# pymaketool

***Release 2.0.6***

**Apr 17, 2022**

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Release v2.0.6. (*Installation*)

**pymaketool** is an elegant and simple tool to generate a C project with GNU Make files.

---

**Behold, the power of pymaketool**

```
# app_mk.py
from pymakelib import module

def getSrcs(m: module.ModuleHandle):
   return m.getAllSrcsC()

def getIncs(m: module.ModuleHandle):
   return m.getAllIncsC()
```

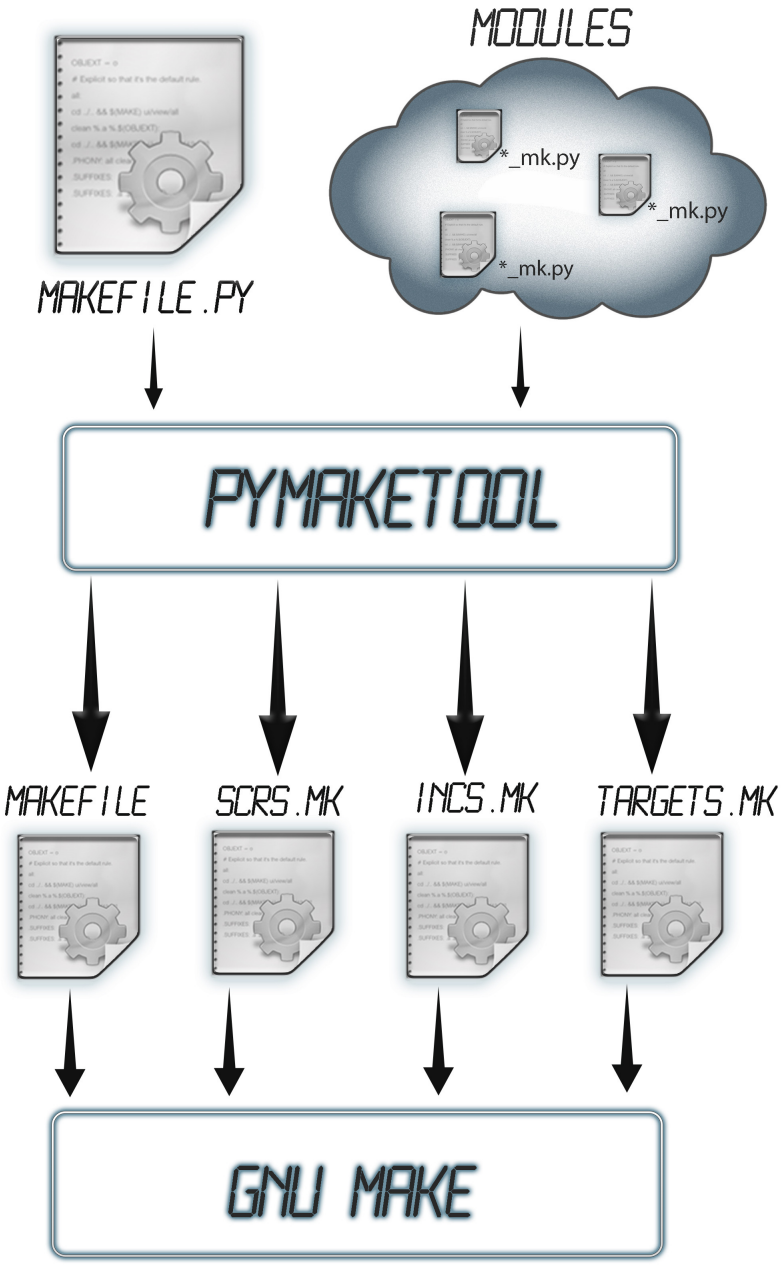
Or in class mode:

```
# app_mk.py
from pymakelib import module

@module.ModuleClass
class mod(module.BasicCModule):
   pass
```

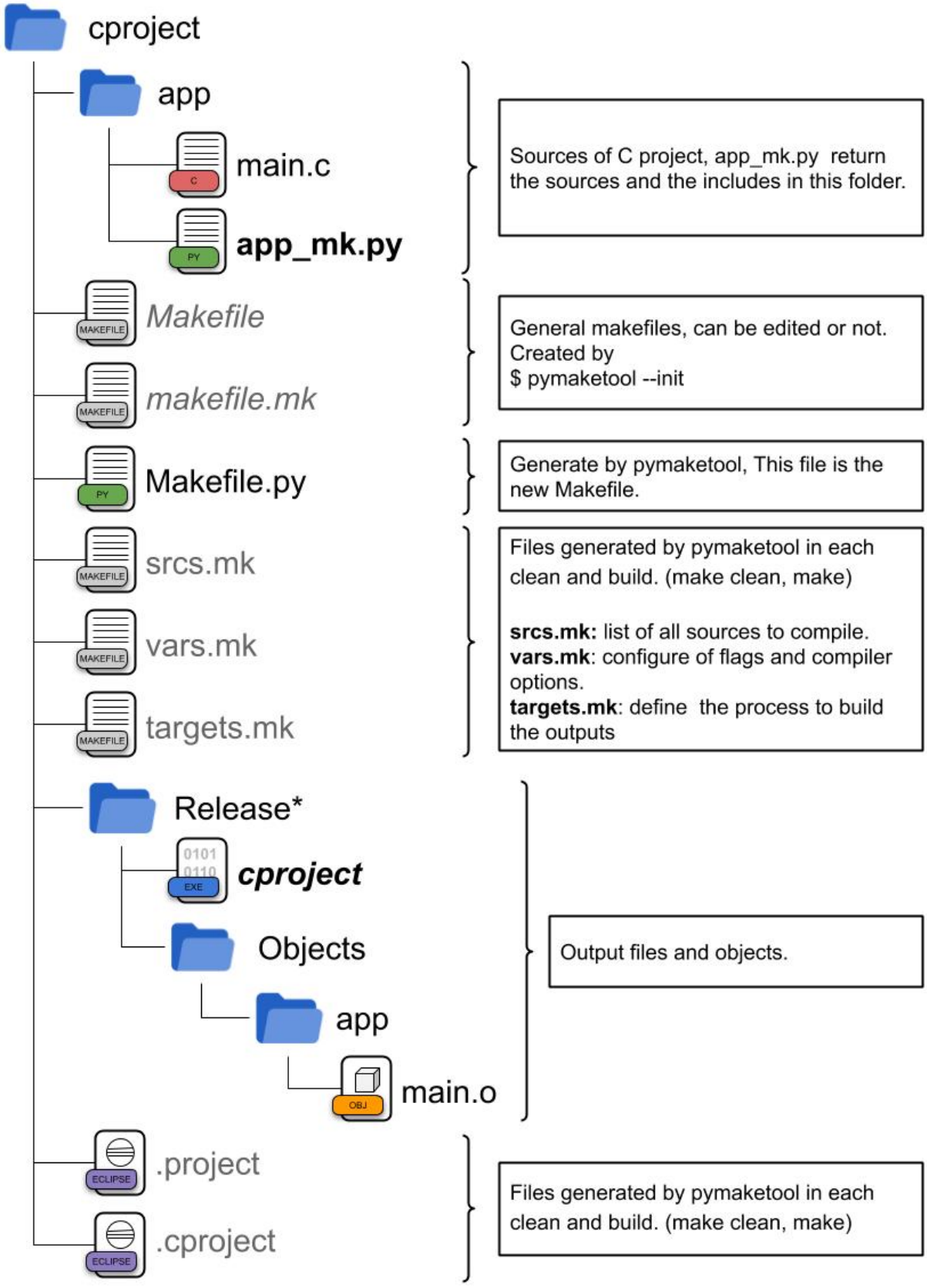
Load remote module:

```
# extlib_mk.py
from pymakelib import module

@module.ModuleClass
class ExtLib(module.ExternalModule):

   def getModulePath(self)->str:
      # Location of module
      return '/LIBS/module_lib/module_lib_mk.py'
```

**pymaketool** allow to you create C projects with anything structure extremely easily. Use Eclipse IDE for open and edit your project, pymaketool generates the necessary files for this.




**Structure of un pymaketool project**


cproject
app
main.c
app_mk.py
Sources of C project, app_mk.py return the sources and the includes in this folder.
Makefile
makefile.mk
General makefiles, can be edited or not. Created by
$ pymaketool --init
Makefile.py
Generate by pymaketool, This file is the new Makefile.
srcs.mk
vars.mk
targets.mk
Files generated by pymaketool in each clean and build. (make clean, make)
srcs.mk: list of all sources to compile.
vars.mk: configure of flags and compiler options.
targets.mk: define the process to build the outputs
Release*
cproject
Objects
app
main.o
Output files and objects.
.project
.cproject
Files generated by pymaketool in each clean and build. (make clean, make)

CHAPTER 1

# Installation of pymaketool

This part of the documentation covers the installation of pymaketool. The first step to using any software package is getting it properly installed.

## 1.1 Ubuntu/debian

```
$ sudo apt install -y python3 python3-pip python3-gi python3-gi-cairo gir1.2-gtk-3.0␣
↪git time zip
$ pip3 install pymaketool
```

## 1.2 Fedora

```
$ sudo dnf install python3-gobject gtk3
$ sudo dnf install python3-pip
$ pip3 install pymaketool
```

## 1.3 Arch Linux

```
$ sudo pacman -S python-gobject gtk3
$ sudo pacman -S python-pip
$ pip install pymaketool
```

## 1.4 macOS

```
$ brew install pygobject3 gtk+3
$ brew install python3
$ pip3 install pymaketool
```

## 1.5 Get the Source Code

pymaketool is actively developed on GitHub, where the code is always available.

You can either clone the public repository

```
$ git clone https://github.com/ericsonj/pymaketool.git
```

Or, download the tarball

Once you have a copy of the source, you can embed it in your own Python package, or install it into your site-packages easily

# CHAPTER 2

## Makefile.py

**Makefile.py** is used to build **vars.mk** and **targets.mk**.

Example of Makefile.py for build a linux application:

```
from os.path import basename
from pymakelib import MKVARS
from pymakelib import toolchain as tool

def getProjectSettings():
    """
    Return the project settings.

    Returns:
        dict: with keys PROJECT_NAME and FODLER_OUT
    """
    return {
        'PROJECT_NAME': basename(os.getcwd()),
        'FOLDER_OUT':   'Release/Objects/'
    }

def getTargetsScript():
    """
    Return the of targets
    """
    PROJECT_NAME = basename(os.getcwd())
    FOLDER_OUT = 'Release/'
    TARGET = FOLDER_OUT + PROJECT_NAME

    TARGETS = {
        # target
        'TARGET': {
            # key of target
            'LOGKEY':  'OUT',
            # Name of output file
            'FILE':    TARGET,
```

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```
            # Script to generate de output file
            'SCRIPT':  [MKVARS.LD, '-o', '$@', MKVARS.OBJECTS, MKVARS.LDFLAGS]
        },
        'TARGET_ZIP': {
            # key of target
            'LOGKEY':   'ZIP',
            # Name of output file
            'FILE':     TARGET + '.zip',
            # Script to generate de output file
            'SCRIPT':   ['zip', TARGET + '.zip', MKVARS.TARGET]
        }
    }

    return TARGETS


def getCompilerSet():
    """
    Return the compilet set.

    Returns:
        dict with path of executables:
        'CC', 'CXX', 'LD', 'AR', 'AS', 'OBJCOPY', 'SIZE', 'OBJDUMP'.
    """
    return tool.confLinuxGCC()


LIBRARIES = [ '-lpthread']

def getCompilerOpts():
    """
    Return all compiler options.

    Returns:
        dict with:
        KEY: name of group of options
        VALUE: list of options
    """
    PROJECT_DEF = {
        'HAVE_CONFIG_H':  None
    }

    return {
        'MACROS': PROJECT_DEF,
        'MACHINE-OPTS': [
        ],
        'OPTIMIZE-OPTS': [
        ],
        'OPTIONS': [
        ],
        'DEBUGGING-OPTS': [
            '-g3'
        ],
        'PREPROCESSOR-OPTS': [
            '-MP',
            '-MMD'
        ],
```

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```
        'WARNINGS-OPTS': [
        ],
        'CONTROL-C-OPTS': [
            '-std=gnu11'
        ],
        'GENERAL-OPTS': [
        ],
        'LIBRARIES': LIBRARIES
    }


def getLinkerOpts():
    """
    Return all linker options.

    Returns:
        dict with:
        KEY: name of group of options
        VALUE: list of options
    """
    return {
        'LINKER-SCRIPT': [
        ],
        'MACHINE-OPTS': [
        ],
        'GENERAL-OPTS': [
        ],
        'LINKER-OPTS': [
        ],
        'LIBRARIES': LIBRARIES
    }
```

Example of Makefile to build firmware for STM32F4 microcontroller:

```
import os
from os.path import basename
from pybuild import MKVARS

PROJECT_NAME = basename(os.getcwd())
FOLDER_OUT = 'Release/stm32f4-sandbox/'

TARGET_ELF = FOLDER_OUT + PROJECT_NAME + '.elf'
TARGET_HEX = FOLDER_OUT + PROJECT_NAME + '.hex'
TARGET_MAP = FOLDER_OUT + PROJECT_NAME + '.map'
TARGET_BIN = FOLDER_OUT + PROJECT_NAME + '.bin'


def getProjectSettings():
    return {
        'PROJECT_NAME': PROJECT_NAME,
        'FOLDER_OUT':   FOLDER_OUT,
    }


def getTargetsScript():

    TARGETS = {
```

