

# Report

## Weather Forecast Maps

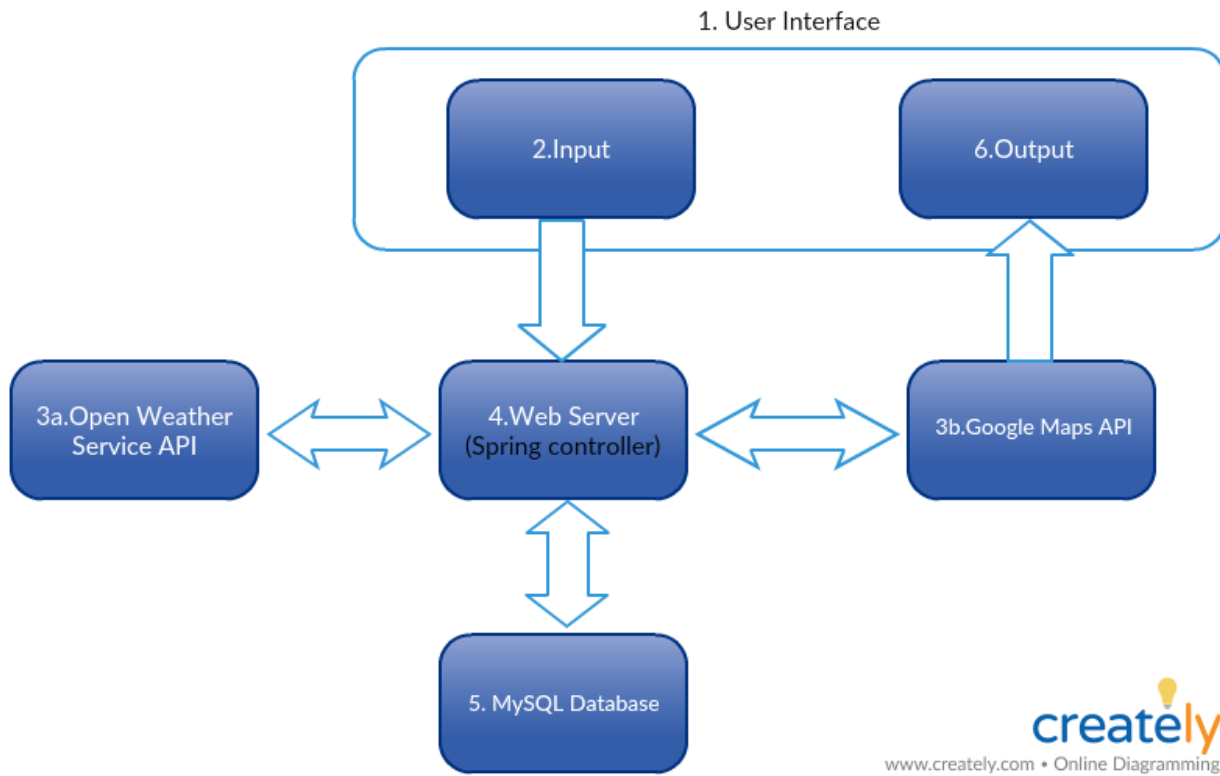
### Abstract

This Application provides a route map along with weather information (throughout the route) as per user input. Users will be provided with an interface where they can provide Source and Destination data. These fields will be internally sent to business tier and then forwarded to Google MAPS API and Weather API services to get the route map and weather information. This response information will be cached into a database for reducing response time, costs and improving performance. Finally the Processed data will be displayed to user in a user-friendly page.

In this multi-tiered distributed application Presentation tier will be designed using HTML, CSS, JS. Application tier will be designed using Spring, JAVA, Rest web services, Google maps API, Weather API. Persistence tier is designed using MySQL database.

**Technology:** JSP, Spring Boot, JS, MY SQL.

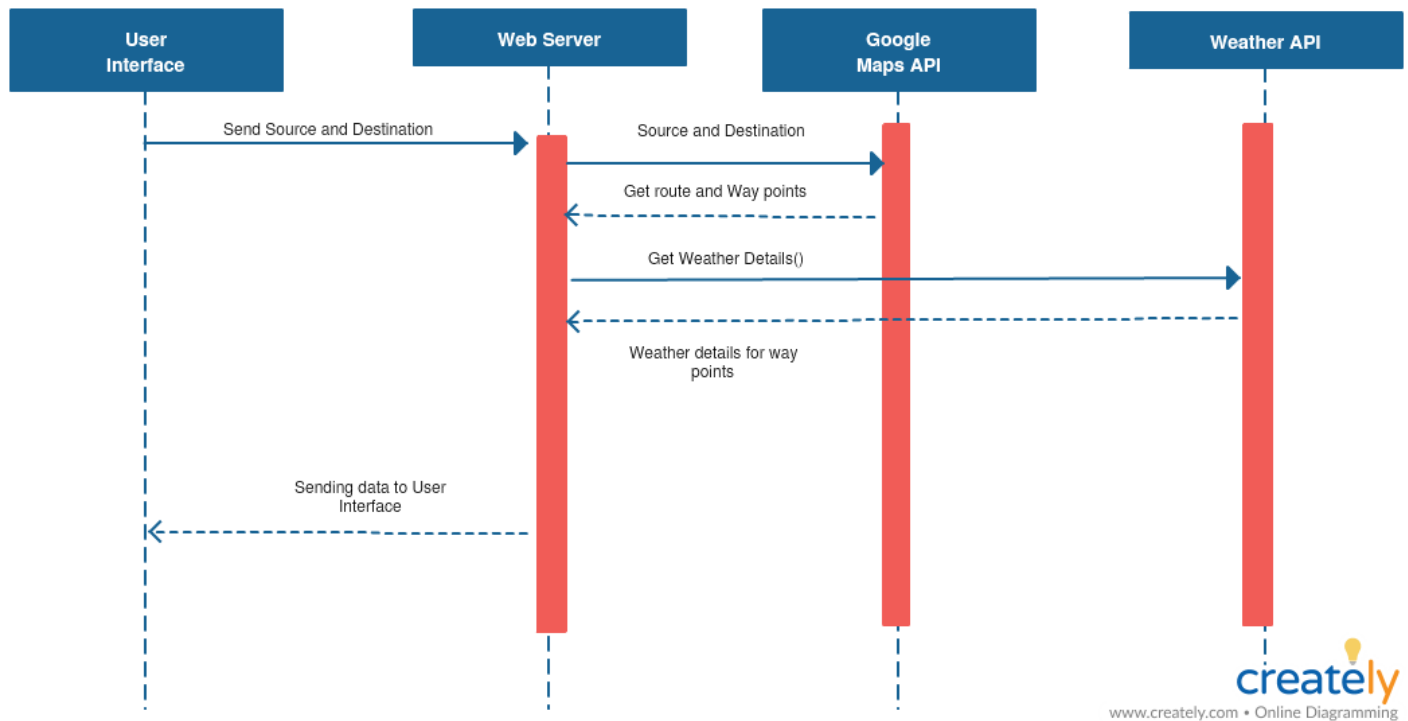
### Architectural Model:



User provides input in text and the data is sent to spring controller then the controller calls db to check if the information is in cache. if the data is not available in cache it requests google maps and openweathermap api then it caches that data and forwards to the end user.

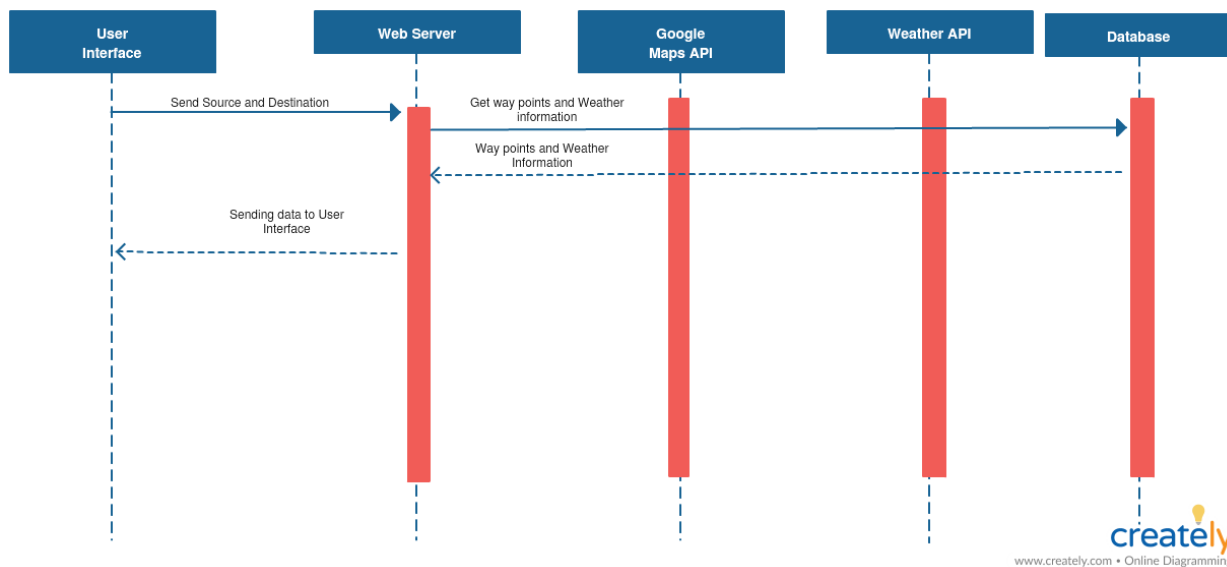
## Sequence Diagrams

### Phase 1:



In Phase 1 no data is cached to database. Controller just hits the api for fetching results. Each coordinate we obtained from google maps are fed to open weather map api to retrieve weather information at particular location.

## Phase 2:



In phase 2 database tier is added to phase 1 for caching the frequent results so that api call costs are reduced. Retrieval of the frequent information will be very fast, thus improving the efficiency by cutting costs and reducing response time along with scalability.

## Cost Matrix

**C1:** Calling Google Maps API

**C2:** Calling Open Weather API

**C3:** Time taken to retrieve from database

c1

google map api time

start time maps1538798051199

end time maps1538798052502

time taken1303

c2

weather api time

start time weather1538798052504

end time weather1538798052785

time taken281

c3

db time

start time db db1538798354963

end time db1538798355106

time taken143

clearly  $c1+c2>c3$

so caching reduces response time( $281+1303 > 143$ ).

new eclipse workspace - MapWeather/src/main/java/com/DS/MapWeather/Controllers/MapsWeatherController.java - Eclipse IDE

File Edit Source Refactor Navigate Search Project Run Window Help

Project Explorer: Directapi, MapWeather [boot], WeatherOnWay [boot]

MapsWeatherCon... success.jsp MapWeatherBean... MapWeatherRepo... application.pr... homepage.jsp error.jsp

```
214         dbwth=dbwth+i+",";
215     }
216     dblat=dblat.substring(0,dblat.length()-2);
217     dblng=dblng.substring(0,dblng.length()-2);
218     dbwth=dbwth.substring(0,dbwth.length()-2);
219     bean.setLatitude(dblat);
220     bean.setLongitude(dblng);
221     bean.setWeather(dbwth);
222     Repository.save(bean);
223     // MapWeatherBean b1 =Repository.findBySourceAndDestination(source, destination);
224     // System.out.println(b1.getLatitude().get(0));
```

Console: MapWeather - MapWeatherApplication [Spring Boot App] C:\Program Files\Java\jre1.8.0\_181\bin\javaw.exe (05-Oct-2018, 11:53:31 PM)

```
2018-10-05 23:53:37.284 INFO 6516 --- [main] s.w.s.m.m.a.RequestMappingHandlerMapping : Mapped "([/error],pro
2018-10-05 23:53:37.315 INFO 6516 --- [main] o.s.w.s.handler.SimpleUrlHandlerMapping : Mapped URL path [/web
2018-10-05 23:53:37.315 INFO 6516 --- [main] o.s.w.s.handler.SimpleUrlHandlerMapping : Mapped URL path [/**]
2018-10-05 23:53:37.675 INFO 6516 --- [main] o.s.j.e.a.AnnotationMBeanExporter : Registering beans for
2018-10-05 23:53:37.681 INFO 6516 --- [main] o.s.j.e.a.AnnotationMBeanExporter : Bean with name 'dataS
2018-10-05 23:53:37.681 INFO 6516 --- [main] o.s.j.e.a.AnnotationMBeanExporter : Located MBean 'dataSo
2018-10-05 23:53:37.728 INFO 6516 --- [main] o.s.b.w.embedded.tomcat.TomcatWebServer : Tomcat started on por
2018-10-05 23:53:37.728 INFO 6516 --- [main] com.DS.MapWeather.MapWeatherApplication : Started MapWeatherApp
2018-10-05 23:53:51.075 INFO 6516 --- [nio-8080-exec-1] o.a.c.c.C.[Tomcat].[localhost].[/] : Initializing Spring F
2018-10-05 23:53:51.075 INFO 6516 --- [nio-8080-exec-1] o.s.web.servlet.DispatcherServlet : FrameworkServlet 'dis
2018-10-05 23:53:51.096 INFO 6516 --- [nio-8080-exec-1] o.s.web.servlet.DispatcherServlet : FrameworkServlet 'dis
start time maps1538798051199
end time maps1538798052502
time taken1303
start time weather1538798052504
end time weather1538798052785
time taken281
```

new eclipse workspace - MapWeather/src/main/java/com/DS/MapWeather/Controllers/MapsWeatherController.java - Eclipse IDE

File Edit Source Refactor Navigate Search Project Run Window Help

Project Explorer: Directapi, MapWeather [boot], WeatherOnWay [boot]

MapsWeatherCon... success.jsp MapWeatherBean... MapWeatherRepo... application.pr... homepage.jsp error.jsp

```
208         dblat=dblat+i+",";
209     }
210     for(float i:steplong) {
211         dblng=dblng+i+",";
212     }
213     for(String i:dbweather) {
214         dbwth=dbwth+i+",";
215     }
216     dblat=dblat.substring(0,dblat.length()-2);
217     dblng=dblng.substring(0,dblng.length()-2);
218     dbwth=dbwth.substring(0,dbwth.length()-2);
219     bean.setLatitude(dblat);
```

Console: MapWeather - MapWeatherApplication [Spring Boot App] C:\Program Files\Java\jre1.8.0\_181\bin\javaw.exe (05-Oct-2018, 11:58:04 PM)

```
2018-10-05 23:58:09.835 INFO 6340 --- [main] s.w.s.m.m.a.RequestMappingHandlerMapping : Mapped "([/error],pro
2018-10-05 23:58:09.835 INFO 6340 --- [main] o.s.w.s.handler.SimpleUrlHandlerMapping : Mapped URL path [/web
2018-10-05 23:58:10.101 INFO 6340 --- [main] o.s.w.s.handler.SimpleUrlHandlerMapping : Mapped URL path [/**]
2018-10-05 23:58:10.101 INFO 6340 --- [main] o.s.j.e.a.AnnotationMBeanExporter : Registering beans for
2018-10-05 23:58:10.116 INFO 6340 --- [main] o.s.j.e.a.AnnotationMBeanExporter : Bean with name 'dataS
2018-10-05 23:58:10.116 INFO 6340 --- [main] o.s.j.e.a.AnnotationMBeanExporter : Located MBean 'dataSo
2018-10-05 23:58:10.159 INFO 6340 --- [main] o.s.b.w.embedded.tomcat.TomcatWebServer : Tomcat started on por
2018-10-05 23:58:10.161 INFO 6340 --- [main] com.DS.MapWeather.MapWeatherApplication : Started MapWeatherApp
2018-10-05 23:58:51.768 INFO 6340 --- [nio-8080-exec-1] o.a.c.c.C.[Tomcat].[localhost].[/] : Initializing Spring F
2018-10-05 23:58:51.768 INFO 6340 --- [nio-8080-exec-1] o.s.web.servlet.DispatcherServlet : FrameworkServlet 'dis
2018-10-05 23:58:51.793 INFO 6340 --- [nio-8080-exec-1] o.s.web.servlet.DispatcherServlet : FrameworkServlet 'dis
start time db1538798354963
2018-10-05 23:59:14.994 INFO 6340 --- [nio-8080-exec-4] o.h.h.i.i.QueryTranslatorFactoryInitiator : HHH000397: Using ASTQ
end time db1538798355106
time taken143
in Database fetching
```

## Screenshots

