The two excel sheets were extracted from the campaign_finance_reports.mdb file. Specifically, the Master and Receipts tables were used, since the receipts table contained the contributor details and the master table contained the details of the people/entities that received the contributions

In [1]:

```python
import pandas as pd

mst = pd.read_excel('./Data/OCPF Donor data/master.xlsx')
rpt = pd.read_excel('./Data/OCPF Donor data/receipts.xlsx')
```

In [48]:

```python
m_cols = mst.columns.values
r_cols = rpt.columns.values
m = mst.to_numpy()
r = rpt.to_numpy()
print(m_cols)
print(r_cols)
print(m.shape)
print(r.shape)
```

```
['Report_ID' 'CPF_ID' 'Filing_ID' 'Report_Type_Description' 'Filing
_Date'
 'Reporting_Period' 'Report_Year' 'Beginning_Date' 'Ending_Date'
 'Beginning_Balance' 'Receipts' 'Subtotal' 'Expenditures' 'Ending_B
alance'
 'Candidate_First_Name' 'Candidate_Last_Name' 'Full_Name' 'District
_Code'
 'Office' 'District' 'Comm_Name']
['ID' 'Report_ID' 'Date' 'Contributor_Type' 'First_Name' 'Last_Nam
e'
 'Address' 'City' 'State' 'Zip' 'Occupation' 'Employer'
 'Principal_Officer' 'Contributor_ID' 'Amount']
(166014, 21)
(1042895, 15)
```

Extracting rows from the master table based on 'Report_Year' (2016 - 2020)

In [22]:

```python
nums = [i for i in range(len(m_cols))]
col_map = dict(zip(m_cols, nums))
year = col_map['Report_Year']
temp_m = []
for i in range(1, len(m)):
    if m[i][year] >= 2016 and m[i][year] <= 2020:
        temp_m.append(m[i])
```

```
In [145]:  print("Number of extracted rows - " + str(len(temp_m)))
```

```
Number of extracted rows - 166013
```

As above, we extract the relevant rows of the receipts table as well, while also applying the healthcare keywords as additional filters.

For the filters, we matched based on Occupation, Employer and Last_Name (some PAC's would have their business name listed in that column)

In [106]:

```
import math
nums2 = [i for i in range(len(r_cols))]
col_map2 = dict(zip(r_cols, nums2))
occupation = ['Nurse','Doctor','Physician','MD','Medical','Hospital'
employer = ['Hospital','Health','Healthcare','Medical']
pacs = ['CVS Health Massachusetts Political Action Committee', 'MA A
        'MA Pol Action Comm for Radiological Health Care', 'Massachu
       'Tenet Healthcare Corporation Political Action Committee Mass
year = col_map2['Date']
occ = col_map2['Occupation']
emp = col_map2['Employer']
pac = col_map2['Last_Name']
temp_r = []
for i in range(1, len(r)):
    if r[i][year] >= '2016' and r[i][year] <= '2020':
        e = r[i][emp]
        o = r[i][occ]
        p = r[i][pac]
        flag = 0
        if type(o) == str:
            for job in occupation:
                if job in o:
                    temp_r.append(r[i])
                    flag = 1
                    break
        if flag == 1:
            continue
        if type(e) == str:
            for boss in employer:
                if 'Hospitality' in e:
                    flag = 1
                    break
                if boss in e:
                    temp_r.append(r[i])
                    flag = 1
                    break
        if flag == 1:
            continue
        if type(p) == str:
            for poc in pacs:
                if poc in p:
                    temp_r.append(r[i])
                    flag = 1
                    break
        if flag == 1:
            continue
        if type(p) == str:
            for boss in employer:
                if boss in p:
                    temp_r.append(r[i])
                    flag = 1
                    break
```

In [147]:

```
print("Total number of transactions - " + str(len(temp_r)))
```

```
Total number of transactions - 31041
```

Here we analyze the ranges of the contributions and draw a simple bar graph based on the results

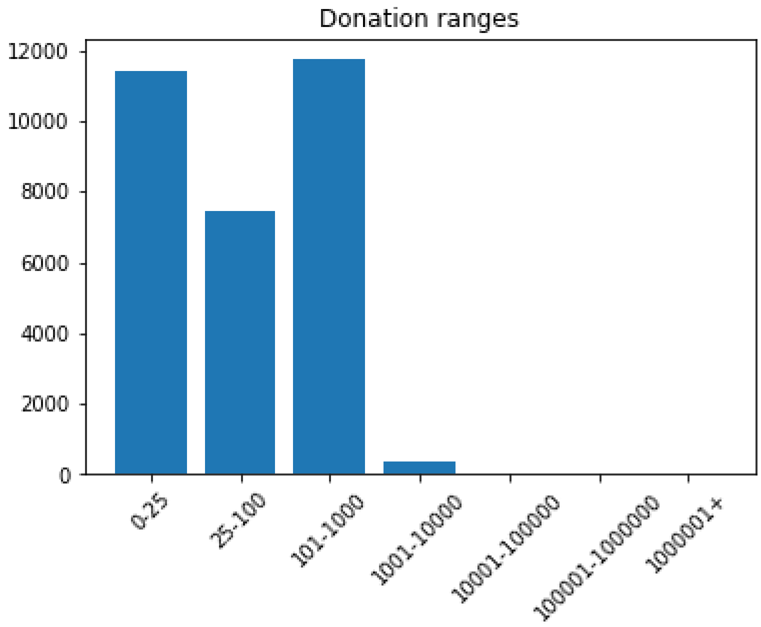
On the side, we are also extracting values from the 'Report_ID' column to match with the master table

In [148]:

```
received = col_map2['Amount']
ids = col_map2['Report_ID']
yrs = {}
l = {'0-25':0,'25-100':0,'101-1000':0,'1001-10000':0,'10001-100000':
m = 0
id_list = []
m_i = []
for i in temp_r:
    if i[ids] not in id_list:
        id_list.append(i[ids])
    amt = i[received]
    if m < amt:
        m_i = i
        m = amt
    if amt <= 25:
        l['0-25'] += 1
    elif amt >= 25 and amt <= 100:
        l['25-100'] += 1
    elif amt > 100 and amt <= 1000:
        l['101-1000'] += 1
    elif amt > 1000 and amt <= 10000:
        l['1001-10000'] += 1
    elif amt > 10000 and amt <= 100000:
        l['10001-100000'] += 1
    elif amt > 100000 and amt <= 1000000:
        l['100001-1000000'] += 1
    else:
        l['1000001+'] += 1
```

In [159]:

```
import matplotlib.pyplot as plt
plt.bar(list(l), l.values())
plt.xticks(list(l), rotation='45')
plt.title('Donation ranges')
plt.show()
print("Highest contributor - " + str(m_i))
print("\nCalculated ranges")
print(l)
```



```
Highest contributor - [13082182 691799 '2018-10-23' 'OTHER' nan
 'Massachusetts Health & Hospital Association' '500 District Ave'
 'Burlington' 'MA' '01803' nan nan 'Steve Walsh' nan 3100000.0]

Calculated ranges
{'0-25': 11435, '25-100': 7427, '101-1000': 11737, '1001-10000': 38
7, '10001-100000': 28, '100001-1000000': 20, '1000001+': 7}
```

Extract rows from the master table based on 'Report_ID' and also extracting unique recipients based on 'CPF_ID'

In [173]:

```
ids = col_map['Report_ID']
cpf = col_map['CPF_ID']
name = col_map['Full_Name']
amount = col_map['Receipts']
cp = {}
health_temp = []
for i in temp_m:
    if i[ids] in id_list:
        health_temp.append(i)
        if i[cpf] not in cp:
            cp[i[cpf]] = {}
            cp[i[cpf]]['Name'] = i[name]
            cp[i[cpf]]['Amount'] = i[amount]
        else:
            cp[i[cpf]]['Amount'] += i[amount]
```

In [183]:

```
print("Number of unique recipients related to healthcare industry -
x = []
for i in cp:
    x.append((cp[i]['Name'],cp[i]['Amount']))
x.sort(key = lambda x: x[1], reverse=True)
print("\nTop 10 recipients\n")
for i in x[:10]:
    print(i)
```

```
Number of unique recipients related to healthcare industry - 1039

Top 10 recipients

('Coalition to Protect Patient Safety', 25800788.790000003)
('Save Our Public Schools', 15406896.5)
('Committee to Ensure Safe Patient Care', 12298919.81)
('YES on 4', 6065697.0)
('Charles D. Baker', 5783997.62)
('Freedom for All Massachusetts, Inc.', 5530348.4)
('Maura T. Healey', 3008623.719999999)
('Martin J. Walsh', 2930438.9200000004)
('Karyn E. Polito', 2892809.67)
('Campaign for Fair Access to Quality Public Schools', 2292183.11)
```

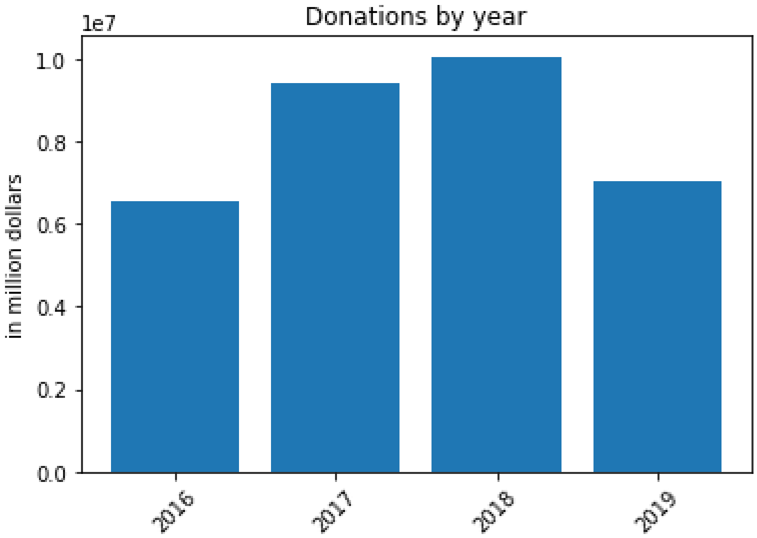
Extracting the total amount received by year, considering only the reports tagged as 'Deposit Report'

In [162]:

```
y = {}
re = col_map['Receipts']
yr = col_map['Report_Year']
desc = col_map['Report_Type_Description']
for i in health_temp:
    if i[desc] != 'Deposit Report':
#     if i[desc] != 'Deposit Report' and i[desc] != 'Late Contributi
# #         print(i[desc])
        continue
    amt = i[re]
    if i[yr] not in y:
        y[i[yr]] = 0
    if not math.isnan(amt):
        y[i[yr]] += int(amt)
```

In [172]:

```
import matplotlib.pyplot as plt
plt.bar(list(y), y.values())
plt.xticks(list(y), rotation='45')
plt.title('Donations by year')
plt.ylabel('in million dollars')
plt.show()
```


Donations by year
1e7
in million dollars