

### Experiment - 14

AIM: To execute pandas program to replace missing values in a given dataframe which do not have any valuable information.

Pseudo code:

- 1) Import pandas library.
- 2) Create dataframe with missing values.
- 3) Use `replace()` method to replace placeholders with NaN using `fillna()`.
- 4) Display updated dataframe.

Sample Input:

```
df = pd.DataFrame(np.random.rand(10, 4), columns=['A', 'B', 'C', 'D'])
```

Sample Output:

	A	B	C	D
0	0.72	0.34	0.65	0.12
1	0.32	0.45	0.51	0.89
2	0.51	0.14	0.76	0.37
3				
4	0.29	0.43	0.09	0.46

Result:

This code has been successfully executed.

```

import pandas as pd
import numpy as np

# Sample DataFrame based on your screenshot
data = {
    'ord_no': [70001, np.nan, 70002, 70004, np.nan, 70005, '--', 70010, 70003, 70012, np.nan, 70013],
    'purch_amt': [150.5, 270.65, 65.26, 110.5, 948.5, 2400.6, 5760, '?', 12.43, 2480.4, 250.45, 3045.6],
    'ord_date': ['?', '2012-09-10', np.nan, '2012-08-17', '2012-09-10', '2012-07-27', '2012-09-10', '2012-10-10', '2012-10-10', '2012-06-27', '2012-08-17', '2012-04-25'],
    'customer_id': [3002, 3001, 3001, 3003, 3002, 3001, 3001, 3004, '--', 3002, 3001, 3001],
    'salesman_id': [5002, 5003, '?', 5001, np.nan, 5001, 5001, '?', 5003, 5002, 5003, '--']
}

df = pd.DataFrame(data)

# Replace placeholders ('?', '--') with NaN
df.replace(['?', '--'], np.nan, inplace=True)

# Display the DataFrame after replacement
print("DataFrame after replacing placeholders with NaN:\n", df)

# Optionally, you can fill NaN values with suitable replacements, like 0 for numerical columns
df_filled = df.fillna({
    'ord_no': 0, # Fill missing order numbers with 0
    'purch_amt': df['purch_amt'].mean(), # Fill missing purchase amounts with the column mean
    'ord_date': 'Unknown', # Fill missing order dates with 'Unknown'
    'customer_id': 0, # Fill missing customer IDs with 0
    'salesman_id': 0 # Fill missing salesman IDs with 0
})

# Display the DataFrame after filling NaN values
print("\nDataFrame after filling NaN values:\n", df_filled)

```

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```

DataFrame after replacing placeholders with NaN:
   ord_no  purch_amt  ord_date  customer_id  salesman_id
0  70001.0    150.50      NaN      3002.0      5002.0
1      NaN    270.65  2012-09-10      3001.0      5003.0
2  70002.0     65.26      NaN      3001.0      5001.0
3  70004.0    110.50  2012-08-17      3003.0      5001.0
4      NaN    948.50  2012-09-10      3002.0      5001.0
5  70005.0   2400.60  2012-07-27      3001.0      5001.0
6      NaN    5760.00  2012-09-10      3001.0      5001.0
7  70010.0      NaN  2012-10-10      3004.0      5001.0
8  70003.0     12.43  2012-10-10      NaN      5003.0
9  70012.0   2480.40  2012-06-27      3002.0      5002.0
10      NaN    250.45  2012-08-17      3001.0      5003.0
11  70013.0   3045.60  2012-04-25      3001.0      5003.0

DataFrame after filling NaN values:
   ord_no  purch_amt  ord_date  customer_id  salesman_id
0  70001.0   150.500000   Unknown      3002.0      5002.0
1      0.0   270.650000  2012-09-10      3001.0      5003.0
2  70002.0    65.260000   Unknown      3001.0         0.0
3  70004.0   110.500000  2012-08-17      3003.0      5001.0
4      0.0   948.500000  2012-09-10      3002.0         0.0
5  70005.0  2400.600000  2012-07-27      3001.0      5001.0
6      0.0  5760.000000  2012-09-10      3001.0      5001.0
7  70010.0  1408.626364  2012-10-10      3004.0         0.0
8  70003.0    12.430000  2012-10-10         0.0      5003.0
9  70012.0  2480.400000  2012-06-27      3002.0      5002.0
10      0.0   250.450000  2012-08-17      3001.0      5003.0
11  70013.0  3045.600000  2012-04-25      3001.0         0.0

```

>>>

Ln: 54 Col: 0