HW2 (3/17 수업 exercise 4, 5, 6)
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AI프로젝트입문(Introduction to Artificial Intelligence Project) 02분반
HW2 보고서

목차

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EX4: Yearly Average Price

```
def getTargetDataSet(dataSet, targetDataIndex):
  return dataSet[:, targetDataIndex]
price_attribute_index = 2
date_attribute_index = 1
targetDataIndex = [price_attribute_index, date_attribute_index]

targetDataSet = getTargetDataSet(data, targetDataIndex)
price_attribute_index = 0
date_attribute_index = 1
```
<전체 데이터 셋에서 가격과 날짜로 이루어진 투 칼람 데이터 셋을 새로 생성합니다>

```
def getDistinctDates(dataSet):
  return np.unique(dataSet)
unique_dates = getDistinctDates(data[:, date_attribute_index])
```
<유니크한 날짜 리스트를 구합니다>

```
years = []
for date in unique_dates:
  years.append(date[:4])
unique_years = np.unique(years)
```
<유니크한 years을 구합니다.>

```
divided_price_by_year = []
for unique_year in unique_years:
  boolean_mask = []
  for target in targetDataSet[:, date_attribute_index]:
    boolean_mask.append(unique_year in str(target))
  divided_price_by_year.append(targetDataSet[boolean_mask])
```
<타겟데이터를 연도별 2차 배열로 구분합니다>

```
average_prive_yearly = []
price_attribute_index_a = 0
for year in divided_price_by_year:
  price = year[:,price_attribute_index_a].astype(float)
  average_prive_yearly.append(np.mean(price))
```
<연도별 평균가격을 구합니다>

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```
i = 0
unique_date_list = unique_dates.tolist()
for price in average_prive_yearly:
  print("{} avg : {:.2f}".format(unique_years[i], price))
  i+=1
```

<연도별 평균가격을 출력 포멧에 맞게 출력합니다.>

출력 결과물

```
2006 avg : 67076.58
2007 avg : 58405.72
2008 avg : 66136.67
2009 avg : 83060.50
2010 avg : 77282.03
2011 avg : 76748.97
2012 avg : 72714.52
2013 avg : 78839.02
2014 avg : 84002.70
2015 avg : 87213.44
2016 avg : 97149.95
2017 avg : 114656.79
```

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EX5: Quarterly Average Price

```
divided_price_by_quarter = []
for unique_date in unique_dates:
  mask = data[:, date_attribute_index] == unique_date
  divided_price_by_quarter.append(targetDataSet[mask])
```

<타겟데이터를 분기별 2차 배열로 구분합니다>

```
average_prive_quarterly = []
price_attribute_index_a = 0
for quarter in divided_price_by_quarter:
  price = quarter[:,price_attribute_index_a].astype(float)
  average_prive_quarterly.append(np.mean(price))
```

<분기별 평균가격을 구합니다>

```
# ex5
i = 0
unique_date_list = unique_dates.tolist()
for price in average_prive_quarterly:
  print("{} avg : {:.2f}".format(unique_date_list[i], price), end =
"\t")
  if i%4 == 3 : print("\n")
  i+=1
```

<분기별 평균가격을 출력 포멧에 맞게 출력합니다.>

출력 결과물

