Locating Nearby Hospital

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- Introduction where you discuss the business problem and who would be interested in this project.
- Data where you describe the data that will be used to solve the problem and the source of the data.
- Methodology section which represents the main component of the report where you discuss and describe any exploratory data analysis that you did, any inferential statistical testing that you performed, if any, and what machine learnings were used and why.
- Results section where you discuss the results.
- Discussion section where you discuss any observations you noted and any recommendations you can make based on the results.
- Conclusion section where you conclude the report.

Introduction:

Now a days, at the time of medical emergency, it's too hard for locating the nearby Hospital, especially when you are in unknown city, town, place etc. The main idea is to pick the location of the user and compare it with the location of the Hospitals from our datasets. User will get this information on the single click..

Data:

I have converted this csv file into Data Frame using Python Library "Pandas". It contains data such as: Name, Address, Zip code, Neighbor, X Co-ordinate, Y Co-ordinate of the Hospitals. Previously, X Co-ordinate and Y Co-ordinate from the Dataset where in the following format:

	NAME	AD	ZIPCODE	NEIGH	XCOORD	YCOORD
0	Lemuel Shattuck Hospital	170 MORTON ST	2130	ROSLINDALE	71106033.0	42300022.0
1	Beth Israel Deaconess Medical Center East Cam	330 BROOKLINE AV	2115	FENWAY/KENMORE	71106780.0	42339726.0
2	Jewish Memorial Hospital	59 TOWNSEND ST	2119	ROXBURY	71092712.0	42318569.0
3	New England Baptist Hospital	125 PARKER HILL AV	2120	JAMAICA PLAIN	71107615.0	42329944.0
4	Boston Specialty & Rehabilitation Hospital	249 RIVER ST	2126	MATTAPAN	71081888.0	42271300.0
5	Boston Medical Center	88 EAST NEWTON ST	2118	SOUTH END	71072029.0	42336883.0
6	Va Hospital	125 PARKER HILL AV	2120	JAMAICA PLAIN	71107615.0	42329944.0

It was required to change the col into:

	NAME	AD	ZIPCODE	NEIGH	XCOORD	YCOORD	Location
0	Lemuel Shattuck Hospital	170 MORTON ST	2130	ROSLINDALE	71.106033	-42.300022	170 MORTON ST\nROSLINDALE, MA 02130\n(42.30025...
1	Beth Israel Deaconess Medical Center East Cam	330 BROOKLINE AV	2115	FENWAY/KENMORE	71.106780	-42.339726	330 BROOKLINE AV\nFENWAY/KENMORE, MA 02115\n(4...
2	Jewish Memorial Hospital	59 TOWNSEND ST	2119	ROXBURY	71.092712	-42.318569	59 TOWNSEND ST\nROXBURY, MA 02119\n(42.3185628...
3	New England Baptist Hospital	125 PARKER HILL AV	2120	JAMAICA PLAIN	71.107615	-42.329944	125 PARKER HILL AV\nJAMAICA PLAIN, MA 02120\n(...
4	Boston Specialty & Rehabilitation Hospital	249 RIVER ST	2126	MATTAPAN	71.081888	-42.271300	249 RIVER ST\nMATTAPAN, MA 02126\n(42.27137912...
5	Boston Medical Center	88 EAST NEWTON ST	2118	SOUTH END	71.072029	-42.336883	88 EAST NEWTON ST\nSOUTH END, MA 02118\n(42.33...
6	Va Hospital	125 PARKER HILL AV	2120	JAMAICA PLAIN	71.107615	-42.329944	125 PARKER HILL AV\nJAMAICA PLAIN, MA 02120\n(...

I have dropped row with missing value.

Methodology:

After cleaning data, we take input from the user. Here, I have inputted the co-ordinates.

```
from haversine import haversine, Unit
```

```
lyon = (71.074854,-42.335459) # (lat, lon)
a = float(input('Enter Latitude '))
b = float(input('Enter Longitude '))
c= []
c.append(a)
c.append(b)
c = tuple(c)
d=[]
df1 = pd.DataFrame()
dist = []
for ind in df.index:
    x = df['XCOORD'][ind]
    y = df['YCOORD'][ind]
    d.append(x)
    d.append(y)
    d = tuple(d)
    dist.append(haversine(c,d))
    d = list(d)
    d.clear()
```

```
Enter Latitude 71.072040
Enter Longitude -42.336860
```

Basically, this compares the distance between the inputted co-ordinates and the co-ordinates from the dataset. List named ‘dist’ is created and further added as a column to the dataset.

	NAME	AD	ZIPCODE	NEIGH	XCOORD	YCOORD	Location	Distance
0	Lemuel Shattuck Hospital	170 MORTON ST	2130	ROSLINDALE	71.106033	-42.300022	170 MORTON ST\nROSLINDALE, MA 02130\n(42.30025...	4.006214
1	Beth Israel Deaconess Medical Center East Cam	330 BROOKLINE AV	2115	FENWAY/KENMORE	71.106780	-42.339726	330 BROOKLINE AV\nFENWAY/KENMORE, MA 02115\n(4...	3.864298
2	Jewish Memorial Hospital	59 TOWNSEND ST	2119	ROXBURY	71.092712	-42.318569	59 TOWNSEND ST\nROXBURY, MA 02119\n(42.3185628...	2.391334
3	New England Baptist Hospital	125 PARKER HILL AV	2120	JAMAICA PLAIN	71.107615	-42.329944	125 PARKER HILL AV\nJAMAICA PLAIN, MA 02120\n(...	3.963608
4	Boston Specialty & Rehabilitation Hospital	249 RIVER ST	2126	MATTAPAN	71.081888	-42.271300	249 RIVER ST\nMATTAPAN, MA 02126\n(42.27137912...	2.605411
5	Boston Medical Center	88 EAST NEWTON ST	2118	SOUTH END	71.072029	-42.336883	88 EAST NEWTON ST\nSOUTH END, MA 02118\n(42.33...	0.001478
6	Va Hospital	125 PARKER HILL AV	2120	JAMAICA PLAIN	71.107615	-42.329944	125 PARKER HILL AV\nJAMAICA PLAIN, MA 02120\n(...	3.963608
7	Massachusetts Eye & Ear Infirmary	243 CHARLES ST	2114	CENTRAL	71.071597	-42.361888	243 CHARLES ST\nCENTRAL, MA 02114\n(42.3629714...	0.904097
8	Kindred Hospital	1515 COMMONWEALTH AV	2135	ALLSTON/BRIGHTON	71.143257	-42.344524	1515 COMMONWEALTH AV\nALLSTON/BRIGHTON, MA 021...	7.923786
9	Brigham And Women's Hospital	75 FRANCIS ST	2115	FENWAY/KENMORE	71.108736	-42.336110	75 FRANCIS ST\nFENWAY/KENMORE, MA 02115\n(42.3...	4.080504
10	Carney Hospital	2100 DORCHESTER AV	2124	DORCHESTER	71.066700	-42.278793	2100 DORCHESTER AV\nDORCHESTER, MA 02124\n(42....	2.177256
11	New England Medical Center	750 WASHINGTON ST	2111	CENTRAL	71.064105	-42.349919	750 WASHINGTON ST\nCENTRAL, MA 02111\n(42.3499...	1.000235
12	Faulkner Hospital	1153 CENTRE ST	2130	JAMAICA PLAIN	71.127683	-42.300951	1153 CENTRE ST\nJAMAICA PLAIN,	6.320967

When Compared, we get the result with Hospital which is nearest to the inputted co-ordinates.

Result:

Here is the Computed Result:

	NAME	AD	ZIPCODE	NEIGH	XCOORD	YCOORD	Location	Distance
5	Boston Medical Center	88 EAST NEWTON ST	2118	SOUTH END	71.072029	-42.336883	88 EAST NEWTON ST\nSOUTH END, MA 02118\n(42.33...	0.001478

Discussion:

Further we can apply this methodology in fully automated way , where user can give a input of his/her location (co-ordinates) on a single click using mobile hardware

Conclude:

Here I conclude this report