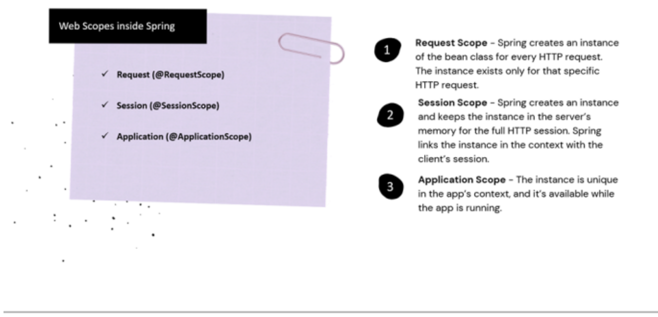


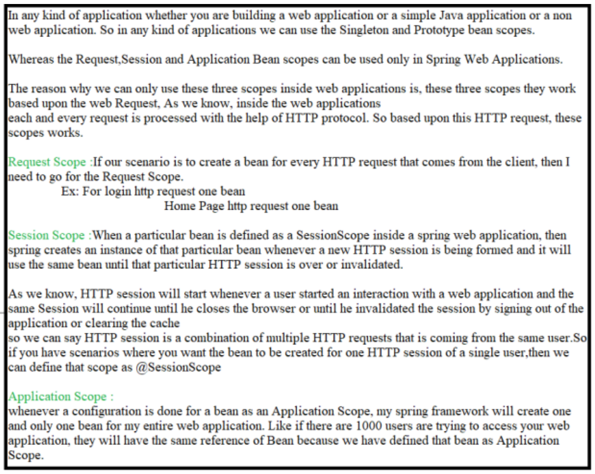
Web Scopes inside Spring

- ✓ Request (@RequestScope)
- ✓ Session (@SessionScope)
- ✓ Application (@ApplicationScope)

1 **Request Scope** – Spring creates an instance of the bean class for every HTTP request. The instance exists only for that specific HTTP request.

2 **Session Scope** – Spring creates an instance and keeps the instance in the server's memory for the full HTTP session. Spring links the instance in the context with the client's session.

3 **Application Scope** – The instance is unique in the app's context, and it's available while the app is running.



In any kind of application whether you are building a web application or a simple Java application or a non web application. So in any kind of applications we can use the Singleton and Prototype bean scopes.

Whereas the Request,Session and Application Bean scopes can be used only in Spring Web Applications.

The reason why we can only use these three scopes inside web applications is, these three scopes they work based upon the web Request, As we know, inside the web applications
each and every request is processed with the help of HTTP protocol. So based upon this HTTP request, these scopes works.

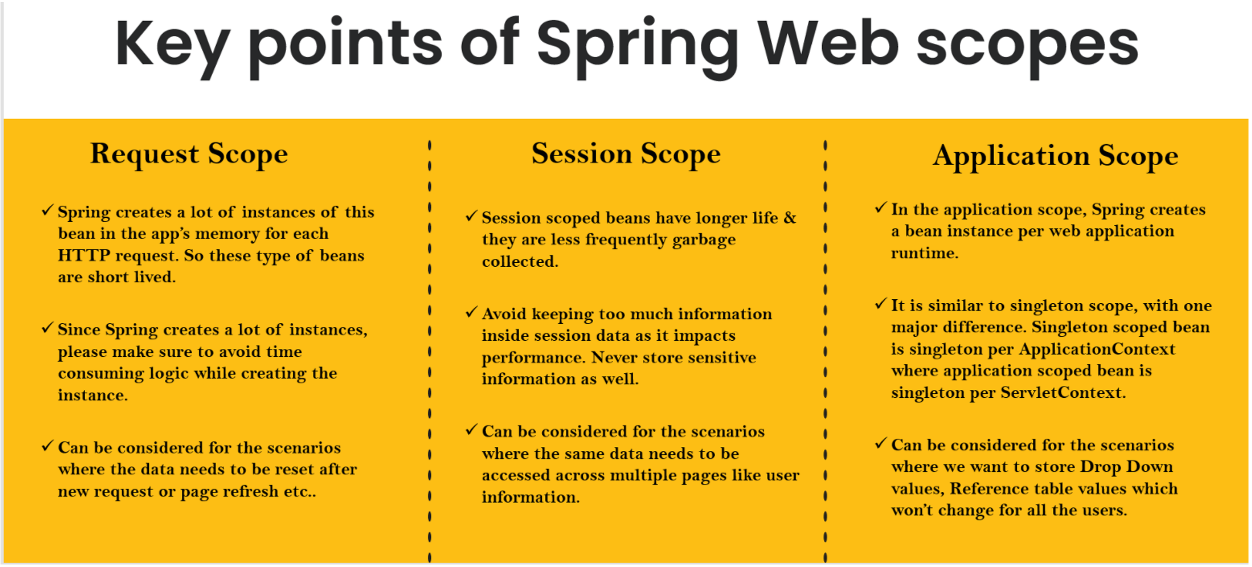
Request Scope :If our scenario is to create a bean for every HTTP request that comes from the client, then I need to go for the Request Scope.

Ex: For login http request one bean
Home Page http request one bean

Session Scope :When a particular bean is defined as a SessionScope inside a spring web application, then spring creates an instance of that particular bean whenever a new HTTP session is being formed and it will use the same bean until that particular HTTP session is over or invalidated.

As we know, HTTP session will start whenever a user started an interaction with a web application and the same Session will continue until he closes the browser or until he invalidated the session by signing out of the application or clearing the cache
so we can say HTTP session is a combination of multiple HTTP requests that is coming from the same user.So if you have scenarios where you want the bean to be created for one HTTP session of a single user,then we can define that scope as @SessionScope

Application Scope :
whenever a configuration is done for a bean as an Application Scope, my spring framework will create one and only one bean for my entire web application. Like if there are 1000 users are trying to access your web application, they will have the same reference of Bean because we have defined that bean as Application Scope.



Key points of Spring Web scopes

Request Scope

- ✓ Spring creates a lot of instances of this bean in the app's memory for each HTTP request. So these type of beans are short lived.
- ✓ Since Spring creates a lot of instances, please make sure to avoid time consuming logic while creating the instance.
- ✓ Can be considered for the scenarios where the data needs to be reset after new request or page refresh etc..

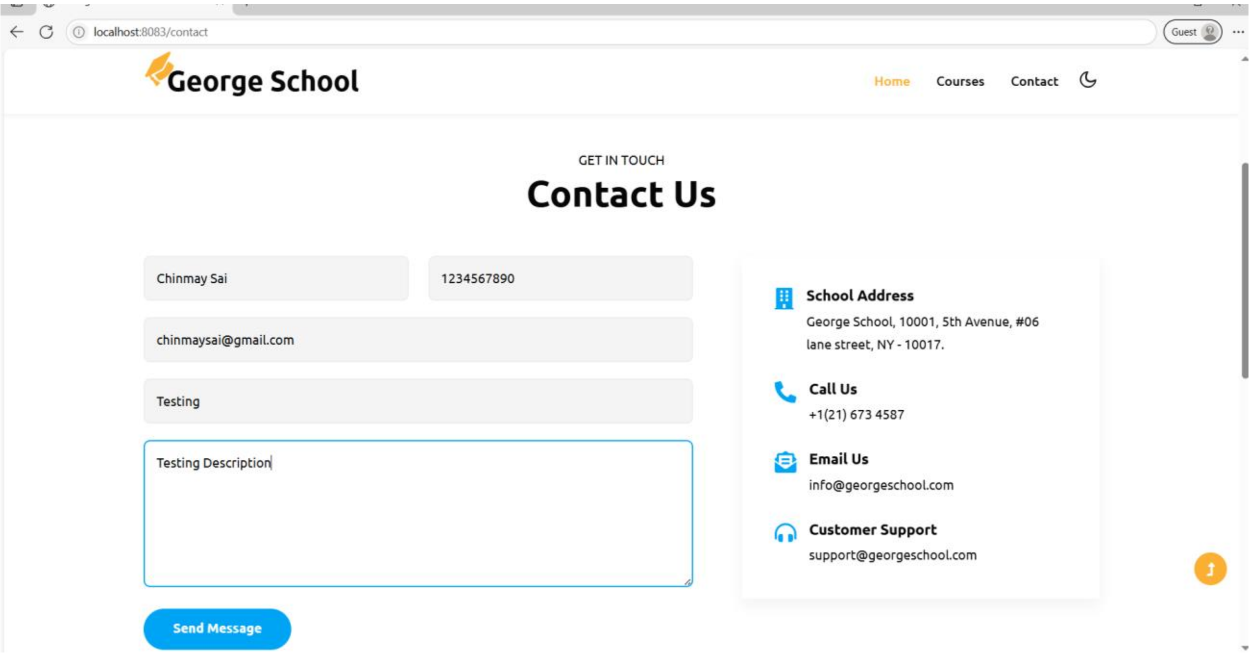
Session Scope

- ✓ Session scoped beans have longer life & they are less frequently garbage collected.
- ✓ Avoid keeping too much information inside session data as it impacts performance. Never store sensitive information as well.
- ✓ Can be considered for the scenarios where the same data needs to be accessed across multiple pages like user information.

Application Scope

- ✓ In the application scope, Spring creates a bean instance per web application runtime.
- ✓ It is similar to singleton scope, with one major difference. Singleton scoped bean is singleton per ApplicationContext where application scoped bean is singleton per ServletContext.
- ✓ Can be considered for the scenarios where we want to store Drop Down values, Reference table values which won't change for all the users.

Example_36_Request_Scope



George School

GET IN TOUCH

Contact Us

Chinmay Sai

1234567890

chinmaysai@gmail.com

Testing

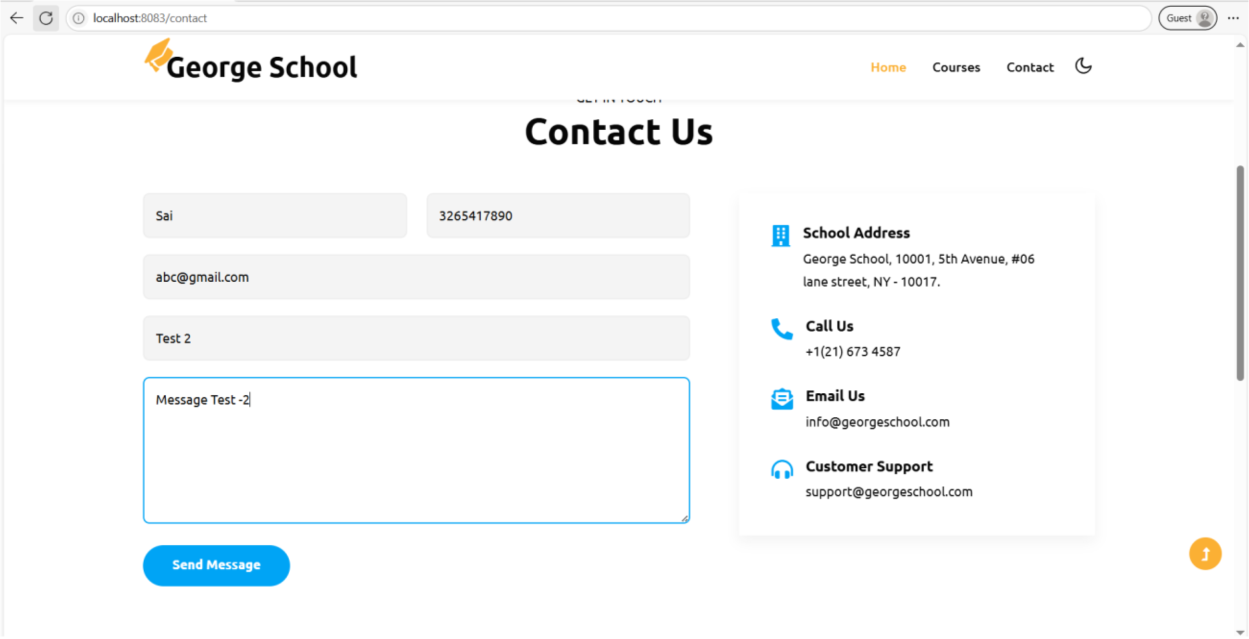
Testing Description

School Address
George School, 10001, 5th Avenue, #06
lane street, NY - 10017.

Call Us
+1(21) 673 4587

Email Us
info@georgeschool.com

Customer Support
support@georgeschool.com



George School

Contact Us

Sai

3265417890

abc@gmail.com

Test 2

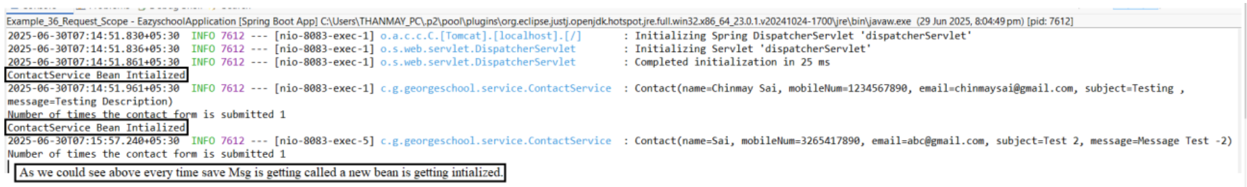
Message Test -2

School Address
George School, 10001, 5th Avenue, #06
lane street, NY - 10017.

Call Us
+1(21) 673 4587

Email Us
info@georgeschool.com

Customer Support
support@georgeschool.com

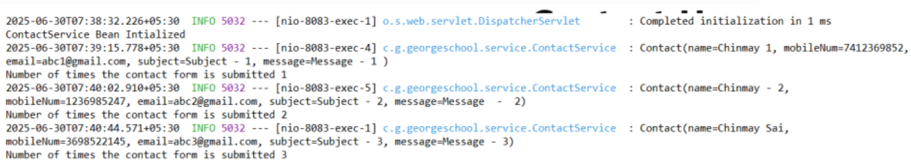


```
Example_36_Request_Scope - EazyschoolApplication [Spring Boot App] C:\Users\THANMAY_PC\.p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_23.0.1.v20241024-1700\jre\bin\javaw.exe  (29 Jun 2025, 8:04:49 pm) [pid: 7612]
2025-06-30T07:14:51.830+05:30  INFO 7612 --- [nio-8083-exec-1] o.a.c.c.C.[Tomcat].[localhost].[/]       : Initializing Spring DispatcherServlet 'dispatcherServlet'
2025-06-30T07:14:51.836+05:30  INFO 7612 --- [nio-8083-exec-1] o.s.web.servlet.DispatcherServlet        : Initializing Servlet 'dispatcherServlet'
2025-06-30T07:14:51.861+05:30  INFO 7612 --- [nio-8083-exec-1] o.s.web.servlet.DispatcherServlet        : Completed initialization in 25 ms
ContactService Bean Intialized
2025-06-30T07:14:51.961+05:30  INFO 7612 --- [nio-8083-exec-1] c.g.georgeschool.service.ContactService  : Contact(name=Chinmay Sai, mobileNum=1234567890, email=chinmaysai@gmail.com, subject=Testing ,
message=Testing Description)
Number of times the contact form is submitted 1
ContactService Bean Intialized
2025-06-30T07:15:57.240+05:30  INFO 7612 --- [nio-8083-exec-5] c.g.georgeschool.service.ContactService  : Contact(name=Sai, mobileNum=3265417890, email=abc@gmail.com, subject=Test 2, message=Message Test -2)
Number of times the contact form is submitted 1
```

As we could see above every time save Msg is getting called a new bean is getting intialized.

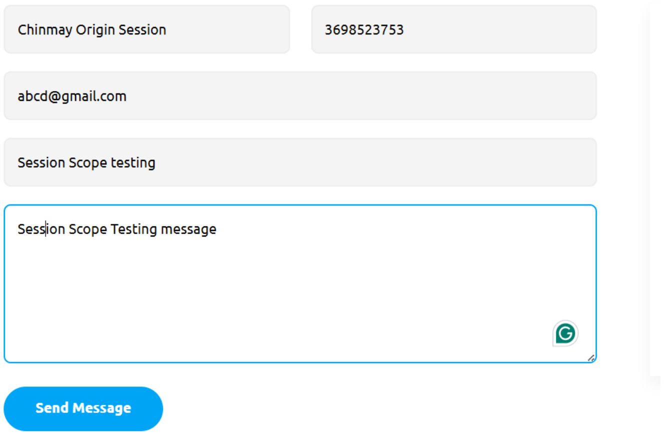
106.Demo of Session Scope

Example_37_Session_Scope



```
2025-06-30T07:38:32.226+05:30  INFO 5032 --- [nio-8083-exec-1] o.s.web.servlet.DispatcherServlet        : Completed initialization in 1 ms
ContactService Bean Intialized
2025-06-30T07:39:15.778+05:30  INFO 5032 --- [nio-8083-exec-4] c.g.georgeschool.service.ContactService  : Contact(name=Chinmay 1, mobileNum=7412369852,
email=abc1@gmail.com, subject=Subject - 1, message=Message - 1 )
Number of times the contact form is submitted 1
2025-06-30T07:40:02.910+05:30  INFO 5032 --- [nio-8083-exec-5] c.g.georgeschool.service.ContactService  : Contact(name=Chinmay - 2,
mobileNum=1236985247, email=abc2@gmail.com, subject=Subject - 2, message=Message  -  2)
Number of times the contact form is submitted 2
2025-06-30T07:40:44.571+05:30  INFO 5032 --- [nio-8083-exec-1] c.g.georgeschool.service.ContactService  : Contact(name=Chinmay Sai,
mobileNum=3698522145, email=abc3@gmail.com, subject=Subject - 3, message=Message - 3)
Number of times the contact form is submitted 3
```

As we could see here a ContactService is created once when it is called initally and every time a new request comes from the saveMsg and the Same session new Object is not getting created and same object is being used.



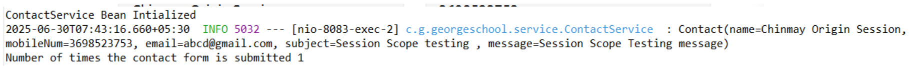
Chinmay Origin Session

3698523753

abcd@gmail.com

Session Scope testing

Session Scope Testing message

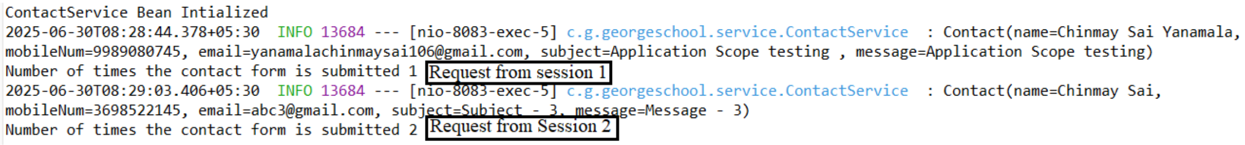


```
ContactService Bean Intialized
2025-06-30T07:43:16.660+05:30  INFO 5032 --- [nio-8083-exec-2] c.g.georgeschool.service.ContactService  : Contact(name=Chinmay Origin Session,
mobileNum=3698523753, email=abcd@gmail.com, subject=Session Scope testing , message=Session Scope Testing message)
Number of times the contact form is submitted 1
```

When we change the session from which we are accessing a new Object will created and will be maintained until the session is not closed

107: Application Scope

Example_38_Application_Scope



```
ContactService Bean Intialized
2025-06-30T08:28:44.378+05:30  INFO 13684 --- [nio-8083-exec-5] c.g.georgeschool.service.ContactService  : Contact(name=Chinmay Sai Yanamala,
mobileNum=9989080745, email=yanamalachinmaysai106@gmail.com, subject=Application Scope testing , message=Application Scope testing)
Number of times the contact form is submitted 1
2025-06-30T08:29:03.406+05:30  INFO 13684 --- [nio-8083-exec-5] c.g.georgeschool.service.ContactService  : Contact(name=Chinmay Sai,
mobileNum=3698522145, email=abc3@gmail.com, subject=Subject - 3, message=Message - 3)
Number of times the contact form is submitted 2
```

As the scope is set to Application Scope even if we access from different browsers sessions the same bean will be considered.

As we know, whenever we are using a bean with the scope Application Scope, then your spring framework will make sure there is only one instance created and available for a single servlet context inside your web application. So regardless of how many users are accessing your application, how many threads are accessing, how many HTTP requests or how many HTTP sessions are being sent to your backend server, the same bean of ContactService will be created and used by your spring framework.