

Cheat Sheet - Polars

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Introduction

Library

```
import polars as pl
```

DataFrame

```
df = pl.DataFrame({  
    'id': [1, 2, 3, 4]  
, 'name': ["Alice", "Bob", "Charlie", "Diana"]  
, 'age': [25, 30, 35, 28]  
, 'score': [85.5, 90.0, 78.3, 92.1]  
})
```

LazyFrame

```
lf = pl.LazyFrame({  
    'id': [1, 2, 3, 4]  
, 'name': ["Alice", "Bob", "Charlie", "Diana"]  
, 'age': [25, 30, 35, 28]  
, 'score': [85.5, 90.0, 78.3, 92.1]  
})
```

Conversion to DataFrame

```
df = lf.collect(engine = EngineType)
```

```
pl.Config.set_engine_affinity(EngineType)  
The values allowed for EngineType are 'in-memory'  
(default), 'streaming' and 'gpu'.
```

LazyFrame Schema

```
schema = lf.collect_schema()  
names = schema.names()  
data_types = schema.dtypes()  
n_vars = schema.len()
```

Input/Output

Parquet

```
lf = pl.scan_parquet(  
    source = filepath  
, n_rows = integer / None (default)  
)  
  
lf.sink_parquet(  
    path = filepath  
, compression = string (default: 'zstd')  
, compression_level = int / None (default)  
, engine = EngineType (default: 'auto')  
)
```

CSV

```
lf = pl.scan_csv(  
    source = filepath  
, has_header = bool (default: True)  
, separator = string (default: ',')  
, quote_char = string (default: "'")  
, decimal_comma = bool (default: False)  
, schema_overrides = dictionary / None (default)  
, skip_rows = integer (default: 0)  
, skip_lines = integer (default: 0)  
)  
  
lf.sink_csv(  
    path = filepath  
, include_header = bool (default: True)  
, separator = string (default: ',')  
, line_terminator = string (default: '\n')  
, quote_char = string (default: "'")  
, decimal_comma = bool (default: 'False')  
, engine = EngineType (default: 'auto')  
)
```

Selection

Rows

```
lf.filter(  
    (pl.col('age') > 27) | (pl.col('name') == 'Bob')  
)  
  
lf.filter(  
    (pl.col('age') > 27) & (pl.col('name') == 'Bob')  
)  
  
lf.filter(  
    pl.col('age') > 27  
, pl.col('name') == 'Bob'  
)
```

Columns

```
lf.select(  
    pl.col(['name', 'age', 'score'])  
)  
  
Special expressions: pl.all(), pl.exclude('column-name-01', ..., 'column-name-n'), pl.col([pl.Int64, pl.Float64, pl.String])
```

Manipulation

Rename Column(s)

```
lf.rename(  
    {'age': 'Age'}  
)
```

Drop Column(s)

```
lf.drop(  
    ['age', 'score']  
)
```

Change Data Type

```
lf.cast(  
    {'age': pl.Int8})
```

Sorting

```
lf.sort(  
    ['score', 'age']  
, descending = bool (default: False)  
, nulls_last = bool (default: False)  
)  
  
lf.select(  
    pl.all().sort_by(['score', 'age'])  
)  
  
lf.select(  
    pl.col(['score', 'age']).set_sorted()  
)
```

Index Column

```
lf = lf.with_row_index(name = 'index')
```

Custom Column(s)

```
lf.with_columns(  
    age_01 = pl.col('age').round(0)  
, pl.col('age').round(0).alias('age_02')  
, pl.col('age').round(0).name.suffix('_03')  
, pl.col('age').name.prefix('org_')  
)
```

Conditional Column(s)

```
lf.select(  
    pl.when(  
        (pl.col('score') > 80)  
        & (pl.col('age') > 30)  
    )  
    .then(pl.lit('Pass'))  
    .when(  
        pl.col('score') > 60  
    )  
    .then(pl.lit('Pending'))  
    .otherwise(pl.lit('Fail'))  
    .alias('result')  
)
```

Functions

User-defined

```
def sqrd(lf: pl.LazyFrame, col_name: str) ->  
    pl.LazyFrame:  
        return (  
            lf.with_columns(  
                pl.col(col_name) ** 2  
            )  
        )  
  
lf.pipe(  
    sqrd  
, col_name = 'age'  
)
```

Lambda

```
lf.with_columns(  
    lf.pipe(  
        lambda temp_df: pl.col("age") ** 2  
    )  
)
```

Missing Values

Create

```
lf.with_columns(  
    null_column = pl.lit(None)  
)
```

Count

```
lf.null_count()
```

```
lf.select(  
    pl.all().null_count()  
)
```

Find

```
lf.select(  
    pl.col('name')  
, is_null = pl.col('name').is_null()  
, is_not_null = pl.col('name').is_not_null()  
)
```

Filter

```
lf.filter(  
    pl.col('name').is_not_null(),  
)
```

At least 1 value not null

```
lf.filter(  
    pl.any_horizontal(pl.all().is_not_null())  
)
```

All values non-null

```
lf.filter(  
    pl.all_horizontal(pl.all().is_not_null())  
)
```

Drop

```
# Observations with only null values dropped  
lf.drop_nulls()  
  
# Obs. with null values in subset are dropped  
lf.drop_nulls(subset = ['name', 'age'])
```

Imputation

```
lf.with_columns(  
    pl.all().fill_null(  
        value = Any / Expr / None (default)  
        ,strategy = FillNullStrategy / None (default)  
        ,limit = int / None (default)  
    )  
    .name.suffix("_new")  
)  
strategy may be equal to 'forward', 'backward', 'min',  
'max', 'mean', 'zero' or 'one'.  
# With respect to groups  
lf.with_columns(  
    pl.all().fill_null(  
        strategy = 'forward'  
    )  
    .over('group-column-name')  
    .name.suffix('_filled')  
)  
  
# Miscellaneous  
lf.with_columns(  
    pl.col('age').fill_null(pl.median('score'))  
    ,pl.col('score').fill_null(pl.col('age'))  
)  
  
lf.with_columns(  
    new_col = pl.coalesce(['age', 'score', 9.0])  
)  
  
lf.with_columns(  
    pl.all().interpolate().name.suffix("_new")  
)
```

Statistics

XXX

xxx

XXX

xxx