Class 2

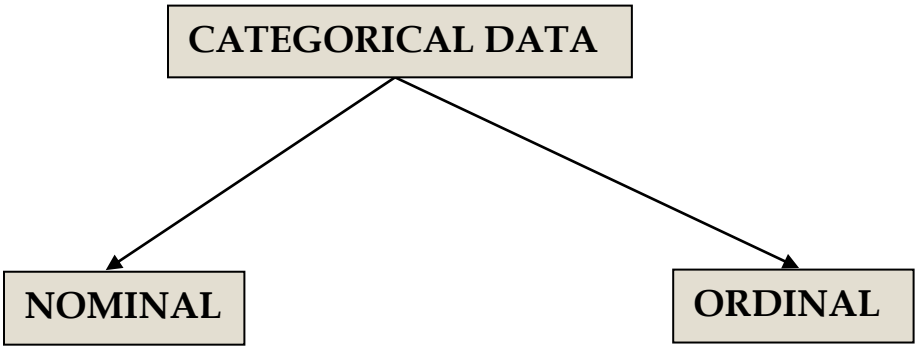
Machine Learning With Python

Qualitative Data / Categorical Data

A data that is classified in categories / Groups and **No Arithmetic operations** is possible.

in simple terms **Categorical Data** may be divided into groups but we **can't** perform any **Arithmetic Operations** on it.

There are two types of **Categorical data.**



1. NOMINAL DATA:-

Data is classified in groups which do not overlap, A common example of Nominal Data is gender; male and female. Other example include eye colour , since it is multi- valued (blue, green , brown, grey, pink , black), and there is no clear scale on which to fit the different values.

Nominal Data can be character and can be Numeric but the main thing is, it has to be in groups and Arithmetic operation is not possible.

An easy way to remember this type of data is that nominal sounds like named, nominal = named.

this type of data can also be called as **Dichotmous Scale**

2. ORDINAL DATA:-

Data is classified in Groups, however the data has **(Rank & Order).**

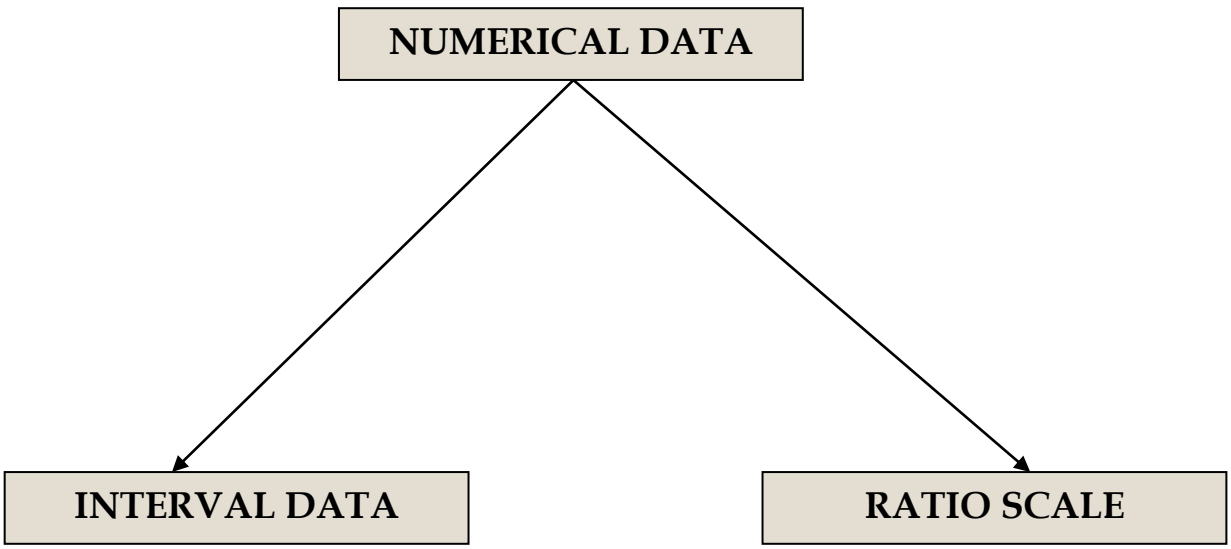
For Example:-

T Shirt Size = M, l, XL

we can compare as **M < L < XL** , but can't perform Arithmetic Operations. as "**M + L = XL**" as it will not make any sense.