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```
        'TARGET': {
            'LOGKEY':  'LD',
            'FILE':    TARGET_ELF,
            'SCRIPT':  [MKVARS.LD, '-o', '$@', MKVARS.OBJECTS, MKVARS.LDFLAGS]
        },
        'TARGET_HEX': {
            'LOGKEY':   'HEX',
            'FILE':     TARGET_HEX,
            'SCRIPT':   [MKVARS.OBJCOPY, '-O', 'ihex', MKVARS.TARGET, TARGET_HEX]
        },
        'TARGET_BIN': {
            'LOGKEY':   'BIN',
            'FILE':     TARGET_BIN,
            'SCRIPT':   [MKVARS.OBJCOPY, '-O', 'binary', MKVARS.TARGET, TARGET_BIN]
        }
    }

    return TARGETS


def getCompilerSet():
    pfx = 'arm-none-eabi-'
    return {
        'CC':       pfx + 'gcc',
        'CXX':      pfx + 'g++',
        'LD':       pfx + 'gcc',
        'AR':       pfx + 'ar',
        'AS':       pfx + 'as',
        'OBJCOPY':  pfx + 'objcopy',
        'SIZE':     pfx + 'size',
        'OBJDUMP':  pfx + 'objdump',
        'INCLUDES': [
            toolchain + 'arm-none-eabi/include',
            toolchain + 'arm-none-eabi/include/c++/8.2.1',
            toolchain + 'arm-none-eabi/include/c++/8.2.1/arm-none-eabi',
            toolchain + 'arm-none-eabi/include/c++/8.2.1/backward',
            toolchain + 'lib/gcc/arm-none-eabi/8.2.1/include',
            toolchain + 'lib/gcc/arm-none-eabi/8.2.1/include-fixed'
        ]
    }


def getCompilerOpts():

    PROJECT_DEF = {
        'USE_HAL_DRIVE':            None,
        'CORE_CM4':                 None,
        'STM32F407xx':              None,
        'DEBUG':                    None,
        'VERSION':                  "0.0.1",
        'STM32F4xx':                None,
    }

    return {
        'MACROS': PROJECT_DEF,
        'MACHINE-OPTS': [
            '-mcpu=cortex-m4',
```

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```
            '-mfpu=fpv4-sp-d16',
            '-mfloat-abi=hard',
            '-mthumb'
        ],
        'OPTIMIZE-OPTS': [
            '-O0'
        ],
        'OPTIONS': [
            '-ffunction-sections',
            '-fstack-usage',
            '-fdata-sections '
        ],
        'DEBUGGING-OPTS': [
            '-g3'
        ],
        'PREPROCESSOR-OPTS': [
            '-MP',
            '-MMD'
        ],
        'WARNINGS-OPTS': [
            '-Wall'
        ],
        'CONTROL-C-OPTS': [
            '-std=gnu11'
        ],
        'GENERAL-OPTS': [
            '--specs=nano.specs'
        ]
    }


def getLinkerOpts():
    return {
        'LINKER-SCRIPT': [
            '-TSTM32F407VETX_FLASH.ld'
        ],
        'MACHINE-OPTS': [
            '-mcpu=cortex-m4',
            '-mfpu=fpv4-sp-d16',
            '-mfloat-abi=hard',
            '-mthumb'
        ],
        'GENERAL-OPTS': [
            '--specs=nosys.specs'
        ],
        'LINKER-OPTS': [
            '-Wl,-Map='+TARGET_MAP,
            '-Wl,--gc-sections',
            '-static',
            '-Wl,--start-group',
            '-lc',
            '-lm',
            '-Wl,--end-group',
            '-u_printf_float'
        ]
    }
```

## 2.1 Makeclass

**Makefile.py** in class mode:

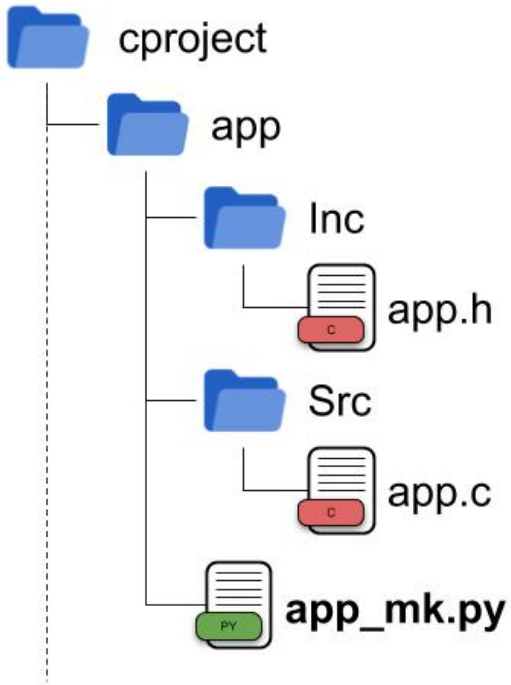
```
from pymakelib import AbstractMake, Makeclass

@Makeclass
class Project(AbstractMake):

    def getProjectSettings(self, **kwargs):
        ...

    def getTargetsScript(self, **kwargs):
        ...

    def getCompilerSet(self, **kwargs):
        ...

    def getCompilerOpts(self, **kwargs):
        ...

    def getLinkerOpts(self, **kwargs):
        ...
```

# CHAPTER 3

## <name>_mk.py

Python file that find and return the sources to compile in the current path.

The file name must end with **_mk.py**.




**app_mk.py** sample:

```
from pymakelib.module import ModuleHandle
```

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```
def init(mh: ModuleHandle):
    """
    Optional function, function that is always executed
    at the beginning of the module.
    """

def getSrcs(mh: ModuleHandle):
    """
    Return the path of all sources in 'cproject/app'

    Returns:
        list of string or Path
    """
    return mh.getAllSrcsC()


def getIncs(mh: ModuleHandle):
    """
    Return the folder of all includes in 'cproject/app'

    Returns:
        list of string or Path
    """
    return mh.getAllIncsC()


def getCompilerOpts(mh: ModuleHandle):
    """
    Optional function, change in the options
    of how these sources are compiled.
    """
    opt = mh.getWorkspace()['compilerOpts']
    opt['CONTROL-C-OPTS'] = ['-std=c89']
    return opt
```

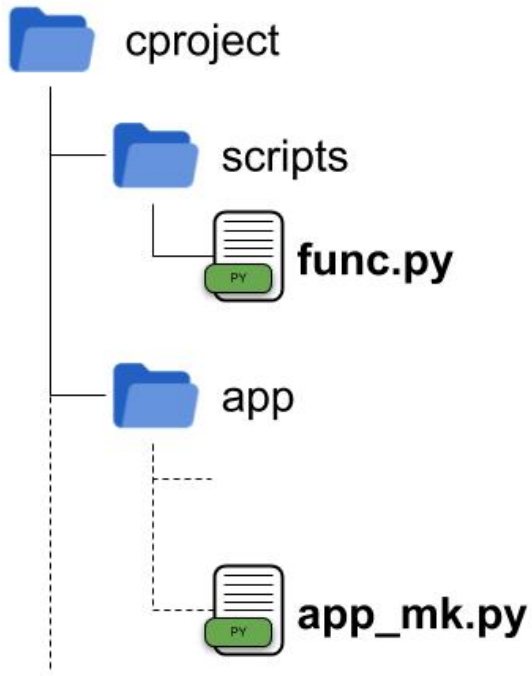
**app_mk.py** in hardcode mode:

```
from pymakelib.module import ModuleHandle

def getSrcs(mh: ModuleHandle):
    return [
        'app/app.c'
    ]


def getIncs(mh: ModuleHandle):
    return [
        'app'
    ]
```

CHAPTER 4

# User scripts

The developer can add more python scripts and import into _mk.py files.




For example in **func.py**:

```
# File func.py

def log(msg):
    print(msg)
```

The **func.py** can import in **app_mk.py**:

```
from pymakelib.module import ModuleHandle
import scripts.func as f


def init(mh: ModuleHandle):
    f.log('Init module app')


def getSrcs(mh: ModuleHandle):
    return [
        'app/app.c'
    ]


def getIncs(mh: ModuleHandle):
    return [
        'app'
    ]
```

CHAPTER 5

# pybuildanalyzer2

Util for ARM embedded systems. This utility summarizes memory usage and symbols size.

