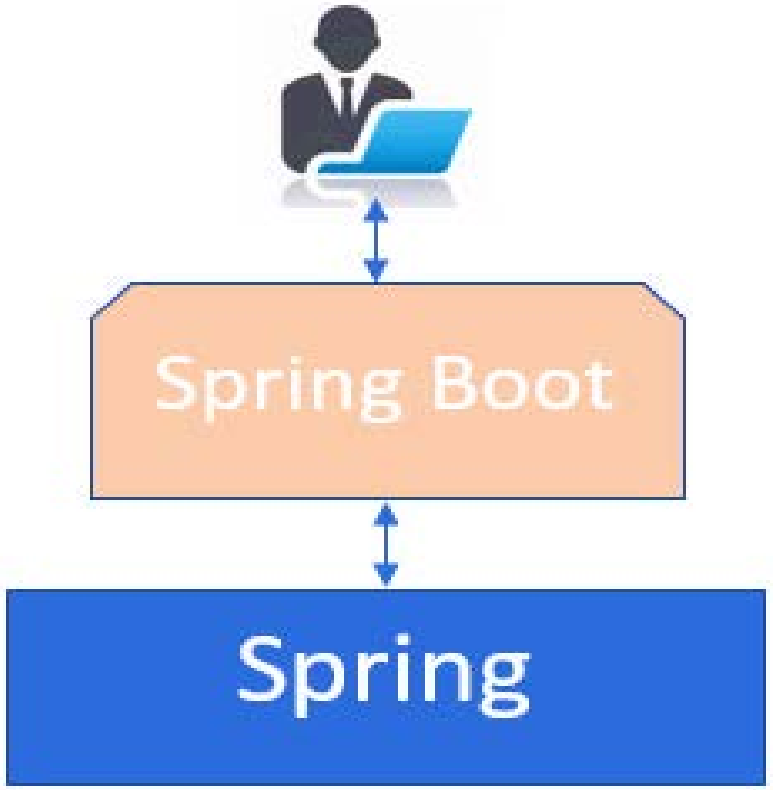
SPRING BOOT | Session 7

OBJECTIVES

- Explain the Spring Boot Framework
- Explain how to use Spring Boot to create a secured Web application and API
- Explain how to use Spring Boot to access database

SPRING BOOT INTRODUCTION

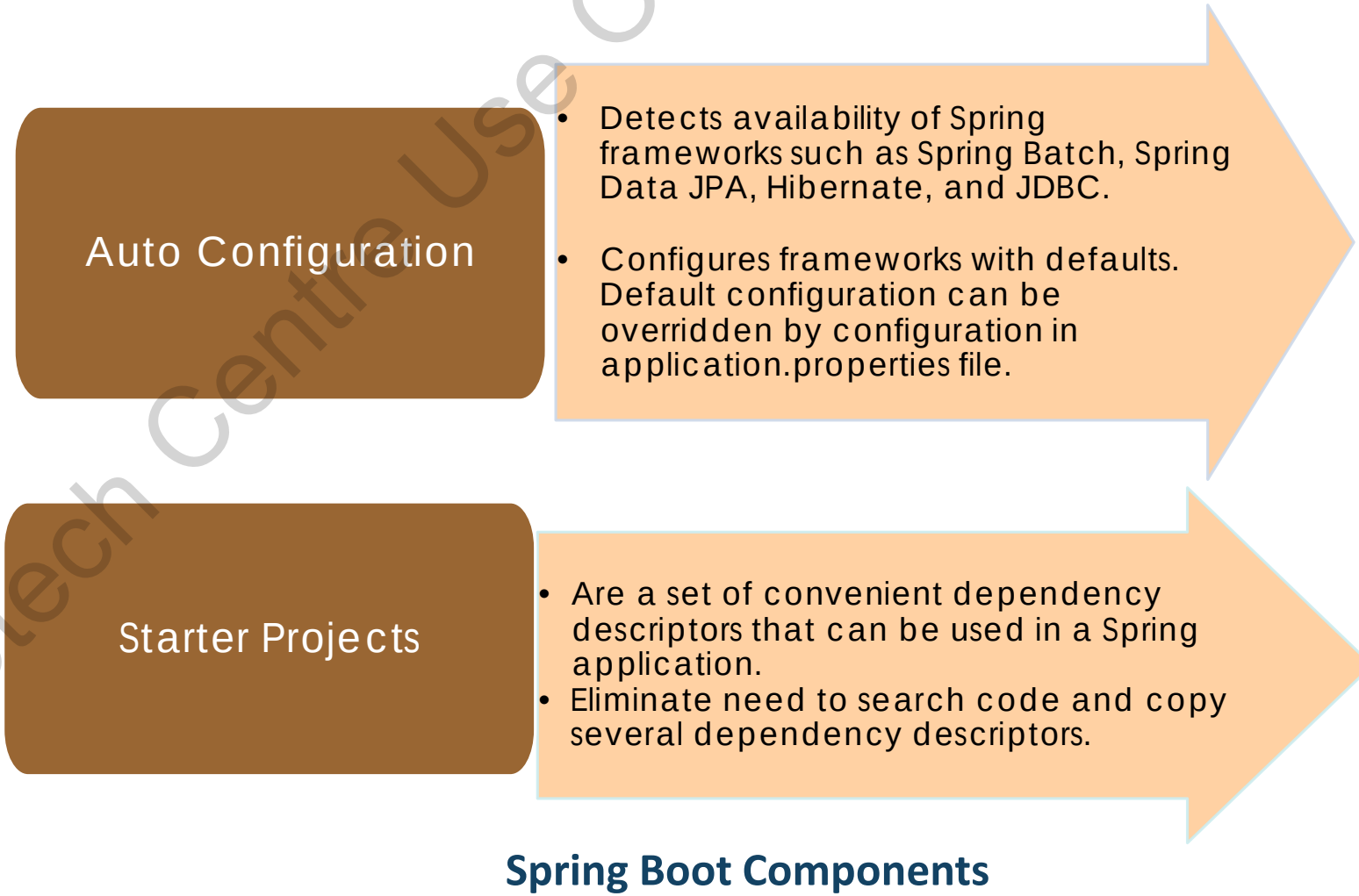
- Spring Boot Framework is a framework that is implemented over the existing Spring Framework.
- This equation explains Spring Boot in simple terms:
  - Spring Boot = Spring Framework – XML Configuration + Integrated Server



Spring Boot Placement

UNDERSTANDING SPRING BOOT

- Spring Boot reduces amount of configuration required
- It uses a combination of two components:
  - Auto configuration
  - Starter projects



Spring Boot Components

ADDITIONAL SPRING BOOT COMPONENTS

Spring Boot Core	Serves as the base for other modules Also provides functionality that can be implemented on its own, such as automatically binding environment properties to Spring bean properties
Spring Boot Command Line Interface	Helps start and stop the Spring Boot applications
Spring Boot Actuator	Can be added to the application to enable enterprise features, such as Security, and so on Is similar to auto configuration components, it uses auto detection feature

FEATURES OF SPRING BOOT

- Web Application Development
- Application Events and Listeners
- Remote Application Management
- Try-Safe Configuration and Security
- YAML and Externalized Configuration Support

BENEFITS OF SPRING BOOT

- Improves productivity by reducing XML-base configuration code
- Provides cloud support for application configuration, tools, and clients
- Provides a unified ecosystem of libraries and standards
- Provides support for third-party Open Source Library
- Expedites the development process by using the integrated server

CREATING A SPRING PROJECT

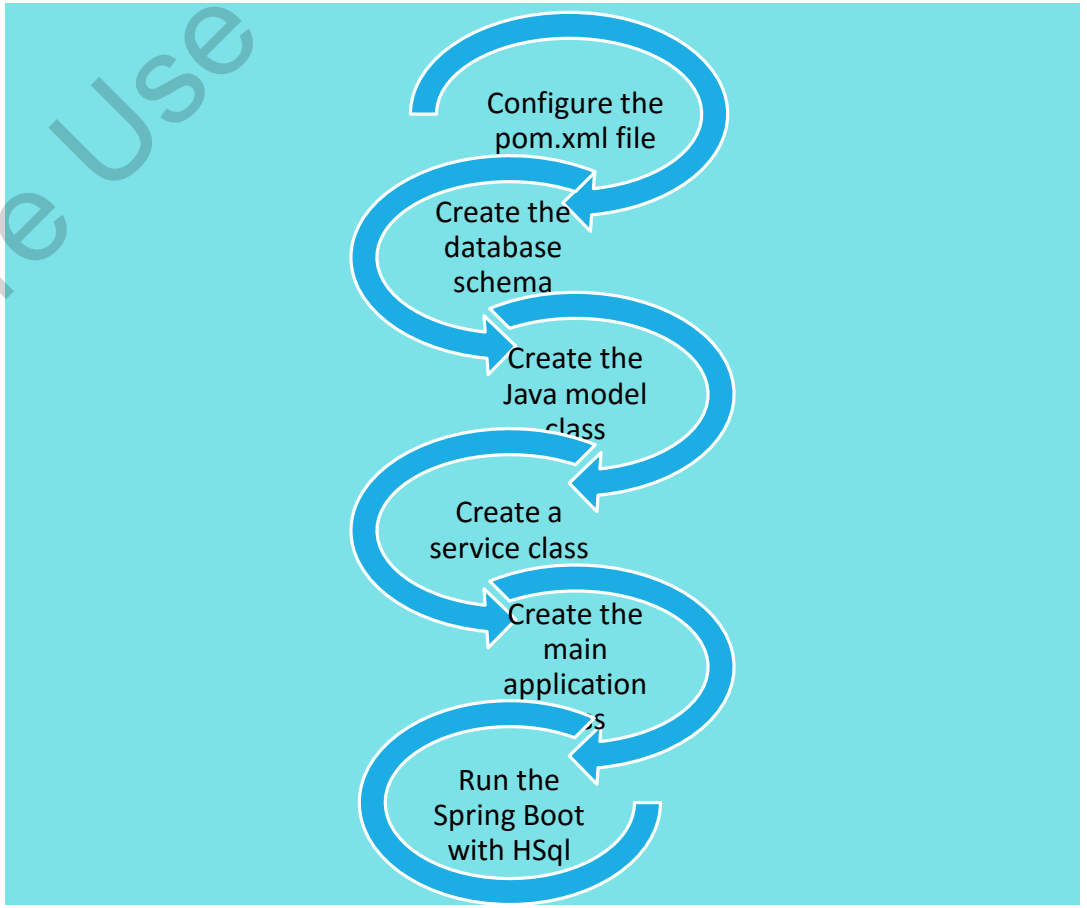
- Spring Boot applications can be developed using:
  - Spring Initializr
  - Spring Tool Suite
  - Spring Boot CLI

Methods to Develop Spring Boot Application

1. **Spring Initializr Web Interface**
   Is a Web application that does not generate any application code but creates a project structure
2. **Spring Tool Suite**
   Is an IDE that integrates with Spring Initializr to help developers to create Spring Boot applications.
3. **Spring Boot Command Line Interface**
   Is a Spring Boot utility software to run and test Spring Boot applications from the command prompt.

DEBUGGING AND MANAGING THE APPLICATION – STORING DATA (1-2)

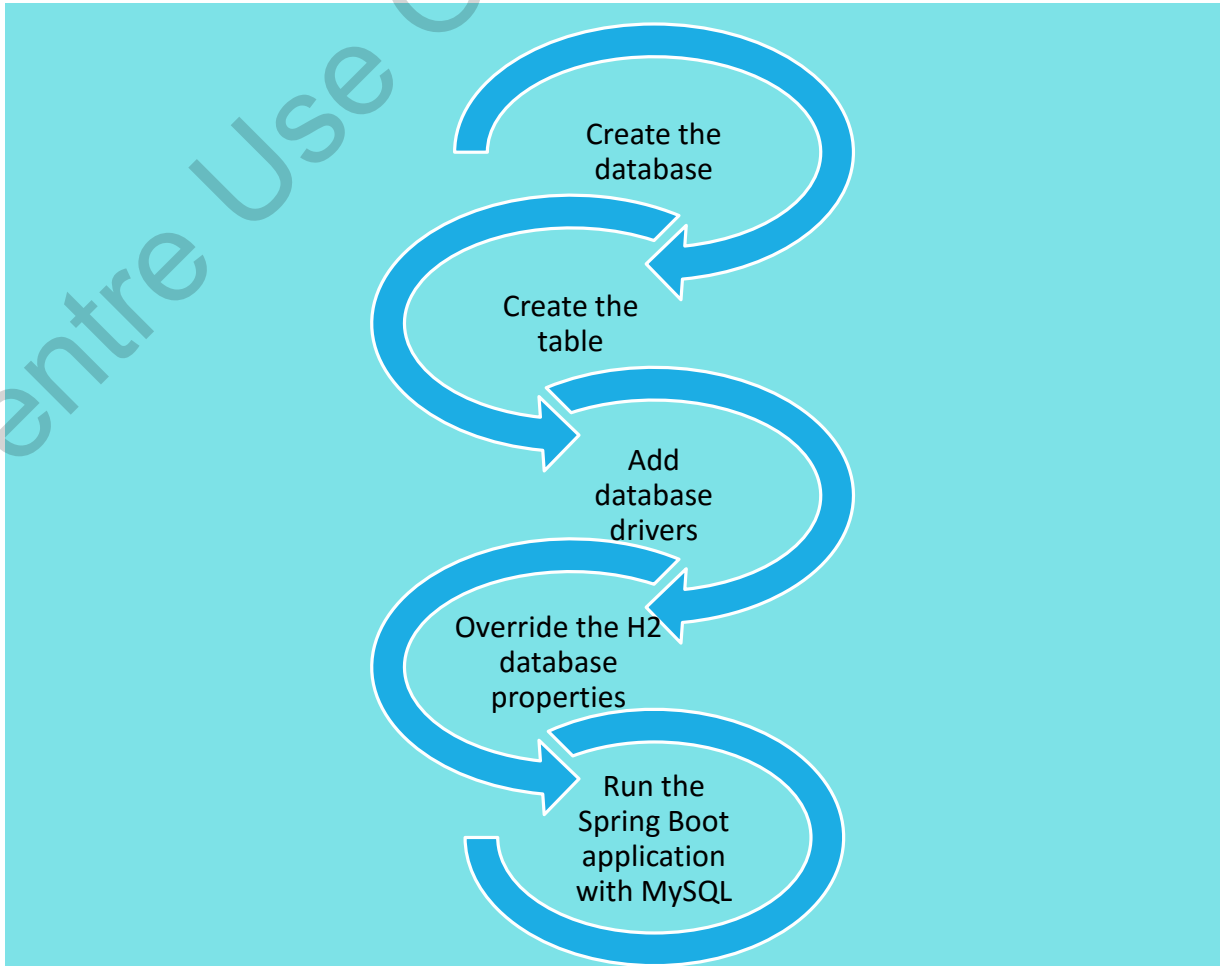
- Spring Boot allows developers to create an API and manage their database.
- Spring Boot supports several relational databases, such as Oracle, MySQL, and H2.



Configuring an In-Memory Database in Spring Boot

DEBUGGING AND MANAGING THE APPLICATION – STORING DATA (2-2)

- Spring Boot supports the use of relational databases.



Configuring a Relational Database in Spring Boot

DATA ACCESS WITH SPRING BOOT

- Spring Boot generates all data access code at runtime, eliminating need to write long data access code modules.
- Spring Boot provides abstract repositories, implemented by Spring container dynamically to perform Create Retrieve Update Delete (CRUD) operations.

Repository

A central interface in the Spring data repository abstraction.

CrudRepository

An interface that extends the Repository interface and provides methods to crud operations.

JpaRepository

A special version of CrudRepository specific to the JPA technology.

PagingAndSortingRepository

An interface to perform paging operations.

Spring Boot Abstract Interfaces

SECURING THE APP WITH SPRING BOOT

- Spring Boot security supports essential security operations, such as authentication and authorization for a Spring Boot Web application.
- Use the following code snippet to introduce security in an application:

```
<dependency>
	<groupId>org.springframework.boot</groupId>
	<artifactId>spring-boot-starter-security</artifactId>
</dependency>
```

SUMMARY

- Spring Boot provides pre-defined code and annotation configuration that can be used to build, package, and deploy new Spring applications.
- Spring Boot uses Auto configuration and Starter projects to reduce configuration code.
- Spring Boot provides abstract repositories, which are implemented by the Spring container dynamically to perform the CRUD operations.
- Spring Boot has more components, in addition to auto configuration and starter projects, which are:
  - Spring Boot Core
  - Spring Boot Command Line Interface (CLI)
  - Spring Boot Actuator
- Spring Initializr is the easiest way to create a Spring Boot application as Spring Initializr provides an extensible API to generate projects and project structure.