

# HOWARD README

## 1 HOWARD Plugins

HOWARD plugins are additional module that take advantage of HOWARD object and functions to manage input files.

### 1.1 Plugins structure

Plugins are store in 'plugins' folder, and follow a specific structure:

```
plugins
|-- __init__.py
|-- plugin1
|   |-- README.md
|   |-- __init__.py
|   |-- __main__.py
|-- plugin2
|   |-- README.md
|   |-- __init__.py
|   |-- __main__.py
```

#### 1.1.1 Plugins module init file

Mainly, plugins `__init__.py` file define enabled plugins, with variable `__all__`.

```
__all__ = ["plugin1", "plugin2"]
```

#### 1.1.2 Plugin init file

At least 2 files are needed. The `__init__.py` file defines the plugin with a description and a version, if the plugin is enabled (default `False`), and information about python code such as main file (default `__main__.py`) and main function (default(`main`)).

```
__description__ = "Plugin1 description"
__version__ = "1.0.0"
__enabled__ = True
__main_file__ = "__main__"
__main_function__ = "main"
```

#### 1.1.3 Plugin main file

Main plugin file (e.g. `__main__.py`) need to contain the main function (e.g. `main`), and also information about new arguments for this plugin (e.g. `show` and `limit`, see Python Argparse) and about command such as a description, help, examples and all avaiable arguments (e.g. existing `input` and `output` arguments).

## 1.2 Example

Example with 'show\_plugin': files structure, init file, arguments, command, and main function

```
plugins
|-- __init__.py
|-- show_plugin
|   |-- __init__.py
|   |-- __main__.py
```

Plugin is enable in main plugins/\_\_init\_\_.py file

```
__all__ = ["show_plugin"]
```

Plugin is defined in plugins/show\_plugin/\_\_init\_\_.py file

```
__description__ = "Show variants in an input file"
__version__ = "1.0.0"
__enabled__ = True
__main_file__ = "__main__"
__main_function__ = "main"
```

Arguments, command, and main function in plugins/show\_plugin/\_\_main\_\_.py file

```
import argparse
import logging as log
from howard.objects.variants import Variants

# Arguments
arguments = {
    "show": {
        "help": """show variants in input file.\n""",
        "action": "store_true",
        "default": False,
    },
    "limit": {
        "help": """Limit of output variants.\n"" "Either '2' or '5' lines.\n""",
        "default": 2,
        "type": int,
        "choices": [2, 5],
    },
}

# Command
commands_arguments = {
    "show_plugin": {
        "function": "show_plugin",
        "description": """Show variants in an input file.\n""",
        "help": """Short description of the plugin!\n""",
        "epilog": """Usage examples:\n""
        """    howard show_plugin --input=tests/data/example.vcf.gz --output=/tmp/example.minimal.vcf.gz --sh
        """    howard show_plugin --input=tests/data/example.vcf.gz --output=/tmp/example.minimal.tsv --show
        """        \n""",
        "groups": {
            "main": {"input": True, "output": False, "param": False},
            "Options": {"show": False, "limit": False},
        },
    },
}

# Main function
def main(args: argparse) -> None:
    """
    Query input VCF file and show result
    """

    # Log
    log.info("START")

    # Debug
    log.debug(f"Input file: {args.input}")
```

```

log.debug(f"Output file: {args.output}")

# Load variants file
variants_obj = Variants(input=args.input, output=args.output, load=True)

# Create query and show results
query = f"SELECT * FROM variants LIMIT {args.limit}"
if args.show:
    df = variants_obj.get_query_to_df(query)
    log.info(df)

# Export
variants_obj.export_output(query=query, export_header=True)

log.info("END")

```

### 1.3 Help and GUI

Plugins will be available on Help command line and HOWARD GUI.

`howard show_plugin --help`

```
usage: howard show_plugin [-h] --input input [--output output] [--param param] [--show] [--limit {2,5}] [--co
                        [--duckdb_settings duckDB settings] [--verbosity verbosity] [--log log]
```

Show variants in an input file.

Options:

|                              |   |
|------------------------------|---|
| <code>-h, --help</code>      | show this help message and exit   |
| <code>--input input</code>   | Input file path.<br>Format file must be either VCF, Parquet, TSV, CSV, PSV or duckDB.<br>Files can be compressed (e.g. vcf.gz, tsv.gz).<br>(default: None)  |
| <code>--output output</code> | Output file path.<br>Format file must be either VCF, Parquet, TSV, CSV, PSV or duckDB.<br>Files can be compressed (e.g. vcf.gz, tsv.gz).<br>(default: None) |
| <code>--param param</code>   | Parameters JSON file (or string) defines parameters to process<br>annotations, calculations, prioritizations, conversions and queries.<br>(default: {})     |

Options options:

|                            |   |
|----------------------------|---|
| <code>--show</code>        | show variants in input file.<br>(default: False)                      |
| <code>--limit {2,5}</code> | Limit of output variants.<br>Either '2' or '5' lines.<br>(default: 2) |

`howard gui`

HOWARD Graphical User Interface HOWARD Graphical User Interface