```
$ pybuildanalyzer2 -h
usage: pybuildanalyzer2 [-h] [-g] [-v] elf

Builder Analyzer for ARM firmware

positional arguments:
elf            ELF file

optional arguments:
-h, --help     show this help message and exit
-g, --gtk      Show in gtk window
-v, --version  show program's version number and exit
```

## 5.1 Output in console

```
$ ./pybuildanalyzer2 Release/app/app.elf
| Region      | Start          | End            |         Size|         Free|
↪Used             Usage(%) |
| RamLoc32    | 0x10000000     | 0x10008000     |     32.00 KB|     31.77 KB|
↪232 B |          |   0.71% |
| RamLoc40    | 0x10080000     | 0x1008a000     |     40.00 KB|     40.00 KB|
↪ 0 B |          |   0.00% |
| MFlashA512  | 0x1a000000     | 0x1a080000     |    512.00 KB|    502.54 KB|      9.
↪46 KB |          |   1.85% |
| MFlashB512  | 0x1b000000     | 0x1b080000     |    512.00 KB|    512.00 KB|
↪ 0 B |          |   0.00% |
| RamAHB32    | 0x20000000     | 0x20008000     |     32.00 KB|     32.00 KB|
↪ 0 B |          |   0.00% |
| RamAHB16    | 0x20008000     | 0x2000c000     |     16.00 KB|     16.00 KB|
↪ 0 B |          |   0.00% |
```

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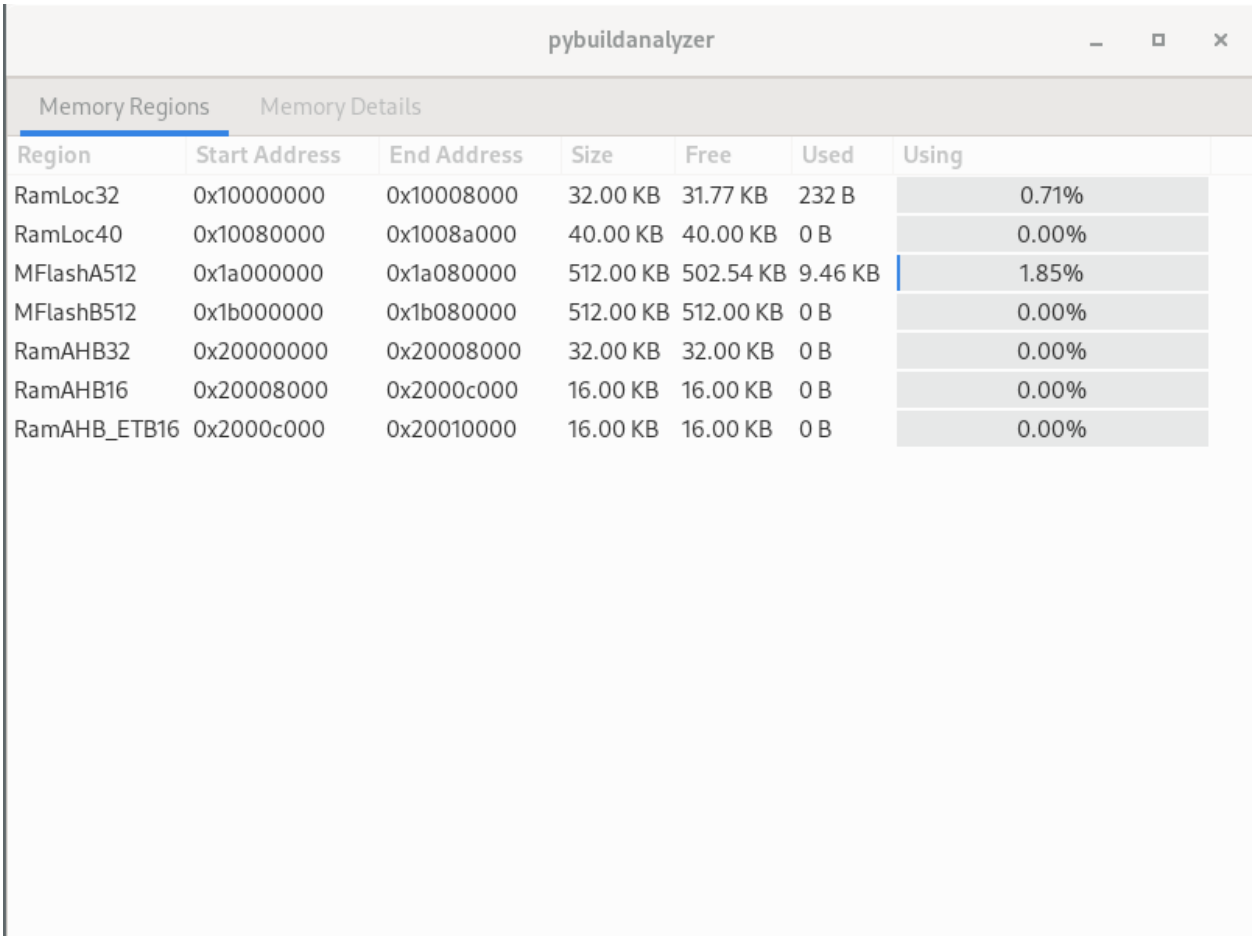
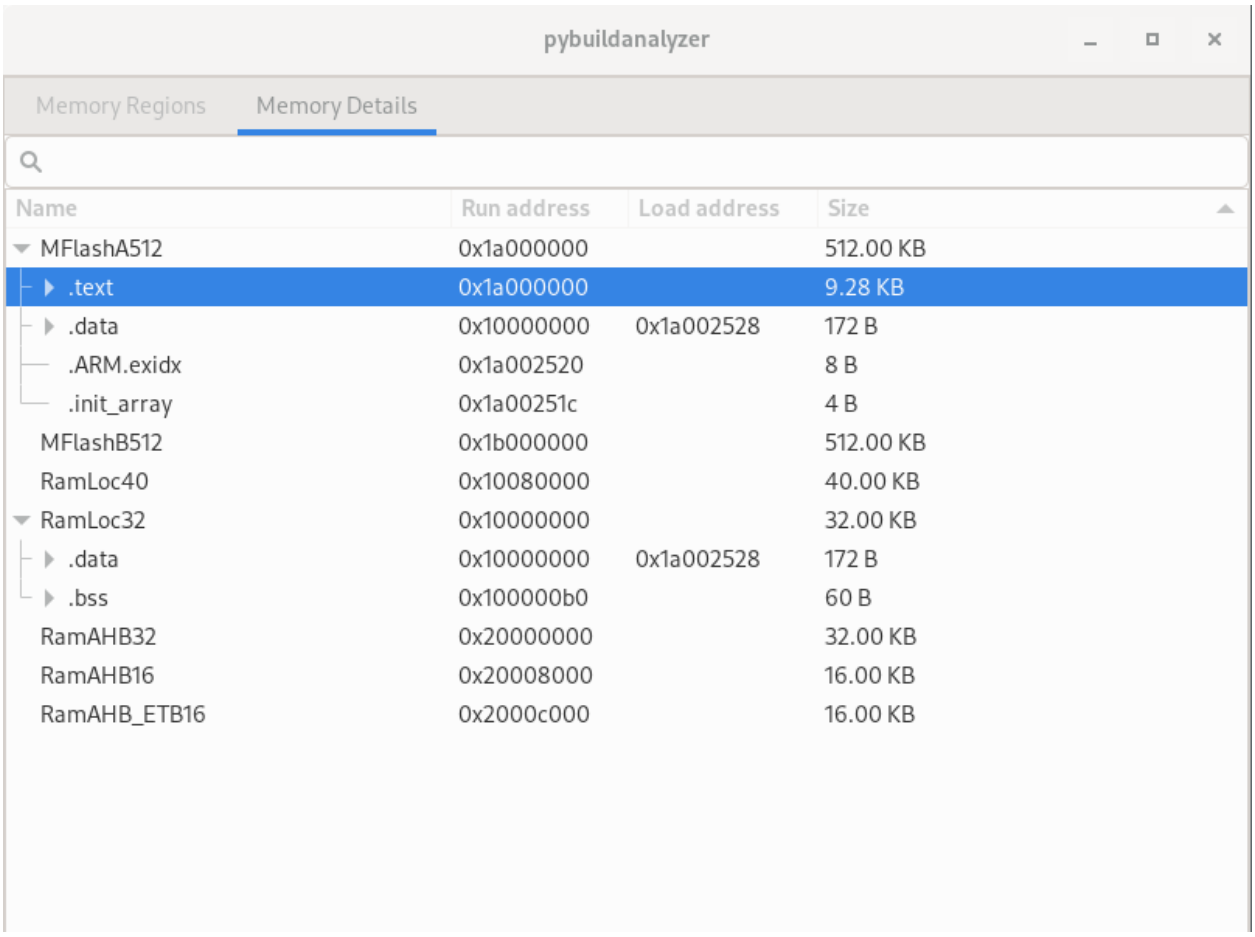
```
| RamAHB_ETB16| 0x2000c000      | 0x20010000      |      16.00 KB|      16.00 KB|
↪ 0 B |           |    0.00% |
```

## 5.2 Output in GTK

```
$ ./pybuildanalyzer2 -g Release/app/app.elf
```



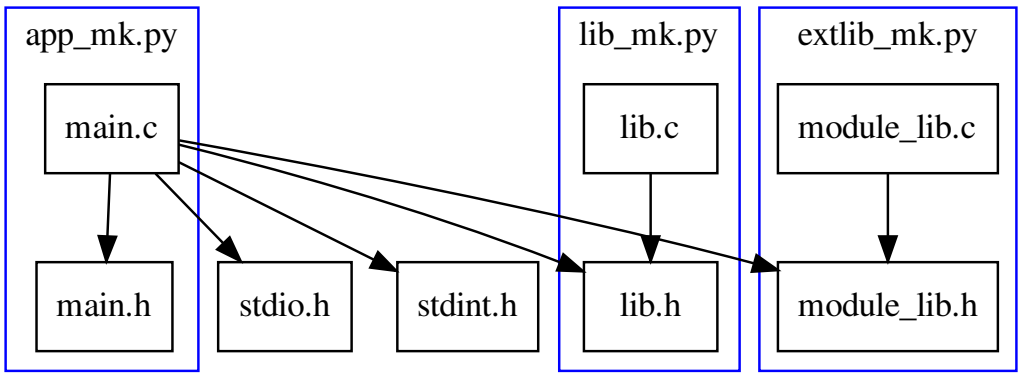

pybuildanalyzer
Memory Regions
Memory Details
Name
Run address
Load address
Size
MFlashA512 0x1a000000 512.00 KB
.text 0x1a000000 9.28 KB
.data 0x10000000 0x1a002528 172 B
.ARM.exidx 0x1a002520 8 B
.init_array 0x1a00251c 4 B
MFlashB512 0x1b000000 512.00 KB
RamLoc40 0x10080000 40.00 KB
RamLoc32 0x10000000 32.00 KB
.data 0x10000000 0x1a002528 172 B
.bss 0x100000b0 60 B
RamAHB32 0x20000000 32.00 KB
RamAHB16 0x20008000 16.00 KB
RamAHB_ETB16 0x2000c000 16.00 KB

CHAPTER 6

# pymakedot

This utility create a simple dot file (a.out) of pymaketool modules. e.g.:

```
$ pymakedot app/application/app_mk.py lib/lib_mk.py extlib/extlib_mk.py
$ xdot a.out
```



CHAPTER 7

# Addons

pymaketool support addons for extenden functionalities. The addons will be executed before the compilation of the project. Add the next lines en **Makefile.py**

```
from pymakelib import addon

addon.add(yourAddonFunction)
# or
addon.add(yourAddonClass)
```

## 7.1 Addon function

Simple addon, her entry point is a function with two arguments, for example:

```
def myAddon(projectSettins, compilerSettings):
    """
    Print project and compiler settings
    """
    print(projectSettins)
    print(compilerSettings)
```

## 7.2 VSCODE Addon

vscode_addon.py is a simple addon that generate c_cpp_properties.json and launch.json

```
import json
import os

def vscodeGen_c_cpp_properties(projSett, compSett):
    """
```

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```
    Generate file .vscode/c_cpp_properties.json
    """
    defines = []
    for d, v in projSett['C_SYMBOLS'].items():
        if not v is None:
            defines.append(str(d) + "=" + str(v))
        else:
            defines.append(str(d))

    # Change here
    c_cpp_properties = {
        "configurations": [
            {
                'name': 'gcc',
                'defines': defines,
                "compilerPath": compSett['CC'],
                "intelliSenseMode": "linux-gcc-x86",
                "cStandard": "gnu11",
                "cppStandard": "c++17",
                "includePath": projSett['C_INCLUDES'],
                "browse": {
                    "path": projSett['C_INCLUDES'],
                    "limitSymbolsToIncludedHeaders": True,
                    "databaseFilename": "${workspaceFolder}/.vscode/browse.vc.db"
                }
            }
        ],
        "version": 4
    }

    output = json.dumps(c_cpp_properties, indent=4)
    if not os.path.exists('.vscode'):
        os.makedirs('.vscode')
    print("Generate .vscode/c_cpp_properties.json")
    fileout = open(".vscode/c_cpp_properties.json", "w")
    fileout.write("// pymaketool: File autogenerate, see vscode_plugin.py\n")
    fileout.write(output)
    fileout.close()


def vscodeGen_launch(projSett, compSett):
    """
    Generate file .vscode/launch.json
    """
    outputFile = projSett['C_TARGETS']['TARGET']['FILE']
    launch = {
        "version": "0.2.0",
        "configurations": [
            {
                "name": "(gdb) Launch",
                "type": "cppdbg",
                "request": "launch",
                "program": "${workspaceFolder}/" + str(outputFile),
                "args": [],
                "stopAtEntry": False,
                "cwd": "${workspaceFolder}",
                "environment": [],
```

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```
                "console": "externalTerminal",
                "MIMode": "gdb",
                "setupCommands": [
                    {
                        "description": "Enable pretty-printing for gdb",
                        "text": "-enable-pretty-printing",
                        "ignoreFailures": True
                    }
                ]
            }
        ]
    }

    output = json.dumps(launch, indent=4)
    if not os.path.exists('.vscode'):
        os.makedirs('.vscode')
    print("Generate .vscode/launch.json")
    fileout = open(".vscode/launch.json", "w")
    fileout.write("// pymaketool: File autogenerate, see vscode_plugin.py\n")
    fileout.write(output)
    fileout.close()

def vscode_init(projSett, compSett):
    """
    Entry point of vscode_addon
    """
    # print(projSett)
    # print(compSett)
    vscodeGen_c_cpp_properties(projSett, compSett)
    vscodeGen_launch(projSett, compSett)
```

Add in Makefile.py the line:

```
addon.add(vscode_init)
```

## 7.3 Addon class

Scalable version for development and extenden addons, for example:

```
from pymakelib import addon

class MyAddon(addon.AddonAbstract):
    """
    Print project and compiler settings
    """
    def init(self):
        print(self.projectSettins)
        print(self.compilerSettings)
```

Add in Makefile.py the line:

```
addon.add(MyAddon)
```

CHAPTER 8

# Logger

To enable logger of **pymaketool**, set environment variable LOGLEVEL. Default value is NOTSET.

```
$ export LOGLEVEL=DEBUG
```

Or add paramter in make command.

```
$ make LOGLEVEL=DEBUG
```

CHAPTER 9

# pymakelib

## 9.1 pymakelib package

### 9.1.1 Submodules

### 9.1.2 pymakelib.addon module

**class** pymakelib.addon.**AddonAbstract**(*projectSettings*, *compilerSettings*)
Bases: object

**init**()

pymakelib.addon.**add**(*inst*)

pymakelib.addon.**init**(*func*)

### 9.1.3 pymakelib.armsize module

**class** pymakelib.armsize.**ItemSizeStat**(*name*, *size*, *addr*)
Bases: object

**getAddr**()

**getSize**()

**string**()

pymakelib.armsize.**getSizeAddr**(*line*)

pymakelib.armsize.**main**(*argv*)

pymakelib.armsize.**printKB**(*value*, *decimals=1*)

pymakelib.armsize.**printPrtg**(*value*, *decimals=1*)

### 9.1.4 pymakelib.ceedling module

pymakelib.ceedling.**getCeedlingHeaderFiles**()

### 9.1.5 pymakelib.eclipse_addon module

**class** pymakelib.eclipse_addon.**EclipseAddon**(*projectSettings*, *compilerSettings*)
Bases: *pymakelib.addon.AddonAbstract*

Generate Eclipse cproject files.

**generateCProject**()

**generateLanguageSettings**()

**init**()

### 9.1.6 pymakelib.eclipse_cproject module

pymakelib.eclipse_cproject.**generate_cproject**(*listconf: dict*)

pymakelib.eclipse_cproject.**generate_languageSettings**(*compilerSettings: dict*)

pymakelib.eclipse_cproject.**writeXmlExcluding**(*excList*)

pymakelib.eclipse_cproject.**writeXmlIncludes**(*incList*)

pymakelib.eclipse_cproject.**writeXmlSymbols**(*symList*)

### 9.1.7 pymakelib.eclipse_files module

### 9.1.8 pymakelib.exclude module

### 9.1.9 pymakelib.git module

pymakelib.git.**getBranchName**()

pymakelib.git.**getCommitHash**(*abbreviated=True*)

pymakelib.git.**getDescribe**(*options='–long'*)

pymakelib.git.**printRelativePath**(*filemacro*)

### 9.1.10 pymakelib.make_files module

### 9.1.11 pymakelib.module module

**class** pymakelib.module.**AbstractModule**
Bases: abc.ABC

Abstract class of pymaketool module

**Parameters** **path** (*str*) – path to module, _mk.py file.

**path**
path of module

**Type** str

**findIncs**(*inc_type: pymakelib.module.IncType*) → list
Util method for find includes in module path

**Parameters** **inc_type** (IncType) – Type of includes C or CPP

**Returns** list of includes paths realtive to project

**Return type** list

**findSrcs**(*src_type: pymakelib.module.SrcType*) → list
Util method for find sources in module path

**Parameters** **src_type** (SrcType) – Type of sources C, CPP or ASM

**Returns** list of sources paths realtive to project

**Return type** list

**getAllIncsC**() → list
Útil method for get all includes in module, type C

**Returns** list of includes paths realtive to project

**Return type** list

**getAllSrcsC**() → list
Util method for get all sources in module, type C

**Returns** list of sources paths realtive to project

**Return type** list

**getCompilerOpts**()
Get special compiler options for module

**getIncs**() → list
Abstract method to get the includes paths of module

**Returns** list of includes paths realtive to project

**Return type** list

**getSrcs**() → list
Abstract method to get the sources paths of module

**Returns** list of sources paths realtive to project

**Return type** list

**get_module_name**() → str
Module name

**Returns** name of module (default: class name)

**Return type** str

**get_path**()
Get path of module in filesystem

**Returns** path (default: self.__module__.module_name)

**Return type** str

**init**()
Initialization of module

**class** pymakelib.module.**BasicCModule**
Bases: *pymakelib.module.AbstractModule*

Basic C module, find all sources and includes in module path

**Parameters** **path** (*str*) – path to module, _mk.py file.

**getIncs**() → list
return list with all includes in module path

**Returns** includes path

**Return type** list

**getSrcs**() → list
Return list with all sources in module path

**Returns** sources paths

**Return type** list

**class** pymakelib.module.**CompilerOptions**(*opts: dict*)
Bases: object

**addOption**(*key*, *value*)

**setOption**(*key*, *value*)

**class** pymakelib.module.**ExternalModule**
Bases: *pymakelib.module.AbstractModule*

The ExternalModule object that inherits from AbstractModule for include external pymaketool module

**Parameters** **path** (*str*) – path to module, _mk.py file.

**remoteModule**
remote module object.

**Type** *AbstractModule*

**Raises** AttributeError – path is not valid

**getCompilerOpts**()
Call and return getCompilerOpts from remote module

**Returns** compiler options

**Return type** disct

**getIncs**()
Call and return getIncs from remote module

**Returns** list of includes

**Return type** list

**getModulePath**() → str
Abstract methos to get string path of external module

**Returns** path of external module

**Return type** str

**getSrcs**()
Call and return getSrcs from remote module

**Returns** list of sources

**Return type** list

**init**()
Call and return init from remote module

**Returns** may be StaticLibrary object or None

**Return type** object

**class** pymakelib.module.**GCC_CompilerOpts**(*copts*)
Bases: *pymakelib.module.CompilerOptions*

**addGeneralOpt**(*opts: list*)

**addMacroOpts**(*macro*, *value=None*)

**getMacroValue**(*macro*)

**isDefine**(*macro*)

**isMacroValue**(*macro*, *value*)

**setControlCOpts**(*opts: list*)

**setDebuggingOpts**(*opts: list*)

**setOptimizationOpts**(*opts: list*)

**setWarningdOpts**(*opts: list*)

**class** pymakelib.module.**IncType**
Bases: object

**C = ['.h']**

**CPP = ['.h', '.hpp', '.h++', '.hh']**

**class** pymakelib.module.**Module**(*srcs*, *incs*, *flags*, *filename*, *staticLib: pymakelib.module.StaticLibrary = None*)
Bases: object

**getDirs**()

**isEmpty**()

pymakelib.module.**ModuleClass**(*clazz*)
Add class to modules of pymaketool

**Parameters** **clazz** (*class*) – Class inheritance of Module.AbstractModule

**class** pymakelib.module.**ModuleHandle**(*modDir*, *gCompOpts*, *goal=None*)
Bases: object

**getAllIncs**(*incType: pymakelib.module.IncType*)

**getAllIncsC**()

**getAllSrcs**(*srcType: pymakelib.module.SrcType*)

**getAllSrcsC**()

**getFileByNames**(*names*)

**getFilesByRegex**(*regexs*, *relativePath=None*)

**getGeneralCompilerOpts**()

**getGoal**()

**getRelaptivePath**()

**getSrcsByPath**(*srcs*)

**getWorkspace**()

**initGitModule = DeprecationWarning(<function ModuleHandle.initGitModule>)**

**class** pymakelib.module.**POJOModule**(*path*)
Bases: *pymakelib.module.AbstractModule*

**getCompilerOpts**()
Get special compiler options for module

**getIncs**() → list
Abstract method to get the includes paths of module

**Returns** list of includes paths realtive to project

**Return type** list

**getSrcs**() → list
Abstract method to get the sources paths of module

**Returns** list of sources paths realtive to project

**Return type** list

**init**()
Initialization of module

**class** pymakelib.module.**SrcType**
Bases: object

**ASM = ['.s', '.S', '.asm']**

**C = ['.c']**

**CPP = ['.C', '.cc', '.cpp', '.CPP', '.c++', '.cp', '.cxx']**

**class** pymakelib.module.**StaticLibrary**(*name: str*, *outputDir: str*, *rebuild=False*, *lib_linked_opts=None*, *orden=1*)
Bases: object

**rebuildByCheckStr**(*checkStr: str*)

**setRebuild**(*rebuild: bool*)

**class** pymakelib.module.**StaticLibraryModule**
Bases: object

**decorate_module**()

**get_command**(*key*) → str

**get_lib_name**() → str

**get_lib_outputdir**() → str

**get_linker**(*key*) → str

**get_linker_opts**() → str

**get_objects**(*key*) → str

**get_order**()

**get_rebuild**()

**get_rule**(*key*) → str

pymakelib.module.**cleanModuleInstance**()

pymakelib.module.**getModuleInstance**() → pymakelib.module.AbstractModule

### 9.1.12 pymakelib.moduleignore module

pymakelib.moduleignore.**readIgnoreFile**(*file=PosixPath('.moduleignore')*)

pymakelib.moduleignore.**writeIgnoreFile**(*ignoreList: list*, *file=PosixPath('.moduleignore')*)

### 9.1.13 pymakelib.preconts module

### 9.1.14 pymakelib.prelib module

pymakelib.prelib.**add_value2list**(*dstList: list*, *values*)

pymakelib.prelib.**compilerOptsByModuleToLine**(*compOpts*)

pymakelib.prelib.**list2str**(*l*)

pymakelib.prelib.**macrosDictToString**(*macros*)

pymakelib.prelib.**overrideFile**(*outfile*)

pymakelib.prelib.**readGenHeader**(*headerpath*)

pymakelib.prelib.**readModule**(*modPath*, *compilerOpts*, *goals=None*)

pymakelib.prelib.**read_Makefilepy**(*workpath=''*)

pymakelib.prelib.**read_Makefilepy_obj**(*workpath=''*) → pymakelib.AbstractMake

pymakelib.prelib.**read_module**(*module_path: pathlib.Path*, *compiler_opts*, *goals=None*) → List[pymakelib.module.AbstractModule]

pymakelib.prelib.**tmp_file_name**(*file_path: str*)

pymakelib.prelib.**wprGetCompilerOpts**(*mod*, *modHandle*, *moduleInstance=None*)

pymakelib.prelib.**wprGetIncs**(*mod*, *modHandle*, *moduleInstance=None*)

pymakelib.prelib.**wprGetSrcs**(*mod*, *modHandle*, *moduleInstance=None*)

pymakelib.prelib.**wprInit**(*mod*, *modHandle*, *moduleInstance=None*)

### 9.1.15 pymakelib.preutil module

pymakelib.preutil.**copyFile**(*file_path_from*, *file_path_to*)

pymakelib.preutil.**getAllIncs**(*wkmh*, *incType: pymakelib.module.IncType*)

pymakelib.preutil.**getAllIncs_C**(*wkmh*)

pymakelib.preutil.**getAllSrcs**(*wkmh*, *srcType: pymakelib.module.SrcType*)

pymakelib.preutil.**getAllSrcs_C**(*wkmh*)

pymakelib.preutil.**getFileHash**(*file_path: str*)

pymakelib.preutil.**getSrcsByRgx**(*wkmh*, **regexs*)

### 9.1.16 pymakelib.printsrc module

**class** pymakelib.printsrc.**bcolors**
Bases: object

**BOLD = '\x1b[1m'**

**CBEIGE = '\x1b[36m'**

**CBEIGE2 = '\x1b[96m'**

**CBEIGEBG = '\x1b[46m'**

**CBEIGEBG2 = '\x1b[106m'**

**CBLACK = '\x1b[30m'**

**CBLACKBG = '\x1b[40m'**

**CBLINK = '\x1b[5m'**

**CBLINK2 = '\x1b[6m'**

**CBLUE = '\x1b[34m'**

**CBLUE2 = '\x1b[94m'**

**CBLUEBG = '\x1b[44m'**

**CBLUEBG2 = '\x1b[104m'**

**CBOLD = '\x1b[1m'**

**CEND = '\x1b[0m'**

**CGREEN = '\x1b[32m'**

**CGREEN2 = '\x1b[92m'**

**CGREENBG = '\x1b[42m'**

**CGREENBG2 = '\x1b[102m'**

**CGREY = '\x1b[90m'**

**CGREYBG = '\x1b[100m'**

**CITALIC = '\x1b[3m'**

**CRED = '\x1b[31m'**

**CRED2 = '\x1b[91m'**

**CREDBG = '\x1b[41m'**

**CREDBG2 = '\x1b[101m'**

**CSELECTED = '\x1b[7m'**

**CURL = '\x1b[4m'**

**CVIOLET = '\x1b[35m'**

**CVIOLET2 = '\x1b[95m'**

**CVIOLETBG = '\x1b[45m'**

**CVIOLETBG2 = '\x1b[105m'**

**CWHITE = '\x1b[37m'**

**CWHITE2 = '\x1b[97m'**

**CWHITEBG = '\x1b[47m'**

**CWHITEBG2 = '\x1b[107m'**

**CYELLOW = '\x1b[33m'**

**CYELLOW2 = '\x1b[93m'**

**CYELLOWBG = '\x1b[43m'**

**CYELLOWBG2 = '\x1b[103m'**

**ENDC = '\x1b[0m'**

**FAIL = '\x1b[91m'**

**HEADER = '\x1b[95m'**

**OKBLUE = '\x1b[94m'**

**OKGREEN = '\x1b[92m'**

**UNDERLINE = '\x1b[4m'**

**WARNING = '\x1b[93m'**

pymakelib.printsrc.**colorSrc**(*pathsrc*)

### 9.1.17 pymakelib.project module

pymakelib.project.**define**(*key*) → str
Get value of define if exist.

**Parameters** **key** (*str*) – name of define (macro)

**Returns** value of define in string, if define value is None return '',if key is not defined return None

**Return type** str

pymakelib.project.**getCompilerOpts**() → dict
Get the project compiler options

**Returns** General project compiler options

**Return type** dict

pymakelib.project.**getSettings**()

pymakelib.project.**get_base_build**() → str
Get base build folder

**Returns** base build folder

**Return type** str

pymakelib.project.**isdefined**(*key*) → bool
Check if project have define.

**Parameters** **key** (*str or D*) – name of define or macro

**Returns** True if key is defined

**Return type** bool

pymakelib.project.**setSettings**(*settings*)

### 9.1.18 pymakelib.pycodegen module

pymakelib.pycodegen.**HEADER_FILE**(**args*, ***kwargs*)

pymakelib.pycodegen.**comment**(*value: str*)

pymakelib.pycodegen.**enum**(*names, values=[0]*)

pymakelib.pycodegen.**enum_sf**(*strformat*, *range*, *init=0*)

pymakelib.pycodegen.**enum_str_map**(*name*, *strdict: dict*)

pymakelib.pycodegen.**out**(*value*)

### 9.1.19 pymakelib.toolchain module

pymakelib.toolchain.**confARMeabiGCC**(*binLocation=''*, *prefix='arm-none-eabi-'*, *extIncludes=[]*)

pymakelib.toolchain.**confGCC**(*binLocation=''*, *prefix=''*, *extIncludes=[]*, *iscpp=False*)

pymakelib.toolchain.**confLinuxGCC**(*binLocation=''*, *extIncludes=[]*)

pymakelib.toolchain.**confToolchain**(*cmd_gcc*, *cmd_gxx*, *cmd_ld*, *cmd_ar*, *cmd_as*, *cmd_objcopy*, *cmd_size*, *cmd_objdump*, *cmd_nm*, *cmd_ranlib*, *cmd_strings*, *cmd_strip*, *cmd_cxxfilt*, *cmd_addr2line*, *cmd_readelf*, *cmd_elfedit*, *includes*)

pymakelib.toolchain.**getGCCHeaderFiles**(*cmd_gcc*)

pymakelib.toolchain.**get_c_linux**(*bin_location=''*, *ext_incs=[]*) → dict

pymakelib.toolchain.**get_cpp_linux**(*bin_location=''*, *ext_incs=[]*) → dict

pymakelib.toolchain.**get_gcc_arm_none_eabi**(*binLocation=''*, *prefix='arm-none-eabi-'*, *extIncludes=[]*) → dict

Get dictionary with gcc compiler set of arm-none-eabi-

**Parameters**

- **binLocation** (*str, optional*) – Location of toolchain binary. Defaults to ‘’.
- **prefix** (*str, optional*) – prefix of ARM toolchain. Defaults to ‘arm-none-eabi-‘.
- **extIncludes** (*list, optional*) – list of external includes. Defaults to [].

**Returns** set of gcc compiler e.g. {‘CC’: ‘arm-none-eabi-gcc’ . . . }

**Return type** dict

pymakelib.toolchain.**get_gcc_linux**(*bin_location=''*, *ext_incs=[]*) → dict

Get dictionary with gcc compiler set for linux

**Parameters**

- **bin_location** (*str, optional*) – location of toolchain. Defaults to ‘’.
- **ext_incs** (*list, optional*) – list of external includes. Defaults to [].

**Returns** set of gcc compiler e.g. {‘CC’: ‘gcc’ . . . }

**Return type** dict

pymakelib.toolchain.**get_gpp_linux**(*bin_location=''*, *ext_incs=[]*) → dict

Get dictionary with g++ compiler set for linux

**Parameters**

- **bin_location** (*str, optional*) – location of toolchain. Defaults to ‘’.
- **ext_incs** (*list, optional*) – list of external includes. Defaults to [].

**Returns** set of gcc compiler e.g. {‘CC’: ‘g++’ ... }

**Return type** dict

### 9.1.20 Module contents

**class** pymakelib.**AbstractMake**

Bases: abc.ABC

**getCompilerOpts**(***kwargs*) → dict

**getCompilerSet**(***kwargs*) → dict

**getLinkerOpts**(***kwargs*) → dict

**getProjectSettings**(***kwargs*) → dict

**getTargetsScript**(***kwargs*) → dict

**class** pymakelib.**Define**(*value*)

Bases: object

Direct define: { ‘__USE_FILE__’: D(‘file.h’) } => -D__USE_FILE__=file.h

**getDefine**()

**class** pymakelib.**Logger**

Bases: object

**static getInstance**()

Static access method.

**static getLogger**() → logging.Logger

**class** pymakelib.**MKVARS**

Bases: object

**ADDR2LINE = '$(ADD2LINE)'**

**CELFEDIT = '$(ELFEDIT)'**

**CXXFILT = '$(CXXFILT)'**

**LD = '$(LD)'**

**LDFLAGS = '$(LDFLAGS)'**

**NM = '$(NM)'**

**OBJCOPY = '$(OBJCOPY)'**

**OBJECTS = '$(OBJECTS)'**

**PROJECT = '$(PROJECT)'**

**RANLIB = '$(RANLIB)'**

**READELF = '$(READELF)'**

**SIZE = '$(SIZE)'**

**STATIC_LIBS = '$(SLIBS_NAMES)'**

**STRINGS = '$(STRINGS)'**

**STRIP = '$(STRIP)'**

**TARGET = '$(TARGET)'**

pymakelib.**MOD_PATH**(*wk*)

pymakelib.**Makeclass**(*clazz*)

**class** pymakelib.**Pymaketool**(*workpath='./'*)

Bases: object

**getModulesPaths**() → list

**readModules**(*modulesPaths*) → list

**read_modules**(*modulesPaths*) → List[pymakelib.module.AbstractModule]

pymakelib.**getProjectInstance**() → pymakelib.AbstractMake

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