LAB 7

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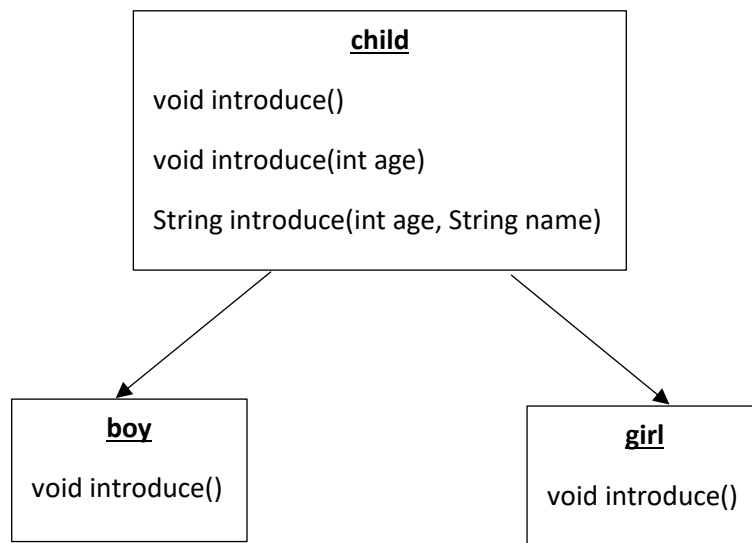
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S No.	Title	Date Of Implementation	Remarks
1	Program to illustrate polymorphism	21-02-2021	

Program to illustrate polymorphism(compile-time and run-time)

OBJECTIVE:

The following program creates a super class **child**. The classes **girl** and **boy** are children classes of the class **child**.

```
┌─────────────────────────────────────┐
│                child                 │
│                                      │
│   void introduce()                   │
│                                      │
│   void introduce(int age)            │
│                                      │
│   String introduce(int age, String name) │
└─────────────────────────────────────┘
        ↓                       ↓
┌─────────────────┐     ┌─────────────────┐
│       boy       │     │      girl       │
│                 │     │                 │
│ void introduce()│     │ void introduce()│
└─────────────────┘     └─────────────────┘
```

In the class child,

      The method introduce is overloaded (compile-time polymorphism)

In the class boy,

      The method introduce overrides the introduce method of the class child (run-time polymorphism)

In the class girl,

      The method introduce overrides the introduce method of the class child (run-time polymorphism)

CODE:

```java
public class Lab7 {
    public class child{
        int age;

        void introduce(){
            System.out.println("I am a child");
        }

        // Method Overloading: Compile time polymorphism
        // Overloads the above introduce() method
        void introduce(int age){
            this.age=age;
            System.out.println("I am a child. I am "+age+" years old");
        }

        // Method Overloading
```

```java
        String introduce(int age, String name){
            this.age=age;
            System.out.println("I am a child. I am "+age+" years old");
            return "My name is "+name;
        }
    }

    public class boy extends child{
        boy(int age){
            super.age = age;
        }

        // Method Overriding: Run time polymorphism
        // Overrides the introduce() method of parent class if object of child is created
        void introduce(){
            System.out.println("I am a boy");
        }
    }

    public class girl extends child{
        girl(int age){
            super.age = age;
        }

        // Method Overriding: Run time polymorphism
        // Overrides the introduce() method of parent class if object of child is created
        void introduce(){
            System.out.println("I am a girl");
        }
    }
    public static void main(String[] args) {
        Lab7 l = new Lab7();

        boy b = l.new boy(6);

        b.introduce();
        b.introduce(6);
        System.out.println(b.introduce(6, "Luke"));

        girl g = l.new girl(8);
        g.introduce();
        System.out.println(g.introduce(8, "Arya"));

    }
}
```

OUTPUT:

```
I am a boy
I am a child. I am 6 years old
I am a child. I am 6 years old
My name is Luke
I am a girl
I am a child. I am 8 years old
My name is Arya
```