📦 Import Required Libraries

```
import numpy as np
import pandas as pd
import seaborn as sns
```

```
df=pd.read_csv("/content/titanic_toy.csv")
```

```
df.sample(10)
```

	Age	Fare	Family	Survived
406	51.0	7.7500	0	0
230	35.0	83.4750	1	1
516	34.0	10.5000	0	1
31	NaN	146.5208	1	1
260	NaN	7.7500	0	0
633	NaN	NaN	0	0
603	44.0	8.0500	0	0
327	36.0	NaN	0	1
339	45.0	35.5000	0	0
715	19.0	7.6500	0	0

```
df.isnull().sum()
```

	0
Age	177
Fare	45
Family	0
Survived	0

dtype: int64

🔀 Feature–Target Split & Train–Test Split

```
from sklearn.model_selection import train_test_split
x=df.drop(columns='Survived')
y=df['Survived']
x_train,x_test,y_train,y_test=train_test_split(x,y,test_size=0.2,random_state=2)
```

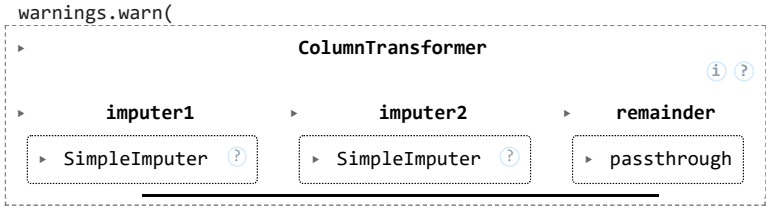
🩹 Missing Value Imputation (ColumnTransformer)

```
from sklearn.impute import SimpleImputer
imputer1=SimpleImputer(strategy='mean')
imputer2=SimpleImputer(strategy='median')
```

```
from sklearn.compose import ColumnTransformer
trf=ColumnTransformer([
    ('imputer1',imputer1,['Age']),
    ('imputer2',imputer2,['Fare'])
],remainder='passthrough')
```

```
trf.fit(x_train)
```

```
/usr/local/lib/python3.12/dist-packages/sklearn/compose/_column_transformer.py:1667: FutureWarning:
The format of the columns of the 'remainder' transformer in ColumnTransformer.transformers_ will change in version 1.7 to matc
At the moment the remainder columns are stored as indices (of type int). With the same ColumnTransformer configuration, in the
To use the new behavior now and suppress this warning, use ColumnTransformer(force_int_remainder_cols=False).

  warnings.warn(
```



Apply Imputation & Restore Feature Names

```
x_train_imputed=trf.fit_transform(x_train)
x_test_imputed=trf.transform(x_test)
```

```
x_train_imputed=pd.DataFrame(x_train_imputed,columns=trf.get_feature_names_out())
x_test_imputed=pd.DataFrame(x_test_imputed,columns=trf.get_feature_names_out())
```

```
x_train_imputed,x_test_imputed
```

```
(     imputer1__Age  imputer2__Fare  remainder__Family
 0        40.000000         27.7208                0.0
 1         4.000000         16.7000                2.0
 2        47.000000          9.0000                0.0
 3         9.000000         31.3875                6.0
 4        20.000000          9.8458                0.0
 ..             ...             ...                ...
 707      30.000000          8.6625                0.0
 708      29.785904          8.7125                0.0
 709      71.000000         49.5042                0.0
 710      29.785904        221.7792                0.0
 711      29.785904         25.9250                0.0

 [712 rows x 3 columns],
      imputer1__Age  imputer2__Fare  remainder__Family
 0        42.000000         26.2875                0.0
 1        21.000000          8.0500                0.0
 2        24.000000         65.0000                3.0
 3        28.000000         56.4958                0.0
 4        17.000000          7.9250                6.0
 ..             ...             ...                ...
 174      24.000000          8.0500                0.0
 175      22.000000          9.0000                0.0
 176      29.785904         69.5500               10.0
 177      26.000000          7.8958                0.0
 178      29.000000         14.4583                2.0

 [179 rows x 3 columns])
```

```
x_train_imputed.isnull().sum()
```

	0
imputer1__Age	0
imputer2__Fare	0
remainder__Family	0

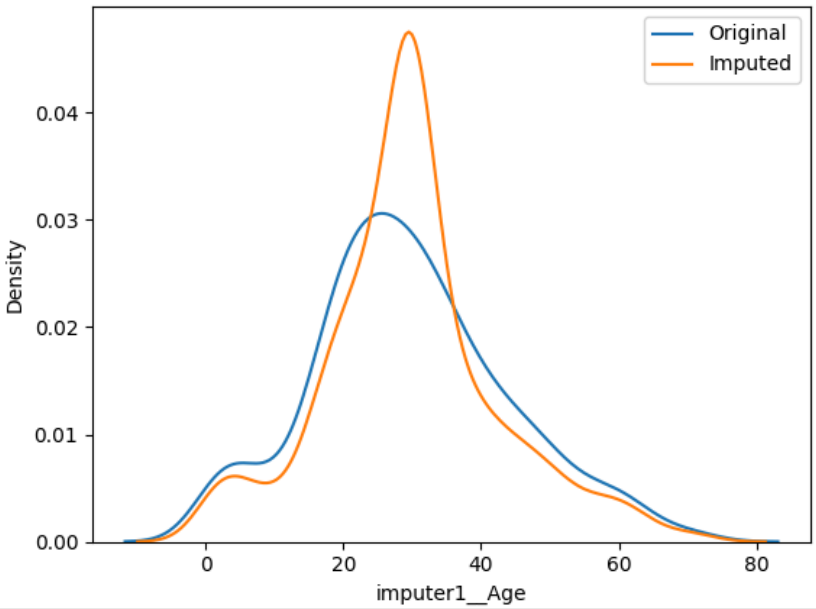
dtype: int64

```
import matplotlib.pyplot as plt
```

Distribution Comparison: Before vs After Imputation

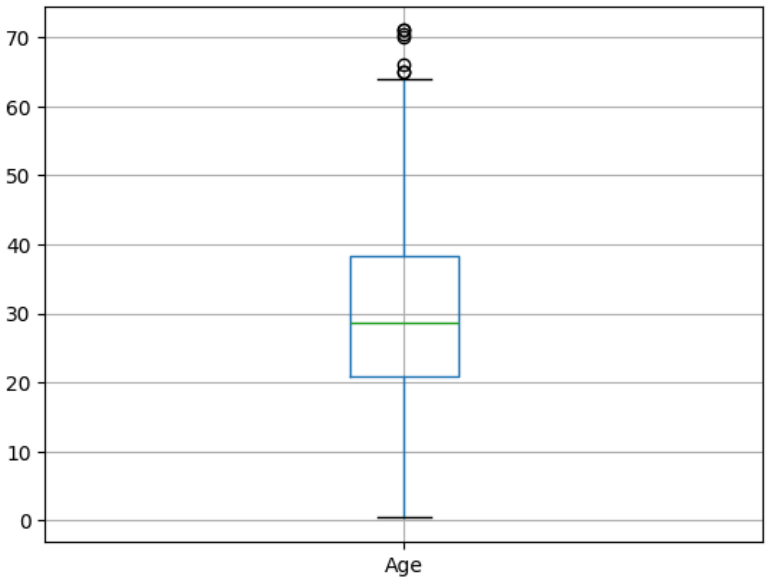
```
sns.distplot(x_train['Age'],label='Original',hist=False)
sns.distplot(x_train_imputed['imputer1__Age'],label = 'Imputed',hist=False)

plt.legend()
plt.show()
```

```
/tmp/ipython-input-3529845411.py:1: UserWarning:

`distplot` is a deprecated function and will be removed in seaborn v0.14.0.

Please adapt your code to use either `displot` (a figure-level function with
similar flexibility) or `kdeplot` (an axes-level function for kernel density plots).

For a guide to updating your code to use the new functions, please see
https://gist.github.com/mwaskom/de44147ed2974457ad6372750bbe5751

  sns.distplot(x_train['Age'],label='Original',hist=False)
/tmp/ipython-input-3529845411.py:2: UserWarning:

`distplot` is a deprecated function and will be removed in seaborn v0.14.0.

Please adapt your code to use either `displot` (a figure-level function with
similar flexibility) or `kdeplot` (an axes-level function for kernel density plots).

For a guide to updating your code to use the new functions, please see
https://gist.github.com/mwaskom/de44147ed2974457ad6372750bbe5751

  sns.distplot(x_train_imputed['imputer1__Age'],label = 'Imputed',hist=False)
```



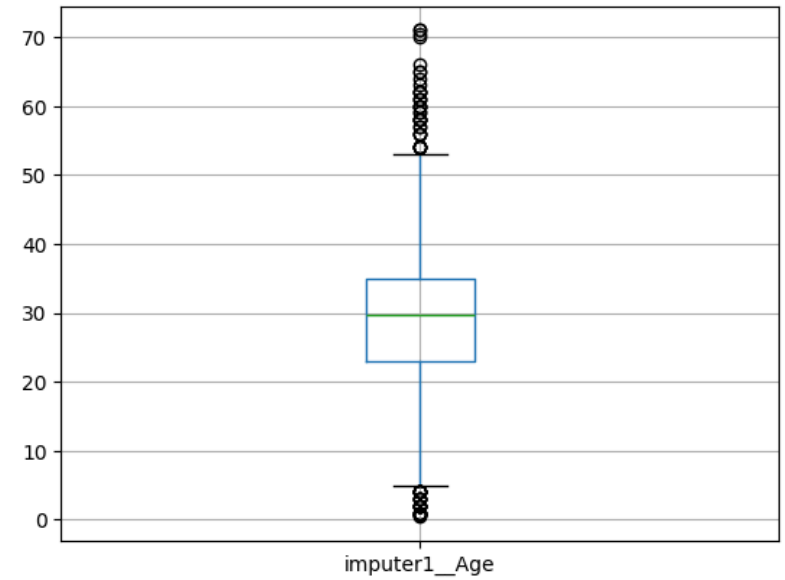

```
x_train[['Age']].boxplot()
```

```
<Axes: >
```




```
x_train_imputed[['imputer1__Age']].boxplot()
```

```
<Axes: >
```



Start coding or generate with AI.