Implementing Type Casting

- In Java, it is possible to assign a sub class object to the base class.
- You cannot assign the base class reference to a sub class reference. Therefore, it is necessary to convert from one type into other.
- Java supports the following types of type casting:
  - Type casting primitive data types
  - Type casting objects

Type Casting Primitive Data Types

- A primitive data type supports two types of type casting:
  - Implicit casting
  - Explicit casting
- Implicit casting:
  - Refers to an automatic conversion of one data type into another.
  - Occurs if both the data types are compatible with each other.
- Consider the following code snippet of the implicit casting:

```
int a = 100;
long b = a;
```

- Explicit casting occurs when one data type cannot be implicitly converted into another data type.
- In case of explicit conversion, you must convert the data type into the compatible type.

Type Casting Primitive Data Types (Contd.)

- Consider the following code snippet that casts the integer number to the byte type:

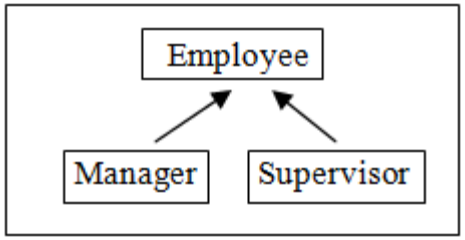
```
int a = 10;
byte b = (byte) a;
System.out.println(b);
```

Type Casting Object

- The casting of object references depends on the relationship of the classes involved in the same hierarchy.
- Any object reference can be assigned to a reference variable of the type, `Object`.
- An object supports following types of casting in Java:
  - Upcasting
  - Downcasting
- Upcasting is usually done along the class hierarchy in a direction from the derived class to the base class.

Type Casting Object (Contd.)

- For example, the `Manager` and `Supervisor` classes extend the `Employee` class, as shown in the following figure.

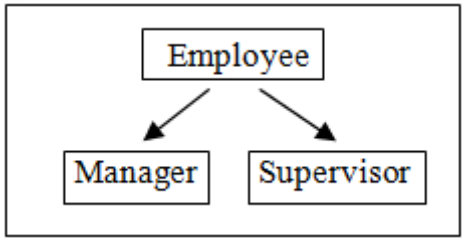


- A `Manager` class object can be treated as if it were an `Employee` object, as shown in following code snippet:

```
Employee emp1 = new Employee();
Employee emp2 = new Employee();
Manager mgr = new Manager();
Supervisor spr = new Supervisor();
emp1 = mgr;
emp2=spr;
```

Type Casting Object (Contd.)

- Downcasting is usually done along the class hierarchy in a direction from the base class towards the derived classes, as shown in the following figure.



- Consider the code given in the embedded document to implement downcasting:

Microsoft Word Document

Just a minute

- Which one of the following casts allows automatic conversion from one data type into another?
  - Upcasting
  - Downcasting
  - Implicit casting
  - Explicit casting

Just a minute (Contd.)

- Solution:
  - Implicit casting