In [1]:

```
import pandas as pd
import numpy as np
import os
import seaborn as sns
import matplotlib.pyplot as plt
from sklearn.feature_extraction.text import TfidfVectorizer
from sklearn.feature_selection import VarianceThreshold
```

In [2]:

```
df = pd.read_csv("/Users/hjk2160@columbia.edu/Desktop/dataset.csv")
```

In [3]:

```
df.head()
```

Out[3]:

	Unnamed: 0	index	Job Title	Salary Estimate	Job Description	Rating	Company Name	Location	Headquarters	Size	Founded	Type of ownership	Industry	Sector	Revenue	Competitors	Easy Apply
(	0	0	Senior Data Scientist	$111K-$181K (Glassdoor est.)	ABOUT HOPPER\n\n At Hopper, we're on a mission ...	3.5	Hopper\n 3.5	New York, NY	Montreal, Canada	501 to 1000 employees	2007	Company - Private	Travel Agencies	Travel & Tourism	Unknown / Non-Applicable	-1	-1
1	1	1	Data Scientist, Product Analytics	$111K-$181K (Glassdoor est.)	At Noom, we use scientifically proven methods ...	4.5	Noom US\n 4.5	New York, NY	New York, NY	1001 to 5000 employees	2008	Company - Private	Health, Beauty, & Fitness	Consumer Services	Unknown / Non-Applicable	-1	-1
2	2	2	Data Science Manager	$111K-$181K (Glassdoor est.)	Decode_M\n\nhttps://www.decode-m.com/\n\nData ...	-1.0	Decode_M	New York, NY	New York, NY	1 to 50 employees	-1	Unknown	-1	-1	Unknown / Non-Applicable	-1	True
3	3	3	Data An	$111K-$181K	Sapphire Digital seeks a dynamic and driven mi...	3.4	Sapphire Digit	Lyndhurst, NJ	Lyndhurst, NJ	201 to 500 em	2019	Company -	Internet	Information Tec	Unknown /	Zocdoc, Heal	-1

	Unnamed: 0	index	Job Title	Salary Estimate	Job Description	Rating	Company Name	Location	Headquarters	Size	Founded	Type of ownership	Industry	Sector	Revenue	Competitors	Easy Apply
			alyst	(Glassdoorest.)			al\n3.4			ployees		Private		hnology	Non-Applicable	thgrades	
4	4	4	Director, Data Science	$111K-$181K (Glassdoorest.)	Director, Data Science - (200537)\nDescription...	3.4	United Entertainment Group\n3.4	New York, NY	New York, NY	51 to 200 employees	2007	Company - Private	Advertising & Marketing	Business Services	Unknown / Non-Applicable	BBDO, Grey Group, Droga5	-1

In [4]:
```
df.drop('Unnamed: 0', axis=1, inplace=True)
```

In [5]:
```
from collections import Counter #항목들 계산해주는 라이브러리
import re #정규표현식임. 쉽게 말해, 내 키워드같은거 어떤 corpus 에서 찾을수 있는지 찾아주는거임.

keywords = ['data', 'machine learning', 'analysis', 'statistics', 'research', 'python']
def count_keywords(description, keywords):
    description = description.lower()
    keyword_counts = {keyword: len(re.findall(r'\b{}\b'.format(re.escape(keyword)), description)) for keyword in keywords}
    return keyword_counts
```

In [6]:
```
max_keyword_occurrence = 0
```

In [7]:
```
for description in df['Job Description']:
    keyword_counts = count_keywords(description, keywords)
    max_keyword_occurrence = max(max_keyword_occurrence, max(keyword_counts.values()))
```

In [8]:
```
def calculate_score(keyword_counts, max_score):
    total_count = sum(keyword_counts.values())
    normalized_score = 0.1 + 0.9 * (total_count / max_score) if max_score > 0 else 0.1
    return normalized_score
```

```
df['Keyword_Counts'] = df['Job Description'].apply(lambda desc:
count_keywords(desc, keywords))
df['Keyword_Score'] = df['Keyword_Counts'].apply(lambda counts:
calculate_score(counts, max_keyword_occurrence))
```

In [9]:

```
df.drop('Job Description', axis=1, inplace=True)
```

In [10]:

```
df.drop('index',axis=1, inplace=True)
```

In [11]:

```
# need to convert salary estimate into scores as well

def salary_to_score(salary_string):
    salary_string = re.sub(r'(\(Glassdoor est.\))|K|\$', '',
salary_string).strip()
    numbers = re.findall(r'\d+', salary_string)

    if len(numbers) == 2:
        lower_bound = int(numbers[0]) * 1000
        upper_bound = int(numbers[1]) * 1000

        score = (lower_bound + upper_bound) / 2
    else:
        score = None
    return score
```

