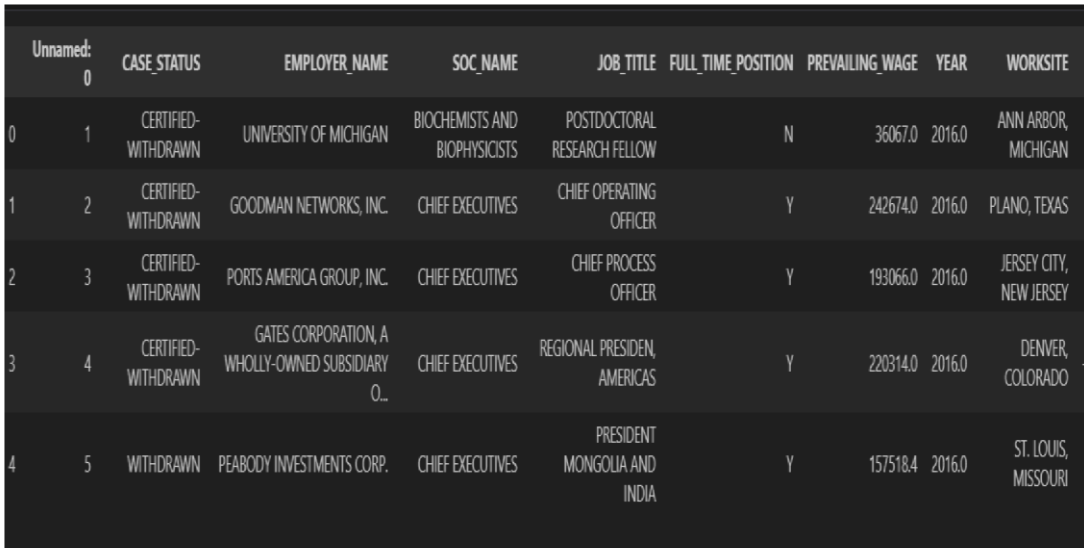
Data Collection and Preprocessing Phase

Date	10 July 2024
Team ID	739779
Project Title	Predictive Modelling for H1b Visa Approval Using Machine Learning
Maximum Marks	6 Marks

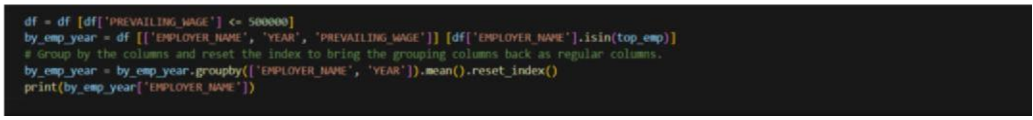
Data Exploration and Preprocessing Report

Dataset variables will be statistically analysed to identify patterns and outliers, with Python employed for preprocessing tasks like normalization and feature engineering. Data cleaning will address missing values and outliers, ensuring quality for subsequent analysis and modelling, and forming a strong foundation for insights and predictions.

Section	Description
Data Overview	Dimension: 923 rows × 49 columns Descriptive statistics: 

	Unnamed: 0	CASE_STATUS	EMPLOYER_NAME	SOC_NAME	JOB_TITLE	FULL_TIME_POSITION	PREVAILING_WAGE	YEAR	WORKSITE
0	1	CERTIFIED-WITHDRAWN	UNIVERSITY OF MICHIGAN	BIOCHEMISTS AND BIOPHYSICISTS	POSTDOCTORAL RESEARCH FELLOW	N	36067.0	2016.0	ANN ARBOR, MICHIGAN
1	2	CERTIFIED-WITHDRAWN	GOODMAN NETWORKS, INC.	CHIEF EXECUTIVES	CHIEF OPERATING OFFICER	Y	242674.0	2016.0	PLANO, TEXAS
2	3	CERTIFIED-WITHDRAWN	PORTS AMERICA GROUP, INC.	CHIEF EXECUTIVES	CHIEF PROCESS OFFICER	Y	193066.0	2016.0	JERSEY CITY, NEW JERSEY
3	4	CERTIFIED-WITHDRAWN	GATES CORPORATION, A WHOLLY-OWNED SUBSIDIARY O...	CHIEF EXECUTIVES	REGIONAL PRESIDEN, AMERICAS	Y	220314.0	2016.0	DENVER, COLORADO
4	5	WITHDRAWN	PEABODY INVESTMENTS CORP.	CHIEF EXECUTIVES	PRESIDENT MONGOLIA AND INDIA	Y	157518.4	2016.0	ST. LOUIS, MISSOURI

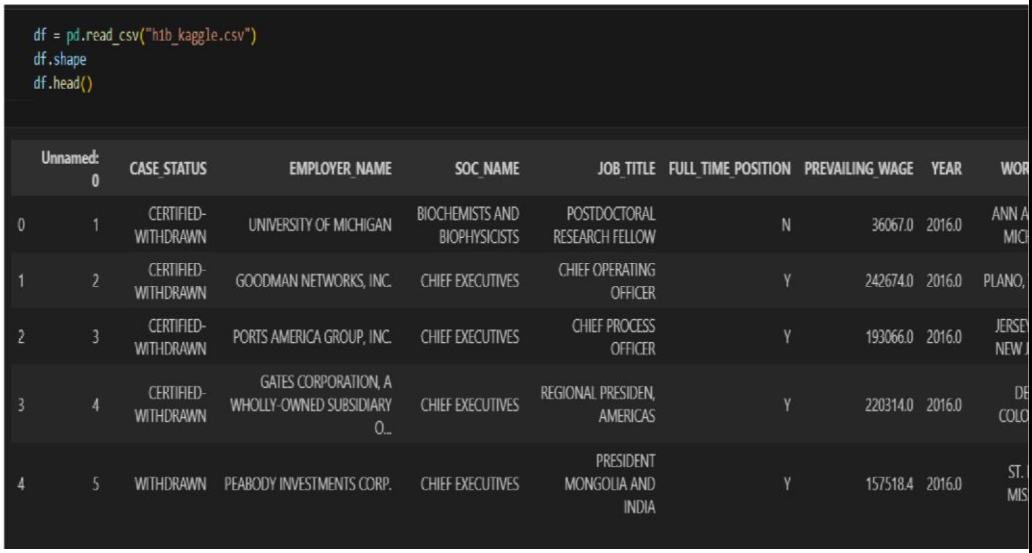
Outliers and Anomalies



```
df = df [df['PREVAILING_WAGE'] <= 500000]
by_emp_year = df [['EMPLOYER_NAME', 'YEAR', 'PREVAILING_WAGE']] [df['EMPLOYER_NAME'].isin(top_emp)]
# Group by the columns and reset the index to bring the grouping columns back as regular columns.
by_emp_year = by_emp_year.groupby(['EMPLOYER_NAME', 'YEAR']).mean().reset_index()
print(by_emp_year['EMPLOYER_NAME'])
```

Data Preprocessing Code Screenshots

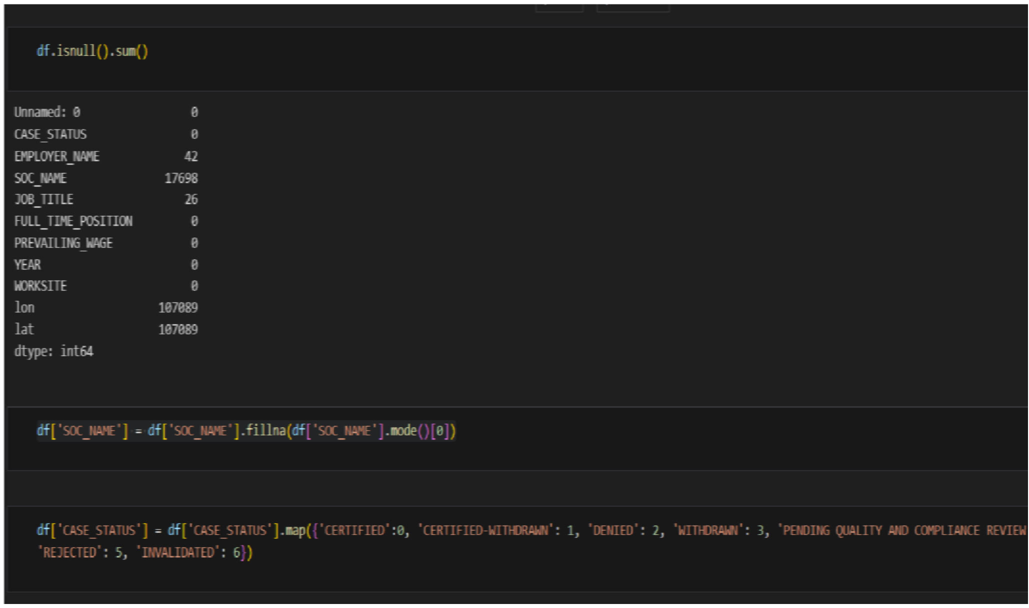
Loading Data



```
df = pd.read_csv("h1b_kaggle.csv")
df.shape
df.head()
```

	Unnamed: 0	CASE_STATUS	EMPLOYER_NAME	SOC_NAME	JOB_TITLE	FULL_TIME_POSITION	PREVAILING_WAGE	YEAR	WOR
0	1	CERTIFIED-WITHDRAWN	UNIVERSITY OF MICHIGAN	BIOCHEMISTS AND BIOPHYSICISTS	POSTDOCTORAL RESEARCH FELLOW	N	36067.0	2016.0	ANN A MIC
1	2	CERTIFIED-WITHDRAWN	GOODMAN NETWORKS, INC.	CHIEF EXECUTIVES	CHIEF OPERATING OFFICER	Y	242674.0	2016.0	PLANO,
2	3	CERTIFIED-WITHDRAWN	PORTS AMERICA GROUP, INC.	CHIEF EXECUTIVES	CHIEF PROCESS OFFICER	Y	193066.0	2016.0	JERSEY NEW J
3	4	CERTIFIED-WITHDRAWN	GATES CORPORATION, A WHOLLY-OWNED SUBSIDIARY O...	CHIEF EXECUTIVES	REGIONAL PRESIDEN, AMERICAS	Y	220314.0	2016.0	DE COLO
4	5	WITHDRAWN	PEABODY INVESTMENTS CORP.	CHIEF EXECUTIVES	PRESIDENT MONGOLIA AND INDIA	Y	157518.4	2016.0	ST. I MIS

Handling Missing Data

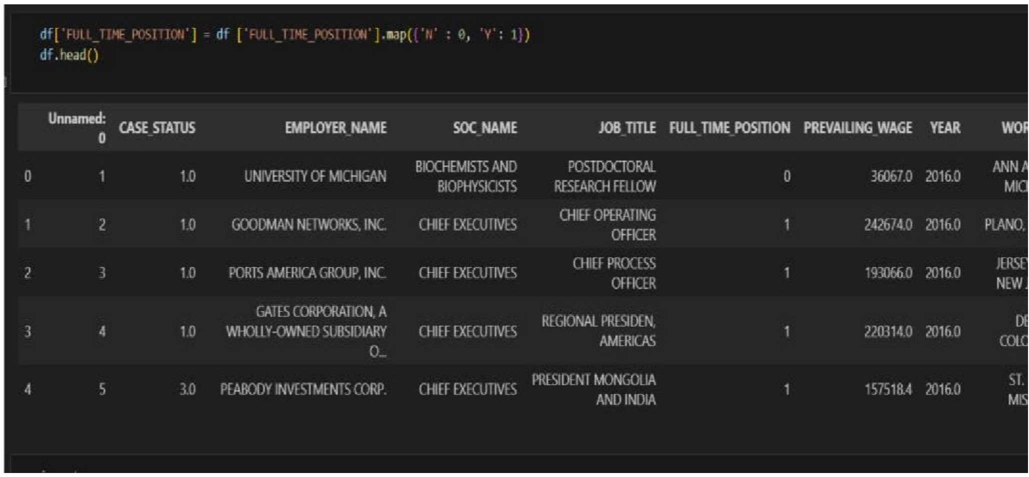


```
df.isnull().sum()
```

```
Unnamed: 0                0
CASE_STATUS               0
EMPLOYER_NAME            42
SOC_NAME              17698
JOB_TITLE                26
FULL_TIME_POSITION        0
PREVAILING_WAGE           0
YEAR                      0
WORKSITE                  0
lon                  107089
lat                  107089
dtype: int64
```

```
df['SOC_NAME'] = df['SOC_NAME'].fillna(df['SOC_NAME'].mode()[0])
```

```
df['CASE_STATUS'] = df['CASE_STATUS'].map({'CERTIFIED':0, 'CERTIFIED-WITHDRAWN': 1, 'DENIED': 2, 'WITHDRAWN': 3, 'PENDING QUALITY AND COMPLIANCE REVIEW
'REJECTED': 5, 'INVALIDATED': 6})
```

Data Transformation	

```
df['FULL_TIME_POSITION'] = df ['FULL_TIME_POSITION'].map({'N' : 0, 'Y': 1})
df.head()
```

	Unnamed: 0	CASE_STATUS	EMPLOYER_NAME	SOC_NAME	JOB_TITLE	FULL_TIME_POSITION	PREVAILING_WAGE	YEAR	WOR
0	1	1.0	UNIVERSITY OF MICHIGAN	BIOCHEMISTS AND BIOPHYSICISTS	POSTDOCTORAL RESEARCH FELLOW	0	36067.0	2016.0	ANN A MIC
1	2	1.0	GOODMAN NETWORKS, INC.	CHIEF EXECUTIVES	CHIEF OPERATING OFFICER	1	242674.0	2016.0	PLANO,
2	3	1.0	PORTS AMERICA GROUP, INC.	CHIEF EXECUTIVES	CHIEF PROCESS OFFICER	1	193066.0	2016.0	JERSE NEW J
3	4	1.0	GATES CORPORATION, A WHOLLY-OWNED SUBSIDIARY O...	CHIEF EXECUTIVES	REGIONAL PRESIDEN, AMERICAS	1	220314.0	2016.0	DE COLC
4	5	3.0	PEABODY INVESTMENTS CORP.	CHIEF EXECUTIVES	PRESIDENT MONGOLIA AND INDIA	1	157518.4	2016.0	ST. MIS

Feature Engineering	-
Save Processed Data	-