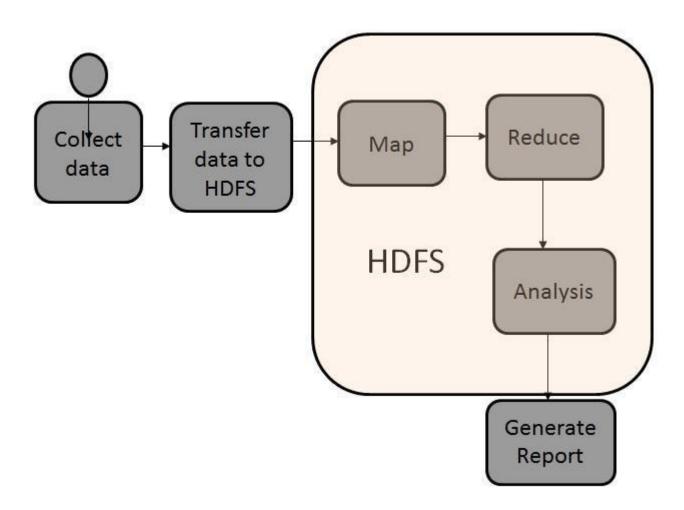
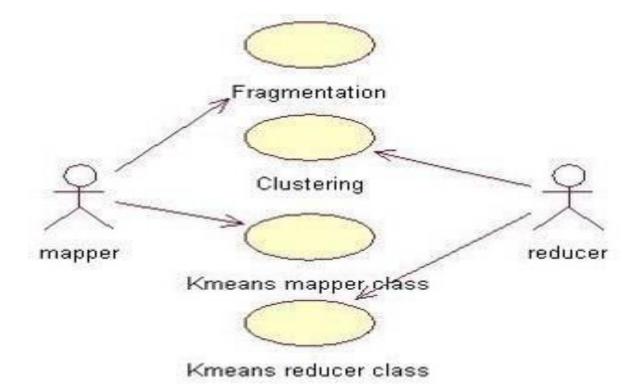
Project Design Phase-I Solution Architecture

Date	10 October 2022	
Team ID	PNT2022TMID40045	
Project Name	Exploratory Analysis of Rainfall Data in India for Agriculture.	
Maximum Marks	4 Marks	

Solution Architecture:





ANNUAL RAINFALL OF INDIA IN mm

2 1902 1038.4 3 1903 1195.9 4 1904 1025.1 5 1905 977.5 6 1906 1149.2 7 1907 1034.8 8 1908 1077.4 9 1909 1128.5 10 1910 1183.9 11 1911 1028.9 12 1912 1070.4 13 1913 1061.8 14 1914 1185.9 15 1915 1124.4 16 1916 1324.8 17 1917 1463.9 18 1918 1020.2 20 1920 1039.1 21 1921 1225. 22 1922 1204.2 23 1923 1148.6 24 1924 1245.9 25 1925 1189.5 26 1926 1226.2 27 1927 1244.6 28 1928 1200.2	S.NO	YEAR	ANN
3 1903 1195.9 4 1904 1025.1 5 1905 977.5 6 1906 1149.2 7 1907 1034.8 8 1908 1077.4 9 1909 1128.5 10 1910 1183.9 11 1911 1028.9 12 1912 1070.4 13 1913 1061.8 14 1914 1185.9 15 1915 1124.4 16 1916 1324.8 17 1917 1463.9 18 1918 1020.2 20 1920 1039.1 19 1919 1287.9 20 1920 1039.1 21 1921 1225. 22 1922 1204.2 23 1923 1148.6 24 1924 1245.9 25 1925 1189.5 26 1926 1226.2 27 1927 1244.6	1	1901	1030.8
4 1904 1025.1 5 1905 977.5 6 1906 1149.2 7 1907 1034.8 8 1908 1077.4 9 1909 1128.5 10 1910 1183.9 11 1911 1028.9 12 1912 1070.4 13 1913 1061.8 14 1914 1185.9 15 1915 1124.4 16 1916 1324.8 17 1917 1463.9 18 1918 1020.2 19 1919 1287.9 20 1920 1039.1 21 1921 1225 22 1922 1204.2 23 1923 1148.6 24 1924 1245.9 25 1925 1189.5 26 1926 1226.2 27 1927 1244.6 28 1928 1200.2 30 1930 1198.5	2	1902	1038.4
5 1905 977.5 6 1906 1149.2 7 1907 1034.8 8 1908 1077.4 9 1909 1128.5 10 1910 1183.9 11 1911 1028.9 12 1912 1070.4 13 1913 1061.8 14 1914 1185.9 15 1915 1124.4 16 1916 1324.8 17 1917 1463.9 18 1918 1020.2 19 1919 1287.9 20 1920 1039.1 21 1921 1225 22 1922 1204.2 23 1923 1148.6 24 1924 1245.9 25 1925 1189.5 26 1926 1226.2 27 1927 1244.6 28 1928 1200.2 30 1930 1198.5 31 1931 1292.8 <td>3</td> <td>1903</td> <td>1195.9</td>	3	1903	1195.9
6 1906 1149.2 7 1907 1034.8 8 1908 1077.4 9 1909 1128.5 10 1910 1183.9 11 1911 1028.9 12 1912 1070.4 13 1913 1061.8 14 1914 1185.9 15 1915 1124.4 16 1916 1324.8 17 1917 1463.9 18 1918 1020.2 19 1919 1287.9 20 1920 1039.1 21 1921 1225.2 22 1922 1204.2 23 1923 1148.6 24 1924 1245.9 25 1925 1189.5 26 1926 1226.2 27 1927 1244.6 28 1928 1200.2 30 1930 1198.5 31 1931 1292.8 32 1932 1202.9	4	1904	1025.1
7 1907 1034.8 8 1908 1077.4 9 1909 1128.5 10 1910 1183.9 11 1911 1028.9 12 1912 1070.4 13 1913 1061.8 14 1914 1185.9 15 1915 1124.4 16 1916 1324.8 17 1917 1463.9 18 1918 1020.2 19 1919 1287.9 20 1920 1039.1 21 1921 1225 22 1922 1204.2 23 1923 1148.6 24 1924 1245.9 25 1925 1189.5 26 1926 1226.2 27 1927 1244.6 28 1928 1200.2 30 1930 1198.5 31 1931 1292.8 32 1932 1202.9 33 1933 1372 <td>5</td> <td>1905</td> <td>977.5</td>	5	1905	977.5
8 1908 1077.4 9 1909 1128.5 10 1910 1183.9 11 1911 1028.9 12 1912 1070.4 13 1913 1061.8 14 1914 1185.9 15 1915 1124.4 16 1916 1324.8 17 1917 1463.9 18 1918 1020.2 19 1919 1287.9 20 1920 1039.1 21 1921 1225 22 1922 1204.2 23 1923 1148.6 24 1924 1245.9 25 1925 1189.5 26 1926 1226.2 27 1927 1244.6 28 1928 1200.2 30 1930 1198.5 31 1931 1292.8 32 1932 1202.9 33 1933 1372 34 1934 1217.5 </td <td>6</td> <td>1906</td> <td>1149.2</td>	6	1906	1149.2
9 1909 1128.5 10 1910 1183.9 11 1911 1028.9 12 1912 1070.4 13 1913 1061.8 14 1914 1185.9 15 1915 1124.4 16 1916 1324.8 17 1917 1463.9 18 1918 1020.2 19 1919 1287.9 20 1920 1039.1 21 1921 1225 22 1922 1204.2 23 1923 1148.6 24 1924 1245.9 25 1925 1189.5 26 1926 1226.2 27 1927 1244.6 28 1928 1200.2 30 1930 1198.5 31 1931 1292.8 32 1932 1202.9 33 1933 1372 34 1934 1217.5	7	1907	1034.8
10 1910 1183.9 11 1911 1028.9 12 1912 1070.4 13 1913 1061.8 14 1914 1185.9 15 1915 1124.4 16 1916 1324.8 17 1917 1463.9 18 1918 1020.2 19 1919 1287.9 20 1920 1039.1 21 1921 1225 22 1922 1204.2 23 1923 1148.6 24 1924 1245.9 25 1925 1189.5 26 1926 1226.2 27 1927 1244.6 28 1928 1200.2 29 1929 1193.2 30 1930 1198.5 31 1931 1292.8 32 1932 1202.9 33 1933 1372 34 1934 1217.5	8	1908	1077.4
11 1911 1028.9 12 1912 1070.4 13 1913 1061.8 14 1914 1185.9 15 1915 1124.4 16 1916 1324.8 17 1917 1463.9 18 1918 1020.2 19 1919 1287.9 20 1920 1039.1 21 1921 1225 22 1922 1204.2 23 1923 1148.6 24 1924 1245.9 25 1925 1189.5 26 1926 1226.2 27 1927 1244.6 28 1928 1200.2 29 1929 1193.2 30 1930 1198.5 31 1931 1292.8 32 1932 1202.9 33 1933 1372 34 1934 1217.5	9	1909	1128.5
12 1912 1070.4 13 1913 1061.8 14 1914 1185.9 15 1915 1124.4 16 1916 1324.8 17 1917 1463.9 18 1918 1020.2 19 1919 1287.9 20 1920 1039.1 21 1921 1225 22 1922 1204.2 23 1923 1148.6 24 1924 1245.9 25 1925 1189.5 26 1926 1226.2 27 1927 1244.6 28 1928 1200.2 29 1929 1193.2 30 1930 1198.5 31 1931 1292.8 32 1932 1202.9 33 1933 1372 34 1934 1217.5	10	1910	1183.9
13 1913 1061.8 14 1914 1185.9 15 1915 1124.4 16 1916 1324.8 17 1917 1463.9 18 1918 1020.2 19 1919 1287.9 20 1920 1039.1 21 1921 1225 22 1922 1204.2 23 1923 1148.6 24 1924 1245.9 25 1925 1189.5 26 1926 1226.2 27 1927 1244.6 28 1928 1200.2 29 1929 1193.2 30 1930 1198.5 31 1931 1292.8 32 1932 1202.9 33 1933 1372 34 1934 1217.5	11	1911	1028.9
14 1914 1185.9 15 1915 1124.4 16 1916 1324.8 17 1917 1463.9 18 1918 1020.2 19 1919 1287.9 20 1920 1039.1 21 1921 1225 22 1922 1204.2 23 1923 1148.6 24 1924 1245.9 25 1925 1189.5 26 1926 1226.2 27 1927 1244.6 28 1928 1200.2 29 1929 1193.2 30 1930 1198.5 31 1931 1292.8 32 1932 1202.9 33 1933 1372 34 1934 1217.5	12	1912	1070.4
15 1915 1124.4 16 1916 1324.8 17 1917 1463.9 18 1918 1020.2 19 1919 1287.9 20 1920 1039.1 21 1921 1225 22 1922 1204.2 23 1923 1148.6 24 1924 1245.9 25 1925 1189.5 26 1926 1226.2 27 1927 1244.6 28 1928 1200.2 29 1929 1193.2 30 1930 1198.5 31 1931 1292.8 32 1932 1202.9 33 1933 1372 34 1934 1217.5	13	1913	1061.8
16 1916 1324.8 17 1917 1463.9 18 1918 1020.2 19 1919 1287.9 20 1920 1039.1 21 1921 1225 22 1922 1204.2 23 1923 1148.6 24 1924 1245.9 25 1925 1189.5 26 1926 1226.2 27 1927 1244.6 28 1928 1200.2 29 1929 1193.2 30 1930 1198.5 31 1931 1292.8 32 1932 1202.9 33 1933 1372 34 1934 1217.5	14	1914	1185.9
17 1917 1463.9 18 1918 1020.2 19 1919 1287.9 20 1920 1039.1 21 1921 1225 22 1922 1204.2 23 1923 1148.6 24 1924 1245.9 25 1925 1189.5 26 1926 1226.2 27 1927 1244.6 28 1928 1200.2 29 1929 1193.2 30 1930 1198.5 31 1931 1292.8 32 1932 1202.9 33 1933 1372 34 1934 1217.5	15	1915	1124.4
18 1918 1020.2 19 1919 1287.9 20 1920 1039.1 21 1921 1225 22 1922 1204.2 23 1923 1148.6 24 1924 1245.9 25 1925 1189.5 26 1926 1226.2 27 1927 1244.6 28 1928 1200.2 29 1929 1193.2 30 1930 1198.5 31 1931 1292.8 32 1932 1202.9 33 1933 1372 34 1934 1217.5	16	1916	1324.8
19 1919 1287.9 20 1920 1039.1 21 1921 1225 22 1922 1204.2 23 1923 1148.6 24 1924 1245.9 25 1925 1189.5 26 1926 1226.2 27 1927 1244.6 28 1928 1200.2 29 1929 1193.2 30 1930 1198.5 31 1931 1292.8 32 1932 1202.9 33 1933 1372 34 1934 1217.5	17	1917	1463.9
20 1920 1039.1 21 1921 1225 22 1922 1204.2 23 1923 1148.6 24 1924 1245.9 25 1925 1189.5 26 1926 1226.2 27 1927 1244.6 28 1928 1200.2 29 1929 1193.2 30 1930 1198.5 31 1931 1292.8 32 1932 1202.9 33 1933 1372 34 1934 1217.5	18	1918	1020.2
21 1921 1225 22 1922 1204.2 23 1923 1148.6 24 1924 1245.9 25 1925 1189.5 26 1926 1226.2 27 1927 1244.6 28 1928 1200.2 29 1929 1193.2 30 1930 1198.5 31 1931 1292.8 32 1932 1202.9 33 1933 1372 34 1934 1217.5	19	1919	1287.9
22 1922 1204.2 23 1923 1148.6 24 1924 1245.9 25 1925 1189.5 26 1926 1226.2 27 1927 1244.6 28 1928 1200.2 29 1929 1193.2 30 1930 1198.5 31 1931 1292.8 32 1932 1202.9 33 1933 1372 34 1934 1217.5	20	1920	1039.1
23 1923 1148.6 24 1924 1245.9 25 1925 1189.5 26 1926 1226.2 27 1927 1244.6 28 1928 1200.2 29 1929 1193.2 30 1930 1198.5 31 1931 1292.8 32 1932 1202.9 33 1933 1372 34 1934 1217.5	21	1921	1225
24 1924 1245.9 25 1925 1189.5 26 1926 1226.2 27 1927 1244.6 28 1928 1200.2 29 1929 1193.2 30 1930 1198.5 31 1931 1292.8 32 1932 1202.9 33 1933 1372 34 1934 1217.5	22	1922	1204.2
25 1925 1189.5 26 1926 1226.2 27 1927 1244.6 28 1928 1200.2 29 1929 1193.2 30 1930 1198.5 31 1931 1292.8 32 1932 1202.9 33 1933 1372 34 1934 1217.5	23	1923	1148.6
26 1926 1226.2 27 1927 1244.6 28 1928 1200.2 29 1929 1193.2 30 1930 1198.5 31 1931 1292.8 32 1932 1202.9 33 1933 1372 34 1934 1217.5	24	1924	1245.9
27 1927 1244.6 28 1928 1200.2 29 1929 1193.2 30 1930 1198.5 31 1931 1292.8 32 1932 1202.9 33 1933 1372 34 1934 1217.5	25	1925	1189.5
28 1928 1200.2 29 1929 1193.2 30 1930 1198.5 31 1931 1292.8 32 1932 1202.9 33 1933 1372 34 1934 1217.5	26	1926	1226.2
29 1929 1193.2 30 1930 1198.5 31 1931 1292.8 32 1932 1202.9 33 1933 1372 34 1934 1217.5	27	1927	1244.6
30 1930 1198.5 31 1931 1292.8 32 1932 1202.9 33 1933 1372 34 1934 1217.5	28	1928	1200.2
31 1931 1292.8 32 1932 1202.9 33 1933 1372 34 1934 1217.5	29	1929	1193.2
32 1932 1202.9 33 1933 1372 34 1934 1217.5	30	1930	1198.5
33 1933 1372 34 1934 1217.5	31	1931	1292.8
34 1934 1217.5	32	1932	1202.9
	33	1933	1372
35 1935 1127.9	34	1934	1217.5
	35	1935	1127.9

Indian agriculture mainly depend on the rainfall rate, major amount of cultivation is done based on the rain. If the rain fall rate is low then automatically the productivity in agriculture is also low. We are going to predict the future rain fall rate based on the past years. If we predict the future rain fall rate then automatically it will reflect on agriculture then it increases the income in agriculture. Agriculture productivity in India play important role in economy of country.

Indian agriculture is mainly based on the old traditional way of cultivation. We can replace the traditional way of cultivation with new way of using past data and statistics. To help the farmers in India our prediction and analysis. To predict the rain fall rate, Data Mining technique, clustering (modified k-Means) used. But now days the data size is increased dramatically and data is available in variety forms such as structured and un-structured for such reason we have gone through Hadoop Single Node Cluster to estimate the rainfall rate.