In [2]:

```
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
%matplotlib inline
```

In [3]:

```
import os
os.chdir('C:/Users/malay/Desktop/Dataset')
```

In [56]:

```
df=pd.read_csv('survey_results_public.csv')
df.shape
```

Out[56]:

```
(73268, 79)
```

In [5]:

```
df_schema=pd.read_csv('survey_results_schema.csv')
df_schema.head()
```

Out[5]:

	qid	qname	question	force_resp	type	selector
0	QID16	S0	<div><span style="font-size:19px;"><strong>Hel...	False	DB	TB
1	QID12	MetaInfo	Browser Meta Info	False	Meta	Browser
2	QID1	S1	<span style="font-size:22px; font-family: aria...	False	DB	TB
3	QID2	MainBranch	Which of the following options best describes ...	True	MC	SAVR
4	QID296	Employment	Which of the following best describes your cur...	False	MC	MAVR

In [6]:

```
pd.set_option('display.max_columns', None)
```

In [7]:

```
df1=df[df['DevType']=='Data scientist or machine learning specialist']
df2=df[df['DevType']=='Data or business analyst']
frames=[df1,df2]
df_ds=pd.concat(frames)
```

In [8]:

```
df_ds.head()
```

Out[8]:

	ResponseId	MainBranch	Employment	RemoteWork	CodingActivities	EdLevel	LearnCode
463	464	I am a developer by profession	Employed, full-time	Hybrid (some remote, some in-person)	Hobby	Bachelor’s degree (B.A., B.S., B.Eng., etc.)	Books / Physical media;Other online resources ...
1089	1090	I am a developer by profession	Employed, full-time	Hybrid (some remote, some in-person)	Hobby;Contribute to open-source projects	Master’s degree (M.A., M.S., M.Eng., MBA, etc.)	Books / Physical media;Other online resources ...
1704	1705	I am a developer by profession	Employed, full-time	Fully remote	Hobby;Contribute to open-source projects	Master’s degree (M.A., M.S., M.Eng., MBA, etc.)	Books / Physical media;Other online resources ...
1707	1708	I am a developer by profession	Employed, full-time	Hybrid (some remote, some in-person)	Hobby	Master’s degree (M.A., M.S., M.Eng., MBA, etc.)	School (i.e., University, College, etc)
1870	1871	I am a developer by profession	Employed, full-time	Hybrid (some remote, some in-person)	Hobby	Bachelor’s degree (B.A., B.S., B.Eng., etc.)	Books / Physical media;Other online resources ...

Popular Language among Data Specialists

In [9]:

```
df_python=df_ds[df_ds['LanguageHaveWorkedWith'].str.contains("Python", case=False, na=
df_python
len(df_python)
print("Hence {} % of the total data specialists in the survey have used Python(among o
```

```
Hence 85.59670781893004 % of the total data specialists in the survey have used Pytho
n(among other languages as well) on their Job
```

In [10]:

```
sum(df_ds['LanguageHaveWorkedWith'].isnull())
```

Out[10]:

```
13
```

In [11]:

```
df_R=df_ds[df_ds['LanguageHaveWorkedWith'].str.contains("R;", case=True, na=False)]
df_R_only= df_ds[df_ds['LanguageHaveWorkedWith']=='R']
frames_2=[df_R, df_R_only]
```

```
df_R_concat= pd.concat(frames_2)
print("Hence {} % of the total data specialists in the survey have used R(among other
```

```
Hence 24.96570644718793 % of the total data specialists in the survey have used R(amo
ng other languages as well) on their Job
```

Percentage of people who have used both Python and R as part of their work

In [12]:

```
df_python_R=df_ds[df_ds['LanguageHaveWorkedWith'].str.contains("Python", case=False, n
df_python_R
print("Hence {} % of the total data specialists in the survey who have used both Pytho
```

```
Hence 19.54177897574124 % of the total data specialists in the survey who have used b
oth Python and R on their Job
```