QUANTITATIVE DATA / NUMERICAL DATA

A data which is classified into Categories / Groups but on which we **can** perform **Arithmetic Operations.**



1. INTERVAL DATA :-

Internal Data can be defined as a data in equal space interval but **NO ABSOLUTE ZERO.**

For Example:-

For example, difference between 68 degrees F and 58 degrees F is the exact same as 101 degrees F and 91 degrees F. In this example, you can't say that 98 degrees F is double the temperature in terms of "heat" or "cold" of 49 degrees F. This is because there is no absolute zero on the Fahrenheit scale – that is at zero temperature doesn't exist.

another example of person's IQ, as we can set parameter for calculating IQ, but no one can have IQ Level = 0.

2. RATIO SCALE:-

Ratio Scale is a type of data which is quantitative in nature , Ratio Scale allows any researcher to compare the intervals or differences. This type of data can **have absolute zero.**

For Example:-

The temperature outside is 0-degree Celsius. 0- degree doesn't mean it's not hot or cold, **it is a value.**

Further Data Classification of Quantitative Data

1.Discrete & Continuous.
2.Labeled & Unlabeled.

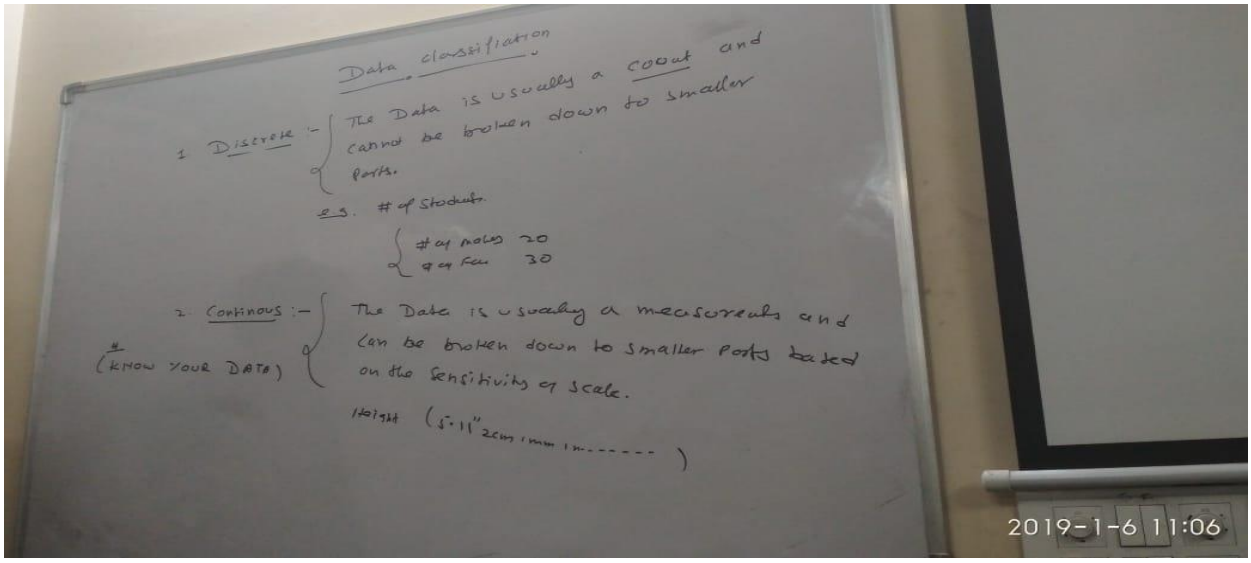
1. DISCRETE:- The Data is usually a count and cannot be broken down to smaller parts.

