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A Convenient Framework for Building Command Line Interfaces, Installables, and Documentation for Python3 Tools

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Why Create a Python3 Software Tool?

- Many software scripts are already developed using Python3
- True software tools are installable files
- Python3 installables are:
 - Highly portable install files
 - Convenient, embedded documentation
 - Accessible both in command terminal and Python shell
 - Much faster to make than you may think!
- An extra 2 minutes spent writing down the description and expected inputs of a script can save you and your collaborators a lot of headache

Python Argparse Package

Python Code

```
#!/usr/bin/env python3
import os
import argparse

myName = os.path.splitext(os.path.basename(__file__))[0]

def main(name:str,num1:float,num2:float,subtract:bool):
    print(f'Hello {name}!')
    if subtract:
        print(f'Subtraction selected. {num1}-{num2}={num1-num2}')
    else:
        print(f'Addition selected. {num1}+{num2}={num1+num2}')

if __name__ == '__main__':
    parser = argparse.ArgumentParser(prog=myName,description='Argparse example for CHES 2025')
    parser.add_argument('name',type=str,help='Your name')
    parser.add_argument('num1',type=float,help='First operand')
    parser.add_argument('-n','--num2',type=float,default=0,help='Second operand')
    parser.add_argument('-s','--subtract',default=False,action='store_true',help='Set to subtract')
    args = parser.parse_args()
    main(args.name,args.num1,args.num2,args.subtract)
```

Command Terminal

```
● axf190026@ece259764:~/Test_Scripts/Python/Arguments/Argparse$ ./argparseEx.py -h
usage: argparseEx [-h] [-n NUM2] [-s] name num1

Argparse example for CHES 2025

positional arguments:
  name          Your name
  num1          First operand

options:
  -h, --help          show this help message and exit
  -n NUM2, --num2 NUM2 Second operand
  -s, --subtract      Set to subtract
● axf190026@ece259764:~/Test_Scripts/Python/Arguments/Argparse$ ./argparseEx.py Aric 2 -n 5
Hello Aric!
Addition selected. 2.0+5.0=7.0
○ axf190026@ece259764:~/Test_Scripts/Python/Arguments/Argparse$
```

Project Directory Framework

```
dist/  
  L myPackage.whl  
  L myPackage.tar.gz  
man/  
  L myScript.1  
  L myScript.1.md  
src/  
  L myScript.py  
  L myScript_cli.py  
test/  
build.sh  
LICENSE  
pyproject.toml  
README.md  
setup.py
```

- **build.sh** – Generates installables, Linux man page
- **myPackage.*** – highly-portable Pip-installable package
- **myScript_cli.py** – Python Argparse interface used when calling **myScript.py** from command terminal
- **myScript.1.md** – Linux man page source
- **pyproject.toml** – All project metadata, URLs, & dependencies