In [12]:

```
df['Salary_Score'] = df['Salary Estimate'].apply(salary_to_score)
df = df.dropna(subset=['Salary_Score'])
max_salary_score = df['Salary_Score'].max()
min_salary_score = df['Salary_Score'].min()
df['Salary_Estimate_Score'] = df['Salary_Score'].apply(lambda x: 0.1 + 0.9
* ((x - min_salary_score) / (max_salary_score - min_salary_score)))
```

In [13]:

```
df.head()
```

Out[13]:

	Job Title	Salary Estimate	Rating	Company Name	Location	Headquarters	Size	Founded	Type of ownership	Industry	Sector	Revenue	Competitors	Easy Apply	Keyword_Counts	Keyword_Score	Salary_Score	Salary_Estimate_Score
0	Senior Data Scientist	$111K-$181K (Glassdoor	3.5	Hopper\n3.5	New York, NY	Montreal, Canada	501 to 1000 employees	2007	Company - Private	Travel Agencies	Travel & Tourism	Unknown / Non-Applic	-1	-1	{'data': 13, 'machine learning': 3, 'analysis'...	0.480769	146000.0	0.656522

	Job Title	Salary Estimate	Rating	Company Name	Location	Headquarters	Size	Founded	Type of ownership	Industry	Sector	Revenue	Competitors	Easy Apply	Keyword_Counts	Keyword_Score	Salary_Score	Salary_Estimate_Score
		est.)										able						
1	Data Scientist, Product Analytics	$111K-$181K (Glassdoor est.)	4.5	Noom US\n4.5	New York, NY	New York, NY	1001 to 5000 employees	2008	Company - Private	Health, Beauty, & Fitness	Consumer Services	Unknown / Non-Applicable	-1	-1	{'data': 7, 'machine learning': 1, 'analysis':...	0.342308	146000.0	0.656522
2	Data Science Manager	$111K-$181K (Glassdoor est.)	-1.0	Decode_M	New York, NY	New York, NY	1 to 50 employees	-1	Unknown	-1	-1	Unknown / Non-Applicable	-1	True	{'data': 11, 'machine learning': 2, 'analysis'...	0.446154	146000.0	0.656522
3	Data Analyst	$111K-$181K (Glassdoor est.)	3.4	Sapphire Digital\n3.4	Lyndhurst, NJ	Lyndhurst, NJ	201 to 500 employees	2019	Company - Private	Internet	Information Technology	Unknown / Non-Applicable	Zocdoc, Healthgrades	-1	{'data': 26, 'machine learning': 0, 'analysis'...	0.636538	146000.0	0.656522
4	Director, Data Science	$111K-$181K (Glassdoor est.)	3.4	United Entertainment Group\n3.4	New York, NY	New York, NY	51 to 200 employees	2007	Company - Private	Advertising & Marketing	Business Services	Unknown / Non-Applicable	BBDO, Grey Group, Droga5	-1	{'data': 8, 'machine learning': 2, 'analysis':...	0.342308	146000.0	0.656522

In [14]:

```
#Im going to erase all above entry level jobs
```

```
keywords = ['senior', 'analyst', 'director', 'manager', 'sr','lead',
'principal']

def contains_keyword(title, keywords):
    title_lower = title.lower()
    return any(keyword in title_lower for keyword in keywords)

mask = df['Job Title'].apply(contains_keyword, keywords=keywords)
df = df[~mask]
```

In [15]:

```
df.head(10)
```

Out[15]:

	Job Title	Salary Estimate	Rating	Company Name	Location	Headquarters	Size	Founded	Type of ownership	Industry	Sector	Revenue	Competitors	Easy Apply	Keyword_Counts	Keyword_Score	Salary_Score	Salary_Estimate_Score
1	Data Scientist, Product Analytics	$111K-$181K (Glassdoor est.)	4.5	Noom US\n4.5	New York, NY	New York, NY	1001 to 5000 employees	2008	Company - Private	Health, Beauty, & Fitness	Consumer Services	Unknown / Non-Applicable	-1	-1	{'data': 7, 'machine learning': 1, 'analysis':...	0.342308	146000.0	0.656522
5	Data Scientist	$111K-$181K (Glassdoor est.)	2.9	IFG Companies\n2.9	New York, NY	Hartford, CT	201 to 500 employees	1985	Company - Private	Insurance Carriers	Insurance	Unknown / Non-Applicable	Colony Specialty, Markel, RLI	-1	{'data': 8, 'machine learning': 1, 'analysis':...	0.307692	146000.0	0.656522
6	Quantitative Researcher	$111K-$181K (Glassdo	4.4	PDT Partners\n4.4	New York, NY	New York, NY	51 to 200 employees	1993	Company - Private	Investment Banking & Asset Man	Finance	Unknown / Non-Appli	-1	-1	{'data': 1, 'machine learning': 0, 'analysis':...	0.325000	146000.0	0.656522

