Project : Case Study (Part - II)

Question- 1

Your Friend has developed the Product and he wants to establish the product startup and he is searching for a perfect location where getting the investment has a high chance. But due to its financial restriction, he can choose only between three locations - Bangalore, Mumbai, and NCR.
As a friend, you want to help your friend deciding the location. NCR include Gurgaon, Noida and New Delhi.
Find the location where the most number of funding is done. That means, find the location where startups has received funding maximum number of times.
Plot the bar graph between location and number of funding.
Take city name "Delhi" as "New Delhi". Check the case-sensitiveness of cities also. That means, at some place instead of "Bangalore", "bangalore" is given. Take city name as "Bangalore". For few startups multiple locations are given, one Indian and one Foreign. Consider the startup if any one of the city lies in given locations.

In [1]:
```
# Importing required Libraries
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
```

In [2]:
```
# Loading dataset & Creating a copy
data = pd.read_csv('./startup_funding.csv')
df = data.copy()
df
```

Out[2]:

	SNo	Date	StartupName	IndustryVertical	SubVertical	CityLocation	InvestorsName	InvestmentType	AmountInUSD	Remarks
0	0	01/08/2017	TouchKin	Technology	Predictive Care Platform	Bangalore	Kae Capital	Private Equity	1,300,000	NaN
1	1	02/08/2017	Ethinos	Technology	Digital Marketing Agency	Mumbai	Triton Investment Advisors	Private Equity	NaN	NaN
2	2	02/08/2017	Leverage Edu	Consumer Internet	Online platform for Higher Education Services	New Delhi	Kashyap Deorah, Anand Sankeshwar, Deepak Jain,...	Seed Funding	NaN	NaN
3	3	02/08/2017	Zepo	Consumer Internet	DIY Ecommerce platform	Mumbai	Kunal Shah, LetsVenture, Anupam Mittal, Hetal ...	Seed Funding	500,000	NaN
4	4	02/08/2017	Click2Clinic	Consumer	healthcare service	Hyderabad	Narottam Thudi,	Seed Funding	850,000	NaN

In [3]:
```
# Checking if there are Null values in CityLocation or not
df["CityLocation"].isnull().sum()
```

Out[3]: 179

In [4]:
```
# Dropping rows with Null values in CityLocation
df["CityLocation"].dropna(inplace=True)
```

In [5]:
```
# Checking if there are Null values in CityLocation or not
df["CityLocation"].isnull().sum()
```

Out[5]: 0

In [6]:
```
# Getting Indian cities from multiple cities
def separateCity(city):
    return city.split('/')[0].strip()
df['CityLocation']=df['CityLocation'].apply(separateCity)

# Rectifying mistyped "New Delhi" and "Bangalore" names as instructed in question
df['CityLocation'].replace("Delhi","New Delhi",inplace=True)
df['CityLocation'].replace("bangalore","Bangalore",inplace=True)
```

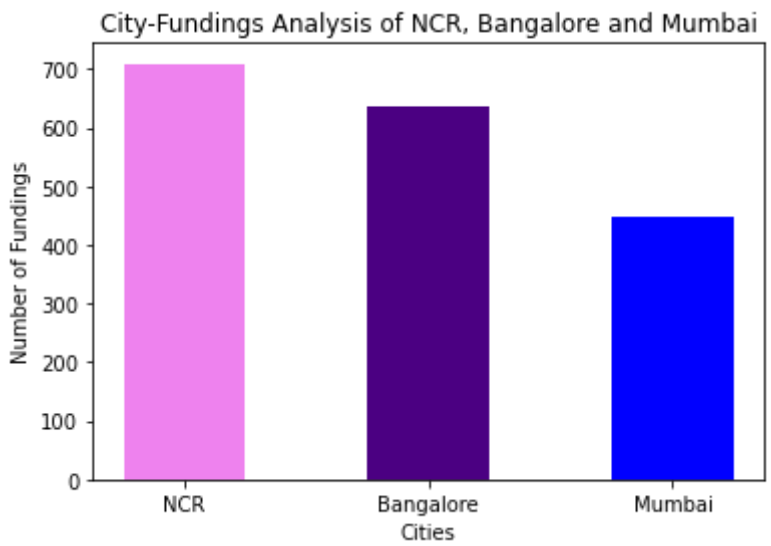
In [7]:
```
# Replacing Gurgaon, Noida and New Delhi with NCR
df['CityLocation'].replace(["Gurgaon", "Noida", "New Delhi"],"NCR",inplace=True)
```

In [8]:
```
# Dropping all rows except with required cities
for i in df.index:
    if (df['CityLocation'][i]!="Bangalore" and df['CityLocation'][i]!="Mumbai" and df['CityLocation'][i]!="NCR"):
        df.drop(i, inplace=True)
```

In [9]:
```
# Counting number of fundings in each city
city_counts = df['CityLocation'].value_counts()
city_counts
```

Out[9]:
```
NCR          709
Bangalore    635
Mumbai       449
Name: CityLocation, dtype: int64
```

In [10]:
```
# Plotting Graph
plt.bar(height = city_counts, x = city_counts.index, color=["violet","indigo","blue"], width=0.5)
plt.xlabel('Cities')
plt.ylabel('Number of Fundings')
plt.title('City-Fundings Analysis of NCR, Bangalore and Mumbai')
plt.show()
```



Answer- 1

The most number of funding is done in **NCR**, which is 709 Fundings

Question- 2

Even after trying for so many times, your friend’s startup could not find the investment. So you decided to take this matter in your hand and try to find the list of investors who probably can invest in your friend’s startup. Your list will increase the chance of your friend startup getting some initial investment by contacting these in vestors.
Find the top 5 investors who have invested maximum number of times (consider repeat investments in one company a lso). In a startup, multiple investors might have invested. So consider each investor for that startup. Ignore u ndisclosed investors.

