# Predictive Analysis-Unit 1 Practice 1

1) Lab 1

import code

import streamlit as st

def clear():

    st.session\_state.name = ''

    st.session\_state.color=''

    st.session\_state.pas=''

st.title("My First Application")

st.subheader("Welcome to the page", divider="rainbow")

col1, col2, col3 = st.columns(3)

with col2:

    st.image("https://www.latentview.com/wp-content/uploads/2023/09/latentview-logo.png",caption="LV Logo")

st.snow()

col1, col2 = st.columns(2)

with col1:

    name = st.text\_input(label="Enter your name",key="name")

with col2:

    password = st.text\_input(label="Enter password",key="pas",type="password")

color = st.selectbox(label="Choose Your Color",options=['','Pink','Blue','Green','Red','Black'],key='color')

submit = st.button("Submit")

if submit:

    st.subheader(f'My name is {name}. I like {color} color.')

clear = st.button("Clear",on\_click=clear)

2)

**Problem 1**: Personalization for customers

Understanding customer behaviour and combining it with consumer demography is the first step in the deployment of predictive analytics.

[Retailers](https://www.expressanalytics.com/blog/market-basket-analysis/) can use it to give targeted and highly customized offers for specific shoppers. Such insights coupled with retail predictive analytics now give merchants the option to make highly personalized offers to customers at a very granular level.

For example, retailers can personalize the in-store experience by giving offers to incentivize frequent buying to drive more purchases, thereby achieving higher sales across all channels.This technique can be used to upsell or even cross-sell.

**Problem 2:**Inventory and supply chain management:

[Predictive analytics](https://www.expressanalytics.com/blog/predictive-analytics/) helps answer questions such as what to store when to store, and what and when to discard.Stocking up on slow-moving products or running out of popular ones are both problems. Such insights optimize performance and reduce costs.Thus, predictive retail analytics removes this uncertainty or any purchase simply based on a hunch.

3)   
  
  
**Problem 1:** Sales forecasting: This problem involves  
predicting the future sales of a product or a service based on historical and  
current data, such as advertising spend, seasonality, customer demand,  
etc.   
  
  
**Problem 2:** Customer lifetime value: This problem  
involves estimating the total revenue that a customer will generate for a  
retailer over their entire relationship.  
  
  
4)  
  
  
**Problem 1:** Store  
clustering: This problem involves grouping stores based on their features and  
performance, such as location, size, revenue, footfall, etc.  
  
  
**Problem 2:** Product  
clustering: This problem involves grouping products based on their attributes  
and performance, such as sales, margin, popularity, seasonality, etc.  
  
  
5)  
  
  
**Problem 1**: Diabetes prediction: Classification models can be used to predict  
whether a person has diabetes or not, or whether they will develop diabetes in  
the future.  
  
  
**Problem 2**: Classification models can be used to predict whether a person has  
heart disease or not, or whether they will experience a cardiac event in the  
future, based on features.  
  
  
6)  
  
  
**Problem 1:** Length of stay prediction: Length of stay (LOS) is an important  
indicator of hospital resource utilization. Regression models can be used to  
predict LOS based on features such as admission type, diagnosis, procedures.  
  
  
**Problem 2:** Disease severity prediction: Disease severity is a measure of how much a  
disease affects a patient’s health and functioning. Regression models can be  
used to predict disease severity.  
  
  
7)   
  
  
**Problem 1:** Phenotype clustering: Phenotype clustering is the process of grouping  
patients or diseases based on their observable characteristics, such as  
symptoms, biomarkers, genetic factors, and clinical outcomes.  
  
  
**Problem 2:** Resource utilization clustering: Resource utilization clustering is the  
process of grouping patients based on their use of health care resources, such  
as length of stay, cost of treatment, and readmission rate  
  
  
8)  
  
  
**Problem 1:** Credit scoring: Classification models can be used to predict whether a  
borrower will repay a loan or default and assign a credit score or rating  
accordingly.  
  
  
**Problem 2:** Fraud detection: Classification models can be used to detect anomalies  
or patterns that indicate fraud, such as identity theft, money laundering, or  
cyberattacks.  
  
  
9)  
  
  
**Problem 1:** Cash flow forecasting: Cash flow forecasting can help with budgeting,  
planning, investing, and financing decisions. Regression models can be used to  
predict cash flow.  
  
  
**Problem 2:** Stock price prediction: Stock price prediction can help with trading,  
investing, and valuation decisions. Regression models can be used to predict  
stock price based on features such as earnings, revenue, dividends, ratios,  
news, and social media.  
  
  
10)   
  
  
**Problem 1:** Customer segmentation: Clustering models can be used to create customer  
segments based on features such as demographics, income, spending, loyalty, and  
satisfaction.  
  
  
**Problem 2:** Portfolio analysis: Portfolio analysis is the process of evaluating the  
performance and risk of a collection of financial assets, such as stocks,  
bonds, or funds. Clustering models can be used to create portfolios based on  
features such as returns, volatility, correlation, and beta.