	Job Title	Salary Estimate	Rating	Company Name	Location	Headquarters	Size	Founded	Type of ownership	Industry	Sector	Revenue	Competitors	Easy Apply	Keyword_Counts	Keyword_Score	Salary_Score	Salary_Estimate_Score
		or est.)								agement		cable						
7	Quantitative Research Associate	$111K-$181K (Glassdoor est.)	-1.0	Enlightenment Research	New York, NY	New York, NY	1 to 50 employees	-1	Unknown	-1	-1	Unknown / Non-Applicable	-1	True	{'data': 1, 'machine learning': 0, 'analysis':...	0.151923	146000.0	0.656522
8	AI Scientist	$111K-$181K (Glassdoor est.)	5.0	Paige\n5.0	New York, NY	New York, NY	1 to 50 employees	2018	Company - Private	Enterprise Software & Network Solutions	Information Technology	Unknown / Non-Applicable	-1	True	{'data': 1, 'machine learning': 1, 'analysis':...	0.186538	146000.0	0.656522
9	Quantitative Researcher	$111K-$181K (Glassdoor est.)	4.8	Jane Street\n4.8	New York, NY	New York, NY	501 to 1000 employees	2000	Company - Private	Investment Banking & Asset Management	Finance	Unknown / Non-Applicable	-1	-1	{'data': 0, 'machine learning': 0, 'analysis':...	0.117308	146000.0	0.656522
10	Data Scientist	$111K-$181K (Gl	3.9	Quartet Health\n3.9	New York, NY	New York, NY	201 to 500 emplo	2014	Company - Private	Enterprise Software & Net	Information Technology	Unknown / Non-Ap	-1	True	{'data': 8, 'machine learning': 4,	0.411538	146000.0	0.656522

	Job Title	Salary Estimate	Rating	Company Name	Location	Headquarters	Size	Founded	Type of ownership	Industry	Sector	Revenue	Competitors	Easy Apply	Keyword_Counts	Keyword_Score	Salary_Score	Salary_Estimate_Score
		assdoorest.)					yees			work Solutions		plicable			'analysis':...			
11	Data Scientist/Machine Learning	$111K-$181K (Glassdoorest.)	4.4	Pulse Point\n4.4	New York, NY	New York, NY	51 to 200 employees	2011	Company - Private	Internet	Information Technology	$100 to $500 million (USD)	Crossix Solutions Inc., AppNexus, The Trade Desk	-1	{'data': 5, 'machine learning': 4, 'analysis':...	0.325000	146000.0	0.656522
12	Data Scientist, Acorn AI Labs	$111K-$181K (Glassdoorest.)	4.3	Medidata Solutions\n4.3	New York, NY	New York, NY	1001 to 5000 employees	1999	Company - Public	Enterprise Software & Network Solutions	Information Technology	$500 million to $1 billion (USD)	Oracle	-1	{'data': 10, 'machine learning': 3, 'analysis'...	0.411538	146000.0	0.656522
13	Data Scientist	$111K-$181K (Glassdoorest.)	3.9	Point72\n3.9	New York, NY	Stamford, CT	1001 to 5000 employees	2014	Company - Private	Investment Banking & Asset Management	Finance	Unknown / Non-Applicable	-1	-1	{'data': 14, 'machine learning': 2, 'analysis'...	0.480769	146000.0	0.656522

In [16]:

```
df.drop('Founded', axis = 1, inplace=True)
```

In [17]:

```
df.info()
<class 'pandas.core.frame.DataFrame'>
Int64Index: 2149 entries, 1 to 3908
Data columns (total 17 columns):
 #   Column                 Non-Null Count  Dtype
---  ------                 --------------  -----
 0   Job Title              2149 non-null   object
 1   Salary Estimate        2149 non-null   object
 2   Rating                 2149 non-null   float64
 3   Company Name           2149 non-null   object
 4   Location               2149 non-null   object
 5   Headquarters           2149 non-null   object
 6   Size                   2149 non-null   object
 7   Type of ownership      2149 non-null   object
 8   Industry               2149 non-null   object
 9   Sector                 2149 non-null   object
 10  Revenue                2149 non-null   object
 11  Competitors            2149 non-null   object
 12  Easy Apply             2149 non-null   object
 13  Keyword_Counts         2149 non-null   object
 14  Keyword_Score          2149 non-null   float64
 15  Salary_Score           2149 non-null   float64
 16  Salary_Estimate_Score  2149 non-null   float64
dtypes: float64(4), object(13)
memory usage: 302.2+ KB
```

In [18]:

```
df.drop('Size', axis = 1, inplace=True)
```

In [19]:

```
df.drop('Easy Apply', axis=1, inplace=True)
```

In [20]:

```
df.describe()
```

Out[20]:

	Rating	Keyword_Score	Salary_Score	Salary_Estimate_Score
count	2149.000000	2149.000000	2149.000000	2149.000000
mean	3.265891	0.331161	108511.167985	0.493527
std	1.628358	0.171478	37667.785608	0.163773
min	-1.000000	0.100000	18000.000000	0.100000
25%	3.200000	0.203846	77500.000000	0.358696
50%	3.700000	0.290385	105500.000000	0.480435
75%	4.100000	0.428846	133000.000000	0.600000
max	5.000000	1.138462	225000.000000	1.000000

In [21]:

```
df.info()
<class 'pandas.core.frame.DataFrame'>
Int64Index: 2149 entries, 1 to 3908
Data columns (total 15 columns):
 #   Column                 Non-Null Count  Dtype
---  ------                 --------------  -----
```

```
 0   Job Title              2149 non-null   object
 1   Salary Estimate        2149 non-null   object
 2   Rating                 2149 non-null   float64
 3   Company Name           2149 non-null   object
 4   Location               2149 non-null   object
 5   Headquarters           2149 non-null   object
 6   Type of ownership      2149 non-null   object
 7   Industry               2149 non-null   object
 8   Sector                 2149 non-null   object
 9   Revenue                2149 non-null   object
 10  Competitors            2149 non-null   object
 11  Keyword_Counts         2149 non-null   object
 12  Keyword_Score          2149 non-null   float64
 13  Salary_Score           2149 non-null   float64
 14  Salary_Estimate_Score  2149 non-null   float64
dtypes: float64(4), object(11)
memory usage: 268.6+ KB
```

EDA 파트 1

In [22]:

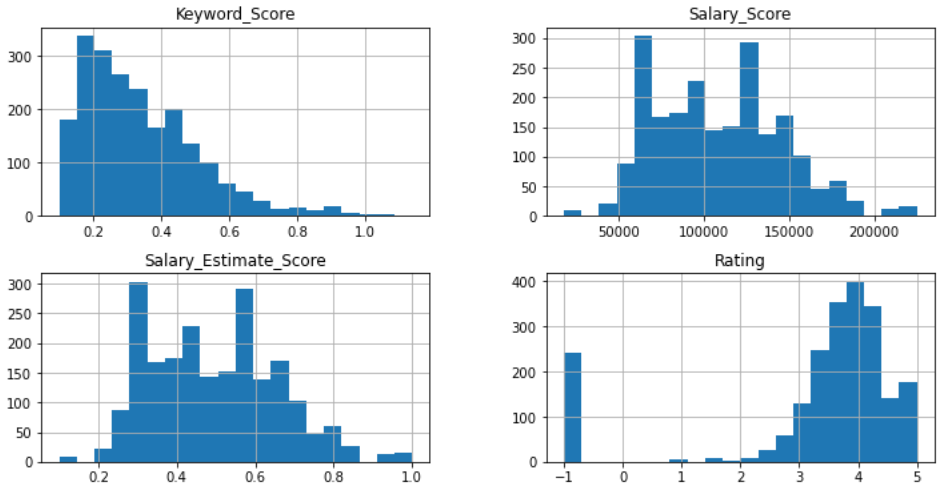
```
#본격적인 EDA
numerical_vars = ['Keyword_Score', 'Salary_Score', 'Salary_Estimate_Score',
'Rating']
df[numerical_vars].describe().T
```

Out[22]:

	count	mean	std	min	25%	50%	75%	max
Keyword_Score	2149.0	0.331161	0.171478	0.1	0.203846	0.290385	0.428846	1.138462
Salary_Score	2149.0	108511.167985	37667.785608	18000.0	77500.000000	105500.000000	133000.000000	225000.000000
Salary_Estimate_Score	2149.0	0.493527	0.163773	0.1	0.358696	0.480435	0.600000	1.000000
Rating	2149.0	3.265891	1.628358	-1.0	3.200000	3.700000	4.100000	5.000000

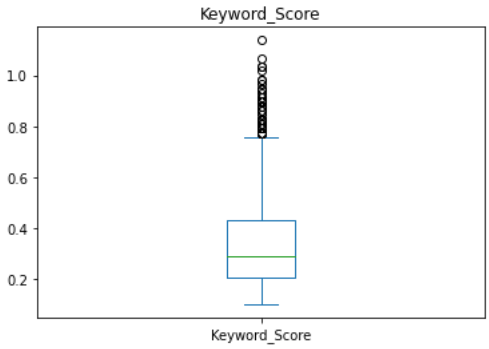
In [23]:

