

# Classes and Objects

**Class** is a template for an object(contains the data fields and methods)

```
public class Employee{  
    double salary;  
    double bonus;  
    void calculateTotalPay(){  
  
    double totalpay=salary+bonus;  
    System.out.println("Totalpay is"  
    +totalpay);  
  
}
```

Annotations in the code above:

- Blue lines pointing to `salary` and `bonus` are labeled "Data fields".
- A blue line pointing to `calculateTotalPay()` is labeled "method".

**Object** is a copy of a class(instance of a class)

```
public class TestEmployee{  
    public static void main (String[]  
    args){  
        Employee alex =new Employee();  
        Employee linda =new Employee();  
        alex.salary=90000;  
        alex.bonus=20000;  
        alex.calculateTotalPay();  
    }  
}
```

# Classes and Objects

```
public class Box{  
int length;  
int width;
```

```
Void calculateArea(){
```

```
int area=length*width;
```

```
System.out.println("Area is" +area);
```

```
}  
}
```

```
public class TestBox{  
public static void main (String[]  
args){  
Box obj1 =new Box();  
Box obj2 =new Box();  
obj1.length=5;  
obj1.width=10;  
obj1.calculateArea;  
obj2.length=15;  
obj2.width=2;  
obj2.calculateArea;  
}  
}
```

# Advantage of return method

## calculating sum of areas

```
public class Box{
int length;
int width;

Int calculateArea(){

int area=length*width;
return area;

}
}
```

```
public class TextBox{
public static void main (String[]
args){
Box obj1 =new Box();
Box obj2 =new Box();
obj1.length=5;
obj1.width=10;
Int area1=obj1.calculateArea;
obj2.length=15;
obj2.width=2;
Int area2=obj2.calculateArea;
System.out.println(area1+area2);
}
}
```

# Methods with arguments

```
public class Box{  
    int length;  
    int width;  
  
    int calculateArea(int x){  
  
    int area=length*width*x;  
    return area;  
  
    }  
}
```

```
public class TestBox{  
    public static void main (String[]  
    args){  
        Box obj1 =new Box();  
        Box obj2 =new Box();  
        obj1.length=5;  
        obj1.width=10;  
        int area1=obj1.calculateArea(4);  
        System.out.println(area1);  
    }  
}
```

# Methods with arguments

```
public class Box{
int length;
int width;

int calculateArea(int length,int
width){

int area=length*width;
return area;

}
}
```

```
public class TestBox{
public static void main (String[]
args){
Box obj1 =new Box();
Box obj2 =new Box();
obj1.length=5;
obj1.width=10;
int area1=obj1.calculateArea(4,3);
System.out.println(area1);
}
}
```

Output 12

# Methods with arguments

```
public class Box{  
int length;  
int width;  
  
int calculateArea( int length,int  
width){  
  
int area=this.length*this.width;  
return area;  
  
}  
}
```

```
public class TestBox{  
public static void main (String[]  
args){  
Box obj1 =new Box();  
Box obj2 =new Box();  
obj1.length=5;  
obj1.width=10;  
int area1=obj1.calculateArea(4,3);  
System.out.println(area1);  
}  
}
```

Output 50

# Constructors

```
public class SmallBox{  
int length;  
int width;
```

```
SmallBox(int length, int width) {  
this.length = length;  
this.width=width;  
}
```

```
void calculateArea( ){
```

```
System.out.println("Area is" +(length+width));
```

```
}  
}
```

```
public class TestSmallBox{  
public static void main (String[]  
args){  
SmallBox obj1 =new SmallBox(3,4);  
obj1.calculateArea();  
}  
}
```

Output ?

# Constructors

```
public class SmallBox{  
int length;  
int width;
```

```
SmallBox( ){
```

```
    this.length=5;  
    this.width=6;  
}
```

```
void calculateArea(){  
    System.out.println("Area"+(length+width)  
);  
}  
}
```

```
public class TestBox{  
public static void main (String[]  
args){  
    SmallBox obj1 =new Employee();  
    obj1.calculateArea();  
}  
}
```

Output ?

if you want some default value you can use a constructor(initial default values)  
Constructors have the same name as class  
Doesn't return anything including void



# Constructors with parameters

```
public class SmallBox{  
int length;  
int width;
```

```
SmallBox(int length,int width ){
```

```
    this.length=length;  
    this.width=width;  
}
```

```
void calculateArea(){  
    System.out.println("Area"+(length+width)  
);  
}
```

