In [ ]:

Auto MPG Dataset

In [277...
```python
#Importing Packages
import numpy as np
import pandas as pd
```

In [278...
```python
#Reading the Dataset
auto = pd.read_csv(r"C:\Users\VICTUS\Downloads\auto+mpg\auto-mpg.data",header=No
auto
```

Out[278...

	0	1	2	3	4	5	6	7	8
0	18.0	8	307.0	130.0	3504.0	12.0	70	1	chevrolet chevelle malibu
1	15.0	8	350.0	165.0	3693.0	11.5	70	1	buick skylark 320
2	18.0	8	318.0	150.0	3436.0	11.0	70	1	plymouth satellite
3	16.0	8	304.0	150.0	3433.0	12.0	70	1	amc rebel sst
4	17.0	8	302.0	140.0	3449.0	10.5	70	1	ford torino
...	...	...	...	...	...	...	...	...	...
393	27.0	4	140.0	86.00	2790.0	15.6	82	1	ford mustang gl
394	44.0	4	97.0	52.00	2130.0	24.6	82	2	vw pickup
395	32.0	4	135.0	84.00	2295.0	11.6	82	1	dodge rampage
396	28.0	4	120.0	79.00	2625.0	18.6	82	1	ford ranger
397	31.0	4	119.0	82.00	2720.0	19.4	82	1	chevy s-10

398 rows × 9 columns

In [279...
```python
auto = pd.read_csv(r"C:\Users\VICTUS\Downloads\auto+mpg\auto-mpg.data",header=No
auto
```

Out[279…

	0	1	2	3	4	5	6	7	8
0	18.0	8	307.0	130.0	3504.0	12.0	70	1	chevrolet chevelle malibu
1	15.0	8	350.0	165.0	3693.0	11.5	70	1	buick skylark 320
2	18.0	8	318.0	150.0	3436.0	11.0	70	1	plymouth satellite
3	16.0	8	304.0	150.0	3433.0	12.0	70	1	amc rebel sst
4	17.0	8	302.0	140.0	3449.0	10.5	70	1	ford torino
...	...	...	...	...	...	...	...	...	...
393	27.0	4	140.0	86.00	2790.0	15.6	82	1	ford mustang gl
394	44.0	4	97.0	52.00	2130.0	24.6	82	2	vw pickup
395	32.0	4	135.0	84.00	2295.0	11.6	82	1	dodge rampage
396	28.0	4	120.0	79.00	2625.0	18.6	82	1	ford ranger
397	31.0	4	119.0	82.00	2720.0	19.4	82	1	chevy s-10

398 rows × 9 columns

In [280…

```python
#Rename the columns (if required)
auto.columns = ['mpg','cylinders','displacement','horsepower',
                'weight','acceleration','model year','origin',
                'car name']
auto.head()
```

Out[280…

	mpg	cylinders	displacement	horsepower	weight	acceleration	model year	origin	
0	18.0	8	307.0	130.0	3504.0	12.0	70	1	che ch
1	15.0	8	350.0	165.0	3693.0	11.5	70	1	s
2	18.0	8	318.0	150.0	3436.0	11.0	70	1	ply sa
3	16.0	8	304.0	150.0	3433.0	12.0	70	1	re
4	17.0	8	302.0	140.0	3449.0	10.5	70	1	

In [281…

```python
#check missing values
auto.isnull().sum()
```

Out[281…   mpg   0
            cylinders   0
            displacement   0
            horsepower   0
            weight   0
            acceleration   0
            model year   0
            origin   0
            car name   0
            dtype: int64

In [282…
```python
#check datatypes
auto.dtypes
```

Out[282…   mpg   float64
            cylinders   int64
            displacement   float64
            horsepower   object
            weight   float64
            acceleration   float64
            model year   int64
            origin   int64
            car name   object
            dtype: object

In [283…
```python
for i in auto.columns:
    print(i,':','\n',auto[i].unique(),'\n')
```

```
mpg :
 [18.  15.  16.  17.  14.  24.  22.  21.  27.  26.  25.  10.  11.   9.
 28.  19.  12.  13.  23.  30.  31.  35.  20.  29.  32.  33.  17.5 15.5
 14.5 22.5 24.5 18.5 29.5 26.5 16.5 31.5 36.  25.5 33.5 20.5 30.5 21.5
 43.1 36.1 32.8 39.4 19.9 19.4 20.2 19.2 25.1 20.6 20.8 18.6 18.1 17.7
 27.5 27.2 30.9 21.1 23.2 23.8 23.9 20.3 21.6 16.2 19.8 22.3 17.6 18.2
 16.9 31.9 34.1 35.7 27.4 25.4 34.2 34.5 31.8 37.3 28.4 28.8 26.8 41.5
 38.1 32.1 37.2 26.4 24.3 19.1 34.3 29.8 31.3 37.  32.2 46.6 27.9 40.8
 44.3 43.4 36.4 44.6 40.9 33.8 32.7 23.7 23.6 32.4 26.6 25.8 23.5 39.1
 39.  35.1 32.3 37.7 34.7 34.4 29.9 33.7 32.9 31.6 28.1 30.7 24.2 22.4
 34.  38.  44. ]

cylinders :
 [8 4 6 3 5]

displacement :
 [307.  350.  318.  304.  302.  429.  454.  440.  455.  390.  383.  340.
 400.  113.  198.  199.  200.   97.  110.  107.  104.  121.  360.  140.
  98.  232.  225.  250.  351.  258.  122.  116.   79.   88.   71.   72.
  91.   97.5  70.  120.   96.  108.  155.   68.  114.  156.   76.   83.
  90.  231.  262.  134.  119.  171.  115.  101.  305.   85.  130.  168.
 111.  260.  151.  146.   80.   78.  105.  131.  163.   89.  267.   86.
 183.  141.  173.  135.   81.  100.  145.  112.  181.  144. ]

horsepower :
 ['130.0' '165.0' '150.0' '140.0' '198.0' '220.0' '215.0' '225.0' '190.0'
 '170.0' '160.0' '95.00' '97.00' '85.00' '88.00' '46.00' '87.00' '90.00'
 '113.0' '200.0' '210.0' '193.0' '?' '100.0' '105.0' '175.0' '153.0'
 '180.0' '110.0' '72.00' '86.00' '70.00' '76.00' '65.00' '69.00' '60.00'
 '80.00' '54.00' '208.0' '155.0' '112.0' '92.00' '145.0' '137.0' '158.0'
 '167.0' '94.00' '107.0' '230.0' '49.00' '75.00' '91.00' '122.0' '67.00'
 '83.00' '78.00' '52.00' '61.00' '93.00' '148.0' '129.0' '96.00' '71.00'
 '98.00' '115.0' '53.00' '81.00' '79.00' '120.0' '152.0' '102.0' '108.0'
 '68.00' '58.00' '149.0' '89.00' '63.00' '48.00' '66.00' '139.0' '103.0'
 '125.0' '133.0' '138.0' '135.0' '142.0' '77.00' '62.00' '132.0' '84.00'
 '64.00' '74.00' '116.0' '82.00']

weight :
 [3504. 3693. 3436. 3433. 3449. 4341. 4354. 4312. 4425. 3850. 3563. 3609.
 3761. 3086. 2372. 2833. 2774. 2587. 2130. 1835. 2672. 2430. 2375. 2234.
 2648. 4615. 4376. 4382. 4732. 2264. 2228. 2046. 2634. 3439. 3329. 3302.
 3288. 4209. 4464. 4154. 4096. 4955. 4746. 5140. 2962. 2408. 3282. 3139.
 2220. 2123. 2074. 2065. 1773. 1613. 1834. 1955. 2278. 2126. 2254. 2226.
 4274. 4385. 4135. 4129. 3672. 4633. 4502. 4456. 4422. 2330. 3892. 4098.
 4294. 4077. 2933. 2511. 2979. 2189. 2395. 2288. 2506. 2164. 2100. 4100.
 3988. 4042. 3777. 4952. 4363. 4237. 4735. 4951. 3821. 3121. 3278. 2945.
 3021. 2904. 1950. 4997. 4906. 4654. 4499. 2789. 2279. 2401. 2379. 2124.
 2310. 2472. 2265. 4082. 4278. 1867. 2158. 2582. 2868. 3399. 2660. 2807.
 3664. 3102. 2875. 2901. 3336. 2451. 1836. 2542. 3781. 3632. 3613. 4141.
 4699. 4457. 4638. 4257. 2219. 1963. 2300. 1649. 2003. 2125. 2108. 2246.
 2489. 2391. 2000. 3264. 3459. 3432. 3158. 4668. 4440. 4498. 4657. 3907.
 3897. 3730. 3785. 3039. 3221. 3169. 2171. 2639. 2914. 2592. 2702. 2223.
 2545. 2984. 1937. 3211. 2694. 2957. 2671. 1795. 2464. 2572. 2255. 2202.
 4215. 4190. 3962. 3233. 3353. 3012. 3085. 2035. 3651. 3574. 3645. 3193.
 1825. 1990. 2155. 2565. 3150. 3940. 3270. 2930. 3820. 4380. 4055. 3870.
 3755. 2045. 1945. 3880. 4060. 4140. 4295. 3520. 3425. 3630. 3525. 4220.
 4165. 4325. 4335. 1940. 2740. 2755. 2051. 2075. 1985. 2190. 2815. 2600.
 2720. 1800. 2070. 3365. 3735. 3570. 3535. 3155. 2965. 3430. 3210. 3380.
 3070. 3620. 3410. 3445. 3205. 4080. 2560. 2230. 2515. 2745. 2855. 2405.
 2830. 3140. 2795. 2135. 3245. 2990. 2890. 3265. 3360. 3840. 3725. 3955.
```

```
3830. 4360. 4054. 3605. 1925. 1975. 1915. 2670. 3530. 3900. 3190. 3420.
2200. 2150. 2020. 2595. 2700. 2556. 2144. 1968. 2120. 2019. 2678. 2870.
3003. 3381. 2188. 2711. 2434. 2110. 2800. 2085. 2335. 2950. 3250. 1850.
2145. 1845. 2910. 2420. 2500. 2905. 2290. 2490. 2635. 2620. 2725. 2385.
1755. 1875. 1760. 2050. 2215. 2380. 2320. 2210. 2350. 2615. 3230. 3160.
2900. 3415. 3060. 3465. 2605. 2640. 2575. 2525. 2735. 2865. 3035. 1980.
2025. 1970. 2160. 2205. 2245. 1965. 1995. 3015. 2585. 2835. 2665. 2370.
2790. 2295. 2625.]

acceleration :
[12.  11.5 11.  10.5 10.   9.   8.5  8.   9.5 15.  15.5 16.  14.5 20.5
17.5 12.5 14.  13.5 18.5 19.  13.  19.5 18.  17.  23.5 16.5 21.  16.9
14.9 17.7 15.3 13.9 12.8 15.4 17.6 22.2 22.1 14.2 17.4 16.2 17.8 12.2
16.4 13.6 15.7 13.2 21.9 16.7 12.1 14.8 18.6 16.8 13.7 11.1 11.4 18.2
15.8 15.9 14.1 21.5 14.4 19.4 19.2 17.2 18.7 15.1 13.4 11.2 14.7 16.6
17.3 15.2 14.3 20.1 24.8 11.3 12.9 18.8 18.1 17.9 21.7 23.7 19.9 21.8
13.8 12.6 16.1 20.7 18.3 20.4 19.6 17.1 15.6 24.6 11.6]

model year :
[70 71 72 73 74 75 76 77 78 79 80 81 82]

origin :
[1 3 2]

car name :
['chevrolet chevelle malibu' 'buick skylark 320' 'plymouth satellite'
 'amc rebel sst' 'ford torino' 'ford galaxie 500' 'chevrolet impala'
 'plymouth fury iii' 'pontiac catalina' 'amc ambassador dpl'
 'dodge challenger se' "plymouth 'cuda 340" 'chevrolet monte carlo'
 'buick estate wagon (sw)' 'toyota corona mark ii' 'plymouth duster'
 'amc hornet' 'ford maverick' 'datsun pl510'
 'volkswagen 1131 deluxe sedan' 'peugeot 504' 'audi 100 ls' 'saab 99e'
 'bmw 2002' 'amc gremlin' 'ford f250' 'chevy c20' 'dodge d200' 'hi 1200d'
 'chevrolet vega 2300' 'toyota corona' 'ford pinto'
 'plymouth satellite custom' 'ford torino 500' 'amc matador'
 'pontiac catalina brougham' 'dodge monaco (sw)'
 'ford country squire (sw)' 'pontiac safari (sw)'
 'amc hornet sportabout (sw)' 'chevrolet vega (sw)' 'pontiac firebird'
 'ford mustang' 'mercury capri 2000' 'opel 1900' 'peugeot 304' 'fiat 124b'
 'toyota corolla 1200' 'datsun 1200' 'volkswagen model 111'
 'plymouth cricket' 'toyota corona hardtop' 'dodge colt hardtop'
 'volkswagen type 3' 'chevrolet vega' 'ford pinto runabout'
 'amc ambassador sst' 'mercury marquis' 'buick lesabre custom'
 'oldsmobile delta 88 royale' 'chrysler newport royal' 'mazda rx2 coupe'
 'amc matador (sw)' 'chevrolet chevelle concours (sw)'
 'ford gran torino (sw)' 'plymouth satellite custom (sw)'
 'volvo 145e (sw)' 'volkswagen 411 (sw)' 'peugeot 504 (sw)'
 'renault 12 (sw)' 'ford pinto (sw)' 'datsun 510 (sw)'
 'toyouta corona mark ii (sw)' 'dodge colt (sw)'
 'toyota corolla 1600 (sw)' 'buick century 350' 'chevrolet malibu'
 'ford gran torino' 'dodge coronet custom' 'mercury marquis brougham'
 'chevrolet caprice classic' 'ford ltd' 'plymouth fury gran sedan'
 'chrysler new yorker brougham' 'buick electra 225 custom'
 'amc ambassador brougham' 'plymouth valiant' 'chevrolet nova custom'
 'volkswagen super beetle' 'ford country' 'plymouth custom suburb'
 'oldsmobile vista cruiser' 'toyota carina' 'datsun 610' 'maxda rx3'
 'mercury capri v6' 'fiat 124 sport coupe' 'chevrolet monte carlo s'
 'pontiac grand prix' 'fiat 128' 'opel manta' 'audi 100ls' 'volvo 144ea'
 'dodge dart custom' 'saab 99le' 'toyota mark ii' 'oldsmobile omega'
 'chevrolet nova' 'datsun b210' 'chevrolet chevelle malibu classic'
```

```
 'plymouth satellite sebring' 'buick century luxus (sw)'
 'dodge coronet custom (sw)' 'audi fox' 'volkswagen dasher' 'datsun 710'
 'dodge colt' 'fiat 124 tc' 'honda civic' 'subaru' 'fiat x1.9'
 'plymouth valiant custom' 'mercury monarch' 'chevrolet bel air'
 'plymouth grand fury' 'buick century' 'chevroelt chevelle malibu'
 'plymouth fury' 'buick skyhawk' 'chevrolet monza 2+2' 'ford mustang ii'
 'toyota corolla' 'pontiac astro' 'volkswagen rabbit' 'amc pacer'
 'volvo 244dl' 'honda civic cvcc' 'fiat 131' 'capri ii' 'renault 12tl'
 'dodge coronet brougham' 'chevrolet chevette' 'chevrolet woody'
 'vw rabbit' 'dodge aspen se' 'ford granada ghia' 'pontiac ventura sj'
 'amc pacer d/l' 'datsun b-210' 'volvo 245' 'plymouth volare premier v8'
 'mercedes-benz 280s' 'cadillac seville' 'chevy c10' 'ford f108'
 'dodge d100' 'honda accord cvcc' 'buick opel isuzu deluxe'
 'renault 5 gtl' 'plymouth arrow gs' 'datsun f-10 hatchback'
 'oldsmobile cutlass supreme' 'dodge monaco brougham'
 'mercury cougar brougham' 'chevrolet concours' 'buick skylark'
 'plymouth volare custom' 'ford granada' 'pontiac grand prix lj'
 'chevrolet monte carlo landau' 'chrysler cordoba' 'ford thunderbird'
 'volkswagen rabbit custom' 'pontiac sunbird coupe'
 'toyota corolla liftback' 'ford mustang ii 2+2' 'dodge colt m/m'
 'subaru dl' 'datsun 810' 'bmw 320i' 'mazda rx-4'
 'volkswagen rabbit custom diesel' 'ford fiesta' 'mazda glc deluxe'
 'datsun b210 gx' 'oldsmobile cutlass salon brougham' 'dodge diplomat'
 'mercury monarch ghia' 'pontiac phoenix lj' 'ford fairmont (auto)'
 'ford fairmont (man)' 'plymouth volare' 'amc concord'
 'buick century special' 'mercury zephyr' 'dodge aspen' 'amc concord d/l'
 'buick regal sport coupe (turbo)' 'ford futura' 'dodge magnum xe'
 'datsun 510' 'dodge omni' 'toyota celica gt liftback' 'plymouth sapporo'
 'oldsmobile starfire sx' 'datsun 200-sx' 'audi 5000' 'volvo 264gl'
 'saab 99gle' 'peugeot 604sl' 'volkswagen scirocco' 'honda accord lx'
 'pontiac lemans v6' 'mercury zephyr 6' 'ford fairmont 4'
 'amc concord dl 6' 'dodge aspen 6' 'ford ltd landau'
 'mercury grand marquis' 'dodge st. regis' 'chevrolet malibu classic (sw)'
 'chrysler lebaron town @ country (sw)' 'vw rabbit custom'
 'maxda glc deluxe' 'dodge colt hatchback custom' 'amc spirit dl'
 'mercedes benz 300d' 'cadillac eldorado' 'plymouth horizon'
 'plymouth horizon tc3' 'datsun 210' 'fiat strada custom'
 'buick skylark limited' 'chevrolet citation' 'oldsmobile omega brougham'
 'pontiac phoenix' 'toyota corolla tercel' 'datsun 310' 'ford fairmont'
 'audi 4000' 'toyota corona liftback' 'mazda 626' 'datsun 510 hatchback'
 'mazda glc' 'vw rabbit c (diesel)' 'vw dasher (diesel)'
 'audi 5000s (diesel)' 'mercedes-benz 240d' 'honda civic 1500 gl'
 'renault lecar deluxe' 'vokswagen rabbit' 'datsun 280-zx' 'mazda rx-7 gs'
 'triumph tr7 coupe' 'ford mustang cobra' 'honda accord'
 'plymouth reliant' 'dodge aries wagon (sw)' 'toyota starlet'
 'plymouth champ' 'honda civic 1300' 'datsun 210 mpg' 'toyota tercel'
 'mazda glc 4' 'plymouth horizon 4' 'ford escort 4w' 'ford escort 2h'
 'volkswagen jetta' 'renault 18i' 'honda prelude' 'datsun 200sx'
 'peugeot 505s turbo diesel' 'volvo diesel' 'toyota cressida'
 'datsun 810 maxima' 'oldsmobile cutlass ls' 'ford granada gl'
 'chrysler lebaron salon' 'chevrolet cavalier' 'chevrolet cavalier wagon'
 'chevrolet cavalier 2-door' 'pontiac j2000 se hatchback' 'dodge aries se'
 'ford fairmont futura' 'amc concord dl' 'volkswagen rabbit l'
 'mazda glc custom l' 'mazda glc custom' 'plymouth horizon miser'
 'mercury lynx l' 'nissan stanza xe' 'honda civic (auto)' 'datsun 310 gx'
 'buick century limited' 'oldsmobile cutlass ciera (diesel)'
 'chrysler lebaron medallion' 'ford granada l' 'toyota celica gt'
 'dodge charger 2.2' 'chevrolet camaro' 'ford mustang gl' 'vw pickup'
 'dodge rampage' 'ford ranger' 'chevy s-10']
```