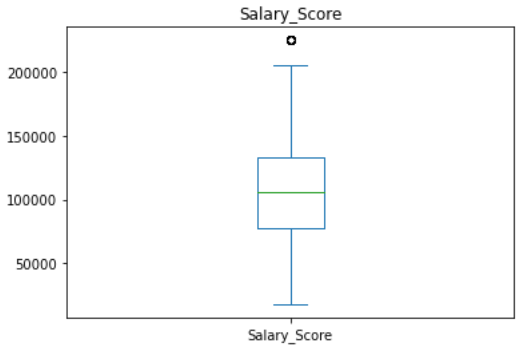
```
df[numerical_vars].hist(bins=20, figsize=(12,6))
plt.show()
```

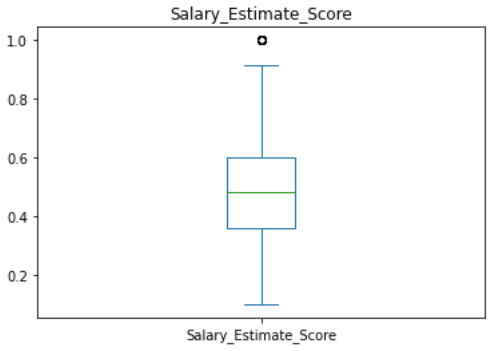


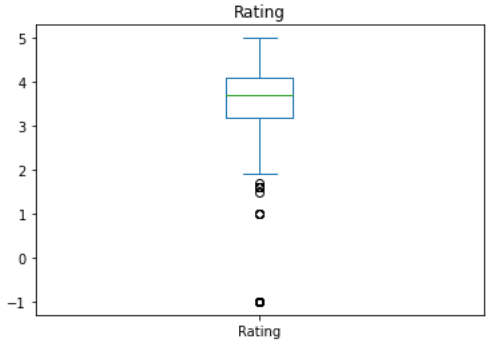
In [24]:

```
for var in numerical_vars:
    df[var].plot(kind='box')
    plt.title(var)
    plt.show()
```









In [25]:

```
df['Job Title'].value_counts()
```

Out[25]:

```
Data Scientist                                                          274
Data Engineer                                                           260
Machine Learning Engineer                                                47
Big Data Engineer                                                        41
Research Scientist                                                       22
                                                                       ...
Scottsdale Data Science Tutor Jobs                                        1
Mesa Data Science Tutor Jobs                                              1
Cloud Data Engineer - Solution Specialist - USDC                          1
Chandler Data Science Tutor Jobs                                          1
Patient Safety Physician or Safety Scientist - UK, Europe or the US       1
Name: Job Title, Length: 1145, dtype: int64
```

In [26]:

```
value_counts = df['Job Title'].value_counts()
mask = df['Job Title'].isin(value_counts[value_counts >= 20].index)
df = df[mask]
```

In [27]:

```
df['Job Title'].value_counts()
```

Out[27]:

```
Data Scientist               274
Data Engineer                260
Machine Learning Engineer     47
Big Data Engineer             41
Research Scientist            22
Name: Job Title, dtype: int64
```

In [28]:

```
df['Industry'].value_counts()
```

Out[28]:

```
-1                                      145
IT Services                             102
Staffing & Outsourcing                   49
Enterprise Software & Network Solutions  42
Consulting                               40
                                       ...
Food & Beverage Manufacturing             1
Consumer Product Rental                   1
Casual Restaurants                        1
Grantmaking Foundations                   1
```

```
Energy                                          1
Name: Industry, Length: 65, dtype: int64
```

In [29]:

```
df = df[df['Industry'] != '-1']
```

In [30]:

```
value_counts = df['Industry'].value_counts()
mask = df['Industry'].isin(value_counts[value_counts >= 20].index)
df = df[mask]
```

In [31]:

```
df['Industry'].value_counts()
```

Out[31]:

```
IT Services                                   102
Staffing & Outsourcing                         49
Enterprise Software & Network Solutions        42
Consulting                                     40
Computer Hardware & Software                   38
Internet                                       32
Advertising & Marketing                        24
Name: Industry, dtype: int64
```

In [32]:

```
def categorize_industry(industry):
    if industry == 'Consulting':
        return 'Consulting Industry'
    elif industry in ['IT Services', 'Computer Hardware & Software',
'Internet', 'Enterprise Software & Network Solutions','Advertising &
Marketing']:
        return 'Tech Industry'
    else:
        return 'Other Industry'
```

In [33]:

```
df['categorized_industry'] = df['Industry'].apply(categorize_industry)
```

In [34]:

```
df.drop('Competitors', axis=1, inplace=True)
```

In [35]:

```
df.drop('Sector', axis=1, inplace=True)
```

In [36]:

```
df.drop('Revenue', axis=1, inplace=True)
```

In [37]:

```
df.drop('Location', axis=1, inplace=True)
```

In [38]:

```
df.drop('Headquarters', axis=1, inplace=True)
```

In [39]:

```
df.head()
```

Out[39]:

	Job Title	Salary Estimate	Rating	Company Name	Type of ownership	Industry	Keyword_Counts	Keyword_Score	Salary_Score	Salary_Estimate_Score	categorized_industry
10	Data Scientist	$111K-$181	3.9	Quartet Health\n3.9	Company -	Enterprise Softw	{'data': 8, 'machine learning':	0.411538	146000.0	0.656522	Tech Industry

	Job Title	Salary Estimate	Rating	Company Name	Type of ownership	Industry	Keyword_Counts	Keyword_Score	Salary_Score	Salary_Estimate_Score	categorized_industry
		K (Glassdoor est.)			Private	are & Network Solutions	4, 'analysis': ...				
15	Data Scientist	$111K-$181K (Glassdoor est.)	3.0	Affinity Solutions\n3.0	Company - Private	Advertising & Marketing	{'data': 8, 'machine learning': 2, 'analysis': ...	0.342308	146000.0	0.656522	Tech Industry
24	Data Scientist	$111K-$181K (Glassdoor est.)	4.4	WITHIN\n4.4	Company - Private	Advertising & Marketing	{'data': 6, 'machine learning': 1, 'analysis': ...	0.238462	146000.0	0.656522	Tech Industry
26	Data Scientist	$111K-$181K (Glassdoor est.)	4.1	Datadog\n4.1	Company - Public	Computer Hardware & Software	{'data': 8, 'machine learning': 2, 'analysis': ...	0.342308	146000.0	0.656522	Tech Industry
30	Data Scientist	$120K-$140K (Glassdoor est.)	4.3	Caserta\n4.3	Company - Private	IT Services	{'data': 10, 'machine learning': 1, 'analysis'...	0.359615	130000.0	0.586957	Tech Industry

In [40]:

```
df.drop("Type of ownership", axis=1, inplace=True)
```

In [41]:

```
df.head()
```

Out[41]:

	Job Title	Salary Estimate	Rating	Company Name	Industry	Keyword_Counts	Keyword_Score	Salary_Score	Salary_Estimate_Score	categorized_industry
10	Data Scientist	$111K-$181K (Glass	3.9	Quartet Health\n3.9	Enterprise Software & Network	{'data': 8, 'machine learning': 4, 'analysis':...	0.411538	146000.0	0.656522	Tech Industry

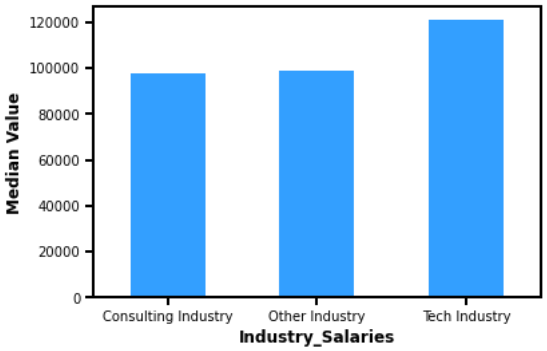
	Job Title	Salary Estimate	Rating	Company Name	Industry	Keyword_Counts	Keyword_Score	Salary_Score	Salary_Estimate_Score	categorized_industry
		door est.)			Solutions					
15	Data Scientist	$111K-$181K (Glassdoor est.)	3.0	Affinity Solutions\n3.0	Advertising & Marketing	{'data': 8, 'machine learning': 2, 'analysis':...	0.342308	146000.0	0.656522	Tech Industry
24	Data Scientist	$111K-$181K (Glassdoor est.)	4.4	WITHIN\n4.4	Advertising & Marketing	{'data': 6, 'machine learning': 1, 'analysis':...	0.238462	146000.0	0.656522	Tech Industry
26	Data Scientist	$111K-$181K (Glassdoor est.)	4.1	Datadog\n4.1	Computer Hardware & Software	{'data': 8, 'machine learning': 2, 'analysis':...	0.342308	146000.0	0.656522	Tech Industry
30	Data Scientist	$120K-$140K (Glassdoor est.)	4.3	Caserta\n4.3	IT Services	{'data': 10, 'machine learning': 1, 'analysis'...	0.359615	130000.0	0.586957	Tech Industry

In [42]:
```
df['Company Name'] = df['Company Name'].str.replace(r'[\W\d_]+$', '', regex=True)
```

In [43]:
```
df.drop('Salary Estimate', axis=1, inplace=True)
df.drop('Industry', axis=1, inplace=True)
```

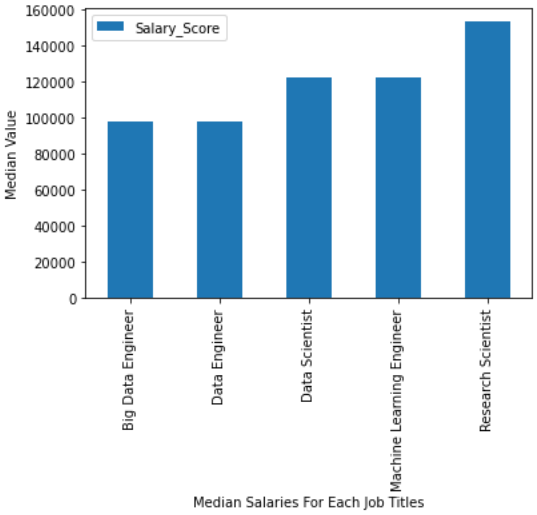
In [44]:
```
custom_colors = ['#339FFF']

grouped = df.groupby('categorized_industry').agg({'Salary_Score': 'median'})

fig, ax = plt.subplots()


grouped.plot(kind='bar', ax=ax, color=custom_colors, legend=False)
```

```
ax.set_xlabel('Industry_Salaries', fontsize=12, fontweight='bold')
ax.set_ylabel('Median Value', fontsize=12, fontweight='bold')


ax.tick_params(axis='both', which='both', labelsize=10, width=2, length=6)
for spine in ax.spines.values():
    spine.set_linewidth(2)

ax.set_xticklabels(ax.get_xticklabels(), rotation=0, fontsize=10)
plt.show()
```



In [45]:

```
grouped = df.groupby('Job Title').agg({'Salary_Score': 'median'})
fig, ax = plt.subplots()
grouped.plot(kind='bar', ax=ax)
ax.set_xlabel('Median Salaries For Each Job Titles')
ax.set_ylabel('Median Value')
plt.show()
```



In [46]:

```
df.corr()
```

Out[46]:

	Rating	Keyword_Score	Salary_Score	Salary_Estimate_Score
Rating	1.000000	0.077334	0.041348	0.041348
Keyword_Score	0.077334	1.000000	-0.016377	-0.016377
Salary_Score	0.041348	-0.016377	1.000000	1.000000
Salary_Estimate_Score	0.041348	-0.016377	1.000000	1.000000

In [47]:

```
df.head()
```

Out[47]:

	Job Title	Rating	Company Name	Keyword_Counts	Keyword_Score	Salary_Score	Salary_Estimate_Score	categorized_industry
10	Data Scientist	3.9	Quartet Health	{'data': 8, 'machine learning': 4, 'analysis':...	0.411538	146000.0	0.656522	Tech Industry
15	Data Scientist	3.0	Affinity Solutions	{'data': 8, 'machine learning': 2, 'analysis':...	0.342308	146000.0	0.656522	Tech Industry
24	Data Scientist	4.4	WITHIN	{'data': 6, 'machine learning': 1, 'analysis':...	0.238462	146000.0	0.656522	Tech Industry
26	Data Scientist	4.1	Datadog	{'data': 8, 'machine learning': 2, 'analysis':...	0.342308	146000.0	0.656522	Tech Industry
30	Data Scientist	4.3	Caserta	{'data': 10, 'machine learning': 1, 'analysis'...	0.359615	130000.0	0.586957	Tech Industry

In [54]:

```
df.columns
```

Out[54]:

```
Index(['Job Title', 'Rating', 'Company Name', 'Keyword_Counts',
       'Keyword_Score', 'Salary_Score', 'Salary_Estimate_Score',
       'categorized_industry'],
      dtype='object')
```

두번째 EDA 시작

In [48]:

```
df.describe()
```

Out[48]:

	Rating	Keyword_Score	Salary_Score	Salary_Estimate_Score
count	327.000000	327.000000	327.000000	327.000000
mean	3.727217	0.364167	110550.458716	0.502393
std	1.096855	0.153006	33821.432809	0.147050
min	-1.000000	0.117308	43500.000000	0.210870
25%	3.400000	0.255769	83750.000000	0.385870
50%	3.900000	0.342308	109000.000000	0.495652
75%	4.300000	0.463462	132750.000000	0.598913

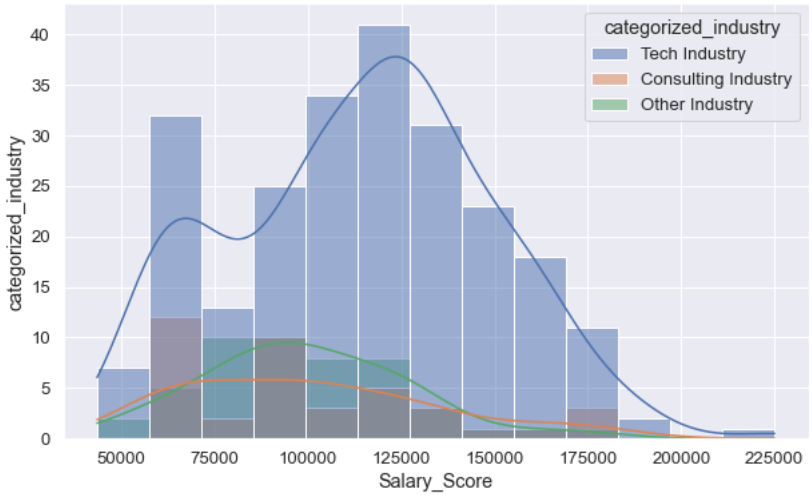
	Rating	Keyword_Score	Salary_Score	Salary_Estimate_Score
max	5.000000	0.982692	225000.000000	1.000000

In [70]:

```
plt.figure(figsize=(10,6))
sns.histplot(data = df, x = "Salary_Score", kde = True, hue =
"categorized_industry")
plt.xlabel('Salary_Score')
plt.ylabel('categorized_industry')
```

Out[70]:

```
Text(0, 0.5, 'categorized_industry')
```

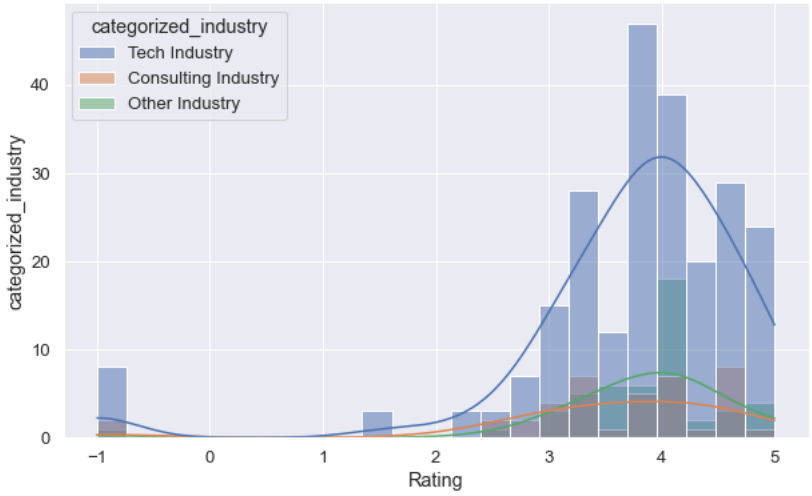


In [65]:

```
plt.figure(figsize=(10,6))
sns.histplot(data = df, x = "Rating", kde = True, hue =
"categorized_industry")
plt.xlabel('Rating')
plt.ylabel('categorized_industry')
```

Out[65]:

```
Text(0, 0.5, 'categorized_industry')
```



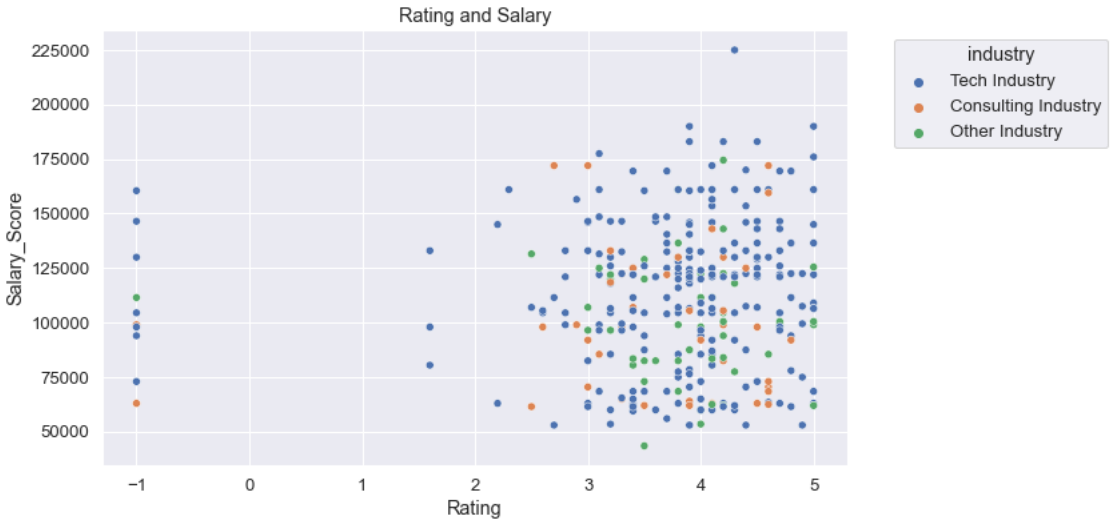
In [55]:

```
df.to_csv('updated_DS_jobs.csv', index=False)
```

THEY ARE ALL ENTRY LEVEL DS JOBS!

In [66]:

```
plt.figure(figsize=(10,6))
sns.scatterplot(data=df, x='Rating', y='Salary_Score',
hue='categorized_industry')
plt.title('Rating and Salary')
plt.legend(title='industry', bbox_to_anchor=(1.05, 1), loc='upper left')
plt.show()
```



In [ ]: