TF_User_Guide

Version: 0.1.0

Contents

About This Manual

This manual describes how to install, configure, and use THE FLOW software.

How this manual is organized

Generally, current manual has two parts. First part is about how to install THE FLOW software and prepare python and linux environment. Second part of this guide shows how to prepare needed configuration files.

1. Installation

THE FLOW installation is very simple, but to use software correctly needed to execute all of steps described below.

1.1. Installing Python and Libraries

Python and Libraries

THE FLOW is Python based software which used a few non-standard libraries. Firstly, needed to install following Python version and libraries:

- Python 3.10 [https://www.python.org/downloads/]
- Jinja2==3.1.2 [https://pypi.org/project/Jinja2/]

Python environment variables

To avoid possible problems during THE FLOW using recommended add following variables into `.bashrc` file (or the same file depend on linux environment):

- PYTHONDONTWRITEBYTECODE=1

1.2. Installing THE FLOW

To install THE FLOW software needed to execute following steps:

- Download archive with latest release from GitHub repository. [https://github.com/Lnidekker/the_flow/releases]
- Unzip archive and run `install` file. `install` file execution can be run in Terminal command line from directory where this file placed. As a result `tf_config` file will be generated.
- Add link to `tf_config` file into `.bashrc` (`source */tf_config`)

2. Configuration files

There are only two files which used to configure THE FLOW: `tf_var.py` and `tf_var_common.py`. Examples of these files are in `template` directory. Both of these files use Python syntax and contain all needed variable tables.

2.1. tf_var.py

`tf_var.py` file used to setup variables which are unique for some block or top design module.

Description of all tables is below:

Table name	Variable name	Description	Variable status
tf_dir_structure_table	-	this table contains directories structure of a project	-
	sdc	path to directory which contains .sdc files	mandatory

Table name	Variable name	Description	Variable status
	workarea_syn	path to directory where THE FLOW will create experiment directory for `-syn` flow	mandatory for `-syn` flow
	workarea_impl	path to directory where THE FLOW will create experiment directory for `-impl` flow	mandatory for `-impl` flow
	workarea_atpg	path to directory where THE FLOW will create experiment directory for `-atpg` flow	mandatory for `-atpg` flow
	workarea_power	path to directory where THE FLOW will create experiment directory for `-power` flow	mandatory for `-power` flow
	syn_steps	path to directory which contains steps files for `-syn` flow	mandatory for `-syn` flow
	impl_steps	path to directory which contains steps files for `-impl` flow	mandatory for `-impl` flow
	atpg_steps	path to directory which contains steps files for `-atpg` flow	mandatory for `-atpg` flow

Table name	Variable name	Description	Variable status
	power_steps	path to directory which contains steps files for `-power` flow	mandatory for `-power` flow
	rtl	path to directory which contains RTL files for design	optional
	syn_src	path to directory which contains source files for `-syn` flow	optional
	impl_src	path to directory which contains source files for `-impl` flow	optional
	atpg_src	path to directory which contains source files for `-atpg` flow	optional
	power_src	path to directory which contains source files for `-power` flow	optional
tf_var_table	-	this table contains mandatory THE FLOW variables and user defined variables which can be used into steps to automate .tcl scripts for EDA tools	-
	cfg_common	path to directory which contains `tf_var_common.py` file	mandatory
	DESIGN_NAME	name of design top module from RTL	mandatory

Table name	Variable name	Description	Variable status
	EXP_NAME_SYN	name of experiment for `-syn` flow; this name used like experiment directory name	mandatory for `-syn` flow
	EXP_NAME_IMPL	name of experiment for `-impl` flow; this name used like experiment directory name	mandatory for `-impl` flow
	EXP_NAME_ATPG	name of experiment for `-atpg` flow; this name used like experiment directory name	mandatory for `-atpg` flow
	EXP_NAME_POWER	name of experiment for `-power` flow; this name used like experiment directory name	mandatory for `-power` flow
	user defined variable	this variable appears in each generated .tcl script for all flows	user defined
tf_var_syn_table	-	this table contains user defined variables which appears in each .tcl script only for `-syn` flow	-

Table name	Variable name	Description	Variable status
tf_var_impl_table	-	this table contains user defined variables which appears in each .tcl script only for `-impl` flow	-
tf_var_atpg_table	-	this table contains user defined variables which appears in each .tcl script only for `-atpg` flow	-
tf_var_power_table	-	this table contains user defined variables which appears in each .tcl script only for `-power` flow	-
tf_var_mmmc_table	-	this table contains active presets for mmmc generator for all flows	-
tf_var_mmmc_syn_table	-	this table contains active presets for mmmc generator for `-syn` flow	-
tf_var_mmmc_impl_table	-	this table contains active presets for mmmc generator for `-impl` flow	-

Table name	Variable name	Description	Variable status
tf_var_mmmc_atpg_table	-	this table contains active presets for mmmc generator for `-atpg` flow	-
tf_var_mmmc_power_table	-	this table contains active presets for mmmc generator for `-power` flow	-
mmmc_sdc_mode_table	-	this table contains list of constraint modes with corresponding .sdc files for mmmc generator	-
mmmc_analysis_view_syn_table	-	this table contains list of analysis views for `-syn` flow	-
tf_step_syn_table	-	this table contains list of steps for `-syn` flow	-
mmmc_analysis_view_impl_table	-	this table contains list of analysis views for `-impl` flow	-
tf_step_impl_table	-	this table contains list of steps for `-impl` flow	-
tf_step_atpg_table	-	this table contains list of steps for `-atpg` flow	-

Table name	Variable name	Description	Variable status
mmmc_analysis_view_power_table	-	this table contains list of analysis views for `-power` flow	-
tf_step_power_table	-	this table contains list of steps for `-power` flow	-

2.2. tf_var_common.py

`tf_var_common.py` file used to setup variables which are common for whole design or technology process.

Description of all tables is below:

Table name	Variable name	Description	Variable status
tf_var_common_table	-	this table contains user defined variables which can be used into steps to automate .tcl scripts for EDA tools	-
mmmc_pvt_p_table	-	this table contains `process` variable patterns for mmmc generator (see mmmc_gen_UG)	-
mmmc_pvt_v_table	-	this table contains `voltage` variable patterns for mmmc generator (see mmmc_gen_UG)	-
mmmc_pvt_t_table	-	this table contains `temperature` variable patterns for mmmc generator (see mmmc_gen_UG)	-
mmmc_pvt_table	-	this table contains `process_voltage_temperature` variable patterns for mmmc generator (see mmmc_gen_UG)	-
mmmc_pvt_qrc_table	-	this table contains `extraction` variable patterns for mmmc generator (see mmmc_gen_UG)	-
mmmc_lib_file_table	-	this table contains sets of .lib files for mmmc generator (see mmmc_gen_UG)	-

Table name	Variable name	Description	Variable status
mmmc_cdb_file_table	-	this table contains sets of .cdb files for mmmc generator (see mmmc_gen_UG)	-
mmmc_qrc_file_table	-	this table contains sets of qrcTech files for mmmc generator (see mmmc_gen_UG)	-
mmmc_ocv_table	-	this table contains derate values for each delay corner (see mmmc_gen_UG)	-
phy_lef_table	-	this table contains sets of .lef files for phy generator (see phy_gen_UG)	-
phy_verilog_table	-	this table contains sets of verilog model files for phy generator (see phy_gen_UG)	-
phy_cl_table	-	this table contains sets of .cl view files for phy generator (see phy_gen_UG)	-