

Chapter 6, #6 – a.

```
package package1;
public class Arachnid {
    Arachnid(){
        //constructor without parameters
        System.out.println("Arachnid has "+numberOfLegs+" legs");
    };
}
package package1;
public class Spider extends Arachnid {
    Spider(){
        System.out.println("Executing Spider constructor");
    }
}
package package1;
public class GardenSpider extends Spider {
    GardenSpider(){
        System.out.println("Executing Garden Spider constructor");
        System.out.println("\nAnswer: Order of execution of constructors in inheritance relationship is from base
/parent class to derived / child class.");
    }
    public static void main(String[] args){
        new GardenSpider();
    }
}
```

The screenshot shows an IDE window titled "Homework2 - GardenSpider.java". The left sidebar displays the project structure for "Homework2" at "~/Documents/Homework2", including folders ".idea", "out", and "src", and a package "package1" containing classes "Arachnid", "GardenSpider", and "Spider". The main editor shows the code for "GardenSpider.java", which extends "Spider" and "Arachnid". The code includes constructors for each class and a static main method in "GardenSpider" that creates a new instance. The bottom panel shows the output of running "GardenSpider", with the following sequence of events: "Executing Arachnid constructor", "Executing Spider constructor", "Executing Garden Spider constructor", and the final output: "Answer: Order of execution of constructors in inheritance relationship is from base /parent class to derived / child class." The process finished with exit code 0.

Answer:
Order of execution of constructors in inheritance relationship is from base /parent class to derived / child class.

Chapter 6, #6 – b.

```
package package1;
public class Arachnid {
    protected int numberOfLegs;
    Arachnid(){
        //constructor without parameters
        numberOfLegs = 8;
        System.out.println("Executing Arachnid constructor");
    };
}
package package1;
public class GardenSpider extends Spider {
    void printNumberOfLegs(){
        System.out.println("Garden Spider has " + numberOfLegs + " legs");
    };
    GardenSpider(){
        System.out.println("Executing Garden Spider constructor");
        System.out.println("\nAnswer: Order of execution of constructors in inheritance relationship is from base
/parent class to derived / child class.");
    }
    public static void main(String[] args){
        GardenSpider newSpider = new GardenSpider();
        newSpider.printNumberOfLegs();
    }
}
```

The screenshot shows an IDE window titled "Homework2 - GardenSpider.java". The left sidebar displays the project structure for "Homework2" at the path "~/Documents/Homework2", showing folders like ".idea", "out", and "src", and files like "Arachnid", "GardenSpider", "Spider", and "Homework2.iml". The main editor area shows the code for "GardenSpider.java", which is a Java class extending "Spider". The code includes a constructor, a method to print the number of legs, and a main method. The right sidebar shows the "Run" configuration for "GardenSpider". The bottom console window displays the execution output, which matches the code's output: "Executing Arachnid constructor", "Executing Spider constructor", "Executing Garden Spider constructor", "Answer: Order of execution of constructors in inheritance relationship is from base /parent class to derived / child class.", and "Garden Spider has 8 legs". The process finished with exit code 0.

```
package package1;
public class GardenSpider extends Spider {
    void printNumberOfLegs(){
        System.out.println("Garden Spider has " + numberOfLegs + " legs");
    };
    GardenSpider(){
        System.out.println("Executing Garden Spider constructor");
        System.out.println("\nAnswer: Order of execution of constructors in inheritance
/parent class to derived / child class.");
    }
    public static void main(String[] args){
        GardenSpider newSpider = new GardenSpider();
        newSpider.printNumberOfLegs();
    }
}
```

Run: GardenSpider x

/Library/Java/JavaVirtualMachines/jdk1.8.0_211.jdk/Contents/Home/bin/java ...

Executing Arachnid constructor

Executing Spider constructor

Executing Garden Spider constructor

Answer: Order of execution of constructors in inheritance relationship is from base /parent class to derived / child class.

Garden Spider has 8 legs

Process finished with exit code 0

– When I declared my numberOfLegs field as a **private** in the class Arachnid, then the field cannot be inherited by a subclass GarderSpider. Java throws the exception when execute the code:

Error:(6, 51) java: numberOfLegs has private access in package1.Arachnid

```
package package1;

public class GardenSpider extends Spider {

    void printNumberOfLegs(){
        System.out.println("Garden Spider has " + numberOfLegs + " legs");
    };

    GardenSpider(){
        System.out.println("Executing Garden Spider constructor");
        System.out.println("\nAnswer: Order of execution of constructors in");
    }

    public static void main(String[] args){
        GardenSpider newSpider = new GardenSpider();
        newSpider.printNumberOfLegs();
    }
}
```

Messages: Build ×

- Information: java: Errors occurred while compiling module 'Homework2'
- Information: javac 1.8.0_211 was used to compile java sources
- Information: 5/14/20, 1:31 PM - Build completed with 1 error and 0 warnings in 1 s 64 ms
- /Users/sergooo/Documents/Homework2/src/package1/GardenSpider.java
- Error:(6, 51) java: numberOfLegs has private access in package1.Arachnid

– When I declared my numberOfLegs field as a **package-private** in the superclass Arachnid, then the field can be inherited by a subclass GarderSpider because it is in the same package.