**PROJECT TITLE : EARTHQUAKE PREDICTION MODEL USING PYTHON**

**PROJECT STEPS:**

**PHASE I :PROBLEM DEFINITION AND DESIGN THINKING**

**PROBLEM DEFINITION**

The problem of earthquake prediction involves developing a model or system that can forecast the occurrence, timing, location, and magnitude of earthquakes before they happen. This is a complex and challenging task due to the dynamic and chaotic nature of seismic activity.

**DESIGN THINKING**

**1.Collect Data:**

Obtain historical earthquake data from sources like the US Geological Survey (USGS) and real-time seismic data using sensors or APIs.

**2.Data Preprocessing:**

Prepare the data by cleaning it and selecting relevant features such as earthquake magnitude, location, and depth.

**3.Feature Engineering:**

Extract meaningful features from the data, like the distance from a known fault line or historical seismic activity in the region.

**4.Machine Learning Model:**

You can use machine learning techniques to build a model that estimates the probability of an earthquake occurring in a given location and time frame. For example, you might use a classification algorithm like Random Forest or XGBoost.

**5.Training:**

Split your dataset into a training set and a testing set. Train your model on historical earthquake data.

**6.Testing:**

Evaluate your model's performance using metrics like accuracy, precision, recall, and F1-score. Make adjustments to your model as needed.

**7.Real-time Monitoring:**

Continuously monitor real-time seismic data. When an event is detected, use your model to estimate the probability of an earthquake occurring. If the probability surpasses a certain threshold, trigger an alert.

**8.Alerting System:**

Develop an alerting system that can notify people in the affected area in real-time, potentially through SMS, mobile apps, or other means.