Calculating the percentage of people who have worked on Python(among other languages as well) but have not worked on R

In [13]:

```
(len(df_python)-(len(df_python_R)))*100/len(df_ds)
```

Out[13]:

```
64.55525606469003
```

Calculating the percentage of people who have worked on R(among other languages as well) but have not worked on Python

In [14]:

```
(len(df_R)-(len(df_python_R)))*100/len(df_ds)
```

Out[14]:

```
3.504043126684636
```

In [15]:

```
df_Julia=df_ds[df_ds['LanguageHaveWorkedWith'].str.contains("Julia", case=False, na=Fa
len(df_Julia)
print("Hence {} % of the total data specialists in the survey have used Julia(among ot
```

```
Hence 5.349794238683128 % of the total data specialists in the survey have used Julia
(among other languages as well) on their Job
```

In [16]:

```
df_Rust=df_ds[df_ds['LanguageHaveWorkedWith'].str.contains("Rust", case=False, na=Fals
len(df_Rust)
print("Hence {} % of the total data specialists in the survey have used Rust(among oth
```

```
Hence 3.017832647462277 % of the total data specialists in the survey have used Rust
(among other languages as well) on their Job
```

In [17]:

```
df_Elixir=df_ds[df_ds['LanguageHaveWorkedWith'].str.contains("Elixir", case=False, na=
len(df_Julia)
print("Hence {} % of the total data specialists in the survey have used Elixir(among o
```

```
Hence 0.27434842249657065 % of the total data specialists in the survey have used Eli
xir(among other languages as well) on their Job
```

In [18]:

```
df_Go=df_ds[df_ds['LanguageHaveWorkedWith'].str.contains("Go", case=False, na=False)]
len(df_Go)
print("Hence {} % of the total data specialists in the survey have used Go(among other
```

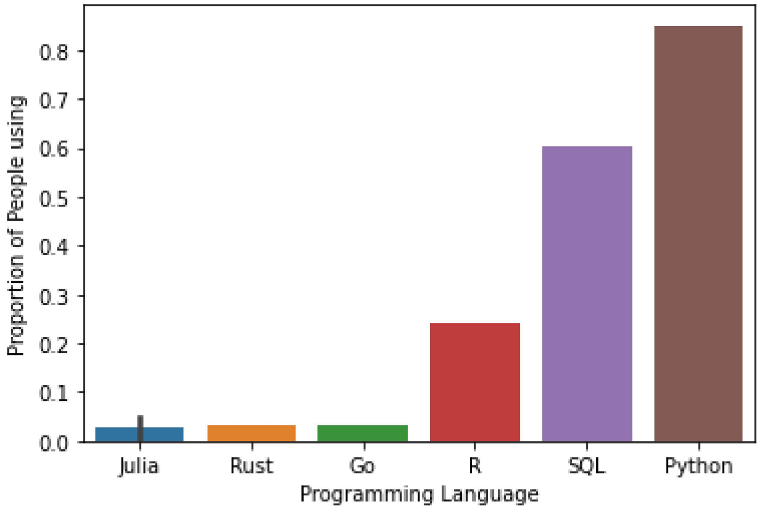
```
Hence 3.017832647462277 % of the total data specialists in the survey have used Go(am
ong other languages as well) on their Job
```

In [66]:

```
df_SQL=df_ds[df_ds['LanguageHaveWorkedWith'].str.contains("SQL", case=True, na=False)]
print("Hence {} % of the total data specialists in the survey have used SQL(among othe
Hence 60.35665294924554 % of the total data specialists in the survey have used SQL(a
mong other languages as well) on their Job
```

In [67]:
```
df_prog= pd.DataFrame({'Programming Language' : ['Python', 'R', 'Julia', 'Rust', 'Juli
df_prog_sort=df_prog.sort_values('Proportion of People using')
```

In [68]:
```
import seaborn as sns
sns.barplot(x='Programming Language', y='Proportion of People using', data= df_prog_sc
plt.show()
```



Hence, Python is predominantly used among Data specialists as per the data. Whereas, there is a very low percentage of data specialists who have used R on their Job but have not worked on Python yet.

