**Capstone project**

To complete capstone, you will be working on a case study which is to predict the severity of an accident.

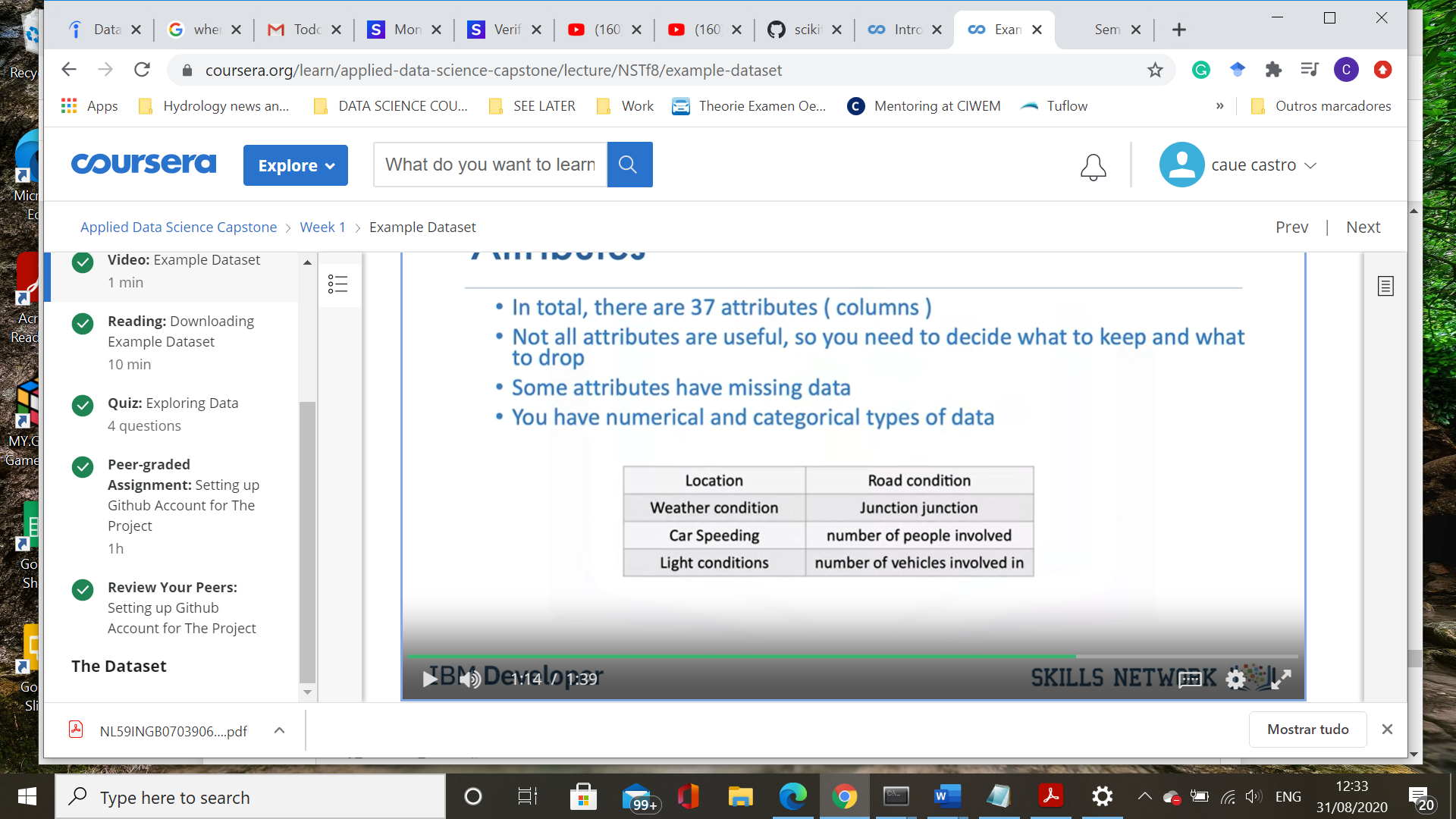
Say you are driving to another city for work or to visit some friends. It is rainy and windy, and on the way, you come across a terrible traffic jam on the other side of the highway. Long lines of cars barely moving.

As you keep driving, police car start appearing from afar shutting down the highway.

Oh, it is an accident and there's a helicopter transporting the ones involved in the crash to the nearest hospital. They must be in critical condition for all of this to be happening.

Now, wouldn't it be great if there is something in place that could warn you,

given the weather and the road conditions about the possibility of you getting into a car accident and how severe it would be, so that you would drive more carefully or even change your travel if you are able to. Well, this is exactly what you will be working on in this course.



**Business Understanding:**

The initial phase is to understand the project's objective from the business or application perspective. Then, you need to translate this knowledge into a machine learning problem with a preliminary plan to achieve the objectives.

**Data understanding:**

In this phase, you need to collect or extract the dataset from various sources such as csv file or SQL database. Then, you need to determine the attributes (columns) that you will use to train your machine learning model. Also, you will assess the condition of chosen attributes by looking for trends, certain patterns, skewed information, correlations, and so on.

**Data Preparation:**

The data preparation includes all the required activities to construct the final dataset which will be fed into the modeling tools. Data preparation can be performed multiple times and it includes balancing the labeled data, transformation, filling missing data, and cleaning the dataset.

**Modeling:**

In this phase, various algorithms and methods can be selected and applied to build the model including supervised machine learning techniques. You can select SVM, XGBoost, decision tree, or any other techniques. You can select a single or multiple machine learning models for the same data mining problem. At this phase, stepping back to the data preparation phase is often required.

**Evaluation**:

Before proceeding to the deployment stage, the model needs to be evaluated thoroughly to ensure that the business or the applications' objectives are achieved. Certain metrics can be used for the model evaluation such as accuracy, recall, F1-score, precision, and others.

**Deployment:**

The deployment phase requirements vary from project to project. It can be as simple as creating a report, developing interactive visualization, or making the machine learning model available in the production environment. In this environment, the customers or end-users can utilize the model in different ways such as API, website, or so on.