In [11]:
```
# Copying original data in df
df = data.copy()
df
```

Out[11]:

	SNo	Date	StartupName	IndustryVertical	SubVertical	CityLocation	InvestorsName	InvestmentType	AmountInUSD	Remarks
0	0	01/08/2017	TouchKin	Technology	Predictive Care Platform	Bangalore	Kae Capital	Private Equity	1,300,000	NaN
1	1	02/08/2017	Ethinos	Technology	Digital Marketing Agency	Mumbai	Triton Investment Advisors	Private Equity	NaN	NaN
2	2	02/08/2017	Leverage Edu	Consumer Internet	Online platform for Higher Education Services	New Delhi	Kashyap Deorah, Anand Sankeshwar, Deepak Jain,...	Seed Funding	NaN	NaN
3	3	02/08/2017	Zepo	Consumer Internet	DIY Ecommerce platform	Mumbai	Kunal Shah, LetsVenture, Anupam Mittal, Hetal ...	Seed Funding	500,000	NaN
4	4	02/08/2017	Click2Clinic	Consumer Internet	healthcare service aggregator	Hyderabad	Narottam Thudi, Shireesh Palle	Seed Funding	850,000	NaN
...	...	...	...	...	...	...	...	...	...	...
2367	2367	29/01/2015	Printvenue	NaN	NaN	NaN	Asia Pacific Internet Group	Private Equity	4,500,000	NaN
2368	2368	29/01/2015	Graphene	NaN	NaN	NaN	KARSEMVEN Fund	Private Equity	825,000	Govt backed VC Fund
2369	2369	30/01/2015	Mad Street Den	NaN	NaN	NaN	Exfinity Fund, GrowX Ventures.	Private Equity	1,500,000	NaN
2370	2370	30/01/2015	Simplotel	NaN	NaN	NaN	MakeMyTrip	Private Equity	NaN	Strategic Funding, Minority stake
2371	2371	31/01/2015	couponmachine.in	NaN	NaN	NaN	UK based Group of Angel Investors	Seed Funding	140,000	NaN

2372 rows × 10 columns

In [12]:
```
# Checking if there are Null values in InvestorsName or not
df["InvestorsName"].isnull().sum()
```

Out[12]: 8

In [13]:
```
# Dropping rows with Null values in InvestorsName
df["InvestorsName"].dropna(inplace=True)
```

In [14]:
```
# Checking if there are Null values in InvestorsName or not
df["InvestorsName"].isnull().sum()
```

Out[14]: 0

In [15]:
```
# Creating dictionary of Investor names and Number of times invested
def createDictionary(array):
    dictionary={}
    for i in array:
        if ',' not in i:
            if i in dictionary:
                dictionary[i]=dictionary.get(i)+1
            else:
                dictionary[i]=1
        else:
            string=i.strip().split(',')
            for j in string:
                if j.strip() in dictionary:
                    dictionary[j.strip()]=dictionary.get(j.strip())+1
                else:
                    dictionary[j.strip()]=1
    return dictionary
dictionary=createDictionary(df['InvestorsName'])
dictionary
```

Out[15]:
```
{'Kae Capital': 22,
 'Triton Investment Advisors': 1,
 'Kashyap Deorah': 3,
 'Anand Sankeshwar': 2,
 'Deepak Jain': 1,
 'Sadashiva NT': 1,
 'Arjun Mehta': 1,
 'Satish Kaul': 1,
 'Anindya Ghose': 1,
 'Kunal Shah': 17,
 'LetsVenture': 17,
 'Anupam Mittal': 18,
 'Hetal Sonpal': 1,
 'Narottam Thudi': 1,
 'Shireesh Palle': 1,
 'Reliance Corporate Advisory Services Ltd': 1,
 'Infuse Ventures': 8,
 'JLL': 2,
 'Asset Management (Asia) Ltd': 1,
```

In [16]:
```
# Getting top investors in a dataframe
dataf=pd.DataFrame(list(dictionary.values()),list(dictionary.keys()))
dataf=dataf.sort_values(by=[0],ascending=False)
dataf=dataf[:6]
dataf
```

Out[16]:

	0
Sequoia Capital	64
Accel Partners	53
Kalaari Capital	44
SAIF Partners	41
Indian Angel Network	40
Blume Ventures	39

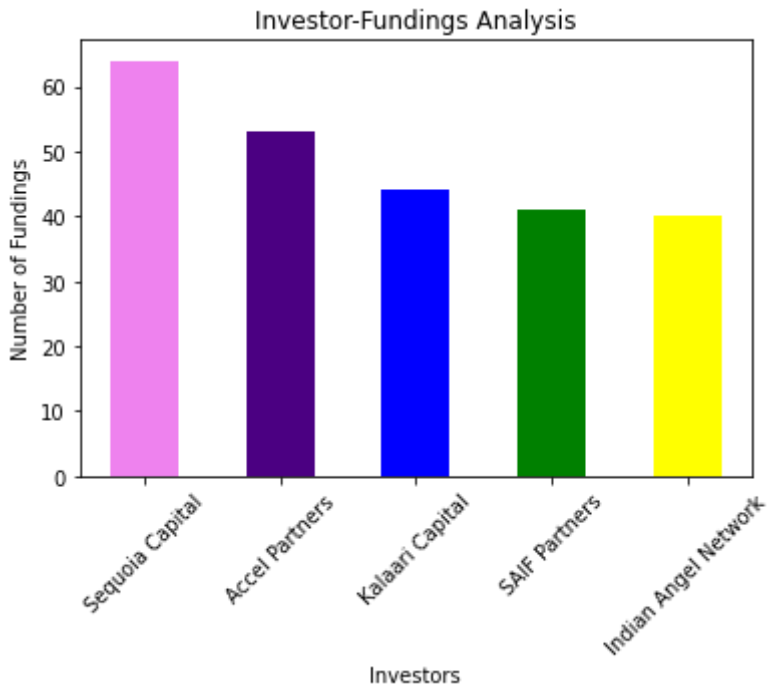
In [17]:
```
# As there is no Tie, so we can drop the 6th investor
dataf.drop("Blume Ventures", inplace=True)

dataf
```

Out[17]:

	0
Sequoia Capital	64
Accel Partners	53
Kalaari Capital	44
SAIF Partners	41
Indian Angel Network	40

In [18]:
```
# Plotting Graph
plt.bar(height = dataf[0],x = dataf.index, color=["violet","indigo","blue","green","yellow"], width=0.5)
plt.xticks(rotation = 45)
plt.xlabel("Investors")
plt.ylabel('Number of Fundings')
plt.title('Investor-Fundings Analysis')
plt.show()
```



Answer- 2

The top 5 investors who have invested maximum number of times are:

1. Sequoia Capital (64 investments)
2. Accel Partners (53 investments)
3. Kalaari Capital (44 investments)
4. SAIF Partners (41 investments)
5. Indian Angel Network (40 investments)

Question- 3

After re-analysing the dataset you found out that some investors have invested in the same startup at different number of funding rounds. So before finalising the previous list, you want to improvise it by finding the top 5 investors who have invested in different number of startups. This list will be more helpful than your previous list in finding the investment for your friend startup.
Find the top 5 investors who have invested maximum number of times in different companies. That means, if one investor has invested multiple times in one startup, count one for that company. There are many errors in startup names. Ignore correcting all, just handle the important ones - Ola, Flipkart, Oyo and Paytm.

In [19]:
```
# df already dropped all Null values from InvestorsName, so we can continue with same
```

In [20]:
```
# # Checking if there are Null values in StartupName or not
df["StartupName"].isnull().sum()
```

Out[20]:
```
0
```

In [21]:
```
# Handling errors in important Startup Names
df['StartupName'].replace('Olacabs','Ola',inplace=True)
df['StartupName'].replace('Ola Cabs','Ola',inplace=True)
df['StartupName'].replace('Flipkart.com','Flipkart',inplace=True)
df['StartupName'].replace('Paytm Marketplace','Paytm',inplace=True)
df['StartupName'].replace('Oyo Rooms','Oyo',inplace=True)
df['StartupName'].replace('Oyorooms','Oyo',inplace=True)
df['StartupName'].replace('OyoRooms','Oyo',inplace=True)
df['StartupName'].replace('OYO Rooms','Oyo',inplace=True)
```

In [22]:
```
# Creating a dictionary with Keys as Investor Name & Values as Set of Startups in which the investor invested (to not rep

dictionary = {}
df.reset_index(drop=True, inplace=True)
for i in df.index:
    if ',' not in str(df['InvestorsName'][i]):
        if str(df['InvestorsName'][i]).strip() in dictionary:
            dictionary[str(df['InvestorsName'][i]).strip()].add(str(df['StartupName'][i]).strip())
        else:
            dictionary[str(df['InvestorsName'][i]).strip()] = {str(df['StartupName'][i]).strip()}
    else:
        string = str(df['InvestorsName'][i]).strip().split(',')
        for j in string:
                if j.strip() in dictionary:
                    dictionary[j.strip()].add(str(df['StartupName'][i]).strip())
                else:
                    dictionary[j.strip()]= {str(df['StartupName'][i]).strip()}
dictionary
```

Out[22]:
```
{'Kae Capital': {'Azuro',
  'Daily Rounds',
  'Frsh',
  'Frsh.co.in',
  'Fynd',
  'HandyHome',
  'HealthKart',
  'Hypernova Interactive',
  'LearnTron',
  'ListUp',
  'Loantap',
  'Nudgespot',
  'Parentune',
  'Shopsense',
  'The Porter',
  'TouchKin',
  'Truebil',
  'TrulyMadly.com',
  'Trupay',
```

In [23]:
```
# Replacing values of dictionary with corresponding length of set, to get count of different startups in which investor

for i in dictionary.keys():
    dictionary[i] = len(dictionary[i])

dictionary
```

Out[23]:
```
{'Kae Capital': 20,
 'Triton Investment Advisors': 1,
 'Kashyap Deorah': 3,
 'Anand Sankeshwar': 2,
 'Deepak Jain': 1,
 'Sadashiva NT': 1,
 'Arjun Mehta': 1,
 'Satish Kaul': 1,
 'Anindya Ghose': 1,
 'Kunal Shah': 17,
 'LetsVenture': 17,
 'Anupam Mittal': 18,
 'Hetal Sonpal': 1,
 'Narottam Thudi': 1,
 'Shireesh Palle': 1,
 'Reliance Corporate Advisory Services Ltd': 1,
 'Infuse Ventures': 8,
 'JLL': 2,
 'Asset Management (Asia) Ltd': 1,
```

In [24]:
```
# Getting top investors in a dataframe
dataf=pd.DataFrame(list(dictionary.values()),list(dictionary.keys()))
dataf=dataf.sort_values(by=[0],ascending=False)
dataf=dataf[:6]
dataf
```

Out[24]:

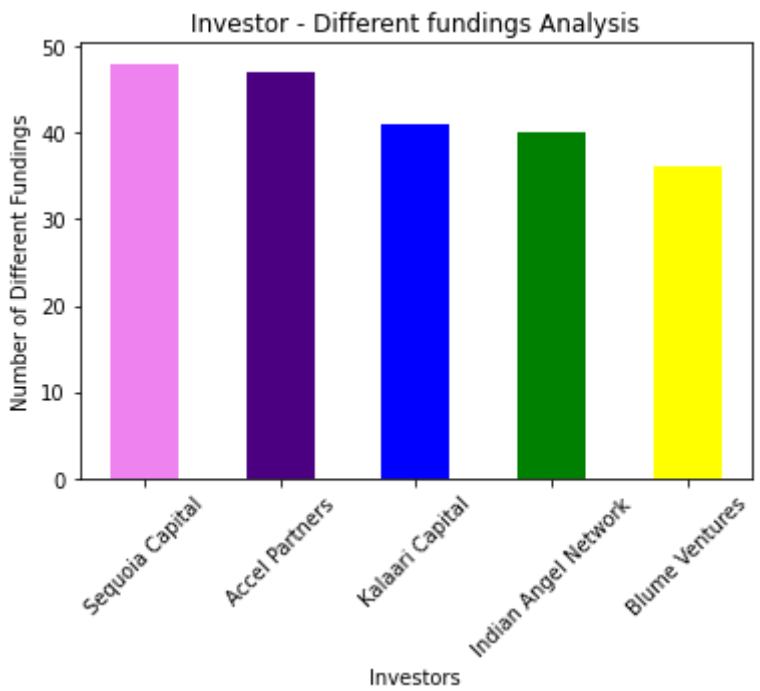
	0
Sequoia Capital	48
Accel Partners	47
Kalaari Capital	41
Indian Angel Network	40
	38
Blume Ventures	36

In [25]:
```
# Dropping irrelevant entry from dataf
dataf.drop("", inplace=True)
dataf
```

Out[25]:

	0
Sequoia Capital	48
Accel Partners	47
Kalaari Capital	41
Indian Angel Network	40
Blume Ventures	36

In [26]:
```
# Plotting Graph
plt.bar(height = dataf[0],x = dataf.index, color=["violet","indigo","blue","green","yellow"], width=0.5)
plt.xticks(rotation = 45)
plt.xlabel("Investors")
plt.ylabel('Number of Different Fundings')
plt.title('Investor - Different fundings Analysis')
plt.show()
```



Answer- 3

The top 5 investors who have invested maximum number of times in different companies are:

1. Sequoia Capital (48 investments)
2. Accel Partners (47 investments)
3. Kalaari Capital (41 investments)
4. Indian Angel Network (40 investments)
5. Blume Ventures (36 investments)

Ques- 4

Even after putting so much effort in finding the probable investors, it didn't turn out to be helpful for your friend. So you went to your investor friend to understand the situation better and your investor friend explained to you about the different Investment Types and their features. This new information will be helpful in finding the right investor. Since your friend startup is at an early stage startup, the best-suited investment type would be - Seed Funding and Crowdfunding.
Find the top 5 investors who have invested in a different number of startups and their investment type is Crowdfunding or Seed Funding.
Correct spelling of investment types are - "Private Equity", "Seed Funding", "Debt Funding", and "Crowd Funding". Keep an eye for any spelling mistake. You can find this by printing unique values from this column. There are many errors in startup names. Ignore correcting all, just handle the important ones - Ola, Flipkart, Oyo and Paytm.

In [27]:
```
# df already dropped all Null values from InvestorsName & corrected Startup names, so we can continue with same
```

In [28]:
```
# Correcting the InvestmentType
df['InvestmentType'].replace('SeedFunding','Seed Funding',inplace=True)
df['InvestmentType'].replace('PrivateEquity','Private Equity',inplace=True)
df['InvestmentType'].replace('Crowd funding','Crowd Funding',inplace=True)
```

In [29]:
```
# Dropping rows in which InvestmentType is neither Crowd Funding nor Seed Funding
for i in df.index:
    if df['InvestmentType'][i] != "Crowd Funding" and df['InvestmentType'][i] != "Seed Funding":
        df.drop(i, inplace=True)
df
```

Out[29]:

	SNo	Date	StartupName	IndustryVertical	SubVertical	CityLocation	InvestorsName	InvestmentType	AmountInUSD	Remarks
2	2	02/08/2017	Leverage Edu	Consumer Internet	Online platform for Higher Education Services	New Delhi	Kashyap Deorah, Anand Sankeshwar, Deepak Jain,...	Seed Funding	NaN	NaN
3	3	02/08/2017	Zepo	Consumer Internet	DIY Ecommerce platform	Mumbai	Kunal Shah, LetsVenture, Anupam Mittal, Hetal ...	Seed Funding	500,000	NaN
4	4	02/08/2017	Click2Clinic	Consumer Internet	healthcare service aggregator	Hyderabad	Narottam Thudi, Shireesh Palle	Seed Funding	850,000	NaN
5	5	01/07/2017	Billion Loans	Consumer Internet	Peer to Peer Lending platform	Bangalore	Reliance Corporate Advisory Services Ltd	Seed Funding	1,000,000	NaN
11	11	06/07/2017	Minjar	Technology	Cloud Solutions provider	Bangalore	Blume Ventures, Contrarian Capital India Partn...	Seed Funding	NaN	NaN
...	...	...	...	...	...	...	...	...	...	...
2356	2356	21/05/2015	Villgro	NaN	NaN	NaN	Michael & Susan Dell Foundation	Seed Funding	3,250,000	To fund edu startups
2357	2357	22/01//2015	Corporate360	NaN	NaN	NaN	Group of Angel Investors	Seed Funding	200,000	NaN
2358	2358	22/01/2015	Freshmonk	NaN	NaN	NaN	August Capital Partners, Michael Blakey	Seed Funding	NaN	NaN
2362	2362	24/01/2015	Aasaanjobs	NaN	NaN	NaN	Inventus Capital Partners, IDG Ventures	Seed Funding	1,500,000	NaN
2371	2371	31/01/2015	couponmachine.in	NaN	NaN	NaN	UK based Group of Angel Investors	Seed Funding	140,000	NaN

1303 rows × 10 columns

In [30]:
```
# Creating a dictionary with Keys as Investor Name & Values as Set of Startups in which the investor invested (to not rep

dictionary = {}
df.reset_index(drop=True, inplace=True)
for i in df.index:
    if ',' not in str(df['InvestorsName'][i]):
        if str(df['InvestorsName'][i]).strip() in dictionary:
            dictionary[str(df['InvestorsName'][i]).strip()].add(str(df['StartupName'][i]).strip())
        else:
            dictionary[str(df['InvestorsName'][i]).strip()] = {str(df['StartupName'][i]).strip()}
    else:
        string = str(df['InvestorsName'][i]).strip().split(',')
        for j in string:
                if j.strip() in dictionary:
                    dictionary[j.strip()].add(str(df['StartupName'][i]).strip())
                else:
                    dictionary[j.strip()]= {str(df['StartupName'][i]).strip()}
dictionary
```

Out[30]:
```
{'Kashyap Deorah': {'Leverage Edu', 'Meesho', 'Springboard'},
 'Anand Sankeshwar': {'Leverage Edu', 'ShopsUp'},
 'Deepak Jain': {'Leverage Edu'},
 'Sadashiva NT': {'Leverage Edu'},
 'Arjun Mehta': {'Leverage Edu'},
 'Satish Kaul': {'Leverage Edu'},
 'Anindya Ghose': {'Leverage Edu'},
 'Kunal Shah': {'Bharat Bazaar',
  'Cookifi',
  'Daily Ninja',
  'Flyrobe',
  'Innov8',
  'Lets Reap',
  'LifCare',
  'ListUp',
  'Pianta',
  'ShaadiSaga',
  'TableHero',
  'Twigly',
```

In [31]:
```
# Replacing values of dictionary with corresponding length of set, to get count of different startups in which investor
for i in dictionary.keys():
    dictionary[i] = len(dictionary[i])

dictionary
```

Out[31]:
```
{'Kashyap Deorah': 3,
 'Anand Sankeshwar': 2,
 'Deepak Jain': 1,
 'Sadashiva NT': 1,
 'Arjun Mehta': 1,
 'Satish Kaul': 1,
 'Anindya Ghose': 1,
 'Kunal Shah': 14,
 'LetsVenture': 16,
 'Anupam Mittal': 16,
 'Hetal Sonpal': 1,
 'Narottam Thudi': 1,
 'Shireesh Palle': 1,
 'Reliance Corporate Advisory Services Ltd': 1,
 'Blume Ventures': 10,
 'Contrarian Capital India Partners': 1,
 'Emergent Ventures India': 1,
 'Pallav Nadhani': 3,
 'Ashish Gupta': 5,
```

In [32]:
```
# Getting top investors in a dataframe
dataf=pd.DataFrame(list(dictionary.values()),list(dictionary.keys()))
dataf=dataf.sort_values(by=[0],ascending=False)
dataf=dataf[:12]
dataf
```

Out[32]:

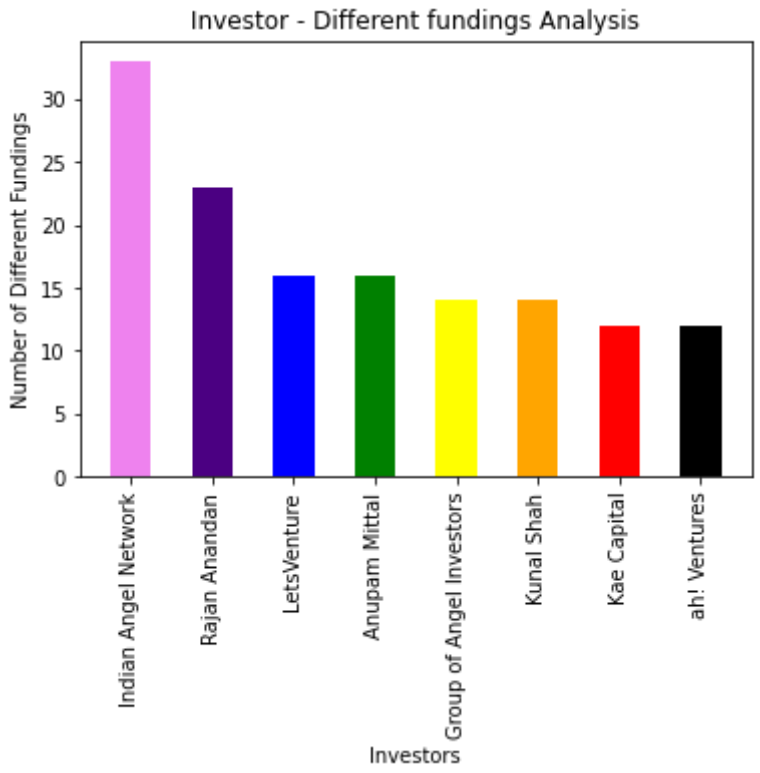
	0
Indian Angel Network	33
Undisclosed Investors	27
Undisclosed investors	24
Rajan Anandan	23
	22
LetsVenture	16
Anupam Mittal	16
Group of Angel Investors	14
Kunal Shah	14
Kae Capital	12
ah! Ventures	12
Singapore Angel Network	11

In [33]:
```
# Dropping irrelevant entry from dataf
dataf.drop("Undisclosed Investors", inplace=True)
dataf.drop("Undisclosed investors", inplace=True)
dataf.drop("", inplace=True)
dataf.drop("Singapore Angel Network", inplace=True)
dataf
```

Out[33]:

	0
Indian Angel Network	33
Rajan Anandan	23
LetsVenture	16
Anupam Mittal	16
Group of Angel Investors	14
Kunal Shah	14
Kae Capital	12
ah! Ventures	12

In [34]:
```
# Plotting Graph
plt.bar(height = dataf[0],x = dataf.index, color=["violet","indigo","blue","green","yellow","orange","red","black"], wid
plt.xticks(rotation = 90)
plt.xlabel("Investors")
plt.ylabel('Number of Different Fundings')
plt.title('Investor - Different fundings Analysis')
plt.show()
```



Answer- 4

The top 5 investors who have invested maximum number of times in different companies are:

1. Indian Angel Network (33 investments)
2. Rajan Anandan (23 investments)
3. LetsVenture (16 investments)
4. Anupam Mittal (16 investments)
5. Group of Angel Investors (14 investments)
6. Kunal Shah (14 investments)
7. Kae Capital (12 investments)
8. ah! Ventures (12 investments)

Question- 5

Due to your immense help, your friend startup successfully got seed funding and it is on the operational mode. N ow your friend wants to expand his startup and he is looking for new investors for his startup. Now you again co me as a saviour to help your friend and want to create a list of probable new new investors. Before moving forwa rd you remember your investor friend advice that finding the investors by analysing the investment type. Since y our friend startup is not in early phase it is in growth stage so the best-suited investment type is Private Equ ity.

Find the top 5 investors who have invested in a different number of startups and their investment type is Privat e Equity.

Correct spelling of investment types are - "Private Equity", "Seed Funding", "Debt Funding", and "Crowd Fundin g". Keep an eye for any spelling mistake. You can find this by printing unique values from this column.There are many errors in startup names. Ignore correcting all, just handle the important ones - Ola, Flipkart, Oyo and Pay tm.

In [35]:
```
# Copying original data in df
df = data.copy()
df
```

Out[35]:

	SNo	Date	StartupName	IndustryVertical	SubVertical	CityLocation	InvestorsName	InvestmentType	AmountInUSD	Remarks
0	0	01/08/2017	TouchKin	Technology	Predictive Care Platform	Bangalore	Kae Capital	Private Equity	1,300,000	NaN
1	1	02/08/2017	Ethinos	Technology	Digital Marketing Agency	Mumbai	Triton Investment Advisors	Private Equity	NaN	NaN
2	2	02/08/2017	Leverage Edu	Consumer Internet	Online platform for Higher Education Services	New Delhi	Kashyap Deorah, Anand Sankeshwar, Deepak Jain,...	Seed Funding	NaN	NaN
3	3	02/08/2017	Zepo	Consumer Internet	DIY Ecommerce platform	Mumbai	Kunal Shah, LetsVenture, Anupam Mittal, Hetal ...	Seed Funding	500,000	NaN
4	4	02/08/2017	Click2Clinic	Consumer Internet	healthcare service aggregator	Hyderabad	Narottam Thudi, Shireesh Palle	Seed Funding	850,000	NaN
...	...	...	...	...	...	...	...	...	...	...
2367	2367	29/01/2015	Printvenue	NaN	NaN	NaN	Asia Pacific Internet Group	Private Equity	4,500,000	NaN
2368	2368	29/01/2015	Graphene	NaN	NaN	NaN	KARSEMVEN Fund	Private Equity	825,000	Govt backed VC Fund
2369	2369	30/01/2015	Mad Street Den	NaN	NaN	NaN	Exfinity Fund, GrowX Ventures.	Private Equity	1,500,000	NaN
2370	2370	30/01/2015	Simplotel	NaN	NaN	NaN	MakeMyTrip	Private Equity	NaN	Strategic Funding, Minority stake
2371	2371	31/01/2015	couponmachine.in	NaN	NaN	NaN	UK based Group of Angel Investors	Seed Funding	140,000	NaN

2372 rows × 10 columns

In [36]:
```
# Rectifying mistyped required Investment Type
df['InvestmentType'].replace('PrivateEquity','Private Equity',inplace=True)

# Dropping rows in which InvestmentType is not Private Equity
for i in df.index:
    if df['InvestmentType'][i] != "Private Equity":
        df.drop(i, inplace=True)
df
```

Out[36]:

	SNo	Date	StartupName	IndustryVertical	SubVertical	CityLocation	InvestorsName	InvestmentType	AmountInUSD	Remarks
0	0	01/08/2017	TouchKin	Technology	Predictive Care Platform	Bangalore	Kae Capital	Private Equity	1,300,000	NaN
1	1	02/08/2017	Ethinos	Technology	Digital Marketing Agency	Mumbai	Triton Investment Advisors	Private Equity	NaN	NaN
6	6	03/07/2017	Ecolibriumenergy	Technology	Energy management solutions provider	Ahmedabad	Infuse Ventures, JLL	Private Equity	2,600,000	NaN
7	7	04/07/2017	Droom	eCommerce	Online marketplace for automobiles	Gurgaon	Asset Management (Asia) Ltd, Digital Garage Inc	Private Equity	20,000,000	NaN
8	8	05/07/2017	Jumbotail	eCommerce	online marketplace for food and grocery	Bangalore	Kalaari Capital, Nexus India Capital Advisors	Private Equity	8,500,000	NaN
...	...	...	...	...	...	...	...	...	...	...
2366	2366	28/01/2015	Grabhouse.com	NaN	NaN	NaN	Kalaari Capital, Sequoia Capital	Private Equity	2,500,000	Series A
2367	2367	29/01/2015	Printvenue	NaN	NaN	NaN	Asia Pacific Internet Group	Private Equity	4,500,000	NaN
2368	2368	29/01/2015	Graphene	NaN	NaN	NaN	KARSEMVEN Fund	Private Equity	825,000	Govt backed VC Fund
2369	2369	30/01/2015	Mad Street Den	NaN	NaN	NaN	Exfinity Fund, GrowX Ventures.	Private Equity	1,500,000	NaN
2370	2370	30/01/2015	Simplotel	NaN	NaN	NaN	MakeMyTrip	Private Equity	NaN	Strategic Funding, Minority stake

1067 rows × 10 columns

In [37]:
```
# Checking if there are Null values in StartupName or not
df["StartupName"].isnull().sum()
```

Out[37]: 0

In [38]:
```
# Checking if there are Null values in InvestorsName or not
df["InvestorsName"].isnull().sum()
```

Out[38]: 1

In [39]:
```
# Dropping rows with Null values in InvestorsName
df["InvestorsName"].dropna(inplace=True)
```

In [40]:
```
# Checking if there are Null values in InvestorsName or not
df["InvestorsName"].isnull().sum()
```

Out[40]: 0

In [41]:
```
# Handling errors in important Startup Names
df['StartupName'].replace('Olacabs','Ola',inplace=True)
df['StartupName'].replace('Ola Cabs','Ola',inplace=True)
df['StartupName'].replace('Flipkart.com','Flipkart',inplace=True)
df['StartupName'].replace('Paytm Marketplace','Paytm',inplace=True)
df['StartupName'].replace('Oyo Rooms','Oyo',inplace=True)
df['StartupName'].replace('Oyorooms','Oyo',inplace=True)
df['StartupName'].replace('OyoRooms','Oyo',inplace=True)
df['StartupName'].replace('OYO Rooms','Oyo',inplace=True)
```

In [42]:
```
# Creating a dictionary with Keys as Investor Name & Values as Set of Startups in which the investor invested (to not rep

dictionary = {}
df.reset_index(drop=True, inplace=True)
for i in df.index:
    if ',' not in str(df['InvestorsName'][i]):
        if str(df['InvestorsName'][i]).strip() in dictionary:
            dictionary[str(df['InvestorsName'][i]).strip()].add(str(df['StartupName'][i]).strip())
        else:
            dictionary[str(df['InvestorsName'][i]).strip()] = {str(df['StartupName'][i]).strip()}
    else:
        string = str(df['InvestorsName'][i]).strip().split(',')
        for j in string:
                if j.strip() in dictionary:
                    dictionary[j.strip()].add(str(df['StartupName'][i]).strip())
                else:
                    dictionary[j.strip()]= {str(df['StartupName'][i]).strip()}
dictionary
```

Out[42]:
```
{'Kae Capital': {'Azuro',
  'Frsh',
  'Fynd',
  'HealthKart',
  'Loantap',
  'Parentune',
  'The Porter',
  'TouchKin',
  'Truebil',
  'TrulyMadly.com'},
 'Triton Investment Advisors': {'Ethinos'},
 'Infuse Ventures': {'Ecolibriumenergy',
  'Fourth Partner Energy',
  'GIBSS',
  'Karma Recycling',
  'Proviera',
  'Silvan Innovation Labs'},
 'JLL': {'Ecolibriumenergy'},
 'Asset Management (Asia) Ltd': {'Droom'},
```

In [43]:
```
# Replacing values of dictionary with corresponding length of set, to get count of different startups in which investor

for i in dictionary.keys():
    dictionary[i] = len(dictionary[i])

dictionary
```

Out[43]:
```
{'Kae Capital': 10,
 'Triton Investment Advisors': 1,
 'Infuse Ventures': 6,
 'JLL': 1,
 'Asset Management (Asia) Ltd': 1,
 'Digital Garage Inc': 1,
 'Kalaari Capital': 35,
 'Nexus India Capital Advisors': 1,
 'International Finance Corporation': 2,
 'Rocketship': 2,
 'Accel Partners': 43,
 'Jungle Ventures': 8,
 'Shailesh Rao': 1,
 'Venture Highway': 2,
 'BCCL': 1,
 'Mitsui & Co.': 2,
 'Dunamis Ventures Pte Ltd': 1,
 'SBI-FMO Fund': 1,
 'Bessemer Venture Partners': 11,
```

In [44]:
```
# Creating a dataframe of top investors
dataf=pd.DataFrame(list(dictionary.values()),list(dictionary.keys()))
dataf=dataf.sort_values(by=[0],ascending=False)
dataf=dataf[:6]
dataf
```

Out[44]:

	0
Sequoia Capital	45
Accel Partners	43
Kalaari Capital	35
Blume Ventures	27
SAIF Partners	24
Tiger Global	22

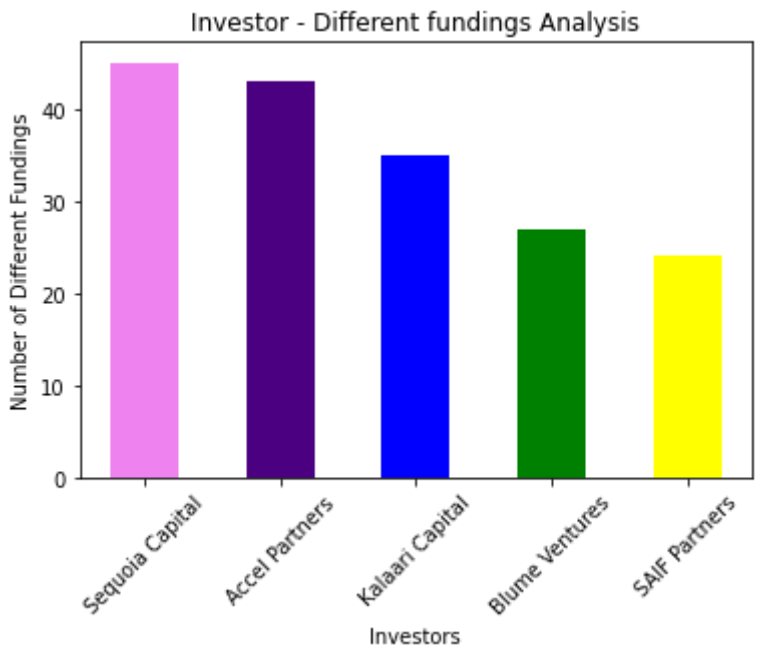
In [45]:
```
# As there is no Tie, so we can drop the 6th investor
dataf.drop("Tiger Global", inplace=True)

dataf
```

Out[45]:

	0
Sequoia Capital	45
Accel Partners	43
Kalaari Capital	35
Blume Ventures	27
SAIF Partners	24

In [46]:
```
# Plotting Graph
plt.bar(height = dataf[0],x = dataf.index, color=["violet","indigo","blue","green","yellow"], width=0.5)
plt.xticks(rotation = 45)
plt.xlabel("Investors")
plt.ylabel('Number of Different Fundings')
plt.title('Investor - Different fundings Analysis')
plt.show()
```



Answer- 5

The top 5 investors who have invested in a different number of startups and their investment type is Private Equity are:

1. Sequoia Capital (45 investments)
2. Accel Partners (43 investments)
3. Kalaari Capital (35 investments)
4. Blume Ventures (27 investments)
5. SAIF Partners (24 investments)

In [ ]: