Project title: Determination of hospital admittance for Patients under Pandemic

1. **Which topic did you choose to apply the data science methodology to? (2 Point)**

   The present scenario of the COVID19 pandemic has shown a lot of issues in the medical system, especially the problems regarding the admission of critical patients in the hospitals due to restricted resource availability.

   I am going to apply the data science methodology to predict whether a COVID patient will require hospital admission so that the hospitals can be well equipped to tackle issues in the near future.

2. **Using the topic that you selected, complete the business Understanding stage by coming up with a problem tat you would like to solve and phrasing it in the form of a question that you will use data to answer. (3 Point)**

   Problem:
   In the pandemic situation, hospitals and doctors are working extra hours to treat COVID patients. The disease is spreading exponentially in some countries (especially in Asia and Africa) and they also have limited medical resources. To save many lives, we need to identify critical patients who need immediate medical attention and predict future requirements so that the medical infrastructure of the country will not collapse.

   Questions:
   After identifying the persons who are COVID-positive,
   1. Can we predict the need for admittance in the isolation ward now or in the future?
   2. Can we predict the requirement of a ventilator in the future?
   3. Can we predict the required drugs to help them alleviate symptoms?

3. **Briefly explain how you would complete each of the following stages for the problem that you described in the business Understanding stage, so that you are ultimately able to answer the questions that you came up with. Analytical Approach, Data Requirements, Data Collection, Data Understanding and Preparation, Modeling and Evaluation. (5 Point)**

   Analytic Approach:
   The decision of the factors to be needed for conducting the study should be determined. After the initial assessment, a decision tree can be made to make an algorithm to categorize the patients based on their risk factors.

   Data Requirements:
   The data (Age, previous medical conditions, medicines, risk factor, locality, relatives, time, etc.) are required for each patient. When further data is required we can loop back from the Data Understanding and Preparation stage.

Data Collection:

Data collection is a bit tricky as a lot of stakeholders are involved in this problem. The Data published by WHO and other research institutions can be used as they are comprehensive and are updated regularly.

Data Understanding and Preparation:

The obtained data have to be checked for inconsistency and false pieces of information, as they tend to appear due to human errors. Doing a visualization based on age data will provide an overall clarity of the data and this data can be edited and prepared to match the standards.

Modeling and Evaluation:

After the data are prepared, modeling can be carried out. We can first remove the biased data to make a decision tree. From the decision tree branches, the critical patients can be identified. After the modeling is carried out a test data has to be used to evaluate the authenticity of the model. If the model passes the test data it can be deployed and with appropriate feedbacks the model can be improved further