For Example:-

No. of students in a class.
No. of seconds in a minute.
#No. of tyres in a car

2. CONTINOUS:- The Data is usually a measurements and can be broken down to smaller parts based on the sensitivity of scale

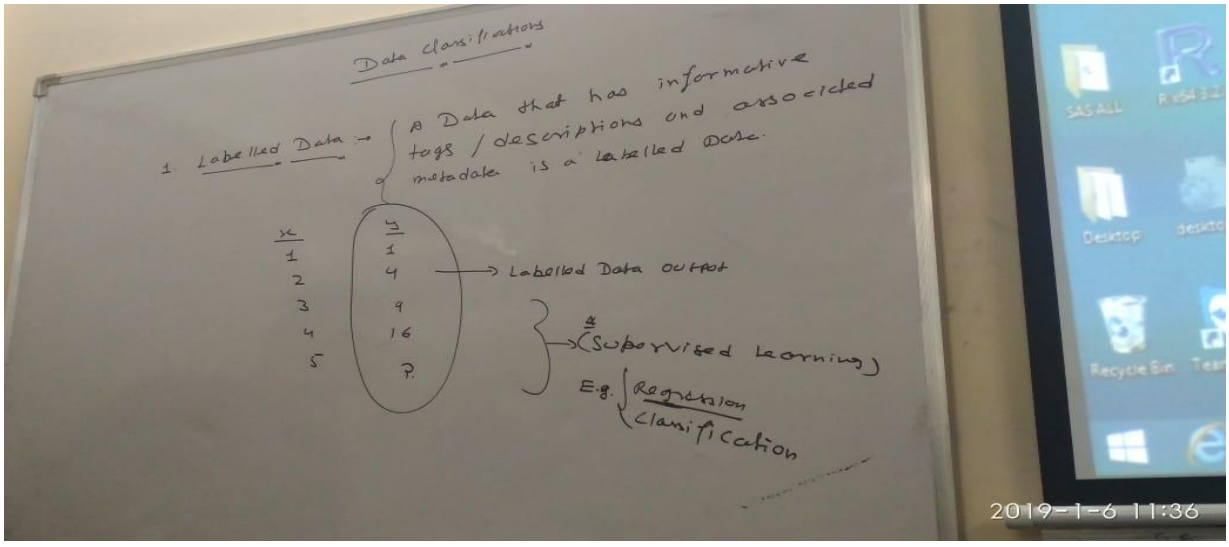
For Example:-
Height = 5 feet 11 inch
further divided = 5 feet 11 inch 6 cm **and so on.....**



1. Labeled Data :-

Its a data that has informative tags / description and associated metadata is a labelled data.

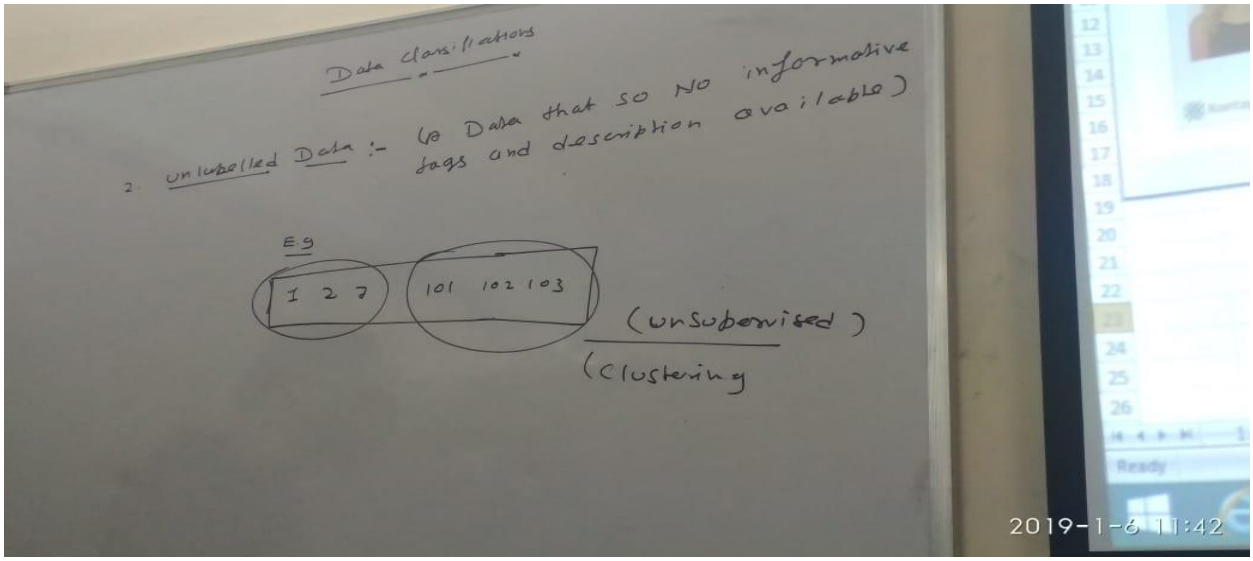
Labeled data typically takes a set of unlabeled data and augments each piece of that unlabeled data with some sort of meaningful "tag," "label," or "class" that is somehow informative or desirable to know



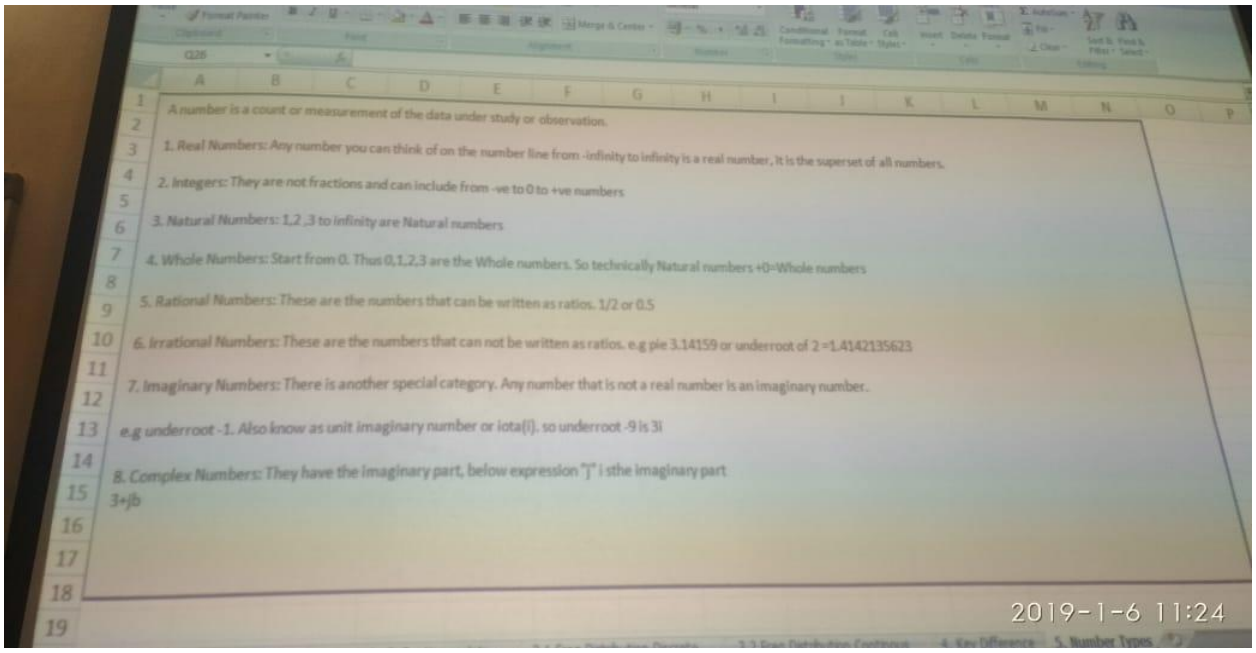
2.UNLABELED DATA :-

A data that has no information tags and description available.

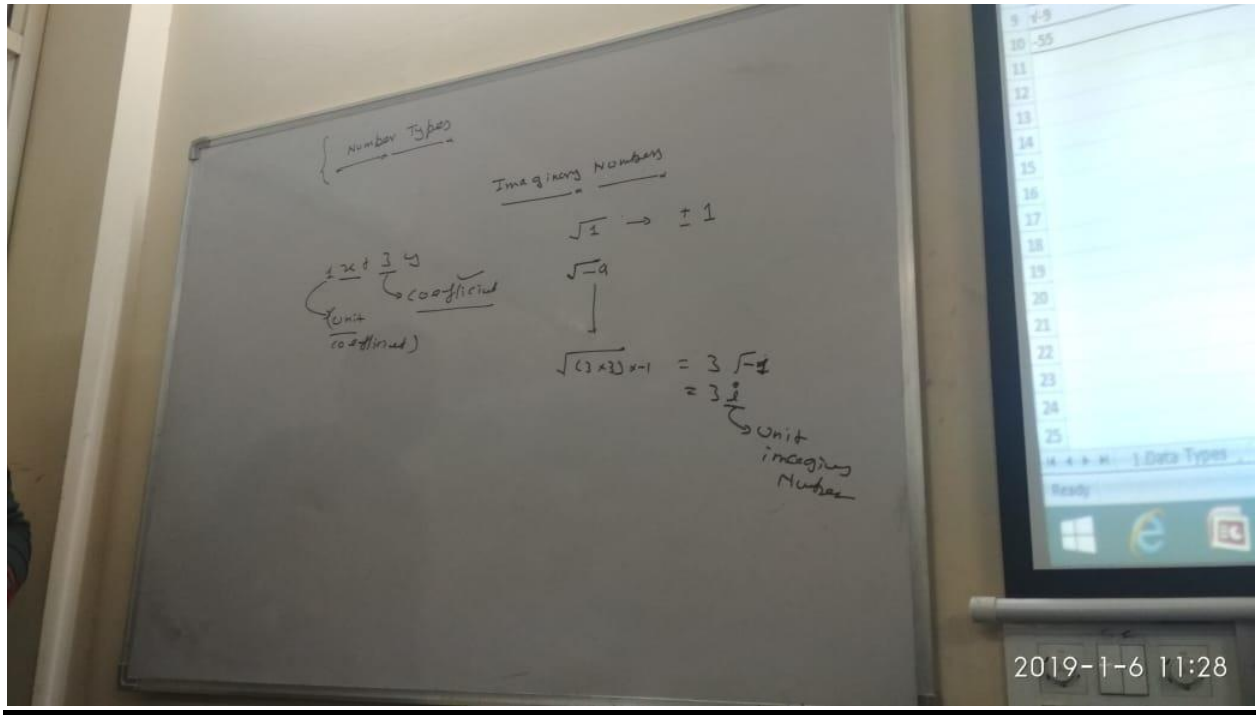
unlabeled data consists of samples of natural or human-created artifacts that you can obtain relatively easily from the world. Some examples of unlabeled data might include photos, audio recordings, videos, news articles, tweets, x-rays (if you were working on a medical application), etc. There is no "explanation" for each piece of unlabeled data -- it just contains the data, and nothing else.



NUMBER SYSTEM



NUMBER TYPES



EXAMPLE OF NUMBER TYPES