In [1]:
```
import pandas as pd
```

In [3]:
```
emp = pd.read_excel(r'C:\Users\Acer\Downloads\Rawdata.xlsx')
```

In [4]:
```
emp
```

Out[4]:

	Name	Domain	Age	Location	Salary	Exp
0	Mike	Datascience#$	34 years	Mumbai	5^00#0	2+
1	Teddy^	Testing	45' yr	Bangalore	10%%000	<3
2	Uma#r	Dataanalyst^^#	NaN	NaN	1$5%000	4> yrs
3	Jane	Ana^^lytics	NaN	Hyderbad	2000^0	NaN
4	Uttam*	Statistics	67-yr	NaN	30000-	5+ year
5	Kim	NLP	55yr	Delhi	6000^$0	10+

In [5]:
```
emp.isnull().sum()
```

Out[5]:
```
Name        0
Domain      0
Age         2
Location    2
Salary      0
Exp         1
dtype: int64
```

In [6]:
```
emp.isna().sum()
```

Out[6]:
```
Name        0
Domain      0
Age         2
Location    2
Salary      0
Exp         1
dtype: int64
```

In [8]:
```
emp.columns
```

Out[8]:
```
Index(['Name', 'Domain', 'Age', 'Location', 'Salary', 'Exp'], dtype='object')
```

In [9]:
```
emp.info
```

Out[9]:
```
<bound method DataFrame.info of      Name          Domain       Age   Location
Salary      Exp
0    Mike   Datascience#$  34 years     Mumbai   5^00#0       2+
1  Teddy^         Testing    45' yr  Bangalore  10%%000       <3
2   Uma#r  Dataanalyst^^#       NaN        NaN  1$5%000   4> yrs
3    Jane     Ana^^lytics       NaN   Hyderbad   2000^0      NaN
4  Uttam*      Statistics     67-yr        NaN   30000-  5+ year
5     Kim             NLP      55yr      Delhi  6000^$0      10+>
```

In [10]:
```
emp.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 6 entries, 0 to 5
Data columns (total 6 columns):
 #   Column    Non-Null Count  Dtype 
---  ------    --------------  ----- 
 0   Name      6 non-null      object
 1   Domain    6 non-null      object
 2   Age       4 non-null      object
 3   Location  4 non-null      object
 4   Salary    6 non-null      object
 5   Exp       5 non-null      object
dtypes: object(6)
memory usage: 420.0+ bytes
```

In [11]:
```
emp['Name']
```

Out[11]:
```
0      Mike
1    Teddy^
2     Uma#r
3      Jane
4    Uttam*
5       Kim
Name: Name, dtype: object
```

In [12]:
```
emp['Name'] = emp['Name'].str.replace(r'\W','',regex=True)
```

In [13]:
```
emp['Name']
```

Out[13]:
```
0     Mike
1    Teddy
2     Umar
3     Jane
4    Uttam
5      Kim
Name: Name, dtype: object
```

In [14]:
```
emp
```

Out[14]:

	Name	Domain	Age	Location	Salary	Exp
0	Mike	Datascience#$	34 years	Mumbai	5^00#0	2+
1	Teddy	Testing	45' yr	Bangalore	10%%000	<3
2	Umar	Dataanalyst^^#	NaN	NaN	1$5%000	4> yrs
3	Jane	Ana^^lytics	NaN	Hyderbad	2000^0	NaN
4	Uttam	Statistics	67-yr	NaN	30000-	5+ year
5	Kim	NLP	55yr	Delhi	6000^$0	10+

In [15]:
```
emp['Domain'] = emp['Domain'].str.replace(r'\W','',regex=True)
```

In [16]:
```
emp
```

Out[16]:

	Name	Domain	Age	Location	Salary	Exp
0	Mike	Datascience	34 years	Mumbai	5^00#0	2+
1	Teddy	Testing	45' yr	Bangalore	10%%000	<3
2	Umar	Dataanalyst	NaN	NaN	1$5%000	4> yrs
3	Jane	Analytics	NaN	Hyderbad	2000^0	NaN
4	Uttam	Statistics	67-yr	NaN	30000-	5+ year
5	Kim	NLP	55yr	Delhi	6000^$0	10+