In [284...
```python
for i in auto.columns:
    print(i,':',sum(auto[i]=='?'))
```

```
mpg : 0
cylinders : 0
displacement : 0
horsepower : 6
weight : 0
acceleration : 0
model year : 0
origin : 0
car name : 0
```

In [285...
```python
d = auto.describe(include='all')
d
```

Out[285...

	mpg	cylinders	displacement	horsepower	weight	acceleration	
count	398.000000	398.000000	398.000000	398	398.000000	398.000000	3
unique	NaN	NaN	NaN	94	NaN	NaN	
top	NaN	NaN	NaN	150.0	NaN	NaN	
freq	NaN	NaN	NaN	22	NaN	NaN	
mean	23.514573	5.454774	193.425879	NaN	2970.424623	15.568090	
std	7.815984	1.701004	104.269838	NaN	846.841774	2.757689	
min	9.000000	3.000000	68.000000	NaN	1613.000000	8.000000	
25%	17.500000	4.000000	104.250000	NaN	2223.750000	13.825000	
50%	23.000000	4.000000	148.500000	NaN	2803.500000	15.500000	
75%	29.000000	8.000000	262.000000	NaN	3608.000000	17.175000	
max	46.600000	8.000000	455.000000	NaN	5140.000000	24.800000	

In [286...
```python
#replace
#we need to replace the '?' with np.nan
auto.horsepower.replace('?',np.nan,inplace=True)
```

In [287...
```python
for i in auto.columns:
    print(i,':',sum(auto[i]=='?'))
```

```
mpg : 0
cylinders : 0
displacement : 0
horsepower : 0
weight : 0
acceleration : 0
model year : 0
origin : 0
car name : 0
```

In [288...
```python
auto.dtypes
```

```
Out[288…   mpg              float64
           cylinders          int64
           displacement     float64
           horsepower        object
           weight           float64
           acceleration     float64
           model year         int64
           origin             int64
           car name          object
           dtype: object
```

```
In [289…   #now we have to change the datatype of 'horsepower' to 'float' to find the avg v
           auto.horsepower = auto.horsepower.astype(float)
           auto.dtypes
```

```
Out[289…   mpg              float64
           cylinders          int64
           displacement     float64
           horsepower       float64
           weight           float64
           acceleration     float64
           model year         int64
           origin             int64
           car name          object
           dtype: object
```

```
In [292…   auto.horsepower.mean()
```

```
Out[292…   104.46938775510205
```

```
In [293…   #replace
           auto.horsepower.replace(np.nan,d['horsepower'].mean(),inplace=True)
```

```
In [294…   auto.isnull().sum()
```

```
Out[294…   mpg              0
           cylinders        0
           displacement     0
           horsepower       0
           weight           0
           acceleration     0
           model year       0
           origin           0
           car name         0
           dtype: int64
```

```
In [ ]:
```

Wine Quality

```
In [118…   import numpy as np
           import pandas as pd
```

```
In [120…   wine = pd.read_csv(r"C:\Users\VICTUS\Downloads\wine+quality\winequality-red.csv"
           wine
```

Out[120…

	fixed acidity	volatile acidity	citric acid	residual sugar	chlorides	free sulfur dioxide	total sulfur dioxide	density	pH	sulph
0	7.4	0.700	0.00	1.9	0.076	11.0	34.0	0.99780	3.51	
1	7.8	0.880	0.00	2.6	0.098	25.0	67.0	0.99680	3.20	
2	7.8	0.760	0.04	2.3	0.092	15.0	54.0	0.99700	3.26	
3	11.2	0.280	0.56	1.9	0.075	17.0	60.0	0.99800	3.16	
4	7.4	0.700	0.00	1.9	0.076	11.0	34.0	0.99780	3.51	
...	...	...	...	...	...	...	...	...	...	
1594	6.2	0.600	0.08	2.0	0.090	32.0	44.0	0.99490	3.45	
1595	5.9	0.550	0.10	2.2	0.062	39.0	51.0	0.99512	3.52	
1596	6.3	0.510	0.13	2.3	0.076	29.0	40.0	0.99574	3.42	
1597	5.9	0.645	0.12	2.0	0.075	32.0	44.0	0.99547	3.57	
1598	6.0	0.310	0.47	3.6	0.067	18.0	42.0	0.99549	3.39	

1599 rows × 12 columns

Titanic Dataset

In [276…
```python
import numpy as np
import pandas as pd
```

In [121…
```python
titanic = pd.read_csv(r"C:\Users\VICTUS\Downloads\titanic dataset.csv")
titanic
```

Out[121...

	PassengerId	Survived	Pclass	Name	Sex	Age	SibSp	Parch	Ticket
0	1	0	3	Braund, Mr. Owen Harris	male	22.0	1	0	A/5 21171
1	2	1	1	Cumings, Mrs. John Bradley (Florence Briggs Th...	female	38.0	1	0	PC 17599	7
2	3	1	3	Heikkinen, Miss. Laina	female	26.0	0	0	STON/O2. 3101282
3	4	1	1	Futrelle, Mrs. Jacques Heath (Lily May Peel)	female	35.0	1	0	113803	5
4	5	0	3	Allen, Mr. William Henry	male	35.0	0	0	373450
...	...	...	...	...	...	...	...	...	...
886	887	0	2	Montvila, Rev. Juozas	male	27.0	0	0	211536	1
887	888	1	1	Graham, Miss. Margaret Edith	female	19.0	0	0	112053	3
888	889	0	3	Johnston, Miss. Catherine Helen "Carrie"	female	NaN	1	2	W./C. 6607	2
889	890	1	1	Behr, Mr. Karl Howell	male	26.0	0	0	111369	3
890	891	0	3	Dooley, Mr. Patrick	male	32.0	0	0	370376

891 rows × 12 columns

In [122...

```
titanic.isnull().sum()
```

```
Out[122…   PassengerId      0
           Survived         0
           Pclass           0
           Name             0
           Sex              0
           Age            177
           SibSp            0
           Parch            0
           Ticket           0
           Fare             0
           Cabin          687
           Embarked         2
           dtype: int64
```

In [123… `titanic.drop('Cabin',axis=1,inplace=True)`

In [124… `titanic.dtypes`

```
Out[124…   PassengerId      int64
           Survived         int64
           Pclass           int64
           Name            object
           Sex             object
           Age            float64
           SibSp            int64
           Parch            int64
           Ticket          object
           Fare           float64
           Embarked        object
           dtype: object
```

In [125…
```
d = titanic.describe(include='all')
d
```

Out[125...

	PassengerId	Survived	Pclass	Name	Sex	Age	SibSp	
count	891.000000	891.000000	891.000000	891	891	714.000000	891.000000	89
unique	NaN	NaN	NaN	891	2	NaN	NaN	
top	NaN	NaN	NaN	Braund, Mr. Owen Harris	male	NaN	NaN	
freq	NaN	NaN	NaN	1	577	NaN	NaN	
mean	446.000000	0.383838	2.308642	NaN	NaN	29.699118	0.523008	
std	257.353842	0.486592	0.836071	NaN	NaN	14.526497	1.102743	
min	1.000000	0.000000	1.000000	NaN	NaN	0.420000	0.000000	
25%	223.500000	0.000000	2.000000	NaN	NaN	20.125000	0.000000	
50%	446.000000	0.000000	3.000000	NaN	NaN	28.000000	0.000000	
75%	668.500000	1.000000	3.000000	NaN	NaN	38.000000	1.000000	
max	891.000000	1.000000	3.000000	NaN	NaN	80.000000	8.000000	

In [126...
```python
titanic.Age.fillna(d['Age'][4],inplace=True)
```

In [127...
```python
titanic.Embarked.replace(np.nan,'S',inplace=True)
```

In [128...
```python
titanic.isnull().sum()
```

Out[128...
```
PassengerId    0
Survived       0
Pclass         0
Name           0
Sex            0
Age            0
SibSp          0
Parch          0
Ticket         0
Fare           0
Embarked       0
dtype: int64
```

In [130...
```python
for i in titanic.columns:
    print(i,':','\n',titanic[i].unique(),'\n')
```

```
PassengerId :
[  1   2   3   4   5   6   7   8   9  10  11  12  13  14  15  16  17  18
  19  20  21  22  23  24  25  26  27  28  29  30  31  32  33  34  35  36
  37  38  39  40  41  42  43  44  45  46  47  48  49  50  51  52  53  54
  55  56  57  58  59  60  61  62  63  64  65  66  67  68  69  70  71  72
  73  74  75  76  77  78  79  80  81  82  83  84  85  86  87  88  89  90
  91  92  93  94  95  96  97  98  99 100 101 102 103 104 105 106 107 108
 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126
 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144
 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162
 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180
 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198
 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216
 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234
 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252
 253 254 255 256 257 258 259 260 261 262 263 264 265 266 267 268 269 270
 271 272 273 274 275 276 277 278 279 280 281 282 283 284 285 286 287 288
 289 290 291 292 293 294 295 296 297 298 299 300 301 302 303 304 305 306
 307 308 309 310 311 312 313 314 315 316 317 318 319 320 321 322 323 324
 325 326 327 328 329 330 331 332 333 334 335 336 337 338 339 340 341 342
 343 344 345 346 347 348 349 350 351 352 353 354 355 356 357 358 359 360
 361 362 363 364 365 366 367 368 369 370 371 372 373 374 375 376 377 378
 379 380 381 382 383 384 385 386 387 388 389 390 391 392 393 394 395 396
 397 398 399 400 401 402 403 404 405 406 407 408 409 410 411 412 413 414
 415 416 417 418 419 420 421 422 423 424 425 426 427 428 429 430 431 432
 433 434 435 436 437 438 439 440 441 442 443 444 445 446 447 448 449 450
 451 452 453 454 455 456 457 458 459 460 461 462 463 464 465 466 467 468
 469 470 471 472 473 474 475 476 477 478 479 480 481 482 483 484 485 486
 487 488 489 490 491 492 493 494 495 496 497 498 499 500 501 502 503 504
 505 506 507 508 509 510 511 512 513 514 515 516 517 518 519 520 521 522
 523 524 525 526 527 528 529 530 531 532 533 534 535 536 537 538 539 540
 541 542 543 544 545 546 547 548 549 550 551 552 553 554 555 556 557 558
 559 560 561 562 563 564 565 566 567 568 569 570 571 572 573 574 575 576
 577 578 579 580 581 582 583 584 585 586 587 588 589 590 591 592 593 594
 595 596 597 598 599 600 601 602 603 604 605 606 607 608 609 610 611 612
 613 614 615 616 617 618 619 620 621 622 623 624 625 626 627 628 629 630
 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648
 649 650 651 652 653 654 655 656 657 658 659 660 661 662 663 664 665 666
 667 668 669 670 671 672 673 674 675 676 677 678 679 680 681 682 683 684
 685 686 687 688 689 690 691 692 693 694 695 696 697 698 699 700 701 702
 703 704 705 706 707 708 709 710 711 712 713 714 715 716 717 718 719 720
 721 722 723 724 725 726 727 728 729 730 731 732 733 734 735 736 737 738
 739 740 741 742 743 744 745 746 747 748 749 750 751 752 753 754 755 756
 757 758 759 760 761 762 763 764 765 766 767 768 769 770 771 772 773 774
 775 776 777 778 779 780 781 782 783 784 785 786 787 788 789 790 791 792
 793 794 795 796 797 798 799 800 801 802 803 804 805 806 807 808 809 810
 811 812 813 814 815 816 817 818 819 820 821 822 823 824 825 826 827 828
 829 830 831 832 833 834 835 836 837 838 839 840 841 842 843 844 845 846
 847 848 849 850 851 852 853 854 855 856 857 858 859 860 861 862 863 864
 865 866 867 868 869 870 871 872 873 874 875 876 877 878 879 880 881 882
 883 884 885 886 887 888 889 890 891]

Survived :
 [0 1]

Pclass :
 [3 1 2]

Name :
 ['Braund, Mr. Owen Harris'
```

```
'Cumings, Mrs. John Bradley (Florence Briggs Thayer)'
'Heikkinen, Miss. Laina' 'Futrelle, Mrs. Jacques Heath (Lily May Peel)'
'Allen, Mr. William Henry' 'Moran, Mr. James' 'McCarthy, Mr. Timothy J'
'Palsson, Master. Gosta Leonard'
'Johnson, Mrs. Oscar W (Elisabeth Vilhelmina Berg)'
'Nasser, Mrs. Nicholas (Adele Achem)' 'Sandstrom, Miss. Marguerite Rut'
'Bonnell, Miss. Elizabeth' 'Saundercock, Mr. William Henry'
'Andersson, Mr. Anders Johan' 'Vestrom, Miss. Hulda Amanda Adolfina'
'Hewlett, Mrs. (Mary D Kingcome) ' 'Rice, Master. Eugene'
'Williams, Mr. Charles Eugene'
'Vander Planke, Mrs. Julius (Emelia Maria Vandemoortele)'
'Masselmani, Mrs. Fatima' 'Fynney, Mr. Joseph J' 'Beesley, Mr. Lawrence'
'McGowan, Miss. Anna "Annie"' 'Sloper, Mr. William Thompson'
'Palsson, Miss. Torborg Danira'
'Asplund, Mrs. Carl Oscar (Selma Augusta Emilia Johansson)'
'Emir, Mr. Farred Chehab' 'Fortune, Mr. Charles Alexander'
'O\'Dwyer, Miss. Ellen "Nellie"' 'Todoroff, Mr. Lalio'
'Uruchurtu, Don. Manuel E'
'Spencer, Mrs. William Augustus (Marie Eugenie)'
'Glynn, Miss. Mary Agatha' 'Wheadon, Mr. Edward H'
'Meyer, Mr. Edgar Joseph' 'Holverson, Mr. Alexander Oskar'
'Mamee, Mr. Hanna' 'Cann, Mr. Ernest Charles'
'Vander Planke, Miss. Augusta Maria' 'Nicola-Yarred, Miss. Jamila'
'Ahlin, Mrs. Johan (Johanna Persdotter Larsson)'
'Turpin, Mrs. William John Robert (Dorothy Ann Wonnacott)'
'Kraeff, Mr. Theodor' 'Laroche, Miss. Simonne Marie Anne Andree'
'Devaney, Miss. Margaret Delia' 'Rogers, Mr. William John'
'Lennon, Mr. Denis' "O'Driscoll, Miss. Bridget" 'Samaan, Mr. Youssef'
'Arnold-Franchi, Mrs. Josef (Josefine Franchi)'
'Panula, Master. Juha Niilo' 'Nosworthy, Mr. Richard Cater'
'Harper, Mrs. Henry Sleeper (Myna Haxtun)'
'Faunthorpe, Mrs. Lizzie (Elizabeth Anne Wilkinson)'
'Ostby, Mr. Engelhart Cornelius' 'Woolner, Mr. Hugh' 'Rugg, Miss. Emily'
'Novel, Mr. Mansouer' 'West, Miss. Constance Mirium'
'Goodwin, Master. William Frederick' 'Sirayanian, Mr. Orsen'
'Icard, Miss. Amelie' 'Harris, Mr. Henry Birkhardt'
'Skoog, Master. Harald' 'Stewart, Mr. Albert A'
'Moubarek, Master. Gerios' 'Nye, Mrs. (Elizabeth Ramell)'
'Crease, Mr. Ernest James' 'Andersson, Miss. Erna Alexandra'
'Kink, Mr. Vincenz' 'Jenkin, Mr. Stephen Curnow'
'Goodwin, Miss. Lillian Amy' 'Hood, Mr. Ambrose Jr'
'Chronopoulos, Mr. Apostolos' 'Bing, Mr. Lee' 'Moen, Mr. Sigurd Hansen'
'Staneff, Mr. Ivan' 'Moutal, Mr. Rahamin Haim'
'Caldwell, Master. Alden Gates' 'Dowdell, Miss. Elizabeth'
'Waelens, Mr. Achille' 'Sheerlinck, Mr. Jan Baptist'
'McDermott, Miss. Brigdet Delia' 'Carrau, Mr. Francisco M'
'Ilett, Miss. Bertha'
'Backstrom, Mrs. Karl Alfred (Maria Mathilda Gustafsson)'
'Ford, Mr. William Neal' 'Slocovski, Mr. Selman Francis'
'Fortune, Miss. Mabel Helen' 'Celotti, Mr. Francesco'
'Christmann, Mr. Emil' 'Andreasson, Mr. Paul Edvin'
'Chaffee, Mr. Herbert Fuller' 'Dean, Mr. Bertram Frank'
'Coxon, Mr. Daniel' 'Shorney, Mr. Charles Joseph'
'Goldschmidt, Mr. George B' 'Greenfield, Mr. William Bertram'
'Doling, Mrs. John T (Ada Julia Bone)' 'Kantor, Mr. Sinai'
'Petranec, Miss. Matilda' 'Petroff, Mr. Pastcho ("Pentcho")'
'White, Mr. Richard Frasar' 'Johansson, Mr. Gustaf Joel'
'Gustafsson, Mr. Anders Vilhelm' 'Mionoff, Mr. Stoytcho'
'Salkjelsvik, Miss. Anna Kristine' 'Moss, Mr. Albert Johan'
'Rekic, Mr. Tido' 'Moran, Miss. Bertha' 'Porter, Mr. Walter Chamberlain'
```

'Zabour, Miss. Hileni' 'Barton, Mr. David John' 'Jussila, Miss. Katriina'
'Attalah, Miss. Malake' 'Pekoniemi, Mr. Edvard' 'Connors, Mr. Patrick'
'Turpin, Mr. William John Robert' 'Baxter, Mr. Quigg Edmond'
'Andersson, Miss. Ellis Anna Maria' 'Hickman, Mr. Stanley George'
'Moore, Mr. Leonard Charles' 'Nasser, Mr. Nicholas' 'Webber, Miss. Susan'
'White, Mr. Percival Wayland' 'Nicola-Yarred, Master. Elias'
'McMahon, Mr. Martin' 'Madsen, Mr. Fridtjof Arne' 'Peter, Miss. Anna'
'Ekstrom, Mr. Johan' 'Drazenoic, Mr. Jozef'
'Coelho, Mr. Domingos Fernandeo'
'Robins, Mrs. Alexander A (Grace Charity Laury)'
'Weisz, Mrs. Leopold (Mathilde Francoise Pede)'
'Sobey, Mr. Samuel James Hayden' 'Richard, Mr. Emile'
'Newsom, Miss. Helen Monypeny' 'Futrelle, Mr. Jacques Heath'
'Osen, Mr. Olaf Elon' 'Giglio, Mr. Victor'
'Boulos, Mrs. Joseph (Sultana)' 'Nysten, Miss. Anna Sofia'
'Hakkarainen, Mrs. Pekka Pietari (Elin Matilda Dolck)'
'Burke, Mr. Jeremiah' 'Andrew, Mr. Edgardo Samuel'
'Nicholls, Mr. Joseph Charles'
'Andersson, Mr. August Edvard ("Wennerstrom")'
'Ford, Miss. Robina Maggie "Ruby"'
'Navratil, Mr. Michel ("Louis M Hoffman")'
'Byles, Rev. Thomas Roussel Davids' 'Bateman, Rev. Robert James'
'Pears, Mrs. Thomas (Edith Wearne)' 'Meo, Mr. Alfonzo'
'van Billiard, Mr. Austin Blyler' 'Olsen, Mr. Ole Martin'
'Williams, Mr. Charles Duane' 'Gilnagh, Miss. Katherine "Katie"'
'Corn, Mr. Harry' 'Smiljanic, Mr. Mile' 'Sage, Master. Thomas Henry'
'Cribb, Mr. John Hatfield'
'Watt, Mrs. James (Elizabeth "Bessie" Inglis Milne)'
'Bengtsson, Mr. John Viktor' 'Calic, Mr. Jovo'
'Panula, Master. Eino Viljami'
'Goldsmith, Master. Frank John William "Frankie"'
'Chibnall, Mrs. (Edith Martha Bowerman)'
'Skoog, Mrs. William (Anna Bernhardina Karlsson)' 'Baumann, Mr. John D'
'Ling, Mr. Lee' 'Van der hoef, Mr. Wyckoff' 'Rice, Master. Arthur'
'Johnson, Miss. Eleanor Ileen' 'Sivola, Mr. Antti Wilhelm'
'Smith, Mr. James Clinch' 'Klasen, Mr. Klas Albin'
'Lefebre, Master. Henry Forbes' 'Isham, Miss. Ann Elizabeth'
'Hale, Mr. Reginald' 'Leonard, Mr. Lionel' 'Sage, Miss. Constance Gladys'
'Pernot, Mr. Rene' 'Asplund, Master. Clarence Gustaf Hugo'
'Becker, Master. Richard F' 'Kink-Heilmann, Miss. Luise Gretchen'
'Rood, Mr. Hugh Roscoe'
'O\'Brien, Mrs. Thomas (Johanna "Hannah" Godfrey)'
'Romaine, Mr. Charles Hallace ("Mr C Rolmane")' 'Bourke, Mr. John'
'Turcin, Mr. Stjepan' 'Pinsky, Mrs. (Rosa)' 'Carbines, Mr. William'
'Andersen-Jensen, Miss. Carla Christine Nielsine'
'Navratil, Master. Michel M' 'Brown, Mrs. James Joseph (Margaret Tobin)'
'Lurette, Miss. Elise' 'Mernagh, Mr. Robert'
'Olsen, Mr. Karl Siegwart Andreas' 'Madigan, Miss. Margaret "Maggie"'
'Yrois, Miss. Henriette ("Mrs Harbeck")' 'Vande Walle, Mr. Nestor Cyriel'
'Sage, Mr. Frederick' 'Johanson, Mr. Jakob Alfred' 'Youseff, Mr. Gerious'
'Cohen, Mr. Gurshon "Gus"' 'Strom, Miss. Telma Matilda'
'Backstrom, Mr. Karl Alfred' 'Albimona, Mr. Nassef Cassem'
'Carr, Miss. Helen "Ellen"' 'Blank, Mr. Henry' 'Ali, Mr. Ahmed'
'Cameron, Miss. Clear Annie' 'Perkin, Mr. John Henry'
'Givard, Mr. Hans Kristensen' 'Kiernan, Mr. Philip'
'Newell, Miss. Madeleine' 'Honkanen, Miss. Eliina'
'Jacobsohn, Mr. Sidney Samuel' 'Bazzani, Miss. Albina'
'Harris, Mr. Walter' 'Sunderland, Mr. Victor Francis'
'Bracken, Mr. James H' 'Green, Mr. George Henry' 'Nenkoff, Mr. Christo'
'Hoyt, Mr. Frederick Maxfield' 'Berglund, Mr. Karl Ivar Sven'

```
'Mellors, Mr. William John' 'Lovell, Mr. John Hall ("Henry")'
'Fahlstrom, Mr. Arne Jonas' 'Lefebre, Miss. Mathilde'
'Harris, Mrs. Henry Birkhardt (Irene Wallach)' 'Larsson, Mr. Bengt Edvin'
'Sjostedt, Mr. Ernst Adolf' 'Asplund, Miss. Lillian Gertrud'
'Leyson, Mr. Robert William Norman' 'Harknett, Miss. Alice Phoebe'
'Hold, Mr. Stephen' 'Collyer, Miss. Marjorie "Lottie"'
'Pengelly, Mr. Frederick William' 'Hunt, Mr. George Henry'
'Zabour, Miss. Thamine' 'Murphy, Miss. Katherine "Kate"'
'Coleridge, Mr. Reginald Charles' 'Maenpaa, Mr. Matti Alexanteri'
'Attalah, Mr. Sleiman' 'Minahan, Dr. William Edward'
'Lindahl, Miss. Agda Thorilda Viktoria' 'Hamalainen, Mrs. William (Anna)'
'Beckwith, Mr. Richard Leonard' 'Carter, Rev. Ernest Courtenay'
'Reed, Mr. James George' 'Strom, Mrs. Wilhelm (Elna Matilda Persson)'
'Stead, Mr. William Thomas' 'Lobb, Mr. William Arthur'
'Rosblom, Mrs. Viktor (Helena Wilhelmina)'
'Touma, Mrs. Darwis (Hanne Youssef Razi)'
'Thorne, Mrs. Gertrude Maybelle' 'Cherry, Miss. Gladys'
'Ward, Miss. Anna' 'Parrish, Mrs. (Lutie Davis)' 'Smith, Mr. Thomas'
'Asplund, Master. Edvin Rojj Felix' 'Taussig, Mr. Emil'
'Harrison, Mr. William' 'Henry, Miss. Delia' 'Reeves, Mr. David'
'Panula, Mr. Ernesti Arvid' 'Persson, Mr. Ernst Ulrik'
'Graham, Mrs. William Thompson (Edith Junkins)' 'Bissette, Miss. Amelia'
'Cairns, Mr. Alexander' 'Tornquist, Mr. William Henry'
'Mellinger, Mrs. (Elizabeth Anne Maidment)' 'Natsch, Mr. Charles H'
'Healy, Miss. Hanora "Nora"' 'Andrews, Miss. Kornelia Theodosia'
'Lindblom, Miss. Augusta Charlotta' 'Parkes, Mr. Francis "Frank"'
'Rice, Master. Eric' 'Abbott, Mrs. Stanton (Rosa Hunt)'
'Duane, Mr. Frank' 'Olsson, Mr. Nils Johan Goransson'
'de Pelsmaeker, Mr. Alfons' 'Dorking, Mr. Edward Arthur'
'Smith, Mr. Richard William' 'Stankovic, Mr. Ivan'
'de Mulder, Mr. Theodore' 'Naidenoff, Mr. Penko' 'Hosono, Mr. Masabumi'
'Connolly, Miss. Kate' 'Barber, Miss. Ellen "Nellie"'
'Bishop, Mrs. Dickinson H (Helen Walton)' 'Levy, Mr. Rene Jacques'
'Haas, Miss. Aloisia' 'Mineff, Mr. Ivan' 'Lewy, Mr. Ervin G'
'Hanna, Mr. Mansour' 'Allison, Miss. Helen Loraine'
'Saalfeld, Mr. Adolphe' 'Baxter, Mrs. James (Helene DeLaudeniere Chaput)'
'Kelly, Miss. Anna Katherine "Annie Kate"' 'McCoy, Mr. Bernard'
'Johnson, Mr. William Cahoone Jr' 'Keane, Miss. Nora A'
'Williams, Mr. Howard Hugh "Harry"' 'Allison, Master. Hudson Trevor'
'Fleming, Miss. Margaret'
'Penasco y Castellana, Mrs. Victor de Satode (Maria Josefa Perez de Soto y Valle
jo)'
'Abelson, Mr. Samuel' 'Francatelli, Miss. Laura Mabel'
'Hays, Miss. Margaret Bechstein' 'Ryerson, Miss. Emily Borie'
'Lahtinen, Mrs. William (Anna Sylfven)' 'Hendekovic, Mr. Ignjac'
'Hart, Mr. Benjamin' 'Nilsson, Miss. Helmina Josefina'
'Kantor, Mrs. Sinai (Miriam Sternin)' 'Moraweck, Dr. Ernest'
'Wick, Miss. Mary Natalie'
'Spedden, Mrs. Frederic Oakley (Margaretta Corning Stone)'
'Dennis, Mr. Samuel' 'Danoff, Mr. Yoto' 'Slayter, Miss. Hilda Mary'
'Caldwell, Mrs. Albert Francis (Sylvia Mae Harbaugh)'
'Sage, Mr. George John Jr' 'Young, Miss. Marie Grice'
'Nysveen, Mr. Johan Hansen' 'Ball, Mrs. (Ada E Hall)'
'Goldsmith, Mrs. Frank John (Emily Alice Brown)'
'Hippach, Miss. Jean Gertrude' 'McCoy, Miss. Agnes' 'Partner, Mr. Austen'
'Graham, Mr. George Edward' 'Vander Planke, Mr. Leo Edmondus'
'Frauenthal, Mrs. Henry William (Clara Heinsheimer)' 'Denkoff, Mr. Mitto'
'Pears, Mr. Thomas Clinton' 'Burns, Miss. Elizabeth Margaret'
'Dahl, Mr. Karl Edwart' 'Blackwell, Mr. Stephen Weart'
'Navratil, Master. Edmond Roger' 'Fortune, Miss. Alice Elizabeth'
```

'Collander, Mr. Erik Gustaf' 'Sedgwick, Mr. Charles Frederick Waddington'
'Fox, Mr. Stanley Hubert' 'Brown, Miss. Amelia "Mildred"'
'Smith, Miss. Marion Elsie' 'Davison, Mrs. Thomas Henry (Mary E Finck)'
'Coutts, Master. William Loch "William"' 'Dimic, Mr. Jovan'
'Odahl, Mr. Nils Martin' 'Williams-Lambert, Mr. Fletcher Fellows'
'Elias, Mr. Tannous' 'Arnold-Franchi, Mr. Josef' 'Yousif, Mr. Wazli'
'Vanden Steen, Mr. Leo Peter' 'Bowerman, Miss. Elsie Edith'
'Funk, Miss. Annie Clemmer' 'McGovern, Miss. Mary'
'Mockler, Miss. Helen Mary "Ellie"' 'Skoog, Mr. Wilhelm'
'del Carlo, Mr. Sebastiano' 'Barbara, Mrs. (Catherine David)'
'Asim, Mr. Adola' "O'Brien, Mr. Thomas" 'Adahl, Mr. Mauritz Nils Martin'
'Warren, Mrs. Frank Manley (Anna Sophia Atkinson)'
'Moussa, Mrs. (Mantoura Boulos)' 'Jermyn, Miss. Annie'
'Aubart, Mme. Leontine Pauline' 'Harder, Mr. George Achilles'
'Wiklund, Mr. Jakob Alfred' 'Beavan, Mr. William Thomas'
'Ringhini, Mr. Sante' 'Palsson, Miss. Stina Viola'
'Meyer, Mrs. Edgar Joseph (Leila Saks)' 'Landergren, Miss. Aurora Adelia'
'Widener, Mr. Harry Elkins' 'Betros, Mr. Tannous'
'Gustafsson, Mr. Karl Gideon' 'Bidois, Miss. Rosalie'
'Nakid, Miss. Maria ("Mary")' 'Tikkanen, Mr. Juho'
'Holverson, Mrs. Alexander Oskar (Mary Aline Towner)'
'Plotcharsky, Mr. Vasil' 'Davies, Mr. Charles Henry'
'Goodwin, Master. Sidney Leonard' 'Buss, Miss. Kate'
'Sadlier, Mr. Matthew' 'Lehmann, Miss. Bertha'
'Carter, Mr. William Ernest' 'Jansson, Mr. Carl Olof'
'Gustafsson, Mr. Johan Birger' 'Newell, Miss. Marjorie'
'Sandstrom, Mrs. Hjalmar (Agnes Charlotta Bengtsson)'
'Johansson, Mr. Erik' 'Olsson, Miss. Elina' 'McKane, Mr. Peter David'
'Pain, Dr. Alfred' 'Trout, Mrs. William H (Jessie L)'
'Niskanen, Mr. Juha' 'Adams, Mr. John' 'Jussila, Miss. Mari Aina'
'Hakkarainen, Mr. Pekka Pietari' 'Oreskovic, Miss. Marija'
'Gale, Mr. Shadrach' 'Widegren, Mr. Carl/Charles Peter'
'Richards, Master. William Rowe' 'Birkeland, Mr. Hans Martin Monsen'
'Lefebre, Miss. Ida' 'Sdycoff, Mr. Todor' 'Hart, Mr. Henry'
'Minahan, Miss. Daisy E' 'Cunningham, Mr. Alfred Fleming'
'Sundman, Mr. Johan Julian' 'Meek, Mrs. Thomas (Annie Louise Rowley)'
'Drew, Mrs. James Vivian (Lulu Thorne Christian)'
'Silven, Miss. Lyyli Karoliina' 'Matthews, Mr. William John'
'Van Impe, Miss. Catharina' 'Gheorgheff, Mr. Stanio'
'Charters, Mr. David' 'Zimmerman, Mr. Leo'
'Danbom, Mrs. Ernst Gilbert (Anna Sigrid Maria Brogren)'
'Rosblom, Mr. Viktor Richard' 'Wiseman, Mr. Phillippe'
'Clarke, Mrs. Charles V (Ada Maria Winfield)'
'Phillips, Miss. Kate Florence ("Mrs Kate Louise Phillips Marshall")'
'Flynn, Mr. James' 'Pickard, Mr. Berk (Berk Trembisky)'
'Bjornstrom-Steffansson, Mr. Mauritz Hakan'
'Thorneycroft, Mrs. Percival (Florence Kate White)'
'Louch, Mrs. Charles Alexander (Alice Adelaide Slow)'
'Kallio, Mr. Nikolai Erland' 'Silvey, Mr. William Baird'
'Carter, Miss. Lucile Polk' 'Ford, Miss. Doolina Margaret "Daisy"'
'Richards, Mrs. Sidney (Emily Hocking)' 'Fortune, Mr. Mark'
'Kvillner, Mr. Johan Henrik Johannesson'
'Hart, Mrs. Benjamin (Esther Ada Bloomfield)' 'Hampe, Mr. Leon'
'Petterson, Mr. Johan Emil' 'Reynaldo, Ms. Encarnacion'
'Johannesen-Bratthammer, Mr. Bernt' 'Dodge, Master. Washington'
'Mellinger, Miss. Madeleine Violet' 'Seward, Mr. Frederic Kimber'
'Baclini, Miss. Marie Catherine' 'Peuchen, Major. Arthur Godfrey'
'West, Mr. Edwy Arthur' 'Hagland, Mr. Ingvald Olai Olsen'
'Foreman, Mr. Benjamin Laventall' 'Goldenberg, Mr. Samuel L'
'Peduzzi, Mr. Joseph' 'Jalsevac, Mr. Ivan' 'Millet, Mr. Francis Davis'

```
'Kenyon, Mrs. Frederick R (Marion)' 'Toomey, Miss. Ellen'
"O'Connor, Mr. Maurice" 'Anderson, Mr. Harry' 'Morley, Mr. William'
'Gee, Mr. Arthur H' 'Milling, Mr. Jacob Christian' 'Maisner, Mr. Simon'
'Goncalves, Mr. Manuel Estanslas' 'Campbell, Mr. William'
'Smart, Mr. John Montgomery' 'Scanlan, Mr. James'
'Baclini, Miss. Helene Barbara' 'Keefe, Mr. Arthur' 'Cacic, Mr. Luka'
'West, Mrs. Edwy Arthur (Ada Mary Worth)'
'Jerwan, Mrs. Amin S (Marie Marthe Thuillard)'
'Strandberg, Miss. Ida Sofia' 'Clifford, Mr. George Quincy'
'Renouf, Mr. Peter Henry' 'Braund, Mr. Lewis Richard'
'Karlsson, Mr. Nils August' 'Hirvonen, Miss. Hildur E'
'Goodwin, Master. Harold Victor' 'Frost, Mr. Anthony Wood "Archie"'
'Rouse, Mr. Richard Henry' 'Turkula, Mrs. (Hedwig)'
'Bishop, Mr. Dickinson H' 'Lefebre, Miss. Jeannie'
'Hoyt, Mrs. Frederick Maxfield (Jane Anne Forby)'
'Kent, Mr. Edward Austin' 'Somerton, Mr. Francis William'
'Coutts, Master. Eden Leslie "Neville"'
'Hagland, Mr. Konrad Mathias Reiersen' 'Windelov, Mr. Einar'
'Molson, Mr. Harry Markland' 'Artagaveytia, Mr. Ramon'
'Stanley, Mr. Edward Roland' 'Yousseff, Mr. Gerious'
'Eustis, Miss. Elizabeth Mussey' 'Shellard, Mr. Frederick William'
'Allison, Mrs. Hudson J C (Bessie Waldo Daniels)' 'Svensson, Mr. Olof'
'Calic, Mr. Petar' 'Canavan, Miss. Mary' "O'Sullivan, Miss. Bridget Mary"
'Laitinen, Miss. Kristina Sofia' 'Maioni, Miss. Roberta'
'Penasco y Castellana, Mr. Victor de Satode'
'Quick, Mrs. Frederick Charles (Jane Richards)'
'Bradley, Mr. George ("George Arthur Brayton")'
'Olsen, Mr. Henry Margido' 'Lang, Mr. Fang' 'Daly, Mr. Eugene Patrick'
'Webber, Mr. James' 'McGough, Mr. James Robert'
'Rothschild, Mrs. Martin (Elizabeth L. Barrett)' 'Coleff, Mr. Satio'
'Walker, Mr. William Anderson' 'Lemore, Mrs. (Amelia Milley)'
'Ryan, Mr. Patrick'
'Angle, Mrs. William A (Florence "Mary" Agnes Hughes)'
'Pavlovic, Mr. Stefo' 'Perreault, Miss. Anne' 'Vovk, Mr. Janko'
'Lahoud, Mr. Sarkis' 'Hippach, Mrs. Louis Albert (Ida Sophia Fischer)'
'Kassem, Mr. Fared' 'Farrell, Mr. James' 'Ridsdale, Miss. Lucy'
'Farthing, Mr. John' 'Salonen, Mr. Johan Werner'
'Hocking, Mr. Richard George' 'Quick, Miss. Phyllis May'
'Toufik, Mr. Nakli' 'Elias, Mr. Joseph Jr'
'Peter, Mrs. Catherine (Catherine Rizk)' 'Cacic, Miss. Marija'
'Hart, Miss. Eva Miriam' 'Butt, Major. Archibald Willingham'
'LeRoy, Miss. Bertha' 'Risien, Mr. Samuel Beard'
'Frolicher, Miss. Hedwig Margaritha' 'Crosby, Miss. Harriet R'
'Andersson, Miss. Ingeborg Constanzia'
'Andersson, Miss. Sigrid Elisabeth' 'Beane, Mr. Edward'
'Douglas, Mr. Walter Donald' 'Nicholson, Mr. Arthur Ernest'
'Beane, Mrs. Edward (Ethel Clarke)' 'Padro y Manent, Mr. Julian'
'Goldsmith, Mr. Frank John' 'Davies, Master. John Morgan Jr'
'Thayer, Mr. John Borland Jr' 'Sharp, Mr. Percival James R'
"O'Brien, Mr. Timothy" 'Leeni, Mr. Fahim ("Philip Zenni")'
'Ohman, Miss. Velin' 'Wright, Mr. George'
'Duff Gordon, Lady. (Lucille Christiana Sutherland) ("Mrs Morgan")'
'Robbins, Mr. Victor' 'Taussig, Mrs. Emil (Tillie Mandelbaum)'
'de Messemaeker, Mrs. Guillaume Joseph (Emma)' 'Morrow, Mr. Thomas Rowan'
'Sivic, Mr. Husein' 'Norman, Mr. Robert Douglas' 'Simmons, Mr. John'
'Meanwell, Miss. (Marion Ogden)' 'Davies, Mr. Alfred J'
'Stoytcheff, Mr. Ilia' 'Palsson, Mrs. Nils (Alma Cornelia Berglund)'
'Doharr, Mr. Tannous' 'Jonsson, Mr. Carl' 'Harris, Mr. George'
'Appleton, Mrs. Edward Dale (Charlotte Lamson)'
'Flynn, Mr. John Irwin ("Irving")' 'Kelly, Miss. Mary'
```

'Rush, Mr. Alfred George John' 'Patchett, Mr. George'
'Garside, Miss. Ethel' 'Silvey, Mrs. William Baird (Alice Munger)'
'Caram, Mrs. Joseph (Maria Elias)' 'Jussila, Mr. Eiriik'
'Christy, Miss. Julie Rachel'
'Thayer, Mrs. John Borland (Marian Longstreth Morris)'
'Downton, Mr. William James' 'Ross, Mr. John Hugo' 'Paulner, Mr. Uscher'
'Taussig, Miss. Ruth' 'Jarvis, Mr. John Denzil'
'Frolicher-Stehli, Mr. Maxmillian' 'Gilinski, Mr. Eliezer'
'Murdlin, Mr. Joseph' 'Rintamaki, Mr. Matti'
'Stephenson, Mrs. Walter Bertram (Martha Eustis)'
'Elsbury, Mr. William James' 'Bourke, Miss. Mary'
'Chapman, Mr. John Henry' 'Van Impe, Mr. Jean Baptiste'
'Leitch, Miss. Jessie Wills' 'Johnson, Mr. Alfred' 'Boulos, Mr. Hanna'
'Duff Gordon, Sir. Cosmo Edmund ("Mr Morgan")'
'Jacobsohn, Mrs. Sidney Samuel (Amy Frances Christy)'
'Slabenoff, Mr. Petco' 'Harrington, Mr. Charles H'
'Torber, Mr. Ernst William' 'Homer, Mr. Harry ("Mr E Haven")'
'Lindell, Mr. Edvard Bengtsson' 'Karaic, Mr. Milan'
'Daniel, Mr. Robert Williams'
'Laroche, Mrs. Joseph (Juliette Marie Louise Lafargue)'
'Shutes, Miss. Elizabeth W'
'Andersson, Mrs. Anders Johan (Alfrida Konstantia Brogren)'
'Jardin, Mr. Jose Neto' 'Murphy, Miss. Margaret Jane' 'Horgan, Mr. John'
'Brocklebank, Mr. William Alfred' 'Herman, Miss. Alice'
'Danbom, Mr. Ernst Gilbert'
'Lobb, Mrs. William Arthur (Cordelia K Stanlick)'
'Becker, Miss. Marion Louise' 'Gavey, Mr. Lawrence' 'Yasbeck, Mr. Antoni'
'Kimball, Mr. Edwin Nelson Jr' 'Nakid, Mr. Sahid'
'Hansen, Mr. Henry Damsgaard' 'Bowen, Mr. David John "Dai"'
'Sutton, Mr. Frederick' 'Kirkland, Rev. Charles Leonard'
'Longley, Miss. Gretchen Fiske' 'Bostandyeff, Mr. Guentcho'
"O'Connell, Mr. Patrick D" 'Barkworth, Mr. Algernon Henry Wilson'
'Lundahl, Mr. Johan Svensson' 'Stahelin-Maeglin, Dr. Max'
'Parr, Mr. William Henry Marsh' 'Skoog, Miss. Mabel' 'Davis, Miss. Mary'
'Leinonen, Mr. Antti Gustaf' 'Collyer, Mr. Harvey'
'Panula, Mrs. Juha (Maria Emilia Ojala)' 'Thorneycroft, Mr. Percival'
'Jensen, Mr. Hans Peder' 'Sagesser, Mlle. Emma'
'Skoog, Miss. Margit Elizabeth' 'Foo, Mr. Choong'
'Baclini, Miss. Eugenie' 'Harper, Mr. Henry Sleeper' 'Cor, Mr. Liudevit'
'Simonius-Blumer, Col. Oberst Alfons' 'Willey, Mr. Edward'
'Stanley, Miss. Amy Zillah Elsie' 'Mitkoff, Mr. Mito'
'Doling, Miss. Elsie' 'Kalvik, Mr. Johannes Halvorsen'
'O\'Leary, Miss. Hanora "Norah"' 'Hegarty, Miss. Hanora "Nora"'
'Hickman, Mr. Leonard Mark' 'Radeff, Mr. Alexander'
'Bourke, Mrs. John (Catherine)' 'Eitemiller, Mr. George Floyd'
'Newell, Mr. Arthur Webster' 'Frauenthal, Dr. Henry William'
'Badt, Mr. Mohamed' 'Colley, Mr. Edward Pomeroy' 'Coleff, Mr. Peju'
'Lindqvist, Mr. Eino William' 'Hickman, Mr. Lewis'
'Butler, Mr. Reginald Fenton' 'Rommetvedt, Mr. Knud Paust'
'Cook, Mr. Jacob' 'Taylor, Mrs. Elmer Zebley (Juliet Cummins Wright)'
'Brown, Mrs. Thomas William Solomon (Elizabeth Catherine Ford)'
'Davidson, Mr. Thornton' 'Mitchell, Mr. Henry Michael'
'Wilhelms, Mr. Charles' 'Watson, Mr. Ennis Hastings'
'Edvardsson, Mr. Gustaf Hjalmar' 'Sawyer, Mr. Frederick Charles'
'Turja, Miss. Anna Sofia' 'Goodwin, Mrs. Frederick (Augusta Tyler)'
'Cardeza, Mr. Thomas Drake Martinez' 'Peters, Miss. Katie'
'Hassab, Mr. Hammad' 'Olsvigen, Mr. Thor Anderson'
'Goodwin, Mr. Charles Edward' 'Brown, Mr. Thomas William Solomon'
'Laroche, Mr. Joseph Philippe Lemercier' 'Panula, Mr. Jaako Arnold'
'Dakic, Mr. Branko' 'Fischer, Mr. Eberhard Thelander'

'Madill, Miss. Georgette Alexandra' 'Dick, Mr. Albert Adrian'
'Karun, Miss. Manca' 'Lam, Mr. Ali' 'Saad, Mr. Khalil' 'Weir, Col. John'
'Chapman, Mr. Charles Henry' 'Kelly, Mr. James'
'Mullens, Miss. Katherine "Katie"' 'Thayer, Mr. John Borland'
'Humblen, Mr. Adolf Mathias Nicolai Olsen'
'Astor, Mrs. John Jacob (Madeleine Talmadge Force)'
'Silverthorne, Mr. Spencer Victor' 'Barbara, Miss. Saiide'
'Gallagher, Mr. Martin' 'Hansen, Mr. Henrik Juul'
'Morley, Mr. Henry Samuel ("Mr Henry Marshall")'
'Kelly, Mrs. Florence "Fannie"' 'Calderhead, Mr. Edward Pennington'
'Cleaver, Miss. Alice'
'Moubarek, Master. Halim Gonios ("William George")'
'Mayne, Mlle. Berthe Antonine ("Mrs de Villiers")' 'Klaber, Mr. Herman'
'Taylor, Mr. Elmer Zebley' 'Larsson, Mr. August Viktor'
'Greenberg, Mr. Samuel' 'Soholt, Mr. Peter Andreas Lauritz Andersen'
'Endres, Miss. Caroline Louise' 'Troutt, Miss. Edwina Celia "Winnie"'
'McEvoy, Mr. Michael' 'Johnson, Mr. Malkolm Joackim'
'Harper, Miss. Annie Jessie "Nina"' 'Jensen, Mr. Svend Lauritz'
'Gillespie, Mr. William Henry' 'Hodges, Mr. Henry Price'
'Chambers, Mr. Norman Campbell' 'Oreskovic, Mr. Luka'
'Renouf, Mrs. Peter Henry (Lillian Jefferys)' 'Mannion, Miss. Margareth'
'Bryhl, Mr. Kurt Arnold Gottfrid' 'Ilmakangas, Miss. Pieta Sofia'
'Allen, Miss. Elisabeth Walton' 'Hassan, Mr. Houssein G N'
'Knight, Mr. Robert J' 'Berriman, Mr. William John'
'Troupiansky, Mr. Moses Aaron' 'Williams, Mr. Leslie'
'Ford, Mrs. Edward (Margaret Ann Watson)' 'Lesurer, Mr. Gustave J'
'Ivanoff, Mr. Kanio' 'Nankoff, Mr. Minko' 'Hawksford, Mr. Walter James'
'Cavendish, Mr. Tyrell William' 'Ryerson, Miss. Susan Parker "Suzette"'
'McNamee, Mr. Neal' 'Stranden, Mr. Juho' 'Crosby, Capt. Edward Gifford'
'Abbott, Mr. Rossmore Edward' 'Sinkkonen, Miss. Anna'
'Marvin, Mr. Daniel Warner' 'Connaghton, Mr. Michael' 'Wells, Miss. Joan'
'Moor, Master. Meier' 'Vande Velde, Mr. Johannes Joseph'
'Jonkoff, Mr. Lalio' 'Herman, Mrs. Samuel (Jane Laver)'
'Hamalainen, Master. Viljo' 'Carlsson, Mr. August Sigfrid'
'Bailey, Mr. Percy Andrew' 'Theobald, Mr. Thomas Leonard'
'Rothes, the Countess. of (Lucy Noel Martha Dyer-Edwards)'
'Garfirth, Mr. John' 'Nirva, Mr. Iisakki Antino Aijo'
'Barah, Mr. Hanna Assi' 'Carter, Mrs. William Ernest (Lucile Polk)'
'Eklund, Mr. Hans Linus' 'Hogeboom, Mrs. John C (Anna Andrews)'
'Brewe, Dr. Arthur Jackson' 'Mangan, Miss. Mary' 'Moran, Mr. Daniel J'
'Gronnestad, Mr. Daniel Danielsen' 'Lievens, Mr. Rene Aime'
'Jensen, Mr. Niels Peder' 'Mack, Mrs. (Mary)' 'Elias, Mr. Dibo'
'Hocking, Mrs. Elizabeth (Eliza Needs)'
'Myhrman, Mr. Pehr Fabian Oliver Malkolm' 'Tobin, Mr. Roger'
'Emanuel, Miss. Virginia Ethel' 'Kilgannon, Mr. Thomas J'
'Robert, Mrs. Edward Scott (Elisabeth Walton McMillan)'
'Ayoub, Miss. Banoura' 'Dick, Mrs. Albert Adrian (Vera Gillespie)'
'Long, Mr. Milton Clyde' 'Johnston, Mr. Andrew G' 'Ali, Mr. William'
'Harmer, Mr. Abraham (David Lishin)' 'Sjoblom, Miss. Anna Sofia'
'Rice, Master. George Hugh' 'Dean, Master. Bertram Vere'
'Guggenheim, Mr. Benjamin' 'Keane, Mr. Andrew "Andy"'
'Gaskell, Mr. Alfred' 'Sage, Miss. Stella Anna'
'Hoyt, Mr. William Fisher' 'Dantcheff, Mr. Ristiu' 'Otter, Mr. Richard'
'Leader, Dr. Alice (Farnham)' 'Osman, Mrs. Mara'
'Ibrahim Shawah, Mr. Yousseff'
'Van Impe, Mrs. Jean Baptiste (Rosalie Paula Govaert)'
'Ponesell, Mr. Martin' 'Collyer, Mrs. Harvey (Charlotte Annie Tate)'
'Carter, Master. William Thornton II' 'Thomas, Master. Assad Alexander'
'Hedman, Mr. Oskar Arvid' 'Johansson, Mr. Karl Johan'
'Andrews, Mr. Thomas Jr' 'Pettersson, Miss. Ellen Natalia'

```
'Meyer, Mr. August' 'Chambers, Mrs. Norman Campbell (Bertha Griggs)'
'Alexander, Mr. William' 'Lester, Mr. James' 'Slemen, Mr. Richard James'
'Andersson, Miss. Ebba Iris Alfrida' 'Tomlin, Mr. Ernest Portage'
'Fry, Mr. Richard' 'Heininen, Miss. Wendla Maria' 'Mallet, Mr. Albert'
'Holm, Mr. John Fredrik Alexander' 'Skoog, Master. Karl Thorsten'
'Hays, Mrs. Charles Melville (Clara Jennings Gregg)' 'Lulic, Mr. Nikola'
'Reuchlin, Jonkheer. John George' 'Moor, Mrs. (Beila)'
'Panula, Master. Urho Abraham' 'Flynn, Mr. John' 'Lam, Mr. Len'
'Mallet, Master. Andre' 'McCormack, Mr. Thomas Joseph'
'Stone, Mrs. George Nelson (Martha Evelyn)'
'Yasbeck, Mrs. Antoni (Selini Alexander)'
'Richards, Master. George Sibley' 'Saad, Mr. Amin'
'Augustsson, Mr. Albert' 'Allum, Mr. Owen George'
'Compton, Miss. Sara Rebecca' 'Pasic, Mr. Jakob' 'Sirota, Mr. Maurice'
'Chip, Mr. Chang' 'Marechal, Mr. Pierre' 'Alhomaki, Mr. Ilmari Rudolf'
'Mudd, Mr. Thomas Charles' 'Serepeca, Miss. Augusta'
'Lemberopolous, Mr. Peter L' 'Culumovic, Mr. Jeso' 'Abbing, Mr. Anthony'
'Sage, Mr. Douglas Bullen' 'Markoff, Mr. Marin' 'Harper, Rev. John'
'Goldenberg, Mrs. Samuel L (Edwiga Grabowska)'
'Andersson, Master. Sigvard Harald Elias' 'Svensson, Mr. Johan'
'Boulos, Miss. Nourelain' 'Lines, Miss. Mary Conover'
'Carter, Mrs. Ernest Courtenay (Lilian Hughes)'
'Aks, Mrs. Sam (Leah Rosen)' 'Wick, Mrs. George Dennick (Mary Hitchcock)'
'Daly, Mr. Peter Denis ' 'Baclini, Mrs. Solomon (Latifa Qurban)'
'Razi, Mr. Raihed' 'Hansen, Mr. Claus Peter'
'Giles, Mr. Frederick Edward'
'Swift, Mrs. Frederick Joel (Margaret Welles Barron)'
'Sage, Miss. Dorothy Edith "Dolly"' 'Gill, Mr. John William'
'Bystrom, Mrs. (Karolina)' 'Duran y More, Miss. Asuncion'
'Roebling, Mr. Washington Augustus II' 'van Melkebeke, Mr. Philemon'
'Johnson, Master. Harold Theodor' 'Balkic, Mr. Cerin'
'Beckwith, Mrs. Richard Leonard (Sallie Monypeny)'
'Carlsson, Mr. Frans Olof' 'Vander Cruyssen, Mr. Victor'
'Abelson, Mrs. Samuel (Hannah Wizosky)'
'Najib, Miss. Adele Kiamie "Jane"' 'Gustafsson, Mr. Alfred Ossian'
'Petroff, Mr. Nedelio' 'Laleff, Mr. Kristo'
'Potter, Mrs. Thomas Jr (Lily Alexenia Wilson)'
'Shelley, Mrs. William (Imanita Parrish Hall)' 'Markun, Mr. Johann'
'Dahlberg, Miss. Gerda Ulrika' 'Banfield, Mr. Frederick James'
'Sutehall, Mr. Henry Jr' 'Rice, Mrs. William (Margaret Norton)'
'Montvila, Rev. Juozas' 'Graham, Miss. Margaret Edith'
'Johnston, Miss. Catherine Helen "Carrie"' 'Behr, Mr. Karl Howell'
'Dooley, Mr. Patrick']

Sex :
 ['male' 'female']

Age :
 [22.          38.          26.          35.          29.69911765 54.
   2.          27.          14.           4.          58.          20.
  39.          55.          31.          34.          15.          28.
   8.          19.          40.          66.          42.          21.
  18.           3.           7.          49.          29.          65.
  28.5          5.          11.          45.          17.          32.
  16.          25.           0.83        30.          33.          23.
  24.          46.          59.          71.          37.          47.
  14.5         70.5         32.5         12.           9.          36.5
  51.          55.5         40.5         44.           1.          61.
  56.          50.          36.          45.5         20.5         62.
  41.          52.          63.          23.5          0.92        43.
```

```
60.         10.         64.         13.         48.             0.75
53.         57.         80.         70.         24.5            6.
 0.67       30.5         0.42       34.5        74.         ]
```

SibSp :
 [1 0 3 4 2 5 8]

Parch :
 [0 1 2 5 3 4 6]

Ticket :
 ['A/5 21171' 'PC 17599' 'STON/O2. 3101282' '113803' '373450' '330877'
 '17463' '349909' '347742' '237736' 'PP 9549' '113783' 'A/5. 2151'
 '347082' '350406' '248706' '382652' '244373' '345763' '2649' '239865'
 '248698' '330923' '113788' '347077' '2631' '19950' '330959' '349216'
 'PC 17601' 'PC 17569' '335677' 'C.A. 24579' 'PC 17604' '113789' '2677'
 'A./5. 2152' '345764' '2651' '7546' '11668' '349253' 'SC/Paris 2123'
 '330958' 'S.C./A.4. 23567' '370371' '14311' '2662' '349237' '3101295'
 'A/4. 39886' 'PC 17572' '2926' '113509' '19947' 'C.A. 31026' '2697'
 'C.A. 34651' 'CA 2144' '2669' '113572' '36973' '347088' 'PC 17605' '2661'
 'C.A. 29395' 'S.P. 3464' '3101281' '315151' 'C.A. 33111' 'S.O.C. 14879'
 '2680' '1601' '348123' '349208' '374746' '248738' '364516' '345767'
 '345779' '330932' '113059' 'SO/C 14885' '3101278' 'W./C. 6608'
 'SOTON/OQ 392086' '343275' '343276' '347466' 'W.E.P. 5734' 'C.A. 2315'
 '364500' '374910' 'PC 17754' 'PC 17759' '231919' '244367' '349245'
 '349215' '35281' '7540' '3101276' '349207' '343120' '312991' '349249'
 '371110' '110465' '2665' '324669' '4136' '2627' 'STON/O 2. 3101294'
 '370369' 'PC 17558' 'A4. 54510' '27267' '370372' 'C 17369' '2668'
 '347061' '349241' 'SOTON/O.Q. 3101307' 'A/5. 3337' '228414' 'C.A. 29178'
 'SC/PARIS 2133' '11752' '7534' 'PC 17593' '2678' '347081'
 'STON/O2. 3101279' '365222' '231945' 'C.A. 33112' '350043' '230080'
 '244310' 'S.O.P. 1166' '113776' 'A.5. 11206' 'A/5. 851' 'Fa 265302'
 'PC 17597' '35851' 'SOTON/OQ 392090' '315037' 'CA. 2343' '371362'
 'C.A. 33595' '347068' '315093' '363291' '113505' 'PC 17318' '111240'
 'STON/O 2. 3101280' '17764' '350404' '4133' 'PC 17595' '250653' 'LINE'
 'SC/PARIS 2131' '230136' '315153' '113767' '370365' '111428' '364849'
 '349247' '234604' '28424' '350046' 'PC 17610' '368703' '4579' '370370'
 '248747' '345770' '3101264' '2628' 'A/5 3540' '347054' '2699' '367231'
 '112277' 'SOTON/O.Q. 3101311' 'F.C.C. 13528' 'A/5 21174' '250646'
 '367229' '35273' 'STON/O2. 3101283' '243847' '11813' 'W/C 14208'
 'SOTON/OQ 392089' '220367' '21440' '349234' '19943' 'PP 4348' 'SW/PP 751'
 'A/5 21173' '236171' '347067' '237442' 'C.A. 29566' 'W./C. 6609' '26707'
 'C.A. 31921' '28665' 'SCO/W 1585' '367230' 'W./C. 14263'
 'STON/O 2. 3101275' '2694' '19928' '347071' '250649' '11751' '244252'
 '362316' '113514' 'A/5. 3336' '370129' '2650' 'PC 17585' '110152'
 'PC 17755' '230433' '384461' '110413' '112059' '382649' 'C.A. 17248'
 '347083' 'PC 17582' 'PC 17760' '113798' '250644' 'PC 17596' '370375'
 '13502' '347073' '239853' 'C.A. 2673' '336439' '347464' '345778'
 'A/5. 10482' '113056' '349239' '345774' '349206' '237798' '370373'
 '19877' '11967' 'SC/Paris 2163' '349236' '349233' 'PC 17612' '2693'
 '113781' '19988' '9234' '367226' '226593' 'A/5 2466' '17421' 'PC 17758'
 'P/PP 3381' 'PC 17485' '11767' 'PC 17608' '250651' '349243'
 'F.C.C. 13529' '347470' '29011' '36928' '16966' 'A/5 21172' '349219'
 '234818' '345364' '28551' '111361' '113043' 'PC 17611' '349225' '7598'
 '113784' '248740' '244361' '229236' '248733' '31418' '386525'
 'C.A. 37671' '315088' '7267' '113510' '2695' '2647' '345783' '237671'
 '330931' '330980' 'SC/PARIS 2167' '2691' 'SOTON/O.Q. 3101310' 'C 7076'
 '110813' '2626' '14313' 'PC 17477' '11765' '3101267' '323951' 'C 7077'
 '113503' '2648' '347069' 'PC 17757' '2653' 'STON/O 2. 3101293' '349227'
 '27849' '367655' 'SC 1748' '113760' '350034' '3101277' '350052' '350407'
```

```
'28403' '244278' '240929' 'STON/O 2. 3101289' '341826' '4137' '315096'
'28664' '347064' '29106' '312992' '349222' '394140' 'STON/O 2. 3101269'
'343095' '28220' '250652' '28228' '345773' '349254' 'A/5. 13032' '315082'
'347080' 'A/4. 34244' '2003' '250655' '364851' 'SOTON/O.Q. 392078'
'110564' '376564' 'SC/AH 3085' 'STON/O 2. 3101274' '13507' 'C.A. 18723'
'345769' '347076' '230434' '65306' '33638' '113794' '2666' '113786'
'65303' '113051' '17453' 'A/5 2817' '349240' '13509' '17464'
'F.C.C. 13531' '371060' '19952' '364506' '111320' '234360' 'A/S 2816'
'SOTON/O.Q. 3101306' '113792' '36209' '323592' '315089' 'SC/AH Basle 541'
'7553' '31027' '3460' '350060' '3101298' '239854' 'A/5 3594' '4134'
'11771' 'A.5. 18509' '65304' 'SOTON/OQ 3101317' '113787' 'PC 17609'
'A/4 45380' '36947' 'C.A. 6212' '350035' '315086' '364846' '330909'
'4135' '26360' '111427' 'C 4001' '382651' 'SOTON/OQ 3101316' 'PC 17473'
'PC 17603' '349209' '36967' 'C.A. 34260' '226875' '349242' '12749'
'349252' '2624' '2700' '367232' 'W./C. 14258' 'PC 17483' '3101296'
'29104' '2641' '2690' '315084' '113050' 'PC 17761' '364498' '13568'
'WE/P 5735' '2908' '693' 'SC/PARIS 2146' '244358' '330979' '2620'
'347085' '113807' '11755' '345572' '372622' '349251' '218629'
'SOTON/OQ 392082' 'SOTON/O.Q. 392087' 'A/4 48871' '349205' '2686'
'350417' 'S.W./PP 752' '11769' 'PC 17474' '14312' 'A/4. 20589' '358585'
'243880' '2689' 'STON/O 2. 3101286' '237789' '13049' '3411' '237565'
'13567' '14973' 'A./5. 3235' 'STON/O 2. 3101273' 'A/5 3902' '364848'
'SC/AH 29037' '248727' '2664' '349214' '113796' '364511' '111426'
'349910' '349246' '113804' 'SOTON/O.Q. 3101305' '370377' '364512'
'220845' '31028' '2659' '11753' '350029' '54636' '36963' '219533'
'349224' '334912' '27042' '347743' '13214' '112052' '237668'
'STON/O 2. 3101292' '350050' '349231' '13213' 'S.O./P.P. 751' 'CA. 2314'
'349221' '8475' '330919' '365226' '349223' '29751' '2623' '5727' '349210'
'STON/O 2. 3101285' '234686' '312993' 'A/5 3536' '19996' '29750'
'F.C. 12750' 'C.A. 24580' '244270' '239856' '349912' '342826' '4138'
'330935' '6563' '349228' '350036' '24160' '17474' '349256' '2672'
'113800' '248731' '363592' '35852' '348121' 'PC 17475' '36864' '350025'
'223596' 'PC 17476' 'PC 17482' '113028' '7545' '250647' '348124' '34218'
'36568' '347062' '350048' '12233' '250643' '113806' '315094' '36866'
'236853' 'STON/O2. 3101271' '239855' '28425' '233639' '349201' '349218'
'16988' '376566' 'STON/O 2. 3101288' '250648' '113773' '335097' '29103'
'392096' '345780' '349204' '350042' '29108' '363294' 'SOTON/O2 3101272'
'2663' '347074' '112379' '364850' '8471' '345781' '350047' 'S.O./P.P. 3'
'2674' '29105' '347078' '383121' '36865' '2687' '113501' 'W./C. 6607'
'SOTON/O.Q. 3101312' '374887' '3101265' '12460' 'PC 17600' '349203'
'28213' '17465' '349244' '2685' '2625' '347089' '347063' '112050'
'347087' '248723' '3474' '28206' '364499' '112058' 'STON/O2. 3101290'
'S.C./PARIS 2079' 'C 7075' '315098' '19972' '368323' '367228' '2671'
'347468' '2223' 'PC 17756' '315097' '392092' '11774' 'SOTON/O2 3101287'
'2683' '315090' 'C.A. 5547' '349213' '347060' 'PC 17592' '392091'
'113055' '2629' '350026' '28134' '17466' '233866' '236852'
'SC/PARIS 2149' 'PC 17590' '345777' '349248' '695' '345765' '2667'
'349212' '349217' '349257' '7552' 'C.A./SOTON 34068' 'SOTON/OQ 392076'
'211536' '112053' '111369' '370376']

Fare :
[  7.25     71.2833   7.925    53.1       8.05      8.4583  51.8625  21.075
  11.1333   30.0708  16.7      26.55     31.275     7.8542  16.      29.125
  13.       18.        7.225    26.        8.0292   35.5     31.3875 263.
   7.8792    7.8958   27.7208 146.5208    7.75     10.5     82.1708  52.
   7.2292   11.2417    9.475    21.       41.5792   15.5     21.6792  17.8
  39.6875    7.8      76.7292   61.9792   27.75     46.9     80.      83.475
  27.9      15.2458    8.1583    8.6625   73.5      14.4542  56.4958   7.65
  29.       12.475     9.        9.5       7.7875   47.1     15.85     34.375
  61.175    20.575    34.6542   63.3583   23.       77.2875   8.6542   7.775
```

```
 24.15       9.825     14.4583 247.5208    7.1417   22.3583    6.975     7.05
 14.5       15.0458    26.2833   9.2167   79.2       6.75     11.5      36.75
  7.7958    12.525     66.6      7.3125   61.3792    7.7333   69.55     16.1
 15.75      20.525     55.       25.925   33.5      30.6958   25.4667   28.7125
  0.        15.05      39.       22.025   50.        8.4042    6.4958   10.4625
 18.7875    31.       113.275   27.       76.2917   90.        9.35     13.5
  7.55      26.25      12.275    7.125    52.5542   20.2125   86.5     512.3292
 79.65     153.4625  135.6333   19.5     29.7      77.9583   20.25     78.85
 91.0792    12.875     8.85    151.55     30.5      23.25     12.35    110.8833
108.9       24.        56.9292  83.1583  262.375    14.      164.8667  134.5
  6.2375    57.9792    28.5    133.65     15.9       9.225    35.       75.25
 69.3       55.4417   211.5      4.0125  227.525    15.7417    7.7292   12.
120.        12.65      18.75     6.8583   32.5       7.875    14.4      55.9
  8.1125    81.8583    19.2583   19.9667   89.1042   38.5       7.725    13.7917
  9.8375     7.0458     7.5208   12.2875    9.5875   49.5042   78.2667   15.1
  7.6292    22.525      26.2875  59.4       7.4958   34.0208   93.5     221.7792
106.425     49.5       71.      13.8625    7.8292   39.6      17.4      51.4792
 26.3875    30.         40.125   8.7125   15.       33.       42.4      15.55
 65.        32.3208      7.0542   8.4333   25.5875    9.8417    8.1375   10.1708
211.3375    57.         13.4167   7.7417    9.4833    7.7375    8.3625   23.45
 25.9292     8.6833      8.5167   7.8875   37.0042    6.45      6.95      8.3
  6.4375    39.4        14.1083  13.8583   50.4958    5.        9.8458   10.5167]

Embarked :
 ['S' 'C' 'Q']
```

In [131…
```python
titanic.Age = titanic.Age.astype(int)
titanic.dtypes
```

Out[131…
```
PassengerId       int64
Survived          int64
Pclass            int64
Name             object
Sex              object
Age               int32
SibSp             int64
Parch             int64
Ticket           object
Fare            float64
Embarked         object
dtype: object
```

Adult Dataset

In [273…
```python
import numpy as np
import pandas as pd
```

In [274…
```python
#delimiter=" *, *",engine='python'
adult = pd.read_csv(r"C:\Users\VICTUS\Downloads\adult\adult.data",header=None,de
adult
```

Out[274...

	0	1	2	3	4	5	6	7	8	
0	39	State-gov	77516	Bachelors	13	Never-married	Adm-clerical	Not-in-family	White	Ma
1	50	Self-emp-not-inc	83311	Bachelors	13	Married-civ-spouse	Exec-managerial	Husband	White	Ma
2	38	Private	215646	HS-grad	9	Divorced	Handlers-cleaners	Not-in-family	White	Ma
3	53	Private	234721	11th	7	Married-civ-spouse	Handlers-cleaners	Husband	Black	Ma
4	28	Private	338409	Bachelors	13	Married-civ-spouse	Prof-specialty	Wife	Black	Fema
...	...	...	...	...	...	...	...	...	...	
32556	27	Private	257302	Assoc-acdm	12	Married-civ-spouse	Tech-support	Wife	White	Fema
32557	40	Private	154374	HS-grad	9	Married-civ-spouse	Machine-op-inspct	Husband	White	Ma
32558	58	Private	151910	HS-grad	9	Widowed	Adm-clerical	Unmarried	White	Fema
32559	22	Private	201490	HS-grad	9	Never-married	Adm-clerical	Own-child	White	Ma
32560	52	Self-emp-inc	287927	HS-grad	9	Married-civ-spouse	Exec-managerial	Wife	White	Fema

32561 rows × 15 columns

In [275...

```
#skipinitialspace=True
adult = pd.read_csv(r"C:\Users\VICTUS\Downloads\adult\adult.data",header=None,sk
adult
```

Out[275...

	0	1	2	3	4	5	6	7	8
0	39	State-gov	77516	Bachelors	13	Never-married	Adm-clerical	Not-in-family	White	Ma
1	50	Self-emp-not-inc	83311	Bachelors	13	Married-civ-spouse	Exec-managerial	Husband	White	Ma
2	38	Private	215646	HS-grad	9	Divorced	Handlers-cleaners	Not-in-family	White	Ma
3	53	Private	234721	11th	7	Married-civ-spouse	Handlers-cleaners	Husband	Black	Ma
4	28	Private	338409	Bachelors	13	Married-civ-spouse	Prof-specialty	Wife	Black	Fema
...	...	...	...	...	...	...	...	...	...	
32556	27	Private	257302	Assoc-acdm	12	Married-civ-spouse	Tech-support	Wife	White	Fema
32557	40	Private	154374	HS-grad	9	Married-civ-spouse	Machine-op-inspct	Husband	White	Ma
32558	58	Private	151910	HS-grad	9	Widowed	Adm-clerical	Unmarried	White	Fema
32559	22	Private	201490	HS-grad	9	Never-married	Adm-clerical	Own-child	White	Ma
32560	52	Self-emp-inc	287927	HS-grad	9	Married-civ-spouse	Exec-managerial	Wife	White	Fema

32561 rows × 15 columns

In [147...

```
adult.columns = ['age','workclass','fnlwgt','education','education-num',
                'marital-status','occupation','relationship','race','sex',
                'capital-gain','capital-loss','hrs-per-week','native-country',
                'income']
adult.head()
```

Out[147...

	age	workclass	fnlwgt	education	education-num	marital-status	occupation	relationship
0	39	State-gov	77516	Bachelors	13	Never-married	Adm-clerical	Not-in-family
1	50	Self-emp-not-inc	83311	Bachelors	13	Married-civ-spouse	Exec-managerial	Husband
2	38	Private	215646	HS-grad	9	Divorced	Handlers-cleaners	Not-in-family
3	53	Private	234721	11th	7	Married-civ-spouse	Handlers-cleaners	Husband
4	28	Private	338409	Bachelors	13	Married-civ-spouse	Prof-specialty	Wife

In [148...

```
adult.isnull().sum()
```

Out[148...

```
age               0
workclass         0
fnlwgt            0
education         0
education-num     0
marital-status    0
occupation        0
relationship      0
race              0
sex               0
capital-gain      0
capital-loss      0
hrs-per-week      0
native-country    0
income            0
dtype: int64
```

In [149...

```
adult.dtypes
```

```
Out[149…   age                 int64
           workclass          object
           fnlwgt              int64
           education          object
           education-num       int64
           marital-status     object
           occupation         object
           relationship       object
           race               object
           sex                object
           capital-gain        int64
           capital-loss        int64
           hrs-per-week        int64
           native-country     object
           income             object
           dtype: object
```

```python
In [150…   for i in adult.columns:
               print(i,':','\n',adult[i].unique(),'\n')
```

age :
 [39 50 38 53 28 37 49 52 31 42 30 23 32 40 34 25 43 54 35 59 56 19 20 45
 22 48 21 24 57 44 41 29 18 47 46 36 79 27 67 33 76 17 55 61 70 64 71 68
 66 51 58 26 60 90 75 65 77 62 63 80 72 74 69 73 81 78 88 82 83 84 85 86
 87]

workclass :
 ['State-gov' 'Self-emp-not-inc' 'Private' 'Federal-gov' 'Local-gov' '?'
 'Self-emp-inc' 'Without-pay' 'Never-worked']

fnlwgt :
 [77516 83311 215646 ... 34066 84661 257302]

education :
 ['Bachelors' 'HS-grad' '11th' 'Masters' '9th' 'Some-college' 'Assoc-acdm'
 'Assoc-voc' '7th-8th' 'Doctorate' 'Prof-school' '5th-6th' '10th'
 '1st-4th' 'Preschool' '12th']

education-num :
 [13 9 7 14 5 10 12 11 4 16 15 3 6 2 1 8]

marital-status :
 ['Never-married' 'Married-civ-spouse' 'Divorced' 'Married-spouse-absent'
 'Separated' 'Married-AF-spouse' 'Widowed']

occupation :
 ['Adm-clerical' 'Exec-managerial' 'Handlers-cleaners' 'Prof-specialty'
 'Other-service' 'Sales' 'Craft-repair' 'Transport-moving'
 'Farming-fishing' 'Machine-op-inspct' 'Tech-support' '?'
 'Protective-serv' 'Armed-Forces' 'Priv-house-serv']

relationship :
 ['Not-in-family' 'Husband' 'Wife' 'Own-child' 'Unmarried' 'Other-relative']

race :
 ['White' 'Black' 'Asian-Pac-Islander' 'Amer-Indian-Eskimo' 'Other']

sex :
 ['Male' 'Female']

capital-gain :
 [2174   0 14084 5178 5013 2407 14344 15024 7688 34095 4064 4386
  7298 1409 3674 1055 3464 2050 2176   594 20051 6849 4101 1111
  8614 3411 2597 25236 4650 9386 2463 3103 10605 2964 3325 2580
  3471 4865 99999 6514 1471 2329 2105 2885 25124 10520 2202 2961
 27828 6767 2228 1506 13550 2635 5556 4787 3781 3137 3818 3942
   914   401 2829 2977 4934 2062 2354 5455 15020 1424 3273 22040
  4416 3908 10566   991 4931 1086 7430 6497   114 7896 2346 3418
  3432 2907 1151 2414 2290 15831 41310 4508 2538 3456 6418 1848
  3887 5721 9562 1455 2036 1831 11678 2936 2993 7443 6360 1797
  1173 4687 6723 2009 6097 2653 1639 18481 7978 2387 5060]

capital-loss :
 [0 2042 1408 1902 1573 1887 1719 1762 1564 2179 1816 1980 1977 1876
 1340 2206 1741 1485 2339 2415 1380 1721 2051 2377 1669 2352 1672 653
 2392 1504 2001 1590 1651 1628 1848 1740 2002 1579 2258 1602 419 2547
 2174 2205 1726 2444 1138 2238 625 213 1539 880 1668 1092 1594 3004
 2231 1844 810 2824 2559 2057 1974 974 2149 1825 1735 1258 2129 2603
 2282 323 4356 2246 1617 1648 2489 3770 1755 3683 2267 2080 2457 155
 3900 2201 1944 2467 2163 2754 2472 1411]

```
hrs-per-week :
 [40 13 16 45 50 80 30 35 60 20 52 44 15 25 38 43 55 48 58 32 70  2 22 56
 41 28 36 24 46 42 12 65  1 10 34 75 98 33 54  8  6 64 19 18 72  5  9 47
 37 21 26 14  4 59  7 99 53 39 62 57 78 90 66 11 49 84  3 17 68 27 85 31
 51 77 63 23 87 88 73 89 97 94 29 96 67 82 86 91 81 76 92 61 74 95]

native-country :
 ['United-States' 'Cuba' 'Jamaica' 'India' '?' 'Mexico' 'South'
 'Puerto-Rico' 'Honduras' 'England' 'Canada' 'Germany' 'Iran'
 'Philippines' 'Italy' 'Poland' 'Columbia' 'Cambodia' 'Thailand' 'Ecuador'
 'Laos' 'Taiwan' 'Haiti' 'Portugal' 'Dominican-Republic' 'El-Salvador'
 'France' 'Guatemala' 'China' 'Japan' 'Yugoslavia' 'Peru'
 'Outlying-US(Guam-USVI-etc)' 'Scotland' 'Trinadad&Tobago' 'Greece'
 'Nicaragua' 'Vietnam' 'Hong' 'Ireland' 'Hungary' 'Holand-Netherlands']

income :
 ['<=50K' '>50K']
```

In [152…
```python
for i in adult.columns:
    print(i,':',sum(adult[i]=='?'))
```

```
age : 0
workclass : 1836
fnlwgt : 0
education : 0
education-num : 0
marital-status : 0
occupation : 1843
relationship : 0
race : 0
sex : 0
capital-gain : 0
capital-loss : 0
hrs-per-week : 0
native-country : 583
income : 0
```

In [153…
```python
d = adult.describe(include='all')
d
```

Out[153…

	age	workclass	fnlwgt	education	education-num	marital-status	occu
count	32561.000000	32561	3.256100e+04	32561	32561.000000	32561	
unique	NaN	9	NaN	16	NaN	7	
top	NaN	Private	NaN	HS-grad	NaN	Married-civ-spouse	s|
freq	NaN	22696	NaN	10501	NaN	14976	
mean	38.581647	NaN	1.897784e+05	NaN	10.080679	NaN	
std	13.640433	NaN	1.055500e+05	NaN	2.572720	NaN	
min	17.000000	NaN	1.228500e+04	NaN	1.000000	NaN	
25%	28.000000	NaN	1.178270e+05	NaN	9.000000	NaN	
50%	37.000000	NaN	1.783560e+05	NaN	10.000000	NaN	
75%	48.000000	NaN	2.370510e+05	NaN	12.000000	NaN	
max	90.000000	NaN	1.484705e+06	NaN	16.000000	NaN	

In [155…

```python
for i in ['workclass','occupation','native-country']:
    adult[i].replace('?',d[i][2],inplace=True)
```

In [156…

```python
for i in adult.columns:
    print(i,':',sum(adult[i]=='?'))
```

```
age : 0
workclass : 0
fnlwgt : 0
education : 0
education-num : 0
marital-status : 0
occupation : 0
relationship : 0
race : 0
sex : 0
capital-gain : 0
capital-loss : 0
hrs-per-week : 0
native-country : 0
income : 0
```

In [ ]:

In [ ]:

In [ ]:

In [ ]:

In [ ]: