Internship Project

Company	:	Lucid Technologies & Solutions
Project	:	Weather Report based on User’s Preference
Dated by	:	Oct 2020
Submitted by	:	1. Subashree V 2. Sriram B

TABLE OF CONTENTS

Table of Contents

1. Introduction

As known, Climatic conditions play a vital role in our daily life. Keeping in mind the sudden changes in Climatic conditions, this project keeps an eye on the end users requirement and generates a weather report based on the user's choice. This project gets the detailed requirement of the user by allowing the user to enter the country, state and city from the set listed. Once getting the requirements, the user has given the option to view the climatic condition of the current day or for the past week. Once the particular option is chosen, a weather report for the user's wis will be generated.

2. Prerequisites

2.1 Software Requirements

- Eclipse Java EE Edition
- Postman
- Server - Apache Tomcat

2.2 API Requirements

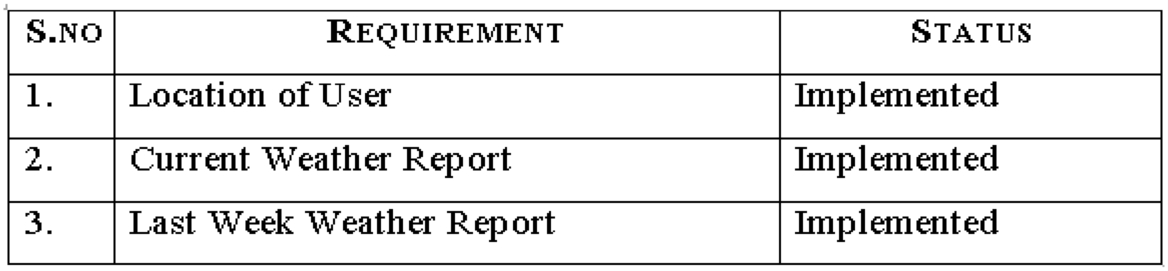
- Current Weather Report API
- Past Week Weather Report API
- Country, State and City API

2.3 Language Requirements

- Groovy
- Java

2.4 User Requirements

The following are the user requirements for this project,



S.NO	REQUIREMENT	STATUS
1.	Location of User	Implemented
2.	Current Weather Report	Implemented
3.	Last Week Weather Report	Implemented

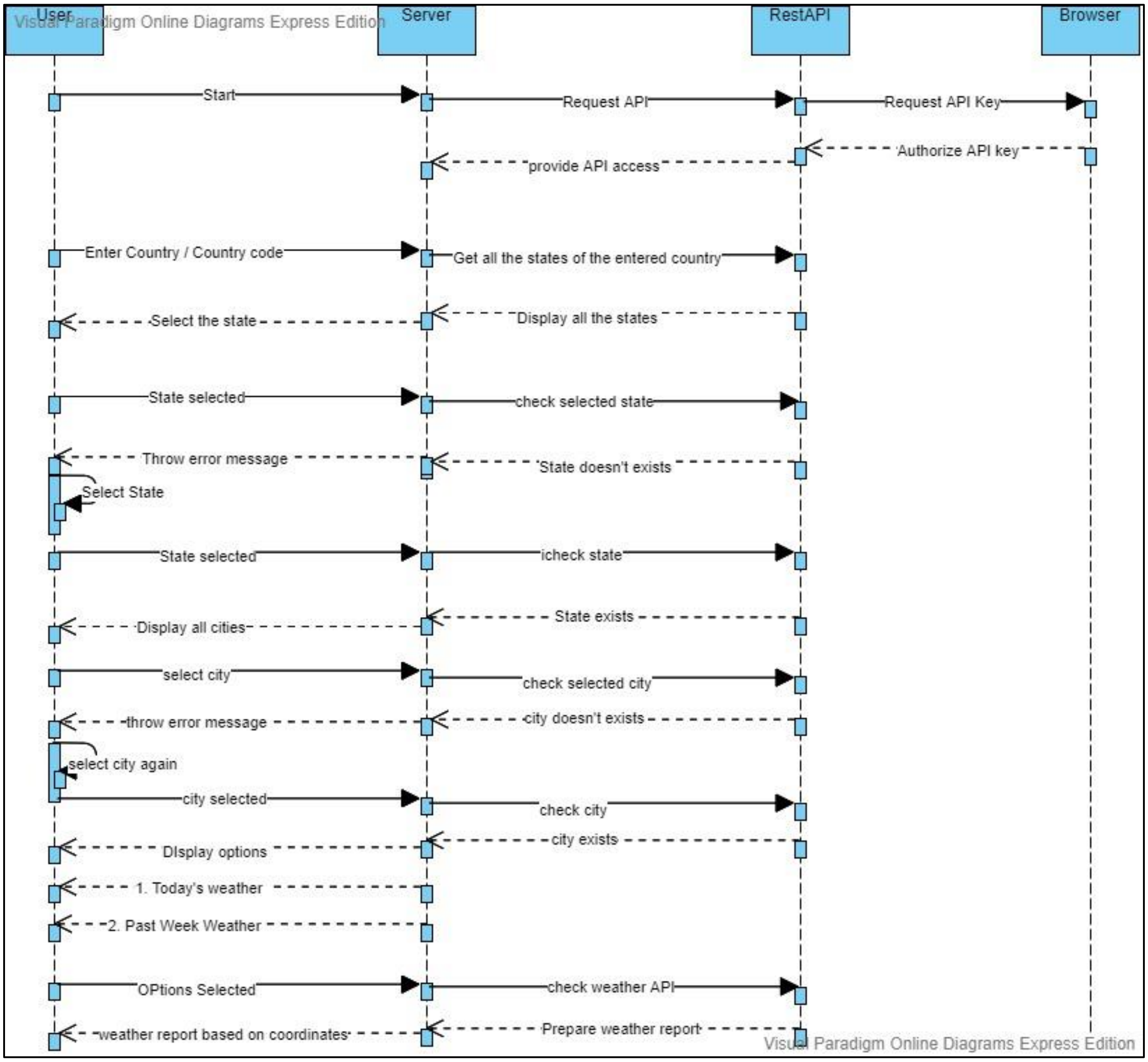
3. Functionality Description

The list of modules present in the weather report system is listed below

- Display Countries
- Display States
- Display Cities
- Display weather of particular location

The functionality for the above modules will be described below.

3.1 Sequence Diagram



3.2 Modules

3.2.1 Display Countries

- ❖ The user will be displayed with a list of country names along with the country code from the API server.
- ❖ The user should enter either country name or country code to get a weather report.
- ❖ If a user enters a country name, the country code associated with the country name will be found and the appropriate regions / states present in the country will be displayed to the user.
- ❖ If a user enters country code, the list of regions / states present in the country will be displayed to the user.
- ❖ If a user enters the wrong country name or code, they will be suggested to re-enter the details again.
- ❖

3.2.2 Display States

- ❖ The user gets the details of the States present in the particular country.
- ❖ The user needs to enter the region / state name specifically to get the weather report.
- ❖ If the user enters the state name correctly, then the list of cities present in the particular county's state will be displayed to the user.
- ❖ If user enters wrong state name, they will be suggested to re – enter the state name again

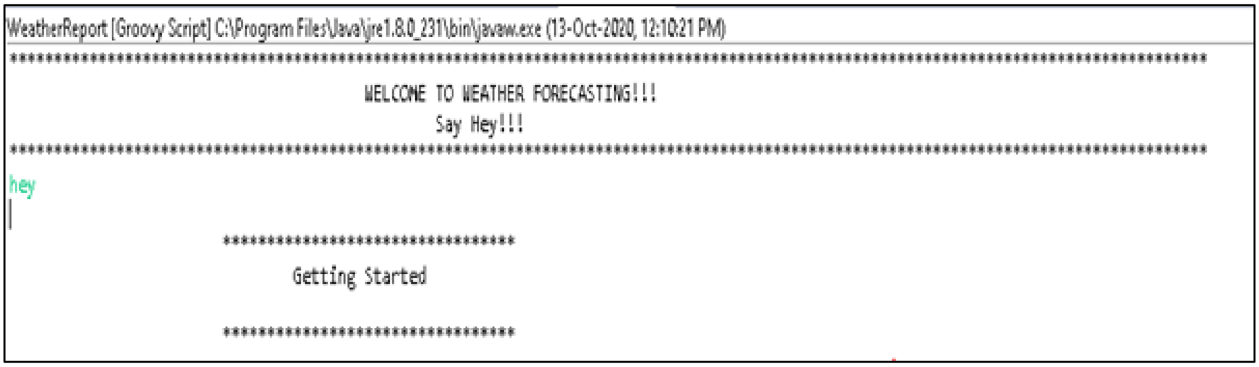
3.2.3 Display City

- ❖ The user gets cities of a particular state from the API.
- ❖ The user needs to enter the specific city name in order to know the weather condition of that location.
- ❖ If the user enters the correct city name, then the location entered by the user will be displayed.
- ❖ If user enters wrong city name, they will be suggested to re – enter the city name again

3.2.4 Display Weather Report of Location

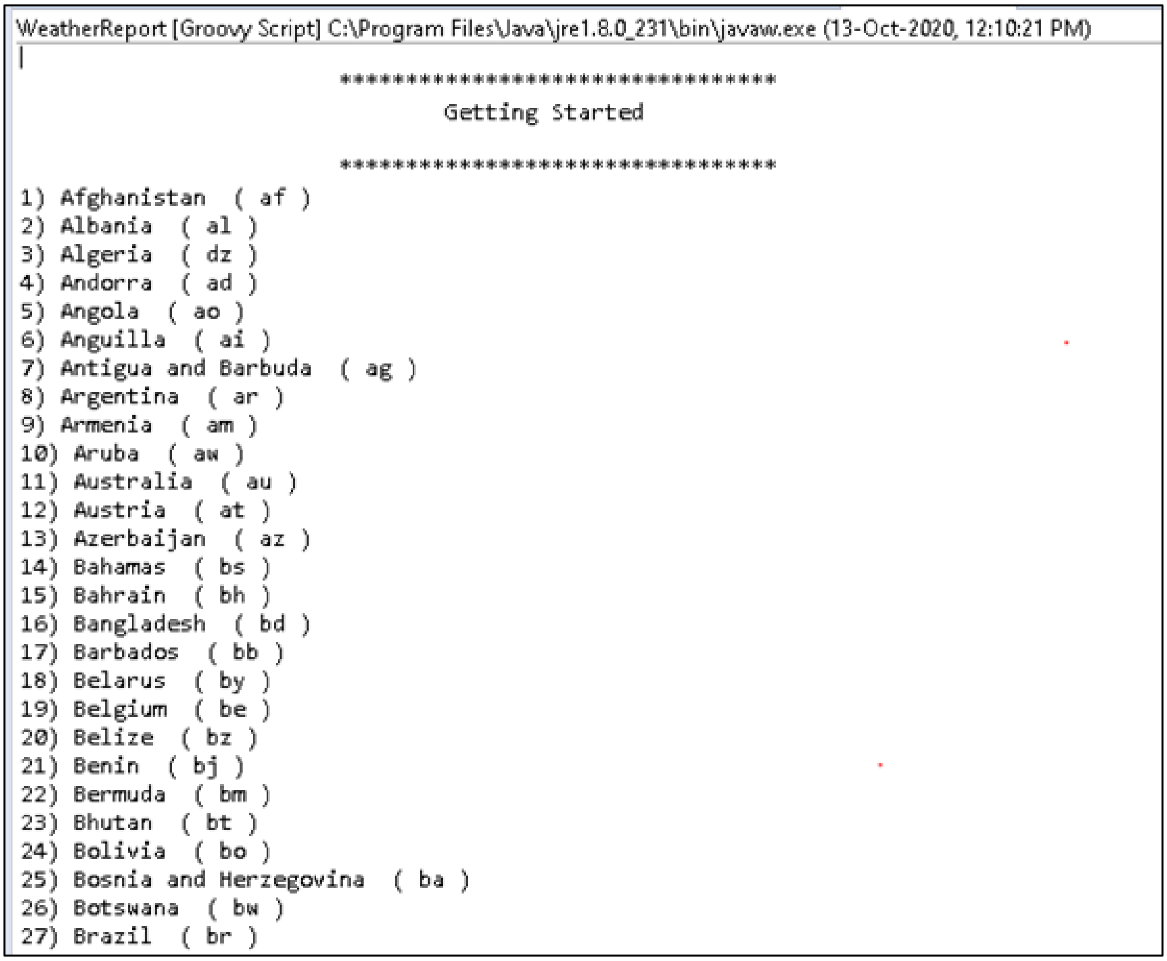
- ❖ The user will be given 2 options to know the weather report of the particular location.
- ❖ The first option is to know the current (today's) weather report.
- ❖ The second option is to know last week's weather report.
- ❖ If the user chooses option 1, then today's weather condition will be displayed.
- ❖ If the user chooses option2, then last week's weather condition will be displayed.

4. Screenshots



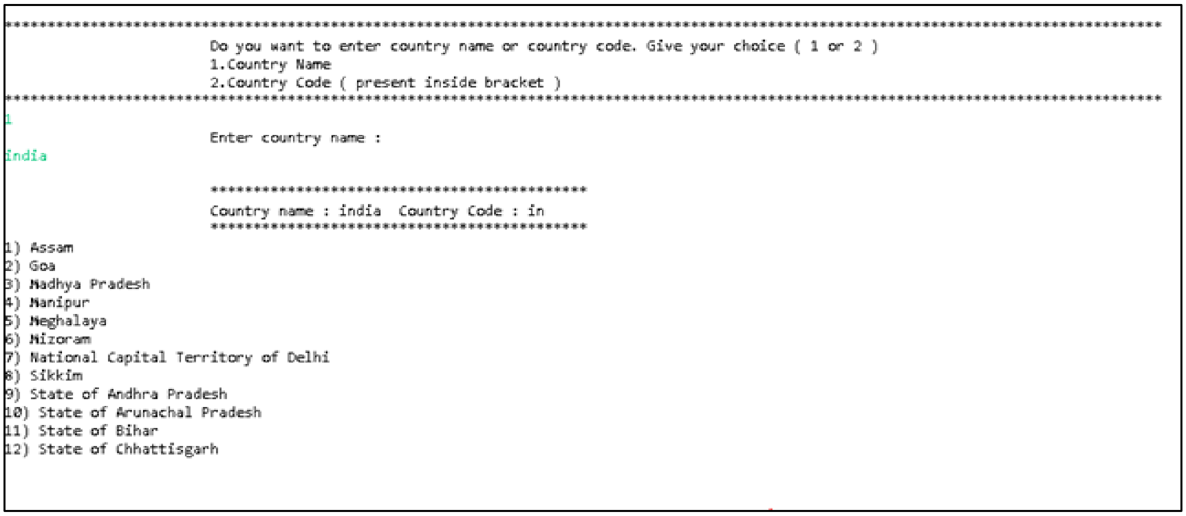
```
WeatherReport [Groovy Script] C:\Program Files\Java\jre1.8.0_231\bin\javaw.exe (13-Oct-2020, 12:10:21 PM)
******************************************************************************************************************************************
                                         WELCOME TO WEATHER FORECASTING!!!
                                                  Say Hey!!!
******************************************************************************************************************************************
hey

                         *********************************
                                 Getting Started

                         *********************************
```

Fig 4.1 Welcome Page



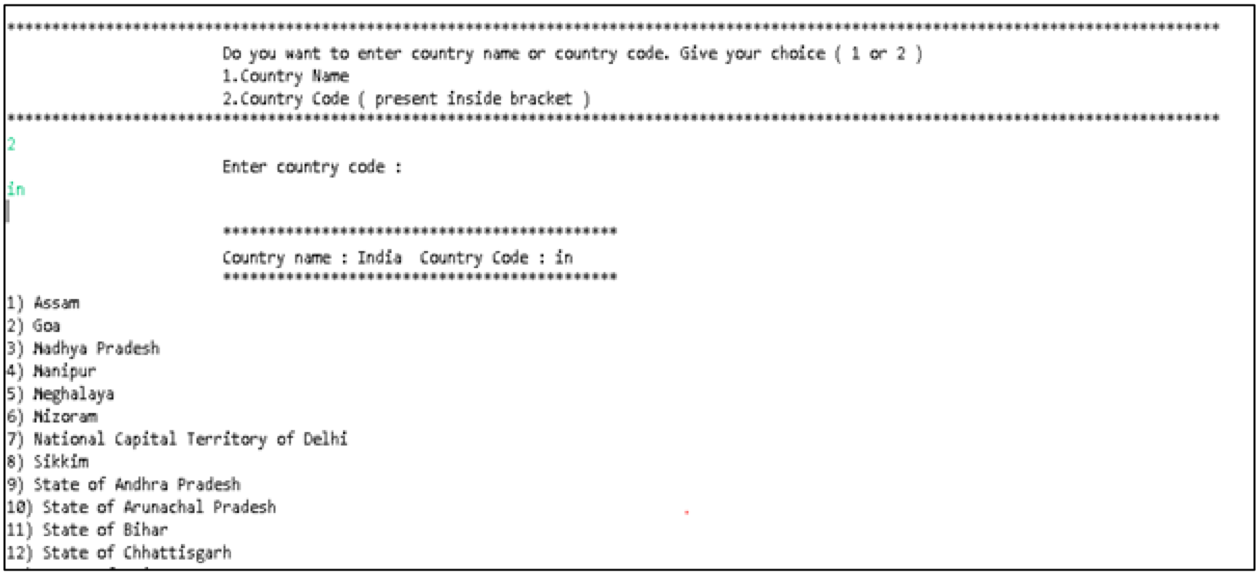
```
WeatherReport [Groovy Script] C:\Program Files\Java\jre1.8.0_231\bin\javaw.exe (13-Oct-2020, 12:10:21 PM)

                         *********************************
                                 Getting Started

                         *********************************
1) Afghanistan  ( af )
2) Albania  ( al )
3) Algeria  ( dz )
4) Andorra  ( ad )
5) Angola  ( ao )
6) Anguilla  ( ai )
7) Antigua and Barbuda  ( ag )
8) Argentina  ( ar )
9) Armenia  ( am )
10) Aruba  ( aw )
11) Australia  ( au )
12) Austria  ( at )
13) Azerbaijan  ( az )
14) Bahamas  ( bs )
15) Bahrain  ( bh )
16) Bangladesh  ( bd )
17) Barbados  ( bb )
18) Belarus  ( by )
19) Belgium  ( be )
20) Belize  ( bz )
21) Benin  ( bj )
22) Bermuda  ( bm )
23) Bhutan  ( bt )
24) Bolivia  ( bo )
25) Bosnia and Herzegovina  ( ba )
26) Botswana  ( bw )
27) Brazil  ( br )
```

Fig 4.2 Displaying Country List



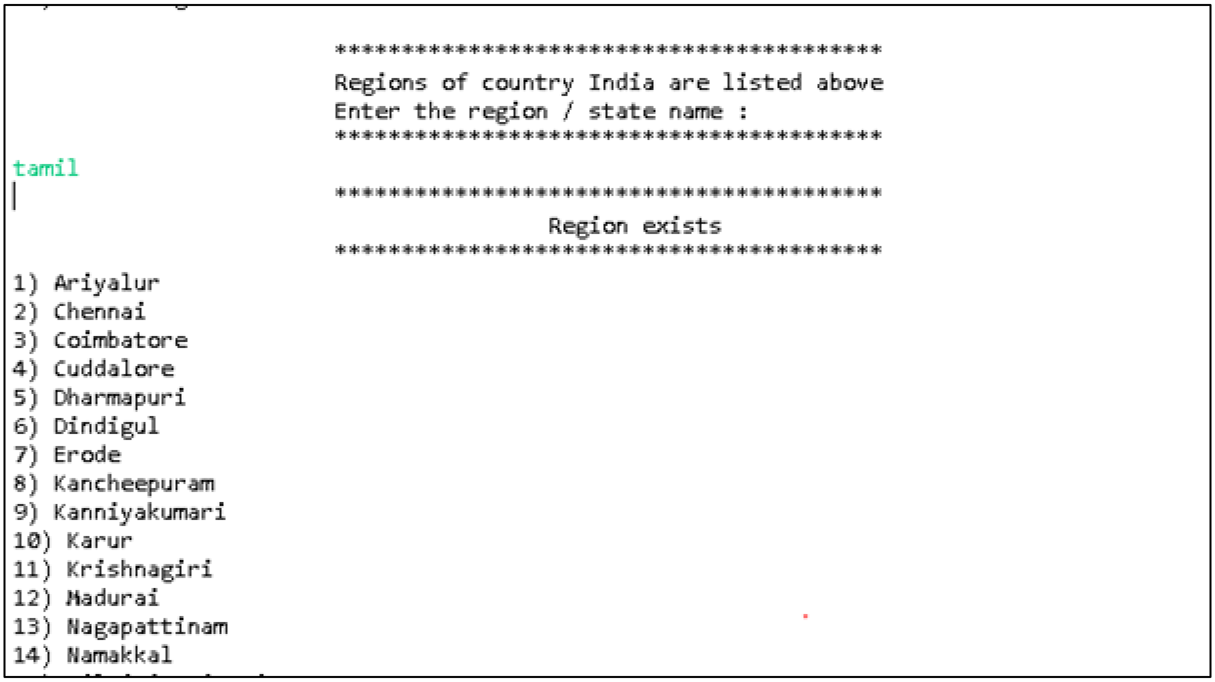
```
***************************************************************************************************************************************
                        Do you want to enter country name or country code. Give your choice ( 1 or 2 )
                        1.Country Name
                        2.Country Code ( present inside bracket )
***************************************************************************************************************************************
1
                        Enter country name :
india

                        ********************************************
                        Country name : india  Country Code : in
                        ********************************************
1) Assam
2) Goa
3) Madhya Pradesh
4) Manipur
5) Meghalaya
6) Mizoram
7) National Capital Territory of Delhi
8) Sikkim
9) State of Andhra Pradesh
10) State of Arunachal Pradesh
11) State of Bihar
12) State of Chhattisgarh
```

Fig 4.3 Choosing Country Name



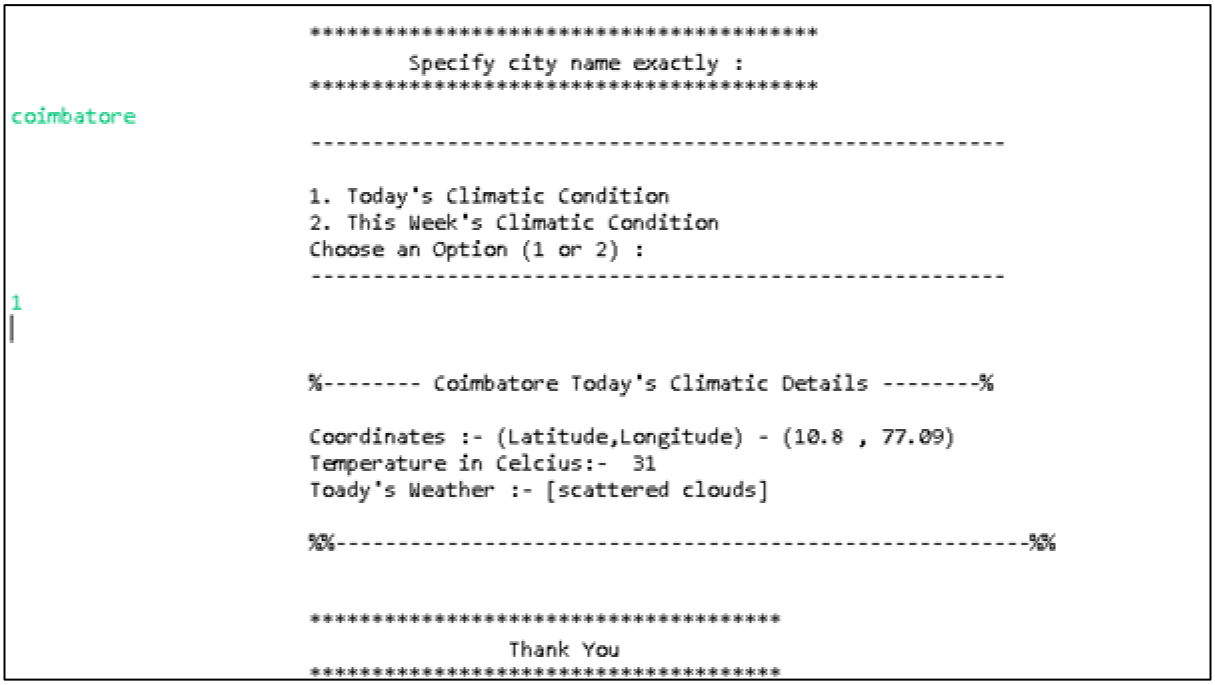
```
***************************************************************************************************************************************
                        Do you want to enter country name or country code. Give your choice ( 1 or 2 )
                        1.Country Name
                        2.Country Code ( present inside bracket )
***************************************************************************************************************************************
2
                        Enter country code :
in

                        ********************************************
                        Country name : India  Country Code : in
                        ********************************************
1) Assam
2) Goa
3) Madhya Pradesh
4) Manipur
5) Meghalaya
6) Mizoram
7) National Capital Territory of Delhi
8) Sikkim
9) State of Andhra Pradesh
10) State of Arunachal Pradesh
11) State of Bihar
12) State of Chhattisgarh
```

4.4 Choosing Country Code



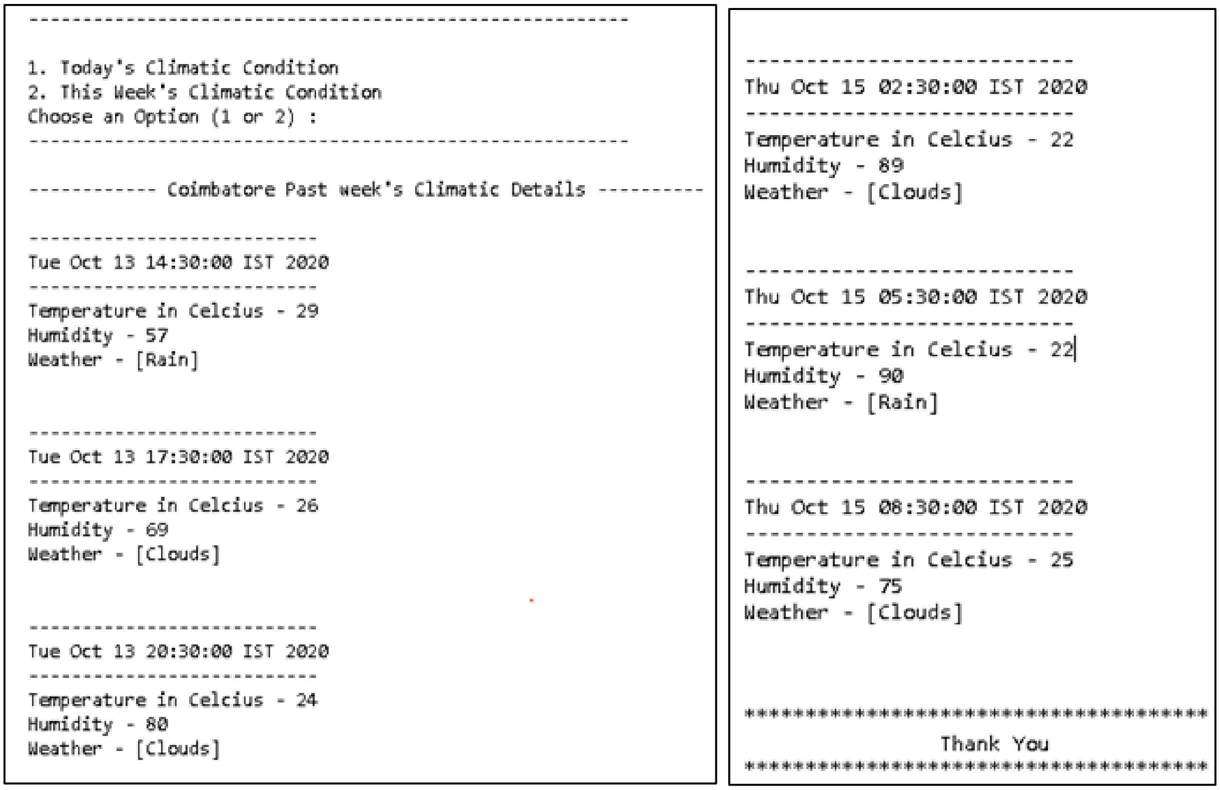
```
                                ****************************************
                                Regions of country India are listed above
                                Enter the region / state name :
                                ****************************************
tamil

                                ****************************************
                                               Region exists
                                ****************************************
1) Ariyalur
2) Chennai
3) Coimbatore
4) Cuddalore
5) Dharmapuri
6) Dindigul
7) Erode
8) Kancheepuram
9) Kanniyakumari
10) Karur
11) Krishnagiri
12) Madurai
13) Nagapattinam
14) Namakkal
```

Fig 4.5 Choosing Region Name



```
                              ******************************************
                                      Specify city name exactly :
                              ******************************************
coimbatore

                              ---------------------------------------------------------

                              1. Today's Climatic Condition
                              2. This Week's Climatic Condition
                              Choose an Option (1 or 2) :
                              ---------------------------------------------------------
1



                              %-------- Coimbatore Today's Climatic Details --------%

                              Coordinates :- (Latitude,Longitude) - (10.8 , 77.09)
                              Temperature in Celcius:-  31
                              Toady's Weather :- [scattered clouds]

                              %%----------------------------------------------------------%%


                              ***************************************
                                             Thank You
                              ***************************************
```

Fig 4.6 Choosing city to know current weather



```
--------------------------------------------------------

1. Today's Climatic Condition
2. This Week's Climatic Condition
Choose an Option (1 or 2) :
--------------------------------------------------------

------------ Coimbatore Past week's Climatic Details ----------

---------------------------
Tue Oct 13 14:30:00 IST 2020
---------------------------
Temperature in Celcius - 29
Humidity - 57
Weather - [Rain]


---------------------------
Tue Oct 13 17:30:00 IST 2020
---------------------------
Temperature in Celcius - 26
Humidity - 69
Weather - [Clouds]


---------------------------
Tue Oct 13 20:30:00 IST 2020
---------------------------
Temperature in Celcius - 24
Humidity - 80
Weather - [Clouds]
```

```
---------------------------
Thu Oct 15 02:30:00 IST 2020
---------------------------
Temperature in Celcius - 22
Humidity - 89
Weather - [Clouds]


---------------------------
Thu Oct 15 05:30:00 IST 2020
---------------------------
Temperature in Celcius - 22
Humidity - 90
Weather - [Rain]


---------------------------
Thu Oct 15 08:30:00 IST 2020
---------------------------
Temperature in Celcius - 25
Humidity - 75
Weather - [Clouds]


***************************************
                Thank You
***************************************
```

Fig 4.7 Last Week's Weather report

5. Code Implementations

```
import groovy.json.JsonSlurper
import groovy.json.JsonOutputt tharen
import java.util.Scanner;
import java.util.List
import java.time.Instant
import groovy.json.JsonBuilder

//Creating JSON Slurper object
JsonSlurper js= new JsonSlurper()

// Global Variables
def global // global flag variable to encounter the flow of process
def counCode // Country Code variable
def counName // Country Name variable
def regionName // Region / State Name variable
def result // Stores resultant location details in the form of list
def cityAPI // API for location tracking

// Displaying Country with code details
def dispCountry(){
   println("\n\t\t\t*********************************************")
   println("\t\t\tCountry name : " + counName + "  Country Code : " + counCode)
   println("\t\t\t*********************************************")
```

```
}

// Used for user interface
def design(){
   println("\t\t\t*********************************************")

}

// Sample for ending code. Mainly for user interface
def endFun(){
   println("\n\t\t\t******************************************")
   println("\t\t\t\t\tThank You")
   println("\t\t\t******************************************")

}


// Displaying All Country List present in world
def dispCounList(){

// URL for displaying Country List
def counCodeAPI = "http://battuta.medunes.net/api/country/all/?key=f6aa01d280721e65f81f6a9f1bf2a1fa"
// Converting URL into String
def counList = new JsonSlurper().parseText(new URL(counCodeAPI).getText())
//Getting Size or Length of List
int counListSize = counList.size()
// Iterating through the list ( String )
for(int i = 0; i < counListSize; i++){
   println(i+1 + ") " + counList.get(i).name + "  ( " + counList.get(i).code + " )")
}
// Loop variable used as flag signal for looping
boolean loop = true
while(loop){

println("\n***************************************************************************************************
**********************************************************")
   println("\t\t\tDo you want to enter country name or country code. Give your choice ( 1 or 2 )")
   println("\t\t\t1.Country Name \n \t\t\t2.Country Code ( present inside bracket ) ")

println("******************************************************************************************************
********************************************************")
   // Getting choice from user
   def choice = System.in.newReader().readLine()
   int flag = 0 // Setting flag as 0
   global = "0"
   if(choice == "1"){ // User wishes to enter country name
            while(loop){
            println("\t\t\tEnter country name : ")
            // Getting country name from user
             counName = System.in.newReader().readLine()
            // Generating Country's Code
            for(int i = 0; i < counListSize; i++){
```

```
            if(counList.get(i).name.toLowerCase() == counName.toLowerCase()){ //Checking input is present
in the API list
                counCode = counList.get(i).code // Getting appropriate country's code
                flag = 1 // To indicate Country is present
                global = "1"
                break
            }
        }
        if(flag == 0){ // Flag not set so country is not available
            design()
            println("\t\t\t   Invalid Country Name@")
            println("\t\t\t Press 1 to re-enter 0 to stop")
            design()
            flag = System.in.newReader().readLine() // Option for user to re-enter or exit
            if(flag == "1") // User needs to re-enter Country name
                loop = true
            else // User needs to exit
                loop = false

        }
        else{
            dispCountry() // Displaying country name with country code to user function call
            loop = false // Country is choosed. So end of loop
            }
        }
        loop = false
    }
    else if(choice == "2"){ // User wishes to enter country code
        while(loop){
        println("\t\t\tEnter country code : ")
        counCode = System.in.newReader().readLine() // Getting country code
        // Generating country name from country code
        for(int i = 0; i < counListSize; i++){
            if(counList.get(i).code.toLowerCase() == counCode.toLowerCase()){ //Checking input is present in
the API list
                counName = counList.get(i).name// Getting appropriate country's code
                flag = 1 // To indicate country is present
                global = "1"
                break
            }
        }
        if(flag == 0){ // Flag not set so country is not available
            design()
            println("\t\t\t   @Invalid Country Code@")
            println("\t\t\tPress 1 to re-enter 0 to stop")
            design()
            flag = System.in.newReader().readLine() // Option for user to re-enter or exit
            if(flag == "1") // User needs to re-enter Country name
                loop = true
            else // User needs to exit
                loop = false

        }
```

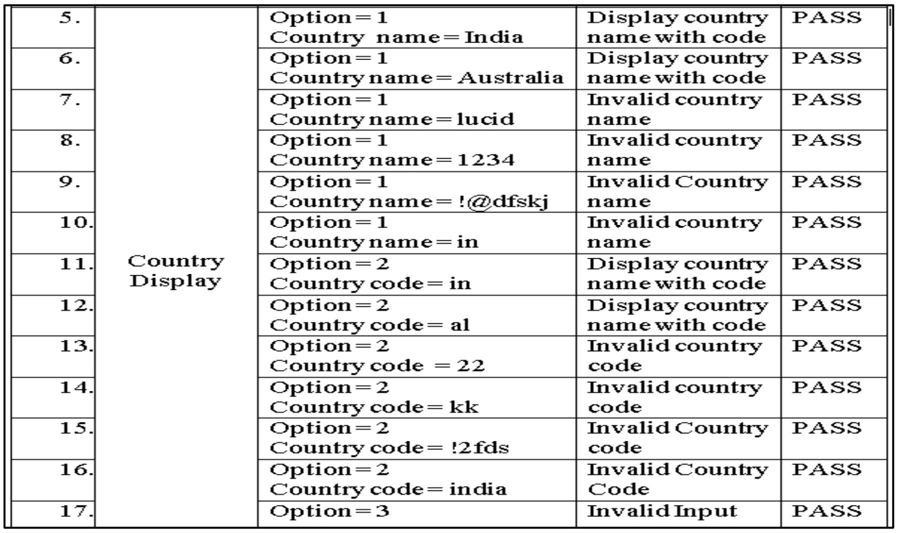
```
          else{
                    dispCountry() // Displaying country name with country code to user function call
                    loop = false // Country is chosen. So end of loop
          }
          }
          loop = false
  }
  else{
          design()
          println("\t\t\t   @Invalid choice. Press 1 or 2 .Try Again@")
          println("\t\t\tPress 1 to re-enter 0 to stop")
          design()
          flag = System.in.newReader().readLine()
          if(flag == "1"){ // User wishes to re-enter country name
                    dispCounList()  // Allowing User to re-enter country name
                    loop = false
          }
          else{
                    endFun()
                    loop = false
          }

  }
}
return global // to Check whether is choosed or not
}


// Displaying Regions / States List of particular Country
def dispRegionList(){
  // URL for displaying Region List of selected Country
  def regionAPI = "http://battuta.medunes.net/api/region/" + counCode +
"/all/?key=f6aa01d280721e65f81f6a9f1bf2a1fa"
  // Converting URL to String
  def regionList = new JsonSlurper().parseText(new URL(regionAPI).getText())
  // Getting size of regions displayed list
  int regionSize = regionList.size()
  // Iterating Regions List
  for(int i = 0; i < regionSize; i++){
          println(i+1 + ") " + regionList.get(i).region)
  }
  println()
  loop = true
  global = "0"
  while(loop){
          design()
          println("\t\t\tRegions of country " + counName + " are listed above")
          println("\t\t\tEnter the region / state name : ")
          design()
          // Getting region name from user
          regionName = System.in.newReader().readLine()
          while(regionName.size() < 2){ // If region name is less than 2 letters
                    println("Please enter region / state name with atleast 2 characters : ")
```

```
                regionName = System.in.newReader().readLine()
        }
        // Generating City list for selected region
        def cityAPI = "http://battuta.medunes.net/api/city/" + counCode + "/search/?region=" + regionName +
"&key=f6aa01d280721e65f81f6a9f1bf2a1fa"
        // Converting URL to String
        def cityList = new JsonSlurper().parseText(new URL(cityAPI).getText())

        if(cityList.size() == 0){ // No such region found
                design()
                println("\t\t\t   @Invalid region / state name.\n\t\t\t Try Again@")
                println("\t\t\tPress 1 to re-enter 0 to stop")
                design()
                flag = System.in.newReader().readLine() // Getting user opinion
                if(flag == "1"){ // User wishes to re-enter region name
                        loop = true
                }
                else{ // User wishes to exit
                        endFun()
                        loop = false
                }
        }
        else{
                design()
                global = "1"
                println("\t\t\t\t\tRegion exists")
                design()
                loop = false
        }
  }
  return global
}


// Displaying City List of particular Country's State
def dispCityList(){
  // Displaying City of particular region
  def partCity = "http://battuta.medunes.net/api/city/" + counCode + "/search/?region=" + regionName +
"&key=f6aa01d280721e65f81f6a9f1bf2a1fa"
  // Converting URL to String
  def cityList = new JsonSlurper().parseText(new URL(partCity).getText())
  // Iterating City list
  for(int i = 0; i < cityList.size(); i++){
        println(i+1 + ") " + cityList.get(i).city)
  }
  println()

  loop = true
  while(loop){
        design()
        println("\t\t\t\tSpecify city name exactly : ")
        design()
        // Getting city name from user
        cityName = System.in.newReader().readLine()
        while(cityName.size() < 3){ // If city name is less than 3 letters
                println("Please enter city name with atleast 3 characters : ")
                cityName = System.in.newReader().readLine()
        }
        cityAPI  =  "http://battuta.medunes.net/api/city/"  +  counCode  +  "/search/?region="  +  regionName  +
"&city=" + cityName + "&key=f6aa01d280721e65f81f6a9f1bf2a1fa"
        result = new JsonSlurper().parseText(new URL(cityAPI).getText())

        if(result.size() == 0){ // No such city found
                design()
                println("\t\t\t   @Invalid city name.\n\t\t\t Try Again@")
                println("\t\t\tPress 1 to re-enter 0 to stop")
                design()
                flag = System.in.newReader().readLine() // Getting user's opinion
                if(flag == "1"){ // user wishes to re-enter city name
                        loop = true
                }
                else{ // user wishes to exit
                        endFun()
                        loop = false
                }
        }
        else if(result.size() >= 2){ // If two or more cities found with specified name
                design()
                println("\t\t\t\tMetion city name exactly. Try again")
                design()
                loop = true
        }
        else if(result.size() == 1){
               Loop = true
       while(loop){
                println("\t\t\t-------------------------------------------------------")
                println("\n\t\t\t1. Today's Climatic Condition")
                println("\t\t\t2. This Week's Climatic Condition")
                println("\t\t\tChoose an Option (1 or 2) :  ")
                println("\t\t\t-------------------------------------------------------")

                Scanner scan = new Scanner(System.in); // creating Scanner class object
                int num = scan.nextInt() // Getting user opinion
                JsonSlurper js= new JsonSlurper()
                        String cityname=result.get(0).city // Generating city name from list
                        String latitude=result.get(0).latitude // Generating latitude
                        String longitude=result.get(0).longitude // Generating longitude

                        String api="http://api.openweathermap.org/data/2.5/" // API for weather
                        String appid="&appid=4c19fc141ec73cc06973aca5a9a8dc42" // Access key for weather
API
                        if (num ==1) {

                                String today="weather?lat="+latitude+"&lon="+longitude
                                // Converting URL to Map
                                Map map = js.parseText(new URL (api+today+appid).getText())
                                // Getting required detail from map
                                String lat = map.coord.lat
                                String lon = map.coord.lon
                                double temp = map.main.temp -273.15
                                String weather = map.weather.description
                                // Displaying today's weather condition
                                println("\n")
                                println("\t\t\t%-------- "+ cityname +" Today's Climatic Details --------%\n")
                                println("\t\t\tCoordinates :- (Latitude,Longitude) - ("+lat+" , "+lon+")")
                                println("\t\t\tTemperature in Celcius:-  "+ Math.round(temp))
                                println("\t\t\tToady's Weather :- "+weather)
                                println("\n\t\t\t%%--------------------------------------------------%%")
                                println()
Loop = false
                        }
                        else {
                                String thisweek="forecast?lat="+latitude+"&lon="+longitude
                                // Displaying last week's weather condition
                                String count="&cnt=15"
                                Map map = js.parseText(new URL (api+thisweek+count+appid).getText())
                                int c=1
                                println("\t\t\t------------ "+ cityname +" Past week's Climatic Details ----------\n")
                                for(i in map.list) {
                                    Instant instant = Instant.ofEpochSecond( i.dt );
                                    Date date = Date.from( instant )
                                    println("\t\t\t--------------------------")
                                    println("\t\t\t" + date)
                                    println("\t\t\t--------------------------")
                                    println("\t\t\tTemperature  in  Celcius  -  "+Math.round(i.main.temp  -
273.15))

                                    println("\t\t\tHumidity - "+ i.main.humidity)
                                    println("\t\t\tWeather - "+ i.weather.main)
                                    println("\n")
                                   Loop = false
                        }

                }
Else{
design()
       println(“Invalid Input”)
design()
Loop = true
}
}

                loop = false
        }
      }

}

// Displaying API for weather reports
```

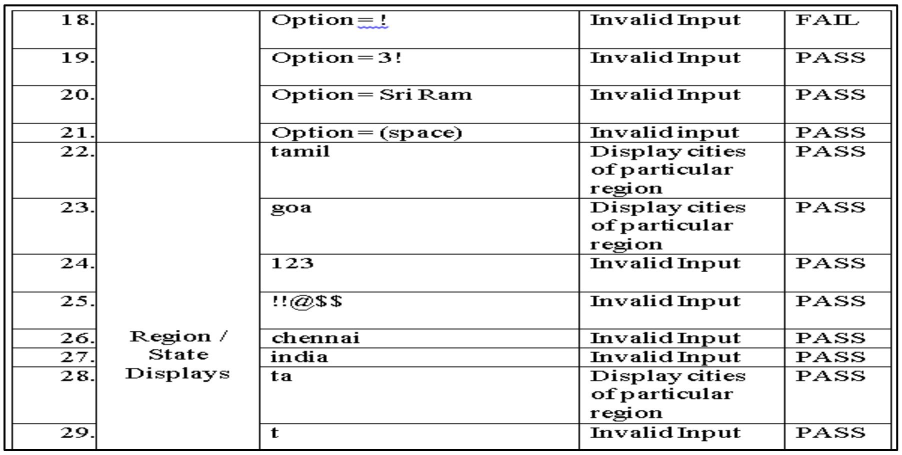
```
def dispAPI(){
   design()
   println("\n\t\t\t\t\tAPI")
   println("\n" + cityAPI)
   design()
}
// Main Part where program Starts
println("**************************************************************************************
***********************************************")
println("\t\t\t\t\tWELCOME TO WEATHER FORECASTING!!!")
println("\t\t\t\t\t\tSay Hey!!!")
println("**************************************************************************************
***********************************************")
def input = System.in.newReader().readLine()
if(input.toLowerCase() == "hey"){
   println("\n\t\t\t**********************************")
   println("\t\t\t\tGetting Started")
   println("\n\t\t\t**********************************")
   boolean flag = true
   global = "0"
   while(flag){
              global = dispCounList()
              if(global == "1"){ // Country is selected
                          global = "0"
                          global = dispRegionList()
                          if(global == "1"){ // Region is selected
                                      global = "0"
                                      dispCityList()
                                      endFun()
                          }
                          else{ // Region is not selected
                                      println()
                                      design()
                                      println("\t\t\tState not mentioned!")
                                      design()
                          }
              }
              else{ // Country is not selected
                          println()
                          design()
                          println("\t\t\t Country not metioned!")
                          design()
              }

              println("Press 1 to continue or 0 to stop")
              input = System.in.newReader().readLine() // input for another location's weather condition
              if(input == "1")
                          flag = true
              else
                          flag = false
   }
}
else{
    endFun()
}
```

6. Test Cases

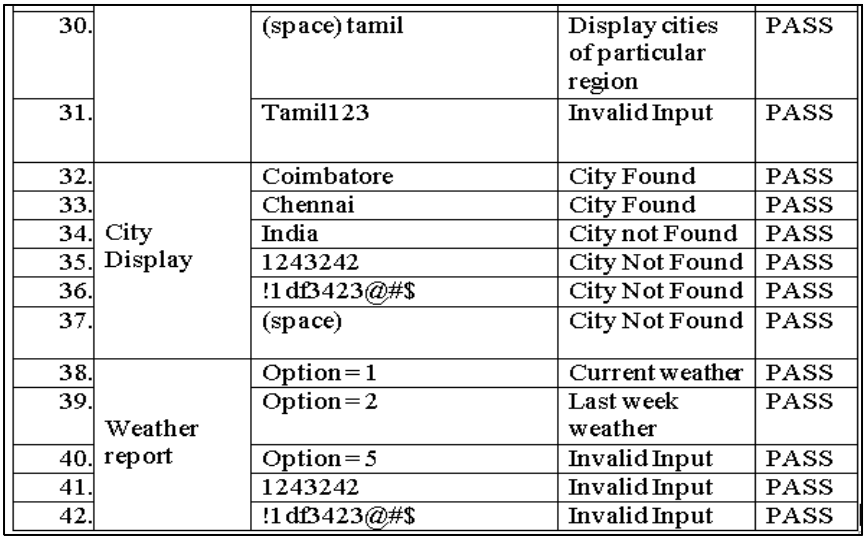
SNO	MODULE	TEST CASE	REMARKS	STATUS
1.	Main	Choice = hey	Getting Started	PASS
2.		Choice = 123	Thank You Message	PASS
3.		Choice = suba	Thank You Message	PASS
4.		Choice = suba!23d	Thank you message	PASS



5.	Country Display	Option = 1 Country name = India	Display country name with code	PASS
6.		Option = 1 Country name = Australia	Display country name with code	PASS
7.		Option = 1 Country name = lucid	Invalid country name	PASS
8.		Option = 1 Country name = 1234	Invalid country name	PASS
9.		Option = 1 Country name = !@dfskj	Invalid Country name	PASS
10.		Option = 1 Country name = in	Invalid country name	PASS
11.		Option = 2 Country code = in	Display country name with code	PASS
12.		Option = 2 Country code = al	Display country name with code	PASS
13.		Option = 2 Country code = 22	Invalid country code	PASS
14.		Option = 2 Country code = kk	Invalid country code	PASS
15.		Option = 2 Country code = !2fds	Invalid Country code	PASS
16.		Option = 2 Country code = india	Invalid Country Code	PASS
17.		Option = 3	Invalid Input	PASS



18.		Option = !	Invalid Input	FAIL
19.		Option = 3!	Invalid Input	PASS
20.		Option = Sri Ram	Invalid Input	PASS
21.		Option = (space)	Invalid input	PASS
22.	Region / State Displays	tamil	Display cities of particular region	PASS
23.		goa	Display cities of particular region	PASS
24.		123	Invalid Input	PASS
25.		!!@$$	Invalid Input	PASS
26.		chennai	Invalid Input	PASS
27.		india	Invalid Input	PASS
28.		ta	Display cities of particular region	PASS
29.		t	Invalid Input	PASS



30.		(space) tamil	Display cities of particular region	PASS
31.		Tamil123	Invalid Input	PASS
32.	City Display	Coimbatore	City Found	PASS
33.		Chennai	City Found	PASS
34.		India	City not Found	PASS
35.		1243242	City Not Found	PASS
36.		!1df3423@#$	City Not Found	PASS
37.		(space)	City Not Found	PASS
38.	Weather report	Option=1	Current weather	PASS
39.		Option=2	Last week weather	PASS
40.		Option=5	Invalid Input	PASS
41.		1243242	Invalid Input	PASS
42.		!1df3423@#$	Invalid Input	PASS

7. Conclusion

Thus, this project understands and gathers the user’s requirements and provides a detailed weather report based on the user's preference.

8. References

a. https://www.eclipse.org/downloads/packages/release/helios/sr1/eclipse-ide-java-developers
b. https://www.postman.com/downloads/
c. https://rapidapi.com/teams?utm_source=google&utm_medium=cpc&utm_campaign=Teams_80056715881&utm_term=%2Bapi%20%2Btesting_b&gclid=EAIaIQobChMIkpKbobux7AIVmAVyCh2o7QiQEAAYASAAEgIXQfD_BwE
d. https://www.tutorialspoint.com/groovy/index.htm
e. https://www.guru99.com/groovy-tutorial.html
f. https://httpd.apache.org/download.cgi
g. https://openweathermap.org/
h. https://openweathermap.org/current
i. https://openweathermap.org/forecast16
j. https://tomcat.apache.org/download-90.cgi
k. http://battuta.medunes.net/api/country/all/?key=f6aa01d280721e65f81f6a9f1bf2a1fa

****** End of the document ******