```
2006Q1 avg : 65661.17   2006Q2 avg : 59592.49   2006Q3 avg : 62410.72   2006Q4 avg : 79588.83
2007Q1 avg : 47336.40   2007Q2 avg : 65344.61   2007Q3 avg : 58634.69   2007Q4 avg : 59687.89
2008Q1 avg : 63515.58   2008Q2 avg : 62458.85   2008Q3 avg : 72233.96   2008Q4 avg : 72608.62
2009Q1 avg : 85574.77   2009Q2 avg : 84314.42   2009Q3 avg : 83246.47   2009Q4 avg : 78589.30
2010Q1 avg : 80386.73   2010Q2 avg : 71885.82   2010Q3 avg : 72697.58   2010Q4 avg : 82475.98
2011Q1 avg : 77359.50   2011Q2 avg : 68071.24   2011Q3 avg : 78499.77   2011Q4 avg : 82607.86
2012Q1 avg : 73633.61   2012Q2 avg : 73102.35   2012Q3 avg : 78050.49   2012Q4 avg : 69313.77
2013Q1 avg : 77980.51   2013Q2 avg : 76391.85   2013Q3 avg : 76638.47   2013Q4 avg : 84570.14
2014Q1 avg : 84038.77   2014Q2 avg : 81931.40   2014Q3 avg : 79218.36   2014Q4 avg : 90134.39
2015Q1 avg : 76180.14   2015Q2 avg : 81677.28   2015Q3 avg : 98509.43   2015Q4 avg : 93279.71
2016Q1 avg : 87456.07   2016Q2 avg : 94492.74   2016Q3 avg : 104774.82  2016Q4 avg : 102236.93
2017Q1 avg : 113074.15  2017Q2 avg : 110766.67  2017Q3 avg : 124098.44
```

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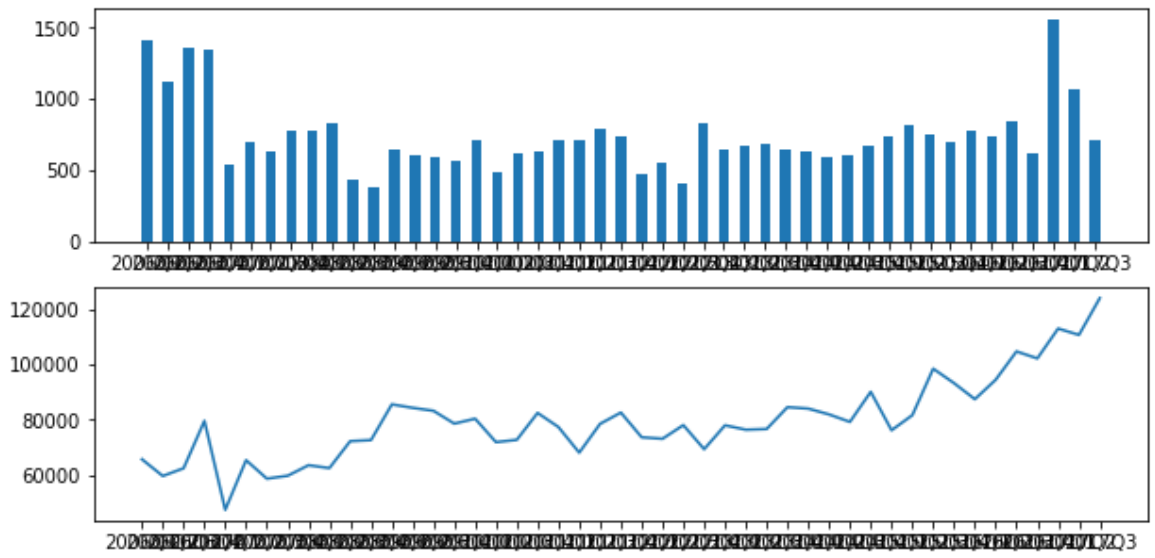
EX6: Quarterly Price Graph & Histogram

```
count_trading_per_quarter = []
for trades in divided_price_by_quarter:
  count_trading_per_quarter.append(trades.size)
```
<분기별 2차 배열의 사이즈를 각각 구합니다>

```
plt.figure(figsize = (10,5))
plt.subplot(2, 1, 1)
plt.bar(unique_dates,count_trading_per_quarter, width=0.5, bottom=None,
align='center', data=None)
plt.subplot(2, 1, 2)
plt.plot(unique_dates,average_prive_quarterly)
```
<plot을 그립니다.>

출력 결과물



부록

전체 소스코드