Fraud Risk Score to be classified to : 5/10/0

	Procedure to Get Feature Value	Feature value
weekend or holiday expenses?	**design a program (input: invoice date extracted)**	0/1
Submitting the Same Invoice Multiple Times?	**design a program (input: Invoice Date, Invoice ID, Invoice Amount from both current invoice data and data in database| Output: 0 or 1)** to get feature value for this feature by looking for duplicated claim by checking whether there are old claims that have same claim history in database & current invoice number & vendor name & date & amount with the current claim	0/1
unusual spending?	**program - input: current employeeID, employeeID List for current project from database| output: 0/1** to check if a person is associated on that project	0/1
Machine learning - public data - severity or likelihood of fraud / (if data not available, can be replaced with amount over $10?	Ivy to collect data, train model, and draw graph	0/1
amount overclaim ?	**input: Invoice Amount Predicted - Invoice Amount Typed | output: variance** variance between invoice amount and typed amount	0/1
amount is even number?	**input: Invoice Amount typed**	0/1
round amounts repeatedly claimed by same person?	**design a program (input: Invoice Date, Invoice ID, Invoice Amount | Output: 0 or 1)** to get feature value for this feature by looking for duplicated claim by checking the number of times same person claimed reimbursement of invoices in amounts that are round number (formula: total round number claims by this employee/ total number of times of claims by this employee)	a value between 0 to 1
likelihood of personal expense (Violations of Company Policies: Claims that violate company reimbursement policies, such as claims for personal expenses or expenses not related to work.):	**design a program (input: text of invoice| Output: 0 or 1)** to get feature value for this feature by looking for whether the text of invoice contains words **similar to** "grocery', "supermarket","tuition", "rent", "housing"	0/1
Changes in Behavior: Sudden Changes in Behavior: Abrupt changes in reimbursement behavior, such as a sudden increase in claims or a change in the types of expenses being claimed.	**design a function and a program (input: prediction of future invoice amount at future dates based on historical data including all invoice amounts and invoice dates for same Expense Category claimed by same employeeID over the last 3 years from the database, and the current invoice date and amount| Output: Standard Deviation -see standard deviation calculation Word file in 5100 local folder for final project)** **Note: within 1 year the claims can only cover a few months, need to revise formula**	a value
Invoice Date falls outside of Project Duration Dates	**Design a program(input: Project Duration_startDate, ProjectDuration_endDate,current Invoice Date|output: 0/1**	0/1
dubious merchants		

Impact on Decision-Making: Consider how the fraud risk score will be used in decision-making. If a higher score lea
Costs and Consequences: If assigning a higher score results in more significant consequences, such as the denial o

https://trenton3983.github.io/files/projects/2019-07-19_fraud_detection_python/2019-07-19_fraud_detection_p
https://stackoverflow.com/questions/57803287/how-to-create-custom-neural-network-with-custom-weight-initia
https://www.v7labs.com/blog/neural-networks-activation-functions
https://medium.com/academy-eldoradocps/creating-a-custom-neural-network-with-pytorch-fd3621705d32
https://towardsdatascience.com/using-ai-to-prevent-supplier-invoice-fraud-fed13f2aaab4