In [1]:
```
import matplotlib.pyplot as plt
import pandas as pd import
numpy as np import seaborn as
sns
```

# Read the dataset

In [2]:
```
df = pd.read_csv("DoctorVisits.csv")
```

In [4]:
```
df.head(15)
```

Out[4]:

| | Unnamed: 0 | visits | gender | age | income | illness | reduced | health | private | freepoor | freerepat | nchronic | lchronic |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 1 | 1 | female | 0.19 | 0.55 | 1 | 4 | 1 | yes | no | no | no | no |
| 1 | 2 | 1 | female | 0.19 | 0.45 | 1 | 2 | 1 | yes | no | no | no | no |
| 2 | 3 | 1 | male | 0.19 | 0.90 | 3 | 0 | 0 | no | no | no | no | no |
| 3 | 4 | 1 | male | 0.19 | 0.15 | 1 | 0 | 0 | no | no | no | no | no |
| 4 | 5 | 1 | male | 0.19 | 0.45 | 2 | 5 | 1 | no | no | no | yes | no |
| 5 | 6 | 1 | female | 0.19 | 0.35 | 5 | 1 | 9 | no | no | no | yes | no |
| 6 | 7 | 1 | female | 0.19 | 0.55 | 4 | 0 | 2 | no | no | no | no | no |
| 7 | 8 | 1 | female | 0.19 | 0.15 | 3 | 0 | 6 | no | no | no | no | no |
| 8 | 9 | 1 | female | 0.19 | 0.65 | 2 | 0 | 5 | yes | no | no | no | no |
| 9 | 10 | 1 | male | 0.19 | 0.15 | 1 | 0 | 0 | yes | no | no | no | no |
| 10 | 11 | 1 | male | 0.19 | 0.45 | 1 | 0 | 0 | no | no | no | no | no |
| 11 | 12 | 1 | male | 0.19 | 0.25 | 2 | 0 | 2 | no | no | yes | no | no |
| 12 | 13 | 2 | male | 0.19 | 0.55 | 3 | 13 | 1 | no | no | no | yes | no |
| 13 | 14 | 1 | male | 0.19 | 0.45 | 4 | 7 | 6 | no | no | no | yes | no |
| 14 | 15 | 1 | male | 0.19 | 0.25 | 3 | 1 | 0 | yes | no | no | yes | no |

# Display complete information about the columns of the dataset such as column name,count,Data type and overoll memory usage

In [5]:
```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 5190 entries, 0 to 5189 Data
columns (total 13 columns):
 #   Column      Non-Null Count  Dtype
---  ------      --------------  -----
0    Unnamed: 0  5190 non-null   int64
1    visits      5190 non-null   int64
2    gender      5190 non-null   object
3    age         5190 non-null   float64
4    income      5190 non-null   float64
5    illness     5190 non-null   int64
6    reduced     5190 non-null   int64
7    health      5190 non-null   int64
8    private     5190 non-null   object
9    freepoor    5190 non-null   object
10   freerepat   5190 non-null   object
11   nchronic    5190 non-null   object  12  lchronic    5190 non-null   object dtypes: float64(2), int64(5), object(6) memory usage: 527.2+ KB
```

# Find out the total no: of people based on their count of illeness

In [6]:
```
df["illness"].value_counts()
```

Out[6]:
```
1    1638
0    1554
2    946
```

```
3   542
4   274
5   236
Name: illness, dtype: int64
```

In [7]:

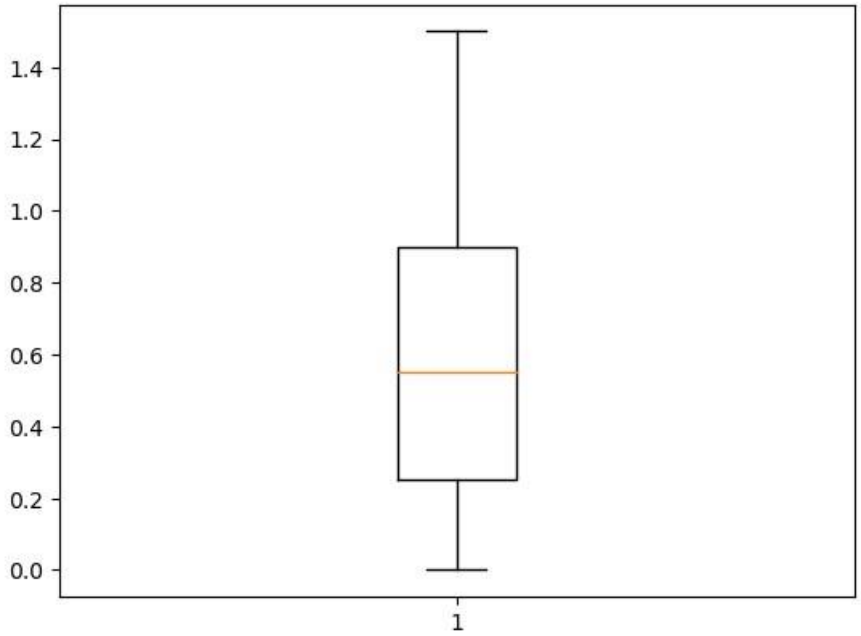
```
df["gender"].value_counts()
```

```
Out[7]:female    2702 male
2488
Name: gender, dtype: int64
```

# visualize and analyse the maximum,minimum and medium income

In [8]:

```
y = list(df.income)
plt.boxplot(y) plt.show()
```




# Find out the no of days of reduced activity of male and female seperately due to illness

In [10]:

```
df.groupby(['gender', 'reduced']).mean()
```

C:\Users\user\AppData\Local\Temp\ipykernel_1312\1847069239.py:1: FutureWarning: The default value of numeric_only in DataFrameGroupBy.mean is dep recated. In a future version, numeric_only will default to False. Either specify numeric_only or select only columns which should be valid for the function.

| | | Unnamed: 0 | visits | age | income | illness | health |
|---|---|---|---|---|---|---|---|
| **gender** | **reduced** | | | | | | |
| **female** | **0** | 2524.038512 | 0.229322 | 0.465755 | 0.482735 | 1.462144 | 1.115098 |
| | **1** | 1985.768421 | 0.400000 | 0.325684 | 0.542105 | 2.242105 | 1.610526 |
| | **2** | 1622.618182 | 0.672727 | 0.391455 | 0.560182 | 2.236364 | 1.781818 |
| | **3** | 997.311111 | 1.333333 | 0.403111 | 0.516000 | 2.733333 | 1.733333 |
| | **4** | 1237.740741 | 0.851852 | 0.458889 | 0.466667 | 2.222222 | 2.074074 |
| | **5** | 1169.055556 | 1.444444 | 0.401667 | 0.614444 | 2.222222 | 2.500000 |
| | **6** | 1382.545455 | 1.363636 | 0.426364 | 0.622727 | 2.363636 | 1.363636 |
| | **7** | 1034.846154 | 1.384615 | 0.436154 | 0.473462 | 2.653846 | 2.230769 |
| | **8** | 1883.090909 | 1.090909 | 0.471818 | 0.404545 | 2.181818 | 4.000000 |
| | **9** | 1349.000000 | 0.500000 | 0.570000 | 0.825000 | 3.000000 | 1.000000 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | **10** | 1099.428571 | 2.142857 | 0.512857 | 0.421429 | 2.571429 | 2.000000 |
| | **12** | 1661.000000 | 2.000000 | 0.720000 | 0.250000 | 3.500000 | 5.500000 |
| | **13** | 906.000000 | 4.000000 | 0.720000 | 0.300000 | 4.500000 | 3.500000 |
| | **14** | 1392.112069 | 1.543103 | 0.551724 | 0.427586 | 2.534483 | 4.112069 |
| **male** | **0** | 3008.911019 | 0.136007 | 0.344703 | 0.694398 | 1.099585 | 0.924850 |
| | **1** | 2485.158537 | 0.304878 | 0.286220 | 0.676341 | 1.743902 | 1.256098 |
| | **2** | 2007.679245 | 0.471698 | 0.343585 | 0.653019 | 2.358491 | 1.547170 |
| | **3** | 1909.068966 | 0.724138 | 0.334138 | 0.741379 | 2.137931 | 1.689655 |
| | **4** | 1424.000000 | 0.722222 | 0.309444 | 0.869444 | 2.055556 | 2.000000 |
| | **5** | 1437.272727 | 1.136364 | 0.331818 | 0.570455 | 2.272727 | 2.818182 |
| | **6** | 562.000000 | 0.833333 | 0.340000 | 0.591667 | 2.500000 | 2.000000 |
| | **7** | 1716.750000 | 0.750000 | 0.314167 | 0.655000 | 2.583333 | 4.333333 |
| | **8** | 680.666667 | 1.333333 | 0.365000 | 0.833333 | 2.666667 | 2.000000 |
| | **9** | 1375.400000 | 2.200000 | 0.310000 | 0.392000 | 2.400000 | 2.000000 |
| | **10** | 1543.200000 | 1.800000 | 0.480000 | 0.590000 | 2.600000 | 4.600000 |
| | **11** | 355.500000 | 5.000000 | 0.320000 | 1.000000 | 1.500000 | 0.500000 |
| | **12** | 781.500000 | 2.000000 | 0.370000 | 0.515000 | 1.500000 | 1.000000 |
| | **13** | 508.666667 | 4.000000 | 0.510000 | 0.350000 | 3.333333 | 2.333333 |
| | **14** | 1236.069444 | 1.555556 | 0.476806 | 0.598611 | 2.375000 | 3.527778 |

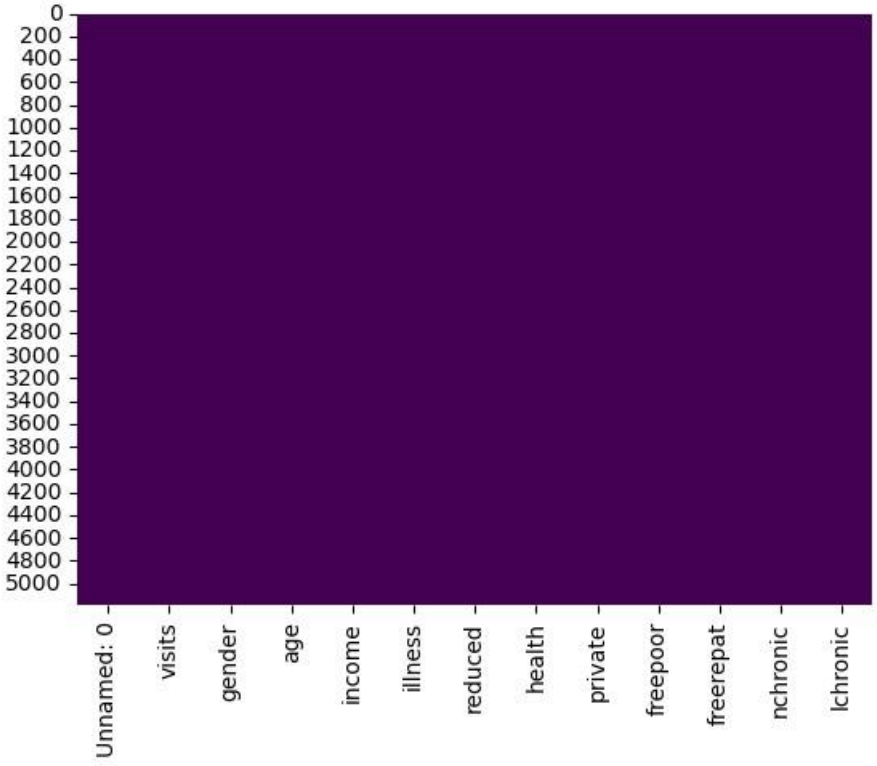
df.groupby(['gender', 'reduced']).mean() Out[10]:

# visualize is their is any missing values in the dataset based on a heat map

In [11]:

```
#missing values sns.heatmap(df.isnull(),cbar=False,cmap='viridis')
```

Out[11]:<Axes: >




# Find out the correlation between variables in the given dataset correlation between different variables

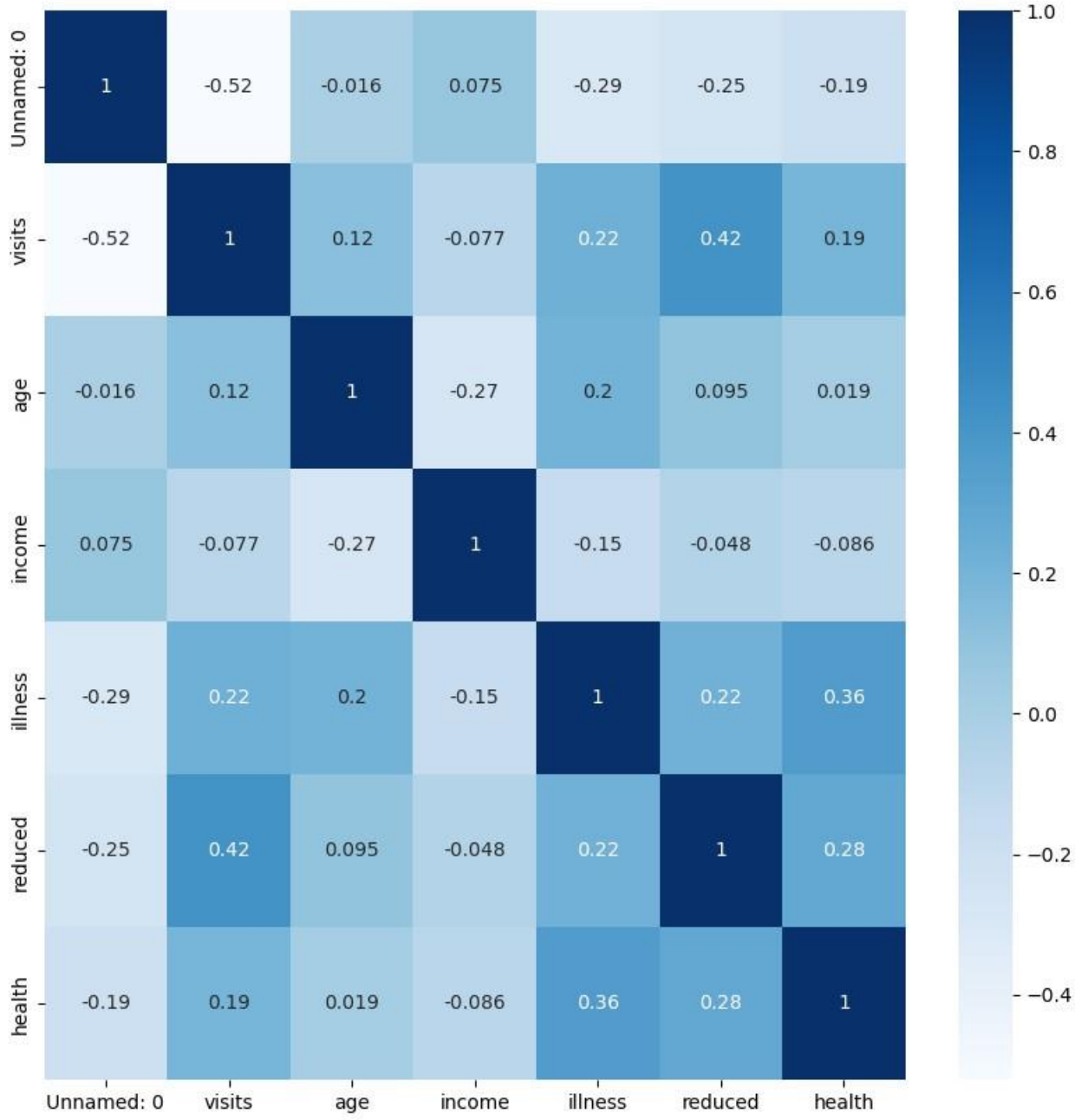
In [12]:

```
plt.figure(figsize=(10,10))
sns.heatmap(df.corr(),cbar=True,annot=True,cmap='Blues')
```

C:\Users\user\AppData\Local\Temp\ipykernel_1312\183792097.py:2: FutureWarning: The default value of numeric_only in DataFrame.corr is deprecated. In a future version, it will default to False. Select only valid columns or specify the value of numeric_only to silence this warning.

```
sns.heatmap(df.corr(),cbar=True,annot=True,cmap='Blues')
```

Out[12]:<Axes: >

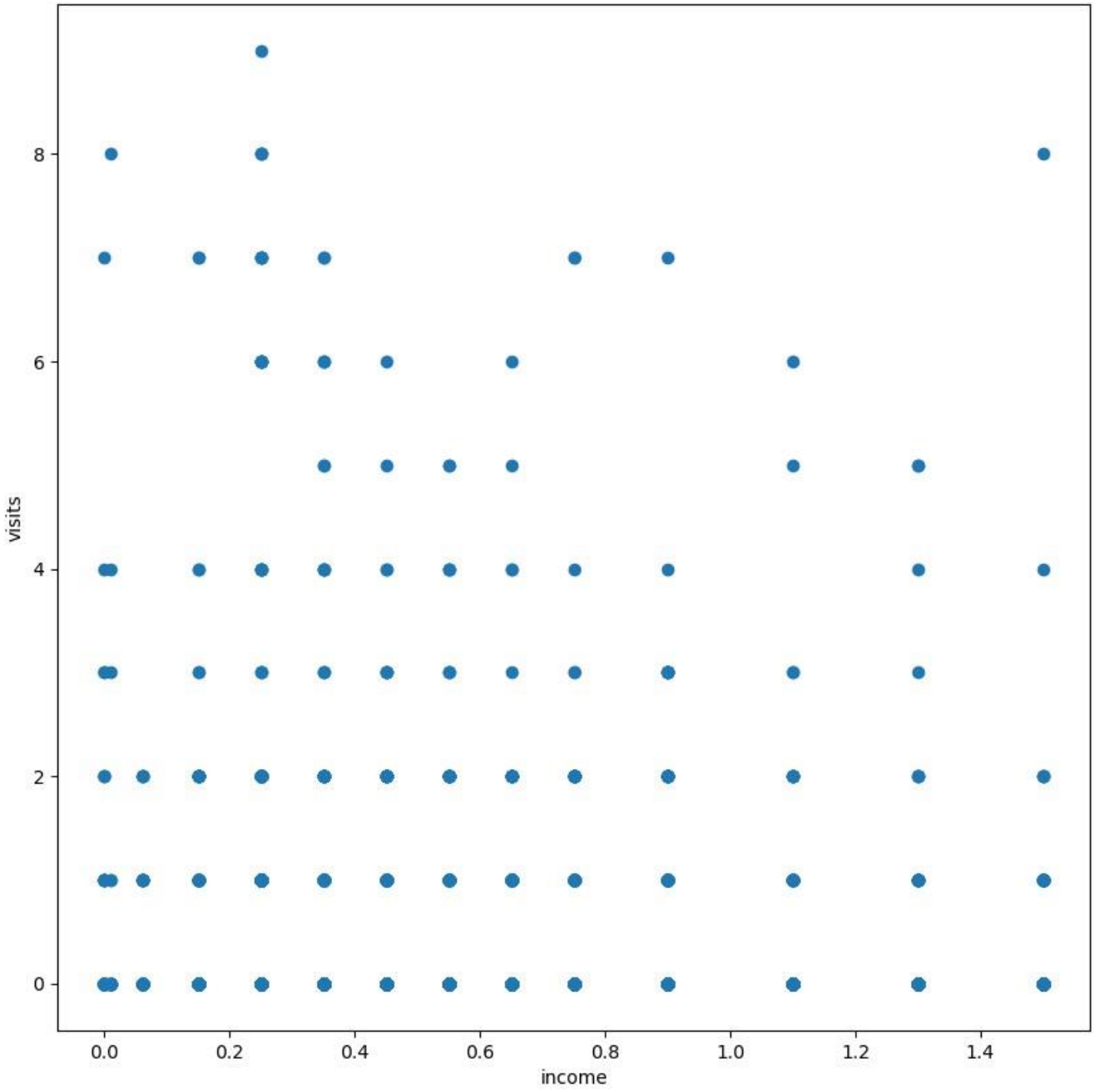



# Analyse how the income of a patient affects the no of visits to the hospital

In [13]:

```
#relation between income and visits
plt.figure(figsize=(10,10))
plt.scatter(x='income',y='visits',data=df)
plt.xlabel('income') plt.ylabel('visits')
```

Out[13]:Text(0, 0.5, 'visits')

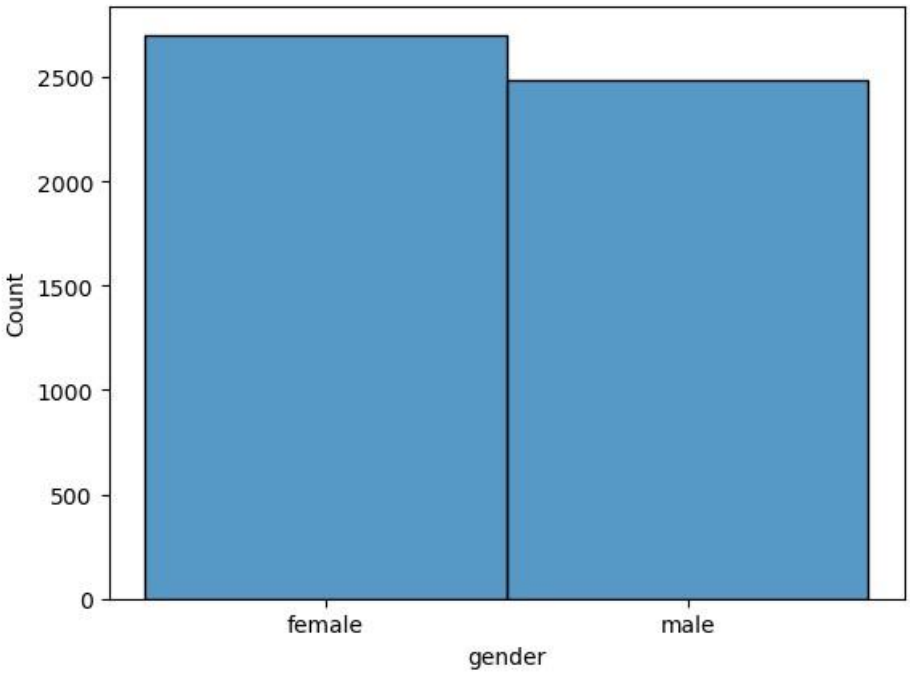



## count and visualize the number of males and females affected by illness

In [14]:

```
sns.histplot(df.gender,bins=2)
```

Out[14]:<Axes: xlabel='gender', ylabel='Count'>

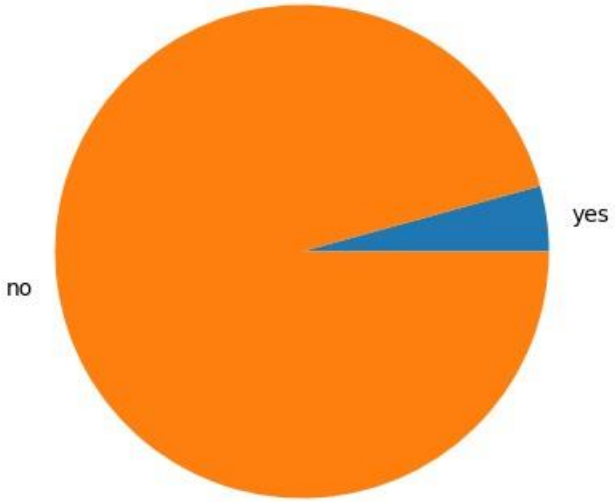



# visualize the percentage of people getting govt health insurance due to low income,due to old age and also the percentage of the people having private health insurance

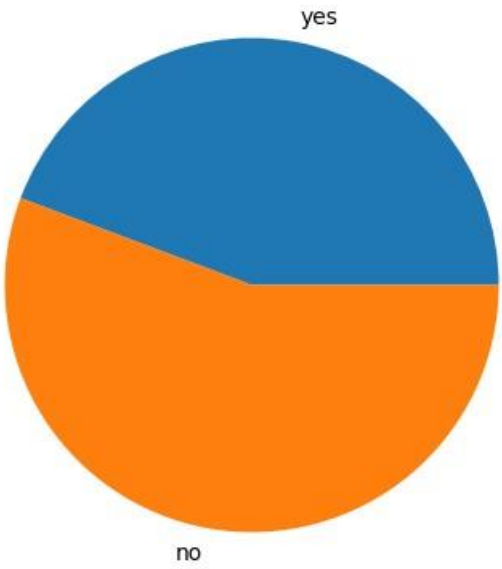
In [15]:

```
# % of people getting Insurance due to low income label=['yes','no']
Y = df[df['freepoor']=='yes'] N = df[df['freepoor']=='no'] x =
[Y.shape[0],N.shape[0]] plt.figure(figsize=(5,5)) plt.pie(x,labels=label)
plt.title("% of people getting govt health Insurance due to low income ")
plt.show()
# % of people having private Insurance
Y = df[df['private']=='yes'] N = df[df['private']=='no'] x =
[Y.shape[0],N.shape[0]] plt.figure(figsize=(5,5))
plt.pie(x,labels=label) plt.title("% of people having private
health Insurance ") plt.show()
# % of people getting govt Insurance due to old age,disability or veteran status
Y = df[df['freerepat']=='yes'] N = df[df['freerepat']=='no'] x = [Y.shape[0],N.shape[0]]
plt.figure(figsize=(5,5)) plt.pie(x,labels=label) plt.title("% of people getting govt health Insurance due
to old age, disability or veteran status ") plt.show()
```

% of people getting govt health Insurance due to low income



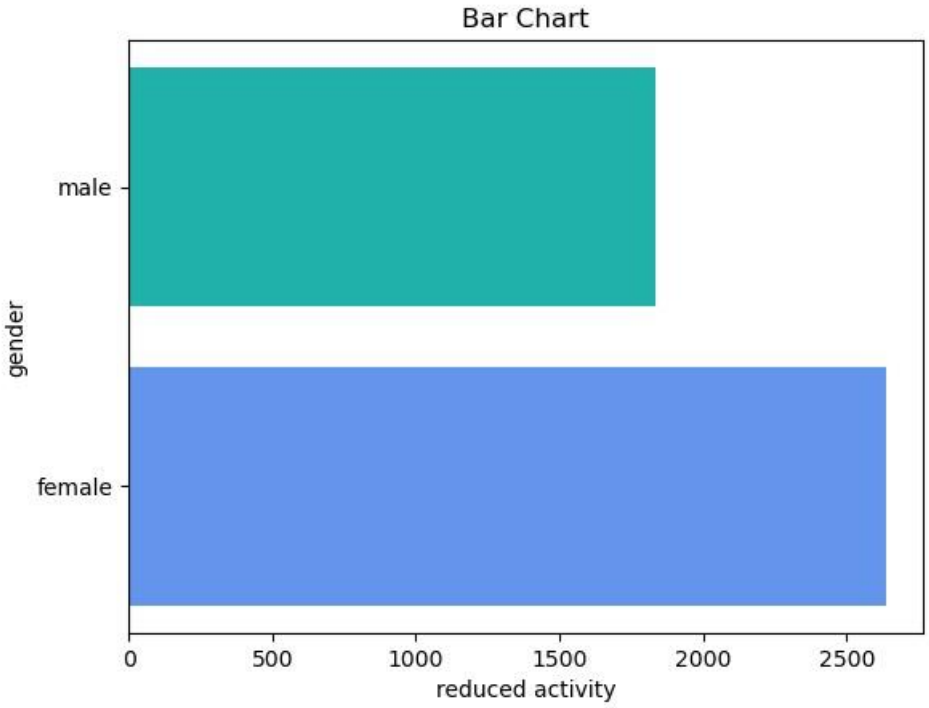

% of people having private health Insurance




% of people getting govt health Insurance due to old age, disability or veteran status


**Plot a horizantal bar chart to analyse the reduced days of activity due to illness based on gender**

In [18]:
```
db= df.groupby('gender')['reduced'].sum().to_frame().reset_index()
#creating the bar chart plt.barh(db['gender'],db['reduced'],color =
['cornflowerblue','lightseagreen'])
#Adding the aesthetics
plt.title('Bar Chart')
plt.xlabel('reduced activity')
plt.ylabel('gender') #Show
the plot plt.show()
```




In [ ]: