Functions

In [15]:
```
def print_name(name):
    """This function prints the name of the person."""
    print(name)
```

In [16]:
```
print_name('Rajesh')
```

```
Rajesh
```

In [17]:
```
print_name.__doc__
```

Out[17]:
```
'This function prints the name of the person.'
```

Write a python program to find the HCF(Highest common factor of two numbers.

In [18]:
```
num1 = 98
num2 = 78
```

In [19]:
```
def compute_hcf(num1, num2):
    """
    This function will compute the HCF of the given numbers.
    """
    if num1 > num2:
        smaller = num2
    else:
        smaller = num1

    hcf = []

    for num in range(1,smaller+1):
        if num1%num == 0 and num2%num == 0:
            hcf.append(num)
    return hcf[-1]
```

In [20]:
```
print("HCF of 98 and 78 is {}".format(compute_hcf(num1,num2)))
```

```
HCF of 98 and 78 is 2
```

In [21]:
```
num1, num2 = 4,16
```

In [22]:
```
print("HCF of {} and {} is {}".format(num1, num2, compute_hcf(num1,num2)))
```

```
HCF of 4 and 16 is 4
```

In [23]:
```
num1, num2 = 16, 96
```

In [24]:
```
print("HCF of {} and {} is {}".format(num1, num2, compute_hcf(num1,num2)))
```

```
HCF of 16 and 96 is 16
```

ABS

In [25]:
```
abs(-44545)
```

Out[25]:
```
44545
```

In [26]:
```
abs('Function name')
```

```
---------------------------------------------------------------------------
```

```
TypeError                                 Traceback (most recent call last)
<ipython-input-26-d32c8fa15d21> in <module>
----> 1 abs('Function name')

TypeError: bad operand type for abs(): 'str'
```

In [27]:
```
abs(-89.8475)
```

Out[27]: 89.8475

DIVMOD

In [28]:
```
divmod(4,2)             # Returns quotient and remainder
```

Out[28]: (2, 0)

In [29]:
```
divmod(8,3)
```

Out[29]: (2, 2)

ALL

In [30]:
```
all([1,2,3,4])              # it returns the bool(x) or bool for all values of x
```

Out[30]: True

In [31]:
```
all([1,2,3,4,])
```

Out[31]: True

In [32]:
```
all([1,2,3,4,0])            # 0 in python is False internally thus it returned Fal
```

Out[32]: False

In [33]:
```
all([False,1,2,3,4])
```

Out[33]: False

In [34]:
```
bool(7)
```

Out[34]: True

In [35]:
```
bool('X')
```

Out[35]: True

In [36]:
```
bool(0)
```

Out[36]: False

In [37]:
```
bool(-1)
```

Out[37]: True

DIR

In [38]:
```
import pandas
```

In [39]:
```
print(dir(pandas))
```

```
['BooleanDtype', 'Categorical', 'CategoricalDtype', 'CategoricalIndex', 'DataFrame',
'DateOffset', 'DatetimeIndex', 'DatetimeTZDtype', 'ExcelFile', 'ExcelWriter', 'Float
64Index', 'Grouper', 'HDFStore', 'Index', 'IndexSlice', 'Int16Dtype', 'Int32Dtype',
'Int64Dtype', 'Int64Index', 'Int8Dtype', 'Interval', 'IntervalDtype', 'IntervalInde
x', 'MultiIndex', 'NA', 'NaT', 'NamedAgg', 'Panel', 'Period', 'PeriodDtype', 'Period
Index', 'RangeIndex', 'Series', 'SparseArray', 'SparseDataFrame', 'SparseDtype', 'Sp
arseSeries', 'StringDtype', 'Timedelta', 'TimedeltaIndex', 'Timestamp', 'UInt16Dtyp
e', 'UInt32Dtype', 'UInt64Dtype', 'UInt64Index', 'UInt8Dtype', '__Datetime', '__Date
timeSub', '__SparseArray', '__SparseArraySub', '__builtins__', '__cached__', '__doc_
_', '__docformat__', '__file__', '__git_version__', '__loader__', '__name__', '__num
py', '__package__', '__path__', '__spec__', '__version__', '_config', '_hashtable',
'_is_numpy_dev', '_lib', '_libs', '_np_version_under1p16', '_np_version_under1p17',
'_np_version_under1p18', '_testing', '_tslib', '_typing', '_version', 'api', 'arra
y', 'arrays', 'bdate_range', 'compat', 'concat', 'core', 'crosstab', 'cut', 'date_ra
nge', 'datetime', 'describe_option', 'errors', 'eval', 'factorize', 'get_dummies',
'get_option', 'infer_freq', 'interval_range', 'io', 'isna', 'isnull', 'json_normaliz
e', 'lreshape', 'melt', 'merge', 'merge_asof', 'merge_ordered', 'notna', 'notnull',
'np', 'offsets', 'option_context', 'options', 'pandas', 'period_range', 'pivot', 'pi
vot_table', 'plotting', 'qcut', 'read_clipboard', 'read_csv', 'read_excel', 'read_fe
ather', 'read_fwf', 'read_gbq', 'read_hdf', 'read_html', 'read_json', 'read_orc', 'r
ead_parquet', 'read_pickle', 'read_sas', 'read_spss', 'read_sql', 'read_sql_query',
'read_sql_table', 'read_stata', 'read_table', 'reset_option', 'set_eng_float_forma
t', 'set_option', 'show_versions', 'test', 'testing', 'timedelta_range', 'to_datetim
e', 'to_numeric', 'to_pickle', 'to_timedelta', 'tseries', 'unique', 'util', 'value_c
ounts', 'wide_to_long']
```

ENUMERATE

In [40]:
```
numbers = [10,20,30,40,50]

for num1 , num2 in enumerate(numbers):
    print(num1, ' || ', num2)
```

```
0  ||  10
1  ||  20
2  ||  30
3  ||  40
4  ||  50
```

In [41]:
```
for idx, num in enumerate(numbers):
    print("Index ---> {} && Number ---> {}".format(idx,num))
```

```
Index ---> 0 && Number ---> 10
Index ---> 1 && Number ---> 20
Index ---> 2 && Number ---> 30
Index ---> 3 && Number ---> 40
Index ---> 4 && Number ---> 50
```

We can also change the starting point of the index

In [42]:
```
for idx, num in enumerate(numbers,500):
    print(idx, ' ||| ', num)
```

```
500  |||  10
501  |||  20
502  |||  30
503  |||  40
504  |||  50
```

FILTER

It works or applies function on every element.

In [43]:
```
def fil_f(num):
    return num >= abs(num)
```

In [44]:
```
list(filter(fil_f,[1,2,3,4,5,6,7,8,9]))
```

Out[44]:
```
[1, 2, 3, 4, 5, 6, 7, 8, 9]
```

In [45]:
```
tuple(filter(fil_f,[1,2,3,4,5,6,7,8,9]))
```

Out[45]:
```
(1, 2, 3, 4, 5, 6, 7, 8, 9)
```

In [46]:
```
set(filter(fil_f,[1,2,3,4,5,6,7,8,9]))
```

Out[46]:
```
{1, 2, 3, 4, 5, 6, 7, 8, 9}
```

In [47]:
```
set(filter(fil_f,[1,2,3,4,5,6,7,8,9,0,-1,-2,-3,-4]))
```

Out[47]:
```
{0, 1, 2, 3, 4, 5, 6, 7, 8, 9}
```

ISINSTANCE

We can check whether the object belongs to the particular class or category.

In [48]:
```
scores = {10,39,89,99,105,175}
```

In [49]:
```
isinstance(scores,list)
```

Out[49]:
```
False
```

In [50]:
```
isinstance(scores,dict)
```

Out[50]:
```
False
```

In [51]:
```
isinstance(scores,tuple)
```

Out[51]:
```
False
```

In [52]:
```
isinstance(scores,set)
```

Out[52]:
```
True
```

MAP

Applies the function on every element.

In [53]:
```
def divide_num_by_4(num):
    return num/4
```

In [54]:
```
list(map(divide_num_by_4,scores))
```

Out[54]:
```
[24.75, 9.75, 26.25, 2.5, 43.75, 22.25]
```

REDUCE

It works as a rolling function and applies the function on two elements.

In [55]:
```
from functools import reduce
```

In [56]:
```
def cume(val1, val2):
    return val1+val2
```

In [57]:
```
nums = [1,2,3,4,5]
```

In [58]:
```
reduce(cume,nums)
```

Out[58]: 15

KEYWORD ARGUMENTS

In [59]:
```
def hello_world(**kwargs):
    return (kwargs['first_name'], kwargs['middle_name'],kwargs['last_name'])
```

In [60]:
```
hello_world(first_name='Rajesh',middle_name='Kumar',last_name='sharma',an_name='titu
```

Out[60]: ('Rajesh', 'Kumar', 'sharma')

In [61]:
```
%timeit hello_world(first_name='Rajesh',middle_name='Kumar',last_name='sharma')
```

```
1.14 µs ± 215 ns per loop (mean ± std. dev. of 7 runs, 1000000 loops each)
```

In [62]:
```
def hello_world(**kwargs):
    print (kwargs['first_name'], kwargs['middle_name'],kwargs['last_name'])
```

In [63]:
```
hello_world(first_name='Rajesh',middle_name='Kumar',last_name='sharma')
```

```
Rajesh Kumar sharma
```

In [64]:
```
hello_world(first_name='Rajesh',middle_name='Kumar',last_name='sharma',an_name='titu
```

```
Rajesh Kumar sharma
```

Arbitary Arguments

In [65]:
```
def name_printing(*names):
    for l_name in names:
        print("First name is Rajesh and Last name is {0}".format(l_name))
```

In [66]:
```
name_printing('sharma','kumar','kapoor')
```

```
First name is Rajesh and Last name is sharma
First name is Rajesh and Last name is kumar
First name is Rajesh and Last name is kapoor
```

RECURSIVE FUNCTIONS

Function calling itself is a recursive functions.

These functions are more expensive in memory consumption and hard to debug.

In [67]:
```
def factorial(num):
    return num if num == 1 else num * factorial(num-1)
```

In [68]:
```
factorial(5)
```

Out[68]: 120

In [69]:
```
def fibonacci(num):
    return num if num <=1 else fibonacci(num-1) + fibonacci(num-2)
```

In [70]:
```
nums = range(0,10)
```

In [71]:
```
for num in nums:
    print(fibonacci(num))
```

```
0
1
1
2
3
5
8
13
21
34
```

LAMBDA Functions

In [72]:
```
sqr = lambda x: x**2
```

In [73]:
```
[sqr(num) for num in nums]
```

Out[73]:
```
[0, 1, 4, 9, 16, 25, 36, 49, 64, 81]
```

In [74]:
```
sum_of_2s = lambda x,y : x+y
```

In [75]:
```
sum_of_2s(3,5)
```

Out[75]:
```
8
```

In [76]:
```
nums = [1,2,3,4,5,6,7,8,9]
```

In [77]:
```
nums
```

Out[77]:
```
[1, 2, 3, 4, 5, 6, 7, 8, 9]
```

In [78]:
```
from functools import reduce
```

In [79]:
```
sum_list = reduce(lambda x,y:x+y,nums)
```

In [80]:
```
sum_list
```

Out[80]:
```
45
```

In [81]:
```
nums
```

Out[81]:
```
[1, 2, 3, 4, 5, 6, 7, 8, 9]
```

In [82]:
```
reduce(lambda x,y:x+y,map(lambda x : x/2,filter(lambda x: x%2==0,nums)))
```

Out[82]:
```
10.0
```

FILE HANDLING

In [83]:
```
f = open('test_file.txt','x')
```

In [84]:
```
f.write("I'm Rajesh Sharma and one day I'll be a Data Scientist.")
```

Out[84]:
```
55
```

In [85]:
```
f.close()
```

SCENARIO-1

In [86]:
```
f1 = open('test_file.txt','r')
```

In [87]:
```
f1.read()
```

Out[87]:
```
"I'm Rajesh Sharma and one day I'll be a Data Scientist."
```

SCENARIO-2

In [88]:
```
f1.tell()
```

Out[88]:
```
55
```

In [89]:
```
f1.seek(1)
```

Out[89]:
```
1
```

In [90]:
```
f1.tell()
```

Out[90]:
```
1
```

In [91]:
```
f1.read(5)
```

Out[91]:
```
"'m Ra"
```

In [92]:
```
f1.seek(50)
```

Out[92]:
```
50
```

In [93]:
```
f1.read()
```

Out[93]:
```
'tist.'
```

In [94]:
```
f1.tell()
```

Out[94]:
```
55
```

In [95]:
```
type(f1.readlines())
```

Out[95]:
```
list
```

In [96]:
```
type(f1.readline())
```

Out[96]:
```
str
```

In [97]:
```
f1.seek(20)
```

Out[97]:
```
20
```

In [98]:
```
f1.readlines()
```

Out[98]:
```
["d one day I'll be a Data Scientist."]
```

In [99]:
```
f1.readline()
```

Out[99]:
```
''
```

In [100…
```
f1.seek(20)
```

Out[100… 20

In [101…
```
f1.readline()
```

Out[101… "d one day I'll be a Data Scientist."

In [102…
```
f1.close()
```

In [103…
```
import os
```

In [104…
```
dir(__builtins__)
```

Out[104…
```
['ArithmeticError',
 'AssertionError',
 'AttributeError',
 'BaseException',
 'BlockingIOError',
 'BrokenPipeError',
 'BufferError',
 'BytesWarning',
 'ChildProcessError',
 'ConnectionAbortedError',
 'ConnectionError',
 'ConnectionRefusedError',
 'ConnectionResetError',
 'DeprecationWarning',
 'EOFError',
 'Ellipsis',
 'EnvironmentError',
 'Exception',
 'False',
 'FileExistsError',
 'FileNotFoundError',
 'FloatingPointError',
 'FutureWarning',
 'GeneratorExit',
 'IOError',
 'ImportError',
 'ImportWarning',
 'IndentationError',
 'IndexError',
 'InterruptedError',
 'IsADirectoryError',
 'KeyError',
 'KeyboardInterrupt',
 'LookupError',
 'MemoryError',
 'ModuleNotFoundError',
 'NameError',
 'None',
 'NotADirectoryError',
 'NotImplemented',
 'NotImplementedError',
 'OSError',
 'OverflowError',
 'PendingDeprecationWarning',
 'PermissionError',
 'ProcessLookupError',
 'RecursionError',
 'ReferenceError',
 'ResourceWarning',
 'RuntimeError',
 'RuntimeWarning',
 'StopAsyncIteration',
 'StopIteration',
 'SyntaxError',
```

```
 'SyntaxWarning',
 'SystemError',
 'SystemExit',
 'TabError',
 'TimeoutError',
 'True',
 'TypeError',
 'UnboundLocalError',
 'UnicodeDecodeError',
 'UnicodeEncodeError',
 'UnicodeError',
 'UnicodeTranslateError',
 'UnicodeWarning',
 'UserWarning',
 'ValueError',
 'Warning',
 'WindowsError',
 'ZeroDivisionError',
 '__IPYTHON__',
 '__build_class__',
 '__debug__',
 '__doc__',
 '__import__',
 '__loader__',
 '__name__',
 '__package__',
 '__spec__',
 'abs',
 'all',
 'any',
 'ascii',
 'bin',
 'bool',
 'bytearray',
 'bytes',
 'callable',
 'chr',
 'classmethod',
 'compile',
 'complex',
 'copyright',
 'credits',
 'delattr',
 'dict',
 'dir',
 'display',
 'divmod',
 'enumerate',
 'eval',
 'exec',
 'filter',
 'float',
 'format',
 'frozenset',
 'get_ipython',
 'getattr',
 'globals',
 'hasattr',
 'hash',
 'help',
 'hex',
 'id',
 'input',
 'int',
 'isinstance',
 'issubclass',
 'iter',
 'len',
 'license',
```

```
 'list',
 'locals',
 'map',
 'max',
 'memoryview',
 'min',
 'next',
 'object',
 'oct',
 'open',
 'ord',
 'pow',
 'print',
 'property',
 'range',
 'repr',
 'reversed',
 'round',
 'set',
 'setattr',
 'slice',
 'sorted',
 'staticmethod',
 'str',
 'sum',
 'super',
 'tuple',
 'type',
 'vars',
 'zip']
```

In [105…
```
dir(os)
```

Out[105…
```
['DirEntry',
 'F_OK',
 'MutableMapping',
 'O_APPEND',
 'O_BINARY',
 'O_CREAT',
 'O_EXCL',
 'O_NOINHERIT',
 'O_RANDOM',
 'O_RDONLY',
 'O_RDWR',
 'O_SEQUENTIAL',
 'O_SHORT_LIVED',
 'O_TEMPORARY',
 'O_TEXT',
 'O_TRUNC',
 'O_WRONLY',
 'P_DETACH',
 'P_NOWAIT',
 'P_NOWAITO',
 'P_OVERLAY',
 'P_WAIT',
 'PathLike',
 'R_OK',
 'SEEK_CUR',
 'SEEK_END',
 'SEEK_SET',
 'TMP_MAX',
 'W_OK',
 'X_OK',
 '_Environ',
 '__all__',
 '__builtins__',
 '__cached__',
 '__doc__',
 '__file__',
```

```
'__loader__',
'__name__',
'__package__',
'__spec__',
'_execvpe',
'_exists',
'_exit',
'_fspath',
'_get_exports_list',
'_putenv',
'_unsetenv',
'_wrap_close',
'abc',
'abort',
'access',
'altsep',
'chdir',
'chmod',
'close',
'closerange',
'cpu_count',
'curdir',
'defpath',
'device_encoding',
'devnull',
'dup',
'dup2',
'environ',
'errno',
'error',
'execl',
'execle',
'execlp',
'execlpe',
'execv',
'execve',
'execvp',
'execvpe',
'extsep',
'fdopen',
'fsdecode',
'fsencode',
'fspath',
'fstat',
'fsync',
'ftruncate',
'get_exec_path',
'get_handle_inheritable',
'get_inheritable',
'get_terminal_size',
'getcwd',
'getcwdb',
'getenv',
'getlogin',
'getpid',
'getppid',
'isatty',
'kill',
'linesep',
'link',
'listdir',
'lseek',
'lstat',
'makedirs',
'mkdir',
'name',
'open',
'pardir',
'path',
```

```
 'pathsep',
 'pipe',
 'popen',
 'putenv',
 'read',
 'readlink',
 'remove',
 'removedirs',
 'rename',
 'renames',
 'replace',
 'rmdir',
 'scandir',
 'sep',
 'set_handle_inheritable',
 'set_inheritable',
 'spawnl',
 'spawnle',
 'spawnv',
 'spawnve',
 'st',
 'startfile',
 'stat',
 'stat_float_times',
 'stat_result',
 'statvfs_result',
 'strerror',
 'supports_bytes_environ',
 'supports_dir_fd',
 'supports_effective_ids',
 'supports_fd',
 'supports_follow_symlinks',
 'symlink',
 'sys',
 'system',
 'terminal_size',
 'times',
 'times_result',
 'truncate',
 'umask',
 'uname_result',
 'unlink',
 'urandom',
 'utime',
 'waitpid',
 'walk',
 'write']
```

In [106…
```
os.rename('test_file.txt','file_manipulations.txt')
```

In [107…
```
f1.read()               # because file is closed
```

```
---------------------------------------------------------------------------
ValueError                                Traceback (most recent call last)
<ipython-input-107-22c8a5cc1142> in <module>
----> 1 f1.read()               # because file is closed

ValueError: I/O operation on closed file.
```

In [108…
```
os.getcwd()
```

Out[108…
```
'E:\\STUDY\\GIT\\aaic_practice\\MODULES\\Module_1_All_about_Python'
```

In [109…
```
os.chdir('E:\\STUDY\\PROJECTS\\AAIC_Practice')
```

In [110…
```
os.getcwd()
```

Out[110… 'E:\\STUDY\\PROJECTS\\AAIC_Practice'

In [111…
```
os.mkdir('VIDEO_PRACTICE_TEST')
```

In [112…
```
os.listdir()
```

Out[112… ['ASSIGNMENTS', 'INTERVIEW_Qs', 'MODULES', 'VIDEO_PRACTICE_TEST']

In [113…
```
os.rmdir('VIDEO_PRACTICE_TEST')
```

In [114…
```
os.mkdir('VIDEO_PRACTICE_TEST2')
```

In [115…
```
os.listdir()
```

Out[115… ['ASSIGNMENTS', 'INTERVIEW_Qs', 'MODULES', 'VIDEO_PRACTICE_TEST2']

In [116…
```
lines = ["This is not a hellow world!!", "This is much more than a hello world!!", "
```

In [117…
```
with open('test_file2.txt','x') as f_test:
    f_test.writelines(lines)
```

In [118…
```
os.getcwd()
```

Out[118… 'E:\\STUDY\\PROJECTS\\AAIC_Practice'

In [119…
```
import shutil
```

In [120…
```
shutil.move('test_file2.txt',os.getcwd()+"\\VIDEO_PRACTICE_TEST2")
```

Out[120… 'E:\\STUDY\\PROJECTS\\AAIC_Practice\\VIDEO_PRACTICE_TEST2\\test_file2.txt'

In [121…
```
os.getcwd()
```

Out[121… 'E:\\STUDY\\PROJECTS\\AAIC_Practice'

In [122…
```
os.rmdir('VIDEO_PRACTICE_TEST2')          # As said it only deletes a empty directo
```

```
---------------------------------------------------------------------------
OSError                                   Traceback (most recent call last)
<ipython-input-122-7db81dea85f2> in <module>
----> 1 os.rmdir('VIDEO_PRACTICE_TEST2')          # As said it only deletes a empty
directory

OSError: [WinError 145] The directory is not empty: 'VIDEO_PRACTICE_TEST2'
```

In [ ]:
```
shutil.rmtree('VIDEO_PRACTICE_TEST2')      # This can delete a non-empty directory
```

DEBUGGER

In [123…
```
dir(shutil)
```

Out[123…
```
['Error',
 'ExecError',
 'ReadError',
 'RegistryError',
 'SameFileError',
 'SpecialFileError',
 '_ARCHIVE_FORMATS',
 '_BZ2_SUPPORTED',
```

```
 '_LZMA_SUPPORTED',
 '_UNPACK_FORMATS',
 '_ZLIB_SUPPORTED',
 '__all__',
 '__builtins__',
 '__cached__',
 '__doc__',
 '__file__',
 '__loader__',
 '__name__',
 '__package__',
 '__spec__',
 '_basename',
 '_check_unpack_options',
 '_copyxattr',
 '_destinsrc',
 '_ensure_directory',
 '_find_unpack_format',
 '_get_gid',
 '_get_uid',
 '_make_tarball',
 '_make_zipfile',
 '_ntuple_diskusage',
 '_rmtree_safe_fd',
 '_rmtree_unsafe',
 '_samefile',
 '_unpack_tarfile',
 '_unpack_zipfile',
 '_use_fd_functions',
 'chown',
 'collections',
 'copy',
 'copy2',
 'copyfile',
 'copyfileobj',
 'copymode',
 'copystat',
 'copytree',
 'disk_usage',
 'errno',
 'fnmatch',
 'get_archive_formats',
 'get_terminal_size',
 'get_unpack_formats',
 'getgrnam',
 'getpwnam',
 'ignore_patterns',
 'make_archive',
 'move',
 'nt',
 'os',
 'register_archive_format',
 'register_unpack_format',
 'rmtree',
 'stat',
 'sys',
 'unpack_archive',
 'unregister_archive_format',
 'unregister_unpack_format',
 'which']
```

In [124…
```
import pdb
```

In [125…
```
dir(pdb)
```

Out[125…
```
['Pdb',
 'Restart',
 'TESTCMD',
```

```
 '__all__',
 '__builtins__',
 '__cached__',
 '__doc__',
 '__file__',
 '__loader__',
 '__name__',
 '__package__',
 '__spec__',
 '_rstr',
 '_usage',
 'bdb',
 'cmd',
 'code',
 'dis',
 'find_function',
 'getsourcelines',
 'glob',
 'help',
 'inspect',
 'lasti2lineno',
 'line_prefix',
 'linecache',
 'main',
 'os',
 'pm',
 'post_mortem',
 'pprint',
 're',
 'run',
 'runcall',
 'runctx',
 'runeval',
 'set_trace',
 'signal',
 'sys',
 'test',
 'traceback']
```

In [126…
```
test_ones = [1,2,3,4,5,6,7,8,9]
```

In [127…
```
test_ones[1:]
```

Out[127… `[2, 3, 4, 5, 6, 7, 8, 9]`

In [128…
```
test_ones[1:4] = [1]
```

In [129…
```
test_ones
```

Out[129… `[1, 1, 5, 6, 7, 8, 9]`

In [130…
```
ones = [val for val in range(1,11)]
```

In [131…
```
ones
```

Out[131… `[1, 2, 3, 4, 5, 6, 7, 8, 9, 10]`

In [132…
```
ones[1:] = [1]
```

In [133…
```
ones
```

Out[133… `[1, 1]`

In [134…
```
import numpy as np
```

In [135…
```
np_ones = np.arange(1,11)
```

In [136…
```
np_ones
```

Out[136…
```
array([ 1,  2,  3,  4,  5,  6,  7,  8,  9, 10])
```

In [137…
```
np_ones[1:] = [1]
```

In [143…
```
np_ones
```

Out[143…
```
array([1, 1, 1, 1, 1, 1, 1, 1, 1, 1])
```

In [139…
```
np_ones[1:4]
```

Out[139…
```
array([1, 1, 1])
```

In [140…
```
len(np_ones)
```

Out[140…
```
10
```

In [147…
```
np_ones = [1,2,3,4,5]
```

In [154…
```
def multiple_of_4(val):
    for n in range(1,len(val)+1,1):
        pdb.set_trace()
        print(n*4)
```

In [156…
```
multiple_of_4(np_ones)
```

```
> <ipython-input-154-281fd9f942ac>(4)multiple_of_4()
      1 def multiple_of_4(val):
      2     for n in range(1,len(val)+1,1):
      3         pdb.set_trace()
----> 4         print(n*4)


Documented commands (type help <topic>):
========================================
EOF    cl         disable  interact  next    psource  rv           undisplay
a      clear      display  j         p       q        s            unt
alias  commands   down     jump      pdef    quit     skip_hidden  until
args   condition  enable   l         pdoc    r        source       up
b      cont       exit     list      pfile   restart  step         w
break  continue   h        ll        pinfo   return   tbreak       whatis
bt     d          help     longlist  pinfo2  retval   u            where
c      debug      ignore   n         pp      run      unalias

Miscellaneous help topics:
==========================
exec  pdb


4
> <ipython-input-154-281fd9f942ac>(3)multiple_of_4()
      1 def multiple_of_4(val):
      2     for n in range(1,len(val)+1,1):
----> 3         pdb.set_trace()
      4         print(n*4)


8
```

```
> <ipython-input-154-281fd9f942ac>(4)multiple_of_4()
      1 def multiple_of_4(val):
      2     for n in range(1,len(val)+1,1):
      3         pdb.set_trace()
----> 4         print(n*4)


12
> <ipython-input-154-281fd9f942ac>(3)multiple_of_4()
      1 def multiple_of_4(val):
      2     for n in range(1,len(val)+1,1):
----> 3         pdb.set_trace()
      4         print(n*4)


16
> <ipython-input-154-281fd9f942ac>(4)multiple_of_4()
      1 def multiple_of_4(val):
      2     for n in range(1,len(val)+1,1):
      3         pdb.set_trace()
----> 4         print(n*4)


20
```

In [157…

```
multiple_of_4(np_ones)
```

```
> <ipython-input-154-281fd9f942ac>(4)multiple_of_4()
      1 def multiple_of_4(val):
      2     for n in range(1,len(val)+1,1):
      3         pdb.set_trace()
----> 4         print(n*4)


{'n': 1, 'val': [1, 2, 3, 4, 5]}

4
> <ipython-input-154-281fd9f942ac>(3)multiple_of_4()
      1 def multiple_of_4(val):
      2     for n in range(1,len(val)+1,1):
----> 3         pdb.set_trace()
      4         print(n*4)


8
> <ipython-input-154-281fd9f942ac>(4)multiple_of_4()
      1 def multiple_of_4(val):
      2     for n in range(1,len(val)+1,1):
      3         pdb.set_trace()
----> 4         print(n*4)


{'n': 3, 'val': [1, 2, 3, 4, 5]}

{'__name__': '__main__', '__doc__': 'Automatically created module for IPython intera
ctive environment', '__package__': None, '__loader__': None, '__spec__': None, '__bu
iltin__': <module 'builtins' (built-in)>, '__builtins__': <module 'builtins' (built-
in)>, '_ih': ['', 'def print_name(name):\n    """This function prints the name of th
e person."""\n    print(name)', "print_name('Rajesh')", 'print_name.__doc__', 'num1
= 98\nnum2 = 78', 'def compute_hcf(num1, num2):\n    """\n    This function will com
pute the HCF of the given numbers.\n    """\n    if num1 > num2:\n        smaller =
num2\n    else:\n        smaller = num1\n\n    hcf = []\n\n    for num in range(1,sm
aller+1):\n        if num1%num == 0 and num2%num == 0:\n            hcf.append(num)
\n    return hcf[-1]', 'print("HCF of 98 and 78 is {}".format(compute_hcf(num1,num
2)))', 'num1, num2 = 4,16', 'print("HCF of {} and {} is {}".format(num1, num2, compu
te_hcf(num1,num2)))', 'num1, num2 = 16, 96', 'print("HCF of {} and {} is {}".format
(num1, num2, compute_hcf(num1,num2)))', 'abs(-44545)', "abs('Function name')", 'os.g
etcwd()', 'len(np_ones)', 'def print_name(name):\n    """This function prints the na
me of the person."""\n    print(name)', "print_name('Rajesh')", 'print_name.__doc_
_', 'num1 = 98\nnum2 = 78', 'def compute_hcf(num1, num2):\n    """\n    This functio
n will compute the HCF of the given numbers.\n    """\n    if num1 > num2:\n
```

smaller = num2\n   else:\n   smaller = num1\n\n   hcf = []\n\n   for num in range(1,smaller+1):\n   if num1%num == 0 and num2%num == 0:\n   hcf.append(num)\n   return hcf[-1]', 'print("HCF of 98 and 78 is {}".format(compute_hcf(num1,num2)))', 'num1, num2 = 4,16', 'print("HCF of {} and {} is {}".format(num1, num2, compute_hcf(num1,num2)))', 'num1, num2 = 16, 96', 'print("HCF of {} and {} is {}".format(num1, num2, compute_hcf(num1,num2)))', 'abs(-44545)', "abs('Function name')", 'abs(-89.8475)', 'divmod(4,2)   # Returns quotient and remainder', 'divmod(8,3)', 'all([1,2,3,4])   # it returns the bool(x) or bool for all values of x', 'all([1,2,3,4,])', 'all([1,2,3,4,0])   # 0 in python is False internally thus it returned False', 'all([False,1,2,3,4])', 'bool(7)', "bool('X')", 'bool(0)', 'bool(-1)', 'import pandas', 'print(dir(pandas))', "numbers = [10,20,30,40,50]\n\nfor num1 , num2 in enumerate(numbers):\n   print(num1, ' || ', num2)", 'for idx, num in enumerate(numbers):\n   print("Index ---> {} && Number ---> {}".format(idx,num))', "for idx, num in enumerate(numbers,500):\n   print(idx, ' || ', num)", 'def fil_f(num):\n   return num >= abs(num)', 'list(filter(fil_f,[1,2,3,4,5,6,7,8,9]))', 'tuple(filter(fil_f,[1,2,3,4,5,6,7,8,9]))', 'set(filter(fil_f,[1,2,3,4,5,6,7,8,9]))', 'set(filter(fil_f,[1,2,3,4,5,6,7,8,9,0,-1,-2,-3,-4]))', 'scores = {10,39,89,99,105,175}', 'isinstance(scores,list)', 'isinstance(scores,dict)', 'isinstance(scores,tuple)', 'isinstance(scores,set)', 'def divide_num_by_4(num):\n   return num/4', 'list(map(divide_num_by_4,scores))', 'from functools import reduce', 'def cume(val1, val2):\n   return val1+val2', 'nums = [1,2,3,4,5]', 'reduce(cume,nums)', "def hello_world(**kwargs):\n   return (kwargs['first_name'], kwargs['middle_name'],kwargs['last_name'])", "hello_world(first_name='Rajesh',middle_name='Kumar',last_name='sharma',an_name='titu')", 'get_ipython().run_line_magic(\'timeit\', "hello_world(first_name=\'Rajesh\',middle_name=\'Kumar\',last_name=\'sharma\')")', "def hello_world(**kwargs):\n   print (kwargs['first_name'], kwargs['middle_name'],kwargs['last_name'])", "hello_world(first_name='Rajesh',middle_name='Kumar',last_name='sharma')", "hello_world(first_name='Rajesh',middle_name='Kumar',last_name='sharma',an_name='titu')", 'def name_printing(*names):\n   for l_name in names:\n   print("First name is Rajesh and Last name is {0}".format(l_name))', "name_printing('sharma','kumar','kapoor')", 'def factorial(num):\n   return num if num == 1 else num * factorial(num-1)', 'factorial(5)', 'def fibonacci(num):\n   return num if num <=1 else fibonacci(num-1) + fibonacci(num-2)', 'nums = range(0,10)', 'for num in nums:\n print(fibonacci(num))', 'sqr = lambda x: x**2', '[sqr(num) for num in nums]', 'sum_of_2s = lambda x,y : x+y', 'sum_of_2s(3,5)', 'nums = [1,2,3,4,5,6,7,8,9]', 'nums', 'from functools import reduce', 'sum_list = reduce(lambda x,y:x+y,nums)', 'sum_list', 'nums', 'reduce(lambda x,y:x+y,map(lambda x : x/2,filter(lambda x: x%2==0,nums)))', "f = open('test_file.txt','x')", 'f.write("I\'m Rajesh Sharma and one day I\'ll be a Data Scientist.")', 'f.close()', "f1 = open('test_file.txt','r')", 'f1.read()', 'f1.tell()', 'f1.seek(1)', 'f1.tell()', 'f1.read(5)', 'f1.seek(50)', 'f1.read()', 'f1.tell()', 'type(f1.readlines())', 'type(f1.readline())', 'f1.seek(20)', 'f1.readlines()', 'f1.readline()', 'f1.seek(20)', 'f1.readline()', 'f1.close()', 'import os', 'dir(__builtins__)', 'dir(os)', "os.rename('test_file.txt','file_manipulations.txt')", 'f1.read()   # because file is closed', 'os.getcwd()', "os.chdir('E:\\\\STUDY\\\\PROJECTS\\\\AAIC_Practice')", 'os.getcwd()', "os.mkdir('VIDEO_PRACTICE_TEST')", 'os.listdir()', "os.rmdir('VIDEO_PRACTICE_TEST')", "os.mkdir('VIDEO_PRACTICE_TEST2')", 'os.listdir()', 'lines = ["This is not a hellow world!!", "This is much more than a hello world!!", "Thats my feelings for DS, ML and DL."]', "with open('test_file2.txt','x') as f_test:\n   f_test.writelines(lines)", 'os.getcwd()', 'import shutil', 'shutil.move(\'test_file2.txt\',os.getcwd()+"\\\\VIDEO_PRACTICE_TEST2")', 'os.getcwd()', "os.rmdir('VIDEO_PRACTICE_TEST2')   # As said it only deletes a empty directory", 'dir(shutil)', 'import pdb', 'dir(pdb)', 'test_ones = [1,2,3,4,5,6,7,8,9]', 'test_ones[1:]', 'test_ones[1:4] = [1]', 'test_ones', 'ones = [val for val in range(1,11)]', 'ones', 'ones[1:] = [1]', 'ones', 'import numpy as np', 'np_ones = np.arange(1,11)', 'np_ones', 'np_ones[1:] = [1] ', 'np_ones', 'np_ones[1:4]', 'len(np_ones)', 'def multiple_of_4(val):\n   for n in range(1,len(val)+1,1):\n pdb.set_trace()\n   print(n*4)', 'multiple_of_4(np_ones)', 'np_ones', 'def multiple_of_4(val):\n   for n in range(1,len(val)+1,1):\n   pdb.set_trace()\n print(n*4)', 'multiple_of_4(np_ones)', 'multiple_of_4(np_ones)', 'np_ones = [1,2,3,4,5]', 'def multiple_of_4(val):\n   for n in range(1,len(val)+1,1):\n   pdb.set_trace()\n   print(n*4)', 'multiple_of_4(np_ones)', 'def multiple_of_4(val):\n for n in range(1,len(val)+1,1):\n   pdb.set_trace()\n   print(n*4)', 'multiple_of_4(np_ones)', 'def multiple_of_4(val):\n   for n in range(1,len(val)+1,1):\n #   pdb.set_trace()\n   print(n*4)', 'multiple_of_4(np_ones)', 'def multiple_of_4(val):\n   for n in range(1,len(val)+1,1):\n   pdb.set_trace()\n print(n*4)', 'multiple_of_4(np_ones)', 'multiple_of_4(np_ones)', 'multiple_of_4(np_ones)'], '_oh': {3: 'This function prints the name of the person.', 11: 44545, 17: 'This function prints the name of the person.', 25: 44545, 27: 89.8475, 28: (2, 0), 29: (2, 2), 30: True, 31: True, 32: False, 33: False, 34: True, 35: True, 36: False,

37: True, 44: [1, 2, 3, 4, 5, 6, 7, 8, 9], 45: (1, 2, 3, 4, 5, 6, 7, 8, 9), 46: {1, 2, 3, 4, 5, 6, 7, 8, 9}, 47: {0, 1, 2, 3, 4, 5, 6, 7, 8, 9}, 49: False, 50: False, 51: False, 52: True, 54: [24.75, 9.75, 26.25, 2.5, 43.75, 22.25], 58: 15, 60: ('Rajesh', 'Kumar', 'sharma'), 68: 120, 73: [0, 1, 4, 9, 16, 25, 36, 49, 64, 81], 75: 8, 77: [1, 2, 3, 4, 5, 6, 7, 8, 9], 80: 45, 81: [1, 2, 3, 4, 5, 6, 7, 8, 9], 82: 10.0, 84: 55, 87: "I'm Rajesh Sharma and one day I'll be a Data Scientist.", 88: 55, 89: 1, 90: 1, 91: "'m Ra", 92: 50, 93: 'tist.', 94: 55, 95: <class 'list'>, 96: <class 'str'>, 97: 20, 98: ["d one day I'll be a Data Scientist."], 99: '', 100: 20, 101: "d one day I'll be a Data Scientist.", 104: ['ArithmeticError', 'AssertionError', 'AttributeError', 'BaseException', 'BlockingIOError', 'BrokenPipeError', 'BufferError', 'BytesWarning', 'ChildProcessError', 'ConnectionAbortedError', 'ConnectionError', 'ConnectionRefusedError', 'ConnectionResetError', 'DeprecationWarning', 'EOFError', 'Ellipsis', 'EnvironmentError', 'Exception', 'False', 'FileExistsError', 'FileNotFoundError', 'FloatingPointError', 'FutureWarning', 'GeneratorExit', 'IOError', 'ImportError', 'ImportWarning', 'IndentationError', 'IndexError', 'InterruptedError', 'IsADirectoryError', 'KeyError', 'KeyboardInterrupt', 'LookupError', 'MemoryError', 'ModuleNotFoundError', 'NameError', 'None', 'NotADirectoryError', 'NotImplemented', 'NotImplementedError', 'OSError', 'OverflowError', 'PendingDeprecationWarning', 'PermissionError', 'ProcessLookupError', 'RecursionError', 'ReferenceError', 'ResourceWarning', 'RuntimeError', 'RuntimeWarning', 'StopAsyncIteration', 'StopIteration', 'SyntaxError', 'SyntaxWarning', 'SystemError', 'SystemExit', 'TabError', 'TimeoutError', 'True', 'TypeError', 'UnboundLocalError', 'UnicodeDecodeError', 'UnicodeEncodeError', 'UnicodeError', 'UnicodeTranslateError', 'UnicodeWarning', 'UserWarning', 'ValueError', 'Warning', 'WindowsError', 'ZeroDivisionError', '__IPYTHON__', '__build_class__', '__debug__', '__doc__', '__import__', '__loader__', '__name__', '__package__', '__spec__', 'abs', 'all', 'any', 'ascii', 'bin', 'bool', 'bytearray', 'bytes', 'callable', 'chr', 'classmethod', 'compile', 'complex', 'copyright', 'credits', 'delattr', 'dict', 'dir', 'display', 'divmod', 'enumerate', 'eval', 'exec', 'filter', 'float', 'format', 'frozenset', 'get_ipython', 'getattr', 'globals', 'hasattr', 'hash', 'help', 'hex', 'id', 'input', 'int', 'isinstance', 'issubclass', 'iter', 'len', 'license', 'list', 'locals', 'map', 'max', 'memoryview', 'min', 'next', 'object', 'oct', 'open', 'ord', 'pow', 'print', 'property', 'range', 'repr', 'reversed', 'round', 'set', 'setattr', 'slice', 'sorted', 'staticmethod', 'str', 'sum', 'super', 'tuple', 'type', 'vars', 'zip'], 105: ['DirEntry', 'F_OK', 'MutableMapping', 'O_APPEND', 'O_BINARY', 'O_CREAT', 'O_EXCL', 'O_NOINHERIT', 'O_RANDOM', 'O_RDONLY', 'O_RDWR', 'O_SEQUENTIAL', 'O_SHORT_LIVED', 'O_TEMPORARY', 'O_TEXT', 'O_TRUNC', 'O_WRONLY', 'P_DETACH', 'P_NOWAIT', 'P_NOWAITO', 'P_OVERLAY', 'P_WAIT', 'PathLike', 'R_OK', 'SEEK_CUR', 'SEEK_END', 'SEEK_SET', 'TMP_MAX', 'W_OK', 'X_OK', '_Environ', '__all__', '__builtins__', '__cached__', '__doc__', '__file__', '__loader__', '__name__', '__package__', '__spec__', '_execvpe', '_exists', '_exit', '_fspath', '_get_exports_list', '_putenv', '_unsetenv', '_wrap_close', 'abc', 'abort', 'access', 'altsep', 'chdir', 'chmod', 'close', 'closerange', 'cpu_count', 'curdir', 'defpath', 'device_encoding', 'devnull', 'dup', 'dup2', 'environ', 'errno', 'error', 'execl', 'execle', 'execlp', 'execlpe', 'execv', 'execve', 'execvp', 'execvpe', 'extsep', 'fdopen', 'fsdecode', 'fsencode', 'fspath', 'fstat', 'fsync', 'ftruncate', 'get_exec_path', 'get_handle_inheritable', 'get_inheritable', 'get_terminal_size', 'getcwd', 'getcwdb', 'getenv', 'getlogin', 'getpid', 'getppid', 'isatty', 'kill', 'linesep', 'link', 'listdir', 'lseek', 'lstat', 'makedirs', 'mkdir', 'name', 'open', 'pardir', 'path', 'pathsep', 'pipe', 'popen', 'putenv', 'read', 'readlink', 'remove', 'removedirs', 'rename', 'renames', 'replace', 'rmdir', 'scandir', 'sep', 'set_handle_inheritable', 'set_inheritable', 'spawnl', 'spawnle', 'spawnv', 'spawnve', 'st', 'startfile', 'stat', 'stat_float_times', 'stat_result', 'statvfs_result', 'strerror', 'supports_bytes_environ', 'supports_dir_fd', 'supports_effective_ids', 'supports_fd', 'supports_follow_symlinks', 'symlink', 'sys', 'system', 'terminal_size', 'times', 'times_result', 'truncate', 'umask', 'uname_result', 'unlink', 'urandom', 'utime', 'waitpid', 'walk', 'write'], 108: 'E:\\STUDY\\GIT\\aaic_practice\\MODULES\\Module_1_All_about_Python', 110: 'E:\\STUDY\\PROJECTS\\AAIC_Practice', 112: ['ASSIGNMENTS', 'INTERVIEW_Qs', 'MODULES', 'VIDEO_PRACTICE_TEST'], 115: ['ASSIGNMENTS', 'INTERVIEW_Qs', 'MODULES', 'VIDEO_PRACTICE_TEST2'], 118: 'E:\\STUDY\\PROJECTS\\AAIC_Practice', 120: 'E:\\STUDY\\PROJECTS\\AAIC_Practice\\VIDEO_PRACTICE_TEST2\\test_file2.txt', 121: 'E:\\STUDY\\PROJECTS\\AAIC_Practice', 123: ['Error', 'ExecError', 'ReadError', 'RegistryError', 'SameFileError', 'SpecialFileError', '_ARCHIVE_FORMATS', '_BZ2_SUPPORTED', '_LZMA_SUPPORTED', '_UNPACK_FORMATS', '_ZLIB_SUPPORTED', '__all__', '__builtins__', '__cached__', '__doc__', '__file__', '__loader__', '__name__', '__package__', '__spec__', '_basename', '_check_unpack_options', '_copyxattr', '_destinsrc', '_ensure_directory', '_find_unpack_format', '_get_gid', '_get_uid', '_make_tarball', '_make_zipfile', '_ntuple_diskusage', '_rmtree_safe_fd', '_rmtree_unsafe', '_samefile', '_unpack_tarfile', '_unpack_zipfile', '_use_fd_functions', 'chown', 'collections', 'copy', 'copy2', 'copyfile', 'copyfileobj', 'copymode', 'copystat', 'copytree', 'disk_usage', 'errno', 'fnmatch', 'get_arch

ive_formats', 'get_terminal_size', 'get_unpack_formats', 'getgrnam', 'getpwnam', 'ig
nore_patterns', 'make_archive', 'move', 'nt', 'os', 'register_archive_format', 'regi
ster_unpack_format', 'rmtree', 'stat', 'sys', 'unpack_archive', 'unregister_archive_
format', 'unregister_unpack_format', 'which'], 125: ['Pdb', 'Restart', 'TESTCMD', '_
_all__', '__builtins__', '__cached__', '__doc__', '__file__', '__loader__', '__name_
_', '__package__', '__spec__', '_rstr', '_usage', 'bdb', 'cmd', 'code', 'dis', 'find
_function', 'getsourcelines', 'glob', 'help', 'inspect', 'lasti2lineno', 'line_prefi
x', 'linecache', 'main', 'os', 'pm', 'post_mortem', 'pprint', 're', 'run', 'runcal
l', 'runctx', 'runeval', 'set_trace', 'signal', 'sys', 'test', 'traceback'], 127:
[2, 3, 4, 5, 6, 7, 8, 9], 129: [1, 1, 5, 6, 7, 8, 9], 131: [1, 1], 133: [1, 1], 136:
array([1, 1, 1, 1, 1, 1, 1, 1, 1, 1]), 138: array([1, 1, 1, 1, 1, 1, 1, 1, 1, 1]), 1
39: array([1, 1, 1]), 140: 10, 143: array([1, 1, 1, 1, 1, 1, 1, 1, 1, 1])}, '_dh':
['E:\\STUDY\\GIT\\aaic_practice\\MODULES\\Module_1_All_about_Python'], 'In': ['', 'd
ef print_name(name):\n   """This function prints the name of the person."""\n   pr
int(name)', "print_name('Rajesh')", 'print_name.__doc__', 'num1 = 98\nnum2 = 78', 'd
ef compute_hcf(num1, num2):\n   """\n   This function will compute the HCF of the
given numbers.\n   """\n   if num1 > num2:\n   smaller = num2\n   else:\n
smaller = num1\n\n   hcf = []\n\n   for num in range(1,smaller+1):\n   if num
1%num == 0 and num2%num == 0:\n   hcf.append(num)\n   return hcf[-1]', 'pr
int("HCF of 98 and 78 is {}".format(compute_hcf(num1,num2)))', 'num1, num2 = 4,16',
'print("HCF of {} and {} is {}".format(num1, num2, compute_hcf(num1,num2)))', 'num1,
num2 = 16, 96', 'print("HCF of {} and {} is {}".format(num1, num2, compute_hcf(num1,
num2)))', 'abs(-44545)', "abs('Function name')", 'os.getcwd()', 'len(np_ones)', 'def
print_name(name):\n   """This function prints the name of the person."""\n   print
(name)', "print_name('Rajesh')", 'print_name.__doc__', 'num1 = 98\nnum2 = 78', 'def
compute_hcf(num1, num2):\n   """\n   This function will compute the HCF of the giv
en numbers.\n   """\n   if num1 > num2:\n   smaller = num2\n   else:\n
smaller = num1\n\n   hcf = []\n\n   for num in range(1,smaller+1):\n   if num
1%num == 0 and num2%num == 0:\n   hcf.append(num)\n   return hcf[-1]', 'pr
int("HCF of 98 and 78 is {}".format(compute_hcf(num1,num2)))', 'num1, num2 = 4,16',
'print("HCF of {} and {} is {}".format(num1, num2, compute_hcf(num1,num2)))', 'num1,
num2 = 16, 96', 'print("HCF of {} and {} is {}".format(num1, num2, compute_hcf(num1,
num2)))', 'abs(-44545)', "abs('Function name')", 'abs(-89.8475)', 'divmod(4,2)
Returns quotient and remainder', 'divmod(8,3)', 'all([1,2,3,4])   # i
t returns the bool(x) or bool for all values of x', 'all([1,2,3,4,])', 'all([1,2,3,
4,0])   # 0 in python is False internally thus it returned False', 'all
([False,1,2,3,4])', 'bool(7)', "bool('X')", 'bool(0)', 'bool(-1)', 'import pandas',
'print(dir(pandas))', "numbers = [10,20,30,40,50]\n\nfor num1 , num2 in enumerate(nu
mbers):\n   print(num1, ' || ', num2)", 'for idx, num in enumerate(numbers):\n   p
rint("Index ---> {} && Number ---> {}".format(idx,num))', "for idx, num in enumerate
(numbers,500):\n   print(idx, ' ||| ', num)", 'def fil_f(num):\n   return num >= a
bs(num)', 'list(filter(fil_f,[1,2,3,4,5,6,7,8,9]))', 'tuple(filter(fil_f,[1,2,3,4,5,
6,7,8,9]))', 'set(filter(fil_f,[1,2,3,4,5,6,7,8,9]))', 'set(filter(fil_f,[1,2,3,4,5,
6,7,8,9,0,-1,-2,-3,-4]))', 'scores = {10,39,89,99,105,175}', 'isinstance(scores,lis
t)', 'isinstance(scores,dict)', 'isinstance(scores,tuple)', 'isinstance(scores,se
t)', 'def divide_num_by_4(num):\n   return num/4', 'list(map(divide_num_by_4,score
s))', 'from functools import reduce', 'def cume(val1, val2):\n   return val1+val2',
'nums = [1,2,3,4,5]', 'reduce(cume,nums)', "def hello_world(**kwargs):\n   return
(kwargs['first_name'], kwargs['middle_name'],kwargs['last_name'])", "hello_world(fir
st_name='Rajesh',middle_name='Kumar',last_name='sharma',an_name='titu')", 'get_ipyth
on().run_line_magic(\'timeit\', "hello_world(first_name=\'Rajesh\',middle_name=\'Kum
ar\',last_name=\'sharma\')")', "def hello_world(**kwargs):\n   print (kwargs['first
_name'], kwargs['middle_name'],kwargs['last_name'])", "hello_world(first_name='Rajes
h',middle_name='Kumar',last_name='sharma')", "hello_world(first_name='Rajesh',middle
_name='Kumar',last_name='sharma',an_name='titu')", 'def name_printing(*names):\n
for l_name in names:\n   print("First name is Rajesh and Last name is {0}".form
at(l_name))', "name_printing('sharma','kumar','kapoor')", 'def factorial(num):\n
return num if num == 1 else num * factorial(num-1)', 'factorial(5)', 'def fibonacci
(num):\n   return num if num <=1 else fibonacci(num-1) + fibonacci(num-2)', 'nums =
range(0,10)', 'for num in nums:\n   print(fibonacci(num))', 'sqr = lambda x: x**2',
'[sqr(num) for num in nums]', 'sum_of_2s = lambda x,y : x+y', 'sum_of_2s(3,5)', 'num
s = [1,2,3,4,5,6,7,8,9]', 'nums', 'from functools import reduce', 'sum_list = reduce
(lambda x,y:x+y,nums)', 'sum_list', 'nums', 'reduce(lambda x,y:x+y,map(lambda x : x/
2,filter(lambda x: x%2==0,nums)))', "f = open('test_file.txt','x')", 'f.write("I\'m
Rajesh Sharma and one day I\'ll be a Data Scientist.")', 'f.close()', "f1 = open('te
st_file.txt','r')", 'f1.read()', 'f1.tell()', 'f1.seek(1)', 'f1.tell()', 'f1.read
(5)', 'f1.seek(50)', 'f1.read()', 'f1.tell()', 'type(f1.readlines())', 'type(f1.read
line())', 'f1.seek(20)', 'f1.readlines()', 'f1.readline()', 'f1.seek(20)', 'f1.readl
ine()', 'f1.close()', 'import os', 'dir(__builtins__)', 'dir(os)', "os.rename('test_

file.txt','file_manipulations.txt')", 'f1.read() # because file is clo
sed', 'os.getcwd()', "os.chdir('E:\\\\STUDY\\\\PROJECTS\\\\AAIC_Practice')", 'os.get
cwd()', "os.mkdir('VIDEO_PRACTICE_TEST')", 'os.listdir()', "os.rmdir('VIDEO_PRACTICE
_TEST')", "os.mkdir('VIDEO_PRACTICE_TEST2')", 'os.listdir()', 'lines = ["This is not
a hellow world!!", "This is much more than a hello world!!", "Thats my feelings for
DS, ML and DL."]', "with open('test_file2.txt','x') as f_test:\n   f_test.writeline
s(lines)", 'os.getcwd()', 'import shutil', 'shutil.move(\'test_file2.txt\',os.getcwd
()+"\\\\VIDEO_PRACTICE_TEST2")', 'os.getcwd()', "os.rmdir('VIDEO_PRACTICE_TEST2')
As said it only deletes a empty directory", 'dir(shutil)', 'import pdb', 'dir(pd
b)', 'test_ones = [1,2,3,4,5,6,7,8,9]', 'test_ones[1:]', 'test_ones[1:4] = [1]', 'te
st_ones', 'ones = [val for val in range(1,11)]', 'ones', 'ones[1:] = [1]', 'ones',
'import numpy as np', 'np_ones = np.arange(1,11)', 'np_ones', 'np_ones[1:] = [1] ',
'np_ones', 'np_ones[1:4]', 'len(np_ones)', 'def multiple_of_4(val):\n   for n in ra
nge(1,len(val)+1,1):\n   pdb.set_trace()\n   print(n*4)', 'multiple_of_4(n
p_ones)', 'np_ones', 'def multiple_of_4(val):\n   for n in range(1,len(val)+1,1):\n
pdb.set_trace()\n   print(n*4)', 'multiple_of_4(np_ones)', 'multiple_of_4(np_on
es)', 'np_ones = [1,2,3,4,5]', 'def multiple_of_4(val):\n   for n in range(1,len(va
l)+1,1):\n   pdb.set_trace()\n   print(n*4)', 'multiple_of_4(np_ones)', 'd
ef multiple_of_4(val):\n   for n in range(1,len(val)+1,1):\n   pdb.set_trace()
\n   print(n*4)', 'multiple_of_4(np_ones)', 'def multiple_of_4(val):\n   for n
in range(1,len(val)+1,1):\n#   pdb.set_trace()\n   print(n*4)', 'multiple
_of_4(np_ones)', 'def multiple_of_4(val):\n   for n in range(1,len(val)+1,1):\n
pdb.set_trace()\n   print(n*4)', 'multiple_of_4(np_ones)', 'multiple_of_4(np_on
es)', 'multiple_of_4(np_ones)'], 'Out': {3: 'This function prints the name of the pe
rson.', 11: 44545, 17: 'This function prints the name of the person.', 25: 44545, 2
7: 89.8475, 28: (2, 0), 29: (2, 2), 30: True, 31: True, 32: False, 33: False, 34: Tr
ue, 35: True, 36: False, 37: True, 44: [1, 2, 3, 4, 5, 6, 7, 8, 9], 45: (1, 2, 3, 4,
5, 6, 7, 8, 9), 46: {1, 2, 3, 4, 5, 6, 7, 8, 9}, 47: {0, 1, 2, 3, 4, 5, 6, 7, 8, 9},
49: False, 50: False, 51: False, 52: True, 54: [24.75, 9.75, 26.25, 2.5, 43.75, 22.2
5], 58: 15, 60: ('Rajesh', 'Kumar', 'sharma'), 68: 120, 73: [0, 1, 4, 9, 16, 25, 36,
49, 64, 81], 75: 8, 77: [1, 2, 3, 4, 5, 6, 7, 8, 9], 80: 45, 81: [1, 2, 3, 4, 5, 6,
7, 8, 9], 82: 10.0, 84: 55, 87: "I'm Rajesh Sharma and one day I'll be a Data Scient
ist.", 88: 55, 89: 1, 90: 1, 91: "'m Ra", 92: 50, 93: 'tist.', 94: 55, 95: <class 'l
ist'>, 96: <class 'str'>, 97: 20, 98: ["d one day I'll be a Data Scientist."], 99:
'', 100: 20, 101: "d one day I'll be a Data Scientist.", 104: ['ArithmeticError', 'A
ssertionError', 'AttributeError', 'BaseException', 'BlockingIOError', 'BrokenPipeErr
or', 'BufferError', 'BytesWarning', 'ChildProcessError', 'ConnectionAbortedError',
'ConnectionError', 'ConnectionRefusedError', 'ConnectionResetError', 'DeprecationWar
ning', 'EOFError', 'Ellipsis', 'EnvironmentError', 'Exception', 'False', 'FileExists
Error', 'FileNotFoundError', 'FloatingPointError', 'FutureWarning', 'GeneratorExit',
'IOError', 'ImportError', 'ImportWarning', 'IndentationError', 'IndexError', 'Interr
uptedError', 'IsADirectoryError', 'KeyError', 'KeyboardInterrupt', 'LookupError', 'M
emoryError', 'ModuleNotFoundError', 'NameError', 'None', 'NotADirectoryError', 'NotI
mplemented', 'NotImplementedError', 'OSError', 'OverflowError', 'PendingDeprecationW
arning', 'PermissionError', 'ProcessLookupError', 'RecursionError', 'ReferenceErro
r', 'ResourceWarning', 'RuntimeError', 'RuntimeWarning', 'StopAsyncIteration', 'Stop
Iteration', 'SyntaxError', 'SyntaxWarning', 'SystemError', 'SystemExit', 'TabError',
'TimeoutError', 'True', 'TypeError', 'UnboundLocalError', 'UnicodeDecodeError', 'Uni
codeEncodeError', 'UnicodeError', 'UnicodeTranslateError', 'UnicodeWarning', 'UserWa
rning', 'ValueError', 'Warning', 'WindowsError', 'ZeroDivisionError', '__IPYTHON__',
'__build_class__', '__debug__', '__doc__', '__import__', '__loader__', '__name__',
'__package__', '__spec__', 'abs', 'all', 'any', 'ascii', 'bin', 'bool', 'bytearray',
'bytes', 'callable', 'chr', 'classmethod', 'compile', 'complex', 'copyright', 'credi
ts', 'delattr', 'dict', 'dir', 'display', 'divmod', 'enumerate', 'eval', 'exec', 'fi
lter', 'float', 'format', 'frozenset', 'get_ipython', 'getