



Demo9.java

```
package com.jlcindia.demos;

import java.util.Optional;
/*
 * @Author : Srinivas Dande
 * @Company: Java Learning Center
 */
public class Demo9 {
    public static void main(String[] args) {

        String str1 = "Srinivas";
        Optional<Optional<String>> myopts1 = Optional.of(Optional.ofNullable(str1));

        System.out.println("1. "+myopts1);
        System.out.println("2. "+myopts1.map(input -> input));
        System.out.println("3. "+myopts1.flatMap(input -> input));

        System.out.println("-----");
        Optional<Optional<String>> x = myopts1.map(
            input1 -> input1.map(input2 -> input2.toUpperCase()
        );
        System.out.println("x = "+x);

        Optional<String> y = myopts1.flatMap(
            input1 -> input1.map(input2 -> input2.toUpperCase()
        );

        System.out.println("y = "+y);
        System.out.println("-----");

        String str2 = "jlc";
        Optional<Optional<Optional<String>>> myopts2 =
Optional.of(Optional.of(Optional.ofNullable(str2))));

        Optional<Optional<Optional<String>>> aa = myopts2.map(input1-> input1);
        System.out.println(aa);

        System.out.println("Done!!!");
    }
}
```



Demo10.java

```
package com.jlcindia.demos;

import java.util.Optional;
/*
 * @Author : Srinivas Dande
 * @Company: Java Learning Center
 */
public class Demo10 {
    public static void main(String[] args) {

        String str = "jlc";
        Optional<Optional<Optional<String>>> myopts =
        Optional.of(Optional.of(Optional.ofNullable(str)));

        System.out.println("1. "+myopts);

        Optional<Optional<Optional<String>>> aa =
        myopts.map(input1-> input1.map(input2->input2.map(input3-> input3.toUpperCase())));
        System.out.println("2. "+aa);

        Optional<Optional<String>> bb =
        myopts.flatMap(input1-> input1.map(input2->input2.map(input3-> input3.toUpperCase())));
        System.out.println("3. "+bb);

        Optional<String> cc =
        myopts.flatMap(input1-> input1.flatMap(input2->input2.map(input3->
        input3.toUpperCase())));
        System.out.println("4. "+cc);

        System.out.println("Done!!!");

    }
}
```



Demo11.java

```
package com.jlcindia.demos;

import java.util.NoSuchElementException;
import java.util.Optional;
/*
 * @Author : Srinivas Dande
 * @Company: Java Learning Center
 */

public class Demo11 {

    public static void main(String[] args) {

        String str1 ="Srinivas";
        Optional<String> myopts= Optional.ofNullable(str1);

        System.out.println("1. "+myopts);
        System.out.println("2. "+myopts.orElse("Hello Guys"));
        System.out.println("3. "+myopts.orElseGet( () -> "Ok Guys"));
        System.out.println("4. "+myopts.orElseThrow(NoSuchElementException::new));

        String str2 =null;
        myopts= Optional.ofNullable(str2);

        System.out.println("1. "+myopts);
        System.out.println("2. "+myopts.orElse("Hello Guys"));
        System.out.println("3. "+myopts.orElseGet( () -> "Ok Guys"));
        System.out.println("4. "+myopts.orElseThrow(NoSuchElementException::new));

    }
}
```

Data Model without Optional Class

Files Required:

1. Trainer.java	2. Course.java
3. Student.java	4. Demo1.java
5. Demo2.java	

1) Trainer.java

```
package com.jlcindia.demos1;
/*
 * @Author : Srinivas Dande
 * @Company: Java Learning Center
 */

public class Trainer {
    private String trainerName;
    private String trainerEmail;
    private String trainerPhone;

    public Trainer() {}

    public Trainer(String trainerName, String trainerEmail, String trainerPhone) {
        super();
        this.trainerName = trainerName;
        this.trainerEmail = trainerEmail;
        this.trainerPhone = trainerPhone;
    }

    //Setters and Getters

}
```

2) Course.java

```
package com.jlcindia.demos1;
/*
 * @Author : Srinivas Dande
 * @Company: Java Learning Center
 */

public class Course {
    private String courseName;
    private double coursePrice;
    private Trainer trainer;
```



```
public Course() {}

public Course(String courseName, double coursePrice, Trainer trainer) {
    super();
    this.courseName = courseName;
    this.coursePrice = coursePrice;
    this.trainer = trainer;
}

//Setters and Getters

}
```

3) Student.java

```
package com.jlcindia.demos1;
/*
 * @Author : Srinivas Dande
 * @Company: Java Learning Center
 */

public class Student {
    private String studentName;
    private String studentEmail;
    private long studentPhone;
    private Course course;

    public Student() {
    }

    public Student(String studentName, String studentEmail, long studentPhone, Course course) {
        super();
        this.studentName = studentName;
        this.studentEmail = studentEmail;
        this.studentPhone = studentPhone;
        this.course = course;
    }

    //Setters and Getters

}
```

4) Demo1.java

```
package com.jlccindia.demos1;
/*
 * @Author : Srinivas Dande
 * @Company: Java Learning Center
 */

public class Demo1 {
    public static void main(String[] args) {

        Trainer trainer1 = new Trainer("Srinivas","sri@jlc","12345");
        Course course1=new Course("DevOps",15000,trainer1);
        Student student1=new Student("Hello", "hello@gmail", 111, course1);

        // I have access to Only Student Object and want trainer Email and Phone
        String trainerName = student1.getCourse().getTrainer().getTrainerName();
        String trainerEmail = student1.getCourse().getTrainer().getTrainerEmail();
        String trainerPhone = student1.getCourse().getTrainer().getTrainerPhone();

        System.out.println(trainerName);
        System.out.println(trainerEmail);
        System.out.println(trainerPhone);
        System.out.println("-----");

        Course course2=new Course("Java8 New",500,null);
        Student student2=new Student("Hai", "hai@gmail",222, course2);

        // I have access to Only Student Object and want trainer Email and Phone
        trainerName = student2.getCourse().getTrainer().getTrainerName();
        trainerEmail = student2.getCourse().getTrainer().getTrainerEmail();
        trainerPhone = student2.getCourse().getTrainer().getTrainerPhone();

        System.out.println(trainerName);
        System.out.println(trainerEmail);
        System.out.println(trainerPhone);

        Student student3=new Student("Sri", "sri@gmail",333, null);

        // I have access to Only Student Object and want trainer Email and Phone
        trainerName = student3.getCourse().getTrainer().getTrainerName();
        trainerEmail = student3.getCourse().getTrainer().getTrainerEmail();
        trainerPhone = student3.getCourse().getTrainer().getTrainerPhone();
```



```
System.out.println(trainerName);
System.out.println(trainerEmail);
System.out.println(trainerPhone);
}
}
```

5) Demo2.java

```
package com.jlcindia.demos1;
/*
 * @Author : Srinivas Dande
 * @Company: Java Learning Center
 */
public class Demo2 {

    public static void main(String[] args) {

        //      Trainer trainer = new Trainer("Srinivas", "sri@jlc", "12345");
        //      Course course = new Course("DevOps", 15000, null);
        Student mystudent = new Student("Hello", "hello@gmail", 111, null);

        // I have access to Only Student Object
        // I want trainer Email and Phone
        String trainerName = "No Name available";
        String trainerEmail = "No Email Provided";
        String trainerPhone = "No Phone Provided";

        if (mystudent != null) {
            Course mycourse = mystudent.getCourse();
            if (mycourse != null) {
                Trainer mytrainer = mycourse.getTrainer();
                if (mytrainer != null) {
                    trainerName = mytrainer.getTrainerName();
                    trainerEmail = mytrainer.getTrainerEmail();
                    trainerPhone = mytrainer.getTrainerPhone();
                }
            }
        }
        System.out.println(trainerName);
        System.out.println(trainerEmail);
        System.out.println(trainerPhone);
    }
}
```

Data Model with Optional Class

Files Required:

1. Trainer.java	2. Course.java
3. Student.java	4. Demo1.java
5. Demo2.java	6. Demo3.java
7. Demo4.java	

1) Trainer.java

```
package com.jlcindia.demos3;
/*
 * @Author : Srinivas Dande
 * @Company: Java Learning Center
 */
public class Trainer {
    private String trainerName;
    private String trainerEmail;
    private String trainerPhone;
    public Trainer() {}
    public Trainer(String trainerName, String trainerEmail, String trainerPhone) {
        this.trainerName = trainerName;
        this.trainerEmail = trainerEmail;
        this.trainerPhone = trainerPhone;
    }
    //Setters and Getters
}
```

2) Course.java

```
package com.jlcindia.demos3;

import java.util.Optional;
/*
 * @Author : Srinivas Dande
 * @Company: Java Learning Center
 */
public class Course {
    private String courseName;
    private double coursePrice;
    private Optional<Trainer> trainer;

    public Course() {}
}
```




```
public Course(String courseName, double coursePrice, Optional<Trainer> trainer) {  
    super();  
    this.courseName = courseName;  
    this.coursePrice = coursePrice;  
    this.trainer = trainer;  
}  
  
//Setters and Getters  
  
}
```

3) Student.java

```
package com.jlcindia.demos3;  
  
import java.util.Optional;  
/*  
 * @Author : Srinivas Dande  
 * @Company: Java Learning Center  
 */  
public class Student {  
    private String studentName;  
    private String studentEmail;  
    private long studentPhone;  
    private Optional<Course> course;  
  
    public Student() {  
    }  
  
    public Student(String studentName, String studentEmail, long studentPhone,  
        Optional<Course> course) {  
        super();  
        this.studentName = studentName;  
        this.studentEmail = studentEmail;  
        this.studentPhone = studentPhone;  
        this.course = course;  
    }  
  
    //Setters and Getters  
  
}
```



4) Demo1.java

```
package com.jlcindia.demos3;

import java.util.Optional;
/*
 * @Author : Srinivas Dande
 * @Company: Java Learning Center
 */
public class Demo1 {

    public static void main(String[] args) {

        Trainer trainer = new Trainer("Srinivas","sri@jlc","12345");
        Course course=new Course("DevOps",15000,Optional.ofNullable(trainer));
        Student student=new Student("Hello", "hello@gmail", 111, Optional.ofNullable(course));

        Optional<Student> mystudent = Optional.ofNullable(student);

        Optional<Course> mycourse =mystudent.flatMap(mystu -> mystu.getCourse());
        Optional<Trainer> mytrainer = mycourse.flatMap(mycou -> mycou.getTrainer());

        Optional<String> emailOpts= mytrainer.map(mytra -> mytra.getTrainerEmail());
        String email = emailOpts.orElse("No Email is given");

        Optional<String> nameOpts= mytrainer.map(mytra -> mytra.getTrainerName());
        String name = nameOpts.orElse("No Name is given");

        Optional<String> phoneOpts= mytrainer.map(mytra -> mytra.getTrainerPhone());
        String phone = phoneOpts.orElse("No Phone is given");

        System.out.println(name);
        System.out.println(email);
        System.out.println(phone);

    }
}
```



5) Demo2.java

```
package com.jlcindia.demos3;

import java.util.Optional;
/*
 * @Author : Srinivas Dande
 * @Company: Java Learning Center
 */
public class Demo2 {

    public static void main(String[] args) {

        Trainer trainer = new Trainer("Srinivas","sri@jlc","12345");
        Course course=new Course("DevOps",15000,Optional.ofNullable(trainer));
        Student student=new Student("Hello", "hello@gmail", 111, Optional.ofNullable(course));

        Optional<Student> mystudent = Optional.ofNullable(student);

        String name= mystudent.flatMap(
            mystu -> mystu.getCourse().flatMap(
                mycou-> mycou.getTrainer().map(
                    mytra-> mytra.getTrainerName()))
            .orElse("NO Name is Provided");

        String email= mystudent.flatMap(
            mystu -> mystu.getCourse().flatMap(
                mycou-> mycou.getTrainer().map(
                    mytra-> mytra.getTrainerEmail()))
            .orElse("NO Email is Provided");

        String phone= mystudent.flatMap(
            mystu -> mystu.getCourse().flatMap(
                mycou-> mycou.getTrainer().map(
                    mytra-> mytra.getTrainerPhone()))
            .orElse("NO Phone is Provided");

        System.out.println(name);
        System.out.println(email);
        System.out.println(phone);
    }
}
```



6) Demo3.java

```
package com.jlcindia.demos3;

import java.util.Optional;
/*
 * @Author : Srinivas Dande
 * @Company: Java Learning Center
 */
public class Demo3 {
    public static void main(String[] args) {

        Trainer trainer =null;
        Course course=new Course("DevOps",15000,Optional.ofNullable(trainer));
        Student student=new Student("Hello", "hello@gmail", 111, Optional.ofNullable(course));

        Optional<Student> mystudent = Optional.ofNullable(student);

        String name= mystudent.flatMap(
            mystu -> mystu.getCourse().flatMap(
                mycou-> mycou.getTrainer().map(
                    mytra-> mytra.getTrainerName()))).orElse("NO Name is Provided");

        String email= mystudent.flatMap(
            mystu -> mystu.getCourse().flatMap(
                mycou-> mycou.getTrainer().map(
                    mytra-> mytra.getTrainerEmail()))).orElse("NO Email is Provided");

        String phone= mystudent.flatMap(
            mystu -> mystu.getCourse().flatMap(
                mycou-> mycou.getTrainer().map(
                    mytra-> mytra.getTrainerPhone()))).orElse("NO Phone is Provided");

        System.out.println(name);
        System.out.println(email);
        System.out.println(phone);

        System.out.println("-----");

        String cname= mystudent.flatMap(
            mystu -> mystu.getCourse().map(
                mycou-> mycou.getCourseName()))).orElse("NO Course is Provided");
```

```
double price= mystudent.flatMap(
mystu -> mystu.getCourse().map(
mycou-> mycou.getCoursePrice()))).orElse(25000.0);

System.out.println(cname);
System.out.println(price);

}
}
```

7) Demo4.java

```
package com.jlcindia.demos3;

import java.util.Optional;
/*
 * @Author : Srinivas Dande
 * @Company: Java Learning Center
 */
public class Demo4 {
public static void main(String[] args) {

Course course=null;
Student student=new Student("Hello", "hello@gmail", 111, Optional.ofNullable(course));

Optional<Student> mystudent = Optional.ofNullable(student);

String name= mystudent.flatMap(
mystu -> mystu.getCourse().flatMap(
mycou-> mycou.getTrainer().map(
mytra-> mytra.getTrainerName()))).orElse("NO Name is Provided");

String email= mystudent.flatMap(
mystu -> mystu.getCourse().flatMap(
mycou-> mycou.getTrainer().map(
mytra-> mytra.getTrainerEmail()))).orElse("NO Email is Provided");

String phone= mystudent.flatMap(
mystu -> mystu.getCourse().flatMap(
mycou-> mycou.getTrainer().map(
mytra-> mytra.getTrainerPhone()))).orElse("NO Phone is Provided");
}
```



```
System.out.println(name);
System.out.println(email);
System.out.println(phone);

System.out.println("-----");

String cname= mystudent.flatMap(
mystu -> mystu.getCourse().map(
mycou-> mycou.getCourseName())).orElse("NO Course is Provided");

double price= mystudent.flatMap(
mystu -> mystu.getCourse().map(
mycou-> mycou.getCoursePrice())).orElse(25000.0);

System.out.println(cname);
System.out.println(price);

}
}
```