Popular Database to work with for Data Specialists

In [30]:
```
df_mysql=df_ds[df_ds['DatabaseHaveWorkedWith'].str.contains("MySql", case=False, na=Fa
print("Hence {} % of the total data specialists in the survey using MySql(among other
```

```
Hence 29.919137466307276 % of the total data specialists in the survey using MySql(am
ong other databases as well) on their Job
```

In [31]:
```
df_PostgreSQL=df_ds[df_ds['DatabaseHaveWorkedWith'].str.contains("PostgreSQL", case=Fa
print("Hence {} % of the total data specialists in the survey using PostgreSQL(among c
```

```
Hence 36.79245283018868 % of the total data specialists in the survey using PostgreSQ
L(among other databases as well) on their Job
```

In [32]:
```
df_DynamoDB=df_ds[df_ds['DatabaseHaveWorkedWith'].str.contains("DynamoDB", case=False,
print("Hence {} % of the total data specialists in the survey using DynamoDB(among oth
```

```
Hence 3.234501347708895 % of the total data specialists in the survey using DynamoDB
(among other databases as well) on their Job
```

In [33]:
```
df_Elasticsearch=df_ds[df_ds['DatabaseHaveWorkedWith'].str.contains("Elasticsearch", c
print("Hence {} % of the total data specialists in the survey using Elasticsearch(amor
Hence 7.681940700808625 % of the total data specialists in the survey using Elasticse
arch(among other databases as well) on their Job
```

In [34]:

```
df_SQLite=df_ds[df_ds['DatabaseHaveWorkedWith'].str.contains("SQLite", case=False, na=
print("Hence {} % of the total data specialists in the survey using SQLite(among other
```

```
Hence 22.641509433962263 % of the total data specialists in the survey using SQLite(a
mong other databases as well) on their Job
```

In [35]:

```
df_Redis=df_ds[df_ds['DatabaseHaveWorkedWith'].str.contains("Redis", case=False, na=Fa
print("Hence {} % of the total data specialists in the survey using Redis(among other
```

```
Hence 8.221024258760108 % of the total data specialists in the survey using Redis(amo
ng other databases as well) on their Job
```

In [36]:

```
df_Microsoft_SQL=df_ds[df_ds['DatabaseHaveWorkedWith'].str.contains("Microsoft SQL Ser
print("Hence {} % of the total data specialists in the survey using Microsoft SQL Serv
```

```
Hence 25.202156334231805 % of the total data specialists in the survey using Microsof
t SQL Server(among other databases as well) on their Job
```

In [37]:

```
df_Oracle=df_ds[df_ds['DatabaseHaveWorkedWith'].str.contains("Oracle", case=False, na=
print("Hence {} % of the total data specialists in the survey using Oracle(among other
```

```
Hence 9.838274932614555 % of the total data specialists in the survey using Oracle(am
ong other databases as well) on their Job
```

In [38]:

```
df_MongoDB=df_ds[df_ds['DatabaseHaveWorkedWith'].str.contains("MongoDB", case=False, n
print("Hence {} % of the total data specialists in the survey using MongoDB(among othe
```

```
Hence 13.611859838274933 % of the total data specialists in the survey using MongoDB
(among other databases as well) on their Job
```

In [39]:

```
df_Cassandra=df_ds[df_ds['DatabaseHaveWorkedWith'].str.contains("Cassandra", case=Fals
print("Hence {} % of the total data specialists in the survey using Cassandra(among ot
```

```
Hence 1.482479784366577 % of the total data specialists in the survey using Cassandra
(among other databases as well) on their Job
```

In [40]:

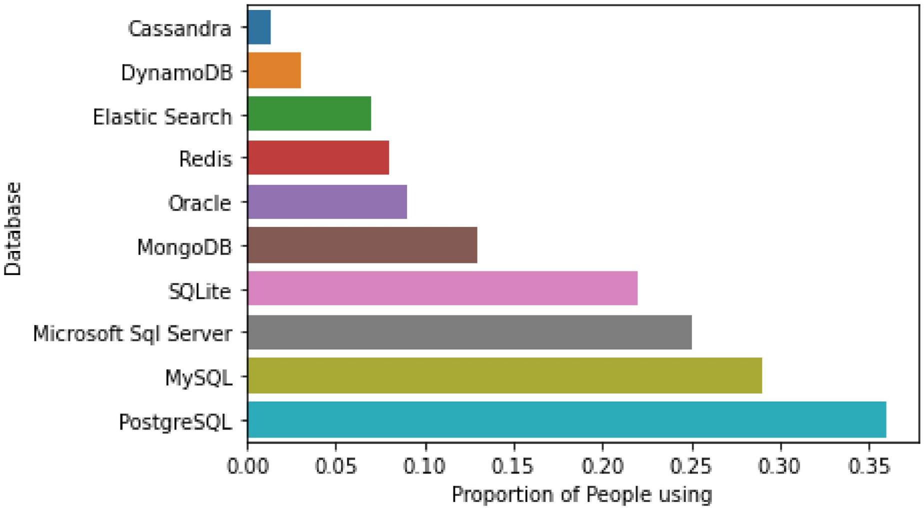
```
df_db= pd.DataFrame({'Database' : ['MySQL', 'PostgreSQL', 'DynamoDB', 'Elastic Search'
df_db_sort=df_db.sort_values('Proportion of People using')
df_db_sort
```

Out[40]:

	Database	Proportion of People using
9	Cassandra	0.014
2	DynamoDB	0.030
3	Elastic Search	0.070
5	Redis	0.080
7	Oracle	0.090
8	MongoDB	0.130
4	SQLite	0.220
6	Microsoft Sql Server	0.250
0	MySQL	0.290
1	PostgreSQL	0.360

In [41]:

```
sns.barplot(x='Proportion of People using', y='Database', data= df_db_sort, orient='h'
plt.show()
```



Which Operating System is popular among the data professionals?

In [61]:

```
df_macos=df_ds[df_ds['OpSysProfessional use'].str.contains("macOS", case=False, na=Fal
print("Hence {} % of the total data specialists in the survey who have used macOS(amon
```

```
Hence 28.694404591104735 % of the total data specialists in the survey who have used
macOS(among other OS as well) on their Job
```

In [62]:

```
df_Windows=df_ds[df_ds['OpSysProfessional use'].str.contains("Windows", case=False, na
print("Hence {} % of the total data specialists in the survey who have used Windows(am
```

```
Hence 61.8364418938307 % of the total data specialists in the survey who have used Wi
ndows(among other OS as well) on their Job
```

In [63]:

```
df_linux=df_ds[df_ds['OpSysProfessional use'].str.contains("Linux-based", case=False,
print("Hence {} % of the total data specialists in the survey who have used Linux(amon
Hence 38.020086083213776 % of the total data specialists in the survey who have used
Linux(among other OS as well) on their Job
```

In [64]:

```
df_wsl=df_ds[df_ds['OpSysProfessional use'].str.contains("WSL", case=False, na=False)]
print("Hence {} % of the total data specialists in the survey who have used WSL(among
```

```
Hence 11.190817790530847 % of the total data specialists in the survey who have used
WSL(among other OS as well) on their Job
```

In [65]:

```
df_bsd=df_ds[df_ds['OpSysProfessional use'].str.contains("BSD", case=False, na=False)]
print("Hence {} % of the total data specialists in the survey who have used BSD(among
```

```
Hence 0.430416068866571 % of the total data specialists in the survey who have used B
SD(among other OS as well) on their Job
```