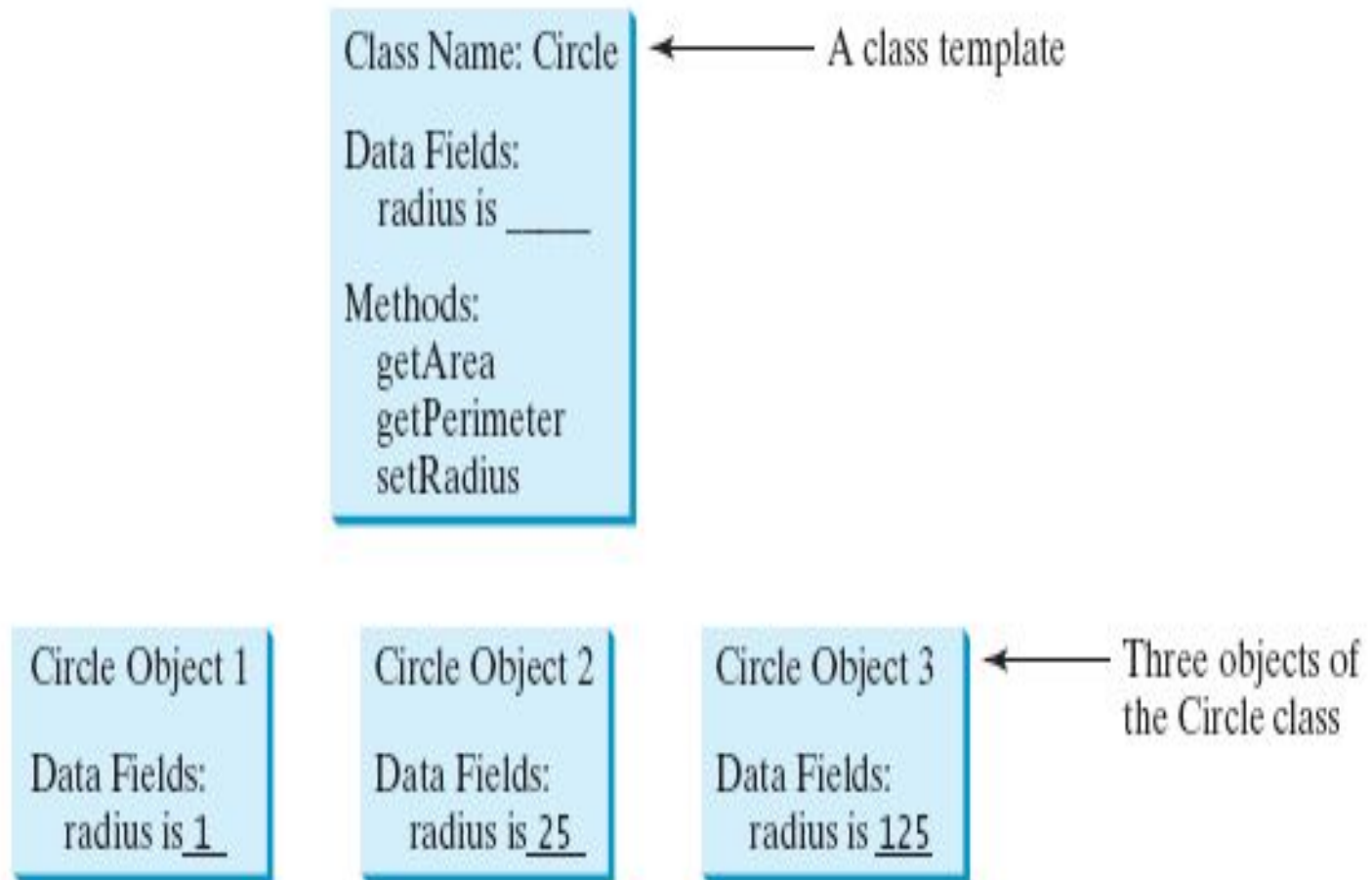
if you want some default value you can use a constructor(initial default values)

Constructors have the same name as class

Doesn't return anything including void

```
public class TestBox{  
public static void main (String[]  
args){  
    Box obj1 =new Employee();  
    obj1.calculateArea();  
}  
}
```

Output ?



**FIGURE 8.2** A class is a template for creating objects.