In [17]:
```
emp['Salary'] = emp['Salary'].str.replace(r'\W','',regex=True)
```

In [18]:
```
emp
```

Out[18]:

	Name	Domain	Age	Location	Salary	Exp
0	Mike	Datascience	34 years	Mumbai	5000	2+
1	Teddy	Testing	45' yr	Bangalore	10000	<3
2	Umar	Dataanalyst	NaN	NaN	15000	4> yrs
3	Jane	Analytics	NaN	Hyderbad	20000	NaN
4	Uttam	Statistics	67-yr	NaN	30000	5+ year
5	Kim	NLP	55yr	Delhi	60000	10+

In [19]:
```
emp['Age'] = emp['Age'].str.extract('(\\d+)') #To remove the characters after di
```

In [20]:
```
emp
```

Out[20]:

	Name	Domain	Age	Location	Salary	Exp
0	Mike	Datascience	34	Mumbai	5000	2+
1	Teddy	Testing	45	Bangalore	10000	<3
2	Umar	Dataanalyst	NaN	NaN	15000	4> yrs
3	Jane	Analytics	NaN	Hyderbad	20000	NaN
4	Uttam	Statistics	67	NaN	30000	5+ year
5	Kim	NLP	55	Delhi	60000	10+

In [21]:
```
emp['Exp'] = emp['Exp'].str.extract('(\\d+)')
```

In [22]:
```
emp
```

Out[22]:

	Name	Domain	Age	Location	Salary	Exp
0	Mike	Datascience	34	Mumbai	5000	2
1	Teddy	Testing	45	Bangalore	10000	3
2	Umar	Dataanalyst	NaN	NaN	15000	4
3	Jane	Analytics	NaN	Hyderbad	20000	NaN
4	Uttam	Statistics	67	NaN	30000	5
5	Kim	NLP	55	Delhi	60000	10

EDA Techniques

In [23]:
```
clean_data = emp.copy()
clean_data
```

Out[23]:

	Name	Domain	Age	Location	Salary	Exp
0	Mike	Datascience	34	Mumbai	5000	2
1	Teddy	Testing	45	Bangalore	10000	3
2	Umar	Dataanalyst	NaN	NaN	15000	4
3	Jane	Analytics	NaN	Hyderbad	20000	NaN
4	Uttam	Statistics	67	NaN	30000	5
5	Kim	NLP	55	Delhi	60000	10

1.Missing Value Treatment

In [24]:
```
clean_data['Age']
```

Out[24]:
```
0     34
1     45
2    NaN
3    NaN
4     67
5     55
Name: Age, dtype: object
```

In [25]:
```
import numpy as np
```

In [26]:
```
clean_data['Age'] = clean_data['Age'].fillna(np.mean(pd.to_numeric(clean_data['A
```

In [27]:
```
clean_data['Age']
```

Out[27]:
```
0       34
1       45
2    50.25
3    50.25
4       67
5       55
Name: Age, dtype: object
```

In [28]:
```
clean_data['Exp'] = clean_data['Exp'].fillna(np.mean(pd.to_numeric(clean_data['E
```

In [29]:
```
clean_data['Exp']
```

Out[29]:
```
0      2
1      3
2      4
3    4.8
4      5
5     10
Name: Exp, dtype: object
```

In [30]:
```
clean_data
```

Out[30]:

	Name	Domain	Age	Location	Salary	Exp
0	Mike	Datascience	34	Mumbai	5000	2
1	Teddy	Testing	45	Bangalore	10000	3
2	Umar	Dataanalyst	50.25	NaN	15000	4
3	Jane	Analytics	50.25	Hyderbad	20000	4.8
4	Uttam	Statistics	67	NaN	30000	5
5	Kim	NLP	55	Delhi	60000	10

In [31]:
```
clean_data['Location'] = clean_data['Location'].fillna(np.mode(pd.to_numeric(cle
```

```
---------------------------------------------------------------------------
AttributeError                            Traceback (most recent call last)
Cell In[31], line 1
----> 1 clean_data['Location'] = clean_data['Location'].fillna(np.mode(pd.to_nume
ric(clean_data['Location'])))

File ~\anaconda3\Lib\site-packages\numpy\__init__.py:808, in __getattr__(attr)
    805     import numpy.char as char
    806     return char.chararray
--> 808 raise AttributeError(f"module {__name__!r} has no attribute {attr!r}")

AttributeError: module 'numpy' has no attribute 'mode'
```

In [33]:
```
clean_data['Location'] = clean_data['Location'].fillna(clean_data['Location'].mo
```

we need to use mode()[0], index to pass the value

In [34]:
```
clean_data['Location']
```

Out[34]:
```
0       Mumbai
1    Bangalore
2    Bangalore
3     Hyderbad
4    Bangalore
5        Delhi
Name: Location, dtype: object
```

In [35]:
```
clean_data
```

Out[35]:

	Name	Domain	Age	Location	Salary	Exp
0	Mike	Datascience	34	Mumbai	5000	2
1	Teddy	Testing	45	Bangalore	10000	3
2	Umar	Dataanalyst	50.25	Bangalore	15000	4
3	Jane	Analytics	50.25	Hyderbad	20000	4.8
4	Uttam	Statistics	67	Bangalore	30000	5
5	Kim	NLP	55	Delhi	60000	10

In [36]:
```
clean_data['Age'] = clean_data['Age'].astype(int)
```

In [37]:
```
clean_data.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 6 entries, 0 to 5
Data columns (total 6 columns):
 #   Column    Non-Null Count  Dtype 
---  ------    --------------  ----- 
 0   Name      6 non-null      object
 1   Domain    6 non-null      object
 2   Age       6 non-null      int64 
 3   Location  6 non-null      object
 4   Salary    6 non-null      object
 5   Exp       6 non-null      object
dtypes: int64(1), object(5)
memory usage: 420.0+ bytes
```

In [38]:
```
clean_data['Salary'] = clean_data['Salary'].astype(int)
clean_data['Exp'] = clean_data['Exp'].astype(int)
clean_data['Name'] = clean_data['Name'].astype('category')
clean_data['Domain'] = clean_data['Domain'].astype('category')
clean_data['Location'] = clean_data['Location'].astype('category')
```

In [39]:
```
clean_data.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 6 entries, 0 to 5
Data columns (total 6 columns):
 #   Column    Non-Null Count  Dtype   
---  ------    --------------  -----   
 0   Name      6 non-null      category
 1   Domain    6 non-null      category
 2   Age       6 non-null      int64   
 3   Location  6 non-null      category
 4   Salary    6 non-null      int64   
 5   Exp       6 non-null      int64   
dtypes: category(3), int64(3)
memory usage: 938.0 bytes
```

In [40]:
```
clean_data.to_csv('clean_data.csv')
```

In [41]:
```
import os
os.getcwd() #from the os give the path of current working directory
```

Out[41]:
```
'C:\\Users\\Acer'
```

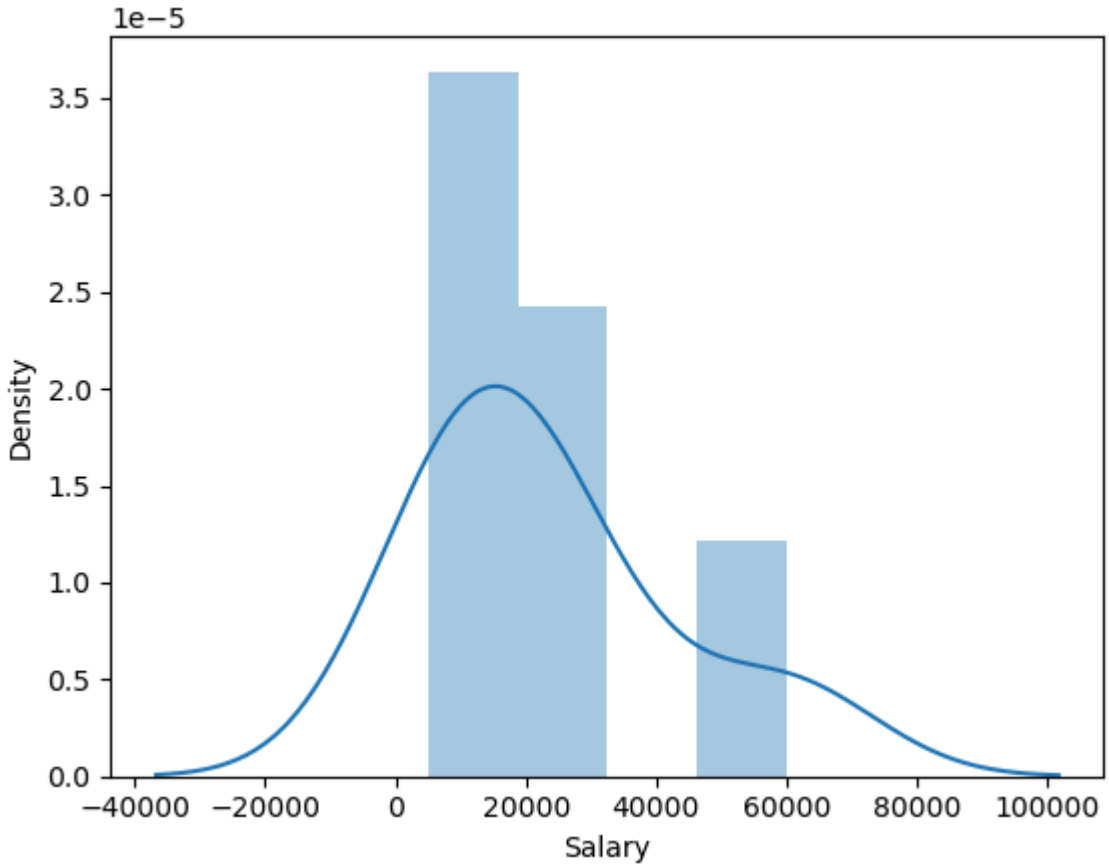
In [42]:
```
import matplotlib.pyplot as plt
import seaborn as sns
```

In [43]:
```
import warnings
warnings.filterwarnings('ignore')
```

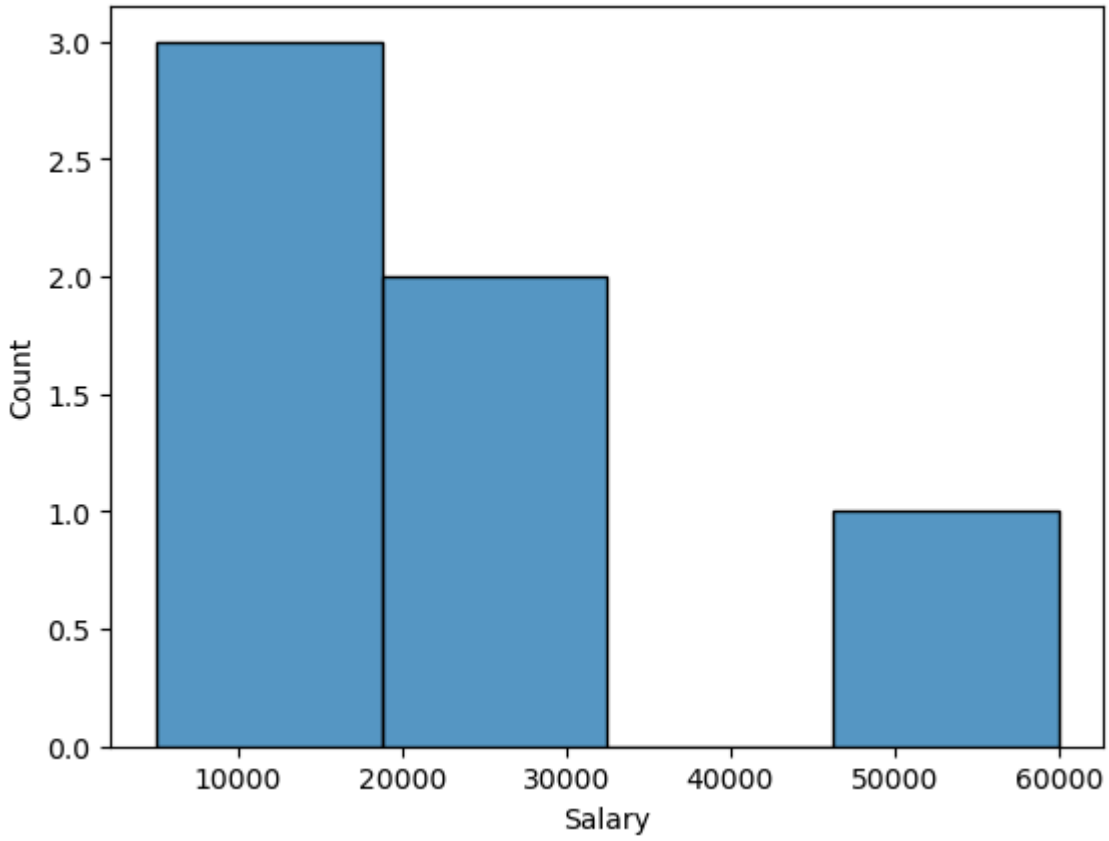
In [44]:
```
clean_data['Salary']
```

Out[44]:
```
0     5000
1    10000
2    15000
3    20000
4    30000
5    60000
Name: Salary, dtype: int64
```

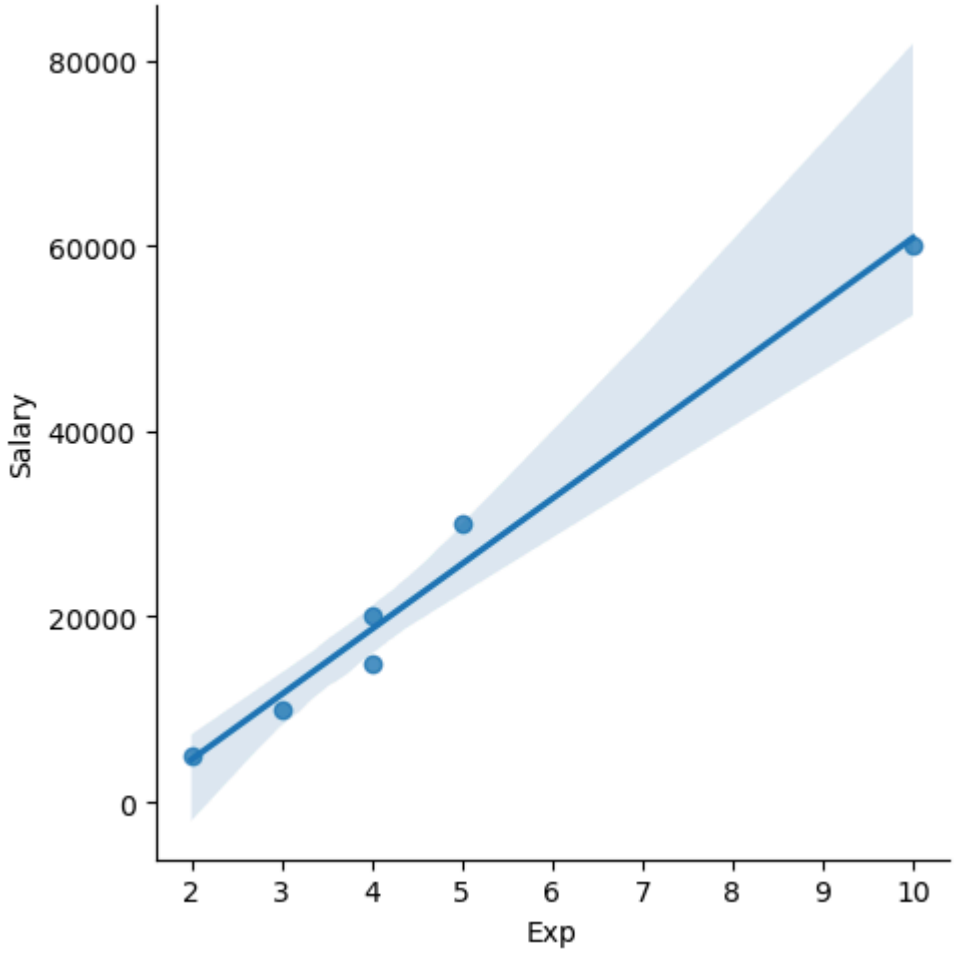
In [45]:
```
vis1=sns.distplot(clean_data['Salary'])
plt.show(vis1)
```



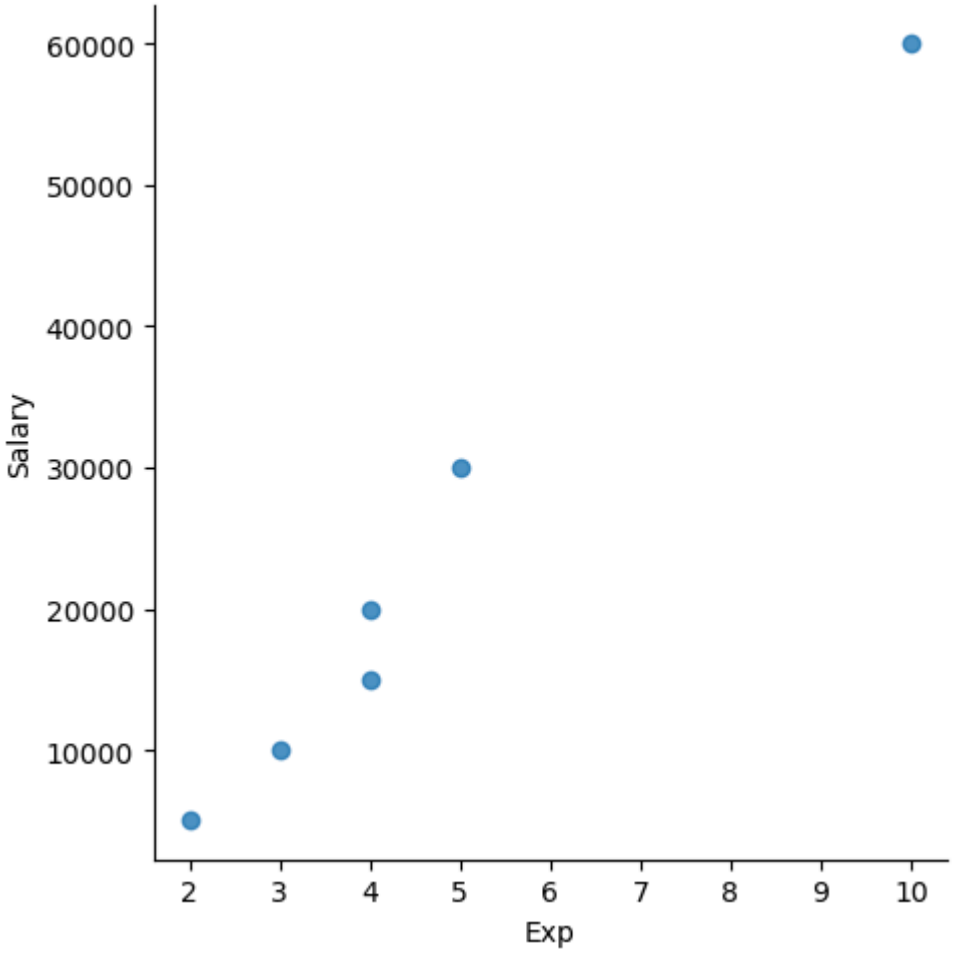
In [49]:
```
vis2=sns.histplot(clean_data['Salary'])
```



In [50]:
```
vis3=sns.lmplot(data=clean_data, x='Exp', y='Salary')
```



In [51]:
```
vis4=sns.lmplot(data=clean_data, x='Exp', y='Salary', fit_reg=False)
```



In [52]:
```
imputation = pd.get_dummies(clean_data)
```

In [53]:
```
imputation
```

Out[53]:

	Age	Salary	Exp	Name_Jane	Name_Kim	Name_Mike	Name_Teddy	Name_Umar
0	34	5000	2	False	False	True	False	False
1	45	10000	3	False	False	False	True	False
2	50	15000	4	False	False	False	False	True
3	50	20000	4	True	False	False	False	False
4	67	30000	5	False	False	False	False	False
5	55	60000	10	False	True	False	False	False

In [ ]: