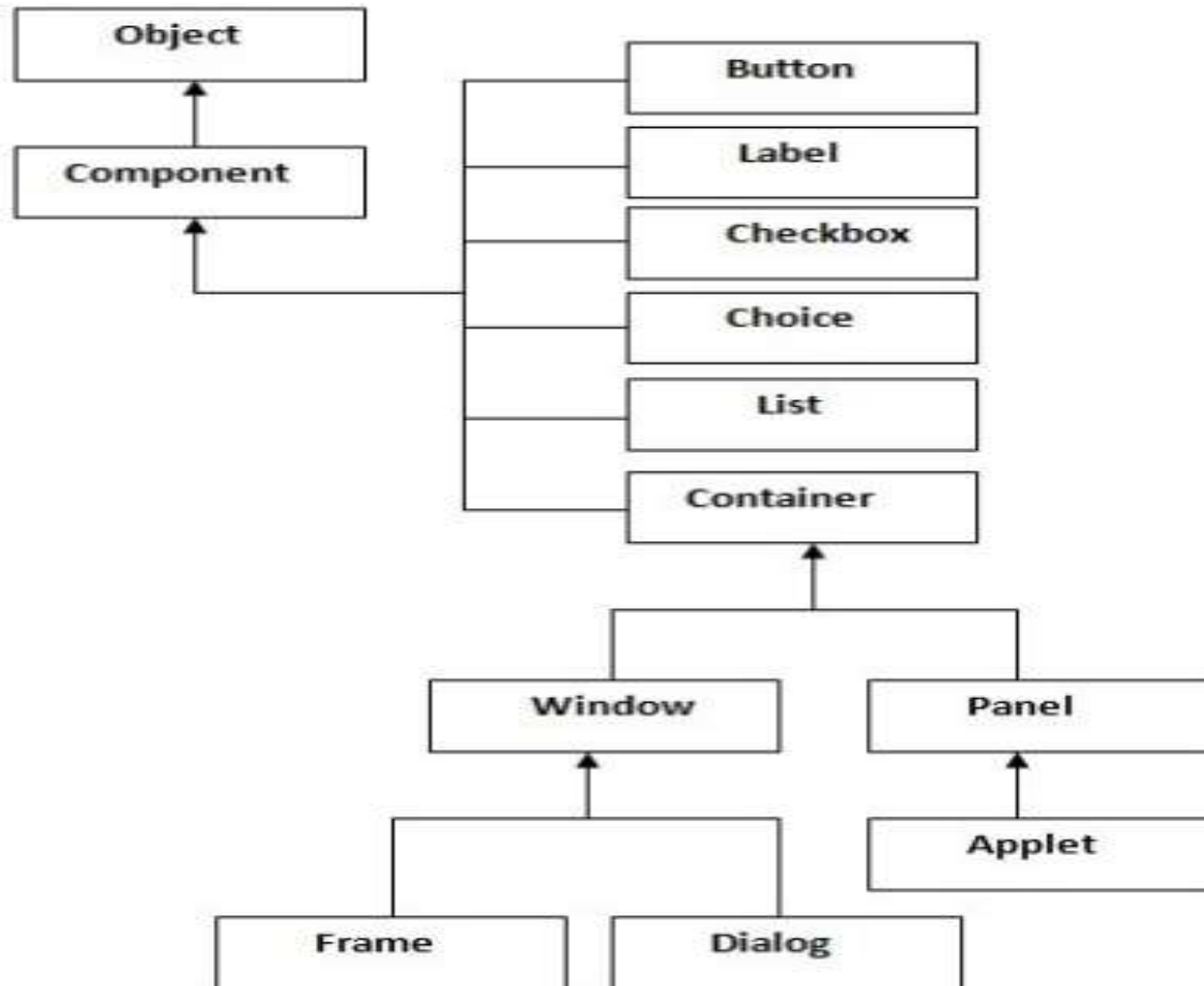
- Object-
- The Object class is the top most class and parent of all the classes in java by default.
- Every class in java is directly or indirectly derived from the object class.
- Components-
- The Component is abstract class that encapsulates all the attributes of visual component.
- All User interface (UI) elements that are displayed on screen are subclasses of Component.

Methods of Component class

Method	Description
public void add(Component c)	inserts a component on this component.
public void setSize(int width, int height)	sets the size (width and height) of the component.
public void setLayout(LayoutManager m)	defines the layout manager for the component.
public void setVisible(boolean status)	changes the visibility of the component, by default false.
void remove(Component c)	Remove a component
void setBounds(int x,int y, int width, int height)	Set the location and size of single component and useful only with null layout.

Container

- The Container is a component in AWT that can contain another components like buttons, textfields, labels etc.
- The classes that extends Container class are known as container such as Frame, Dialog and Panel.
- Container is **responsible for laying out any components** that it contains through the use of layout managers.
- **Methods:**
  - void setFont(Font f)
  - void setLayout(LayoutManager mgr)

Panel

- Panel class is sub class of applet.it is used to grouping the components.

- The Panel is the container that **doesn't contain title bar and menu bars and Borders**.

- It can have other components like button, textfield etc.

window

- The window is the container that have **no borders and menu bars.**

- Window is a rectangular area, which is displayed on the screen. In a different window, we can execute different program and display different data. Window provide us with multitasking environment. A window must have either a frame, dialog, or another window defined as its owner when it's constructed.

Frame

- It is subclass of **Window**.
- The Frame is the container that contain title bar and can have menu bars,borders, and resizing corners.
- It can have other components like button, textfield, etc.
- Methods:
  - void setTitle(String title)
  - void setBackground(Color bgcolor)

- Extends Frame class
- Constructor are:
  - Frame()
  - Frame(String title)
- Setting and Getting window size:
  - void setSize(int width, int height)
  - void setSize(Dimension newsize)
- Showing and Hiding Frame
  - void setVisible(boolean visibleFlag)

- Frame class

- We can create stand-alone AWT based applications.
- A Frame provides main window for the GUI application.
- There are two ways to create a Frame :
  1. By instantiating Frame Class
  2. By extending Frame class

Program using Frames

```java
import java.awt.*;
class FirstFrame
{
FirstFrame()
{
Frame f=new Frame();
f.setSize(300,300);
f.setVisible(true);
}
public static void main(String args[])
{
FirstFrame f=new FirstFrame();
}
}
```