



# Pandas - Cleaning Empty Cells

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## Empty Cells

Empty cells can potentially give you a wrong result when you analyze data.

## Remove Rows

One way to deal with empty cells is to remove rows that contain empty cells.

This is usually OK, since data sets can be very big, and removing a few rows will not have a big impact on the result.

## Example

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Return a new Data Frame with no empty cells:

```
import pandas as pd

df = pd.read_csv('data.csv')

new_df = df.dropna()

print(new_df.to_string())
```

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If you want to change the original DataFrame, use the `inplace = True` argument:

## Example

Remove all rows with NULL values:

```
import pandas as pd

df = pd.read_csv('data.csv')

df.dropna(inplace = True)

print(df.to_string())
```

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**Note:** Now, the `dropna(inplace = True)` will NOT return a new DataFrame, but it will remove all rows containing NULL values from the original DataFrame.

## Replace Empty Values

Another way of dealing with empty cells is to insert a *new* value instead.

This way you do not have to delete entire rows just because of some empty cells.

The `fillna()` method allows us to replace empty cells with a value:

## Example

Replace NULL values with the number 130:

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```
df.fillna(130, inplace = True)
```

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## Replace Only For Specified Columns

The example above replaces all empty cells in the whole Data Frame.

To only replace empty values for one column, specify the *column name* for the DataFrame:

## Example

Replace NULL values in the "Calories" columns with the number 130:

```
import pandas as pd

df = pd.read_csv('data.csv')

df["Calories"].fillna(130, inplace = True)
```

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# Replace Using Mean, Median, or Mode

A common way to replace empty cells, is to calculate the mean, median or mode value of the column.

Pandas uses the `mean()` `median()` and `mode()` methods to calculate the respective values for a specified column:

## Example

Calculate the MEAN, and replace any empty values with it:

```
import pandas as pd

df = pd.read_csv('data.csv')

x = df["Calories"].mean()

df["Calories"].fillna(x, inplace = True)
```

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**Mean** = the average value (the sum of all values divided by number of values).

## Example

Calculate the MEDIAN, and replace any empty values with it:

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```
x = df["Calories"].median()

df["Calories"].fillna(x, inplace = True)
```

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**Median** = the value in the middle, after you have sorted all values ascending.

## Example

Calculate the MODE, and replace any empty values with it:

```
import pandas as pd

df = pd.read_csv('data.csv')

x = df["Calories"].mode()[0]

df["Calories"].fillna(x, inplace = True)
```

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**Mode** = the value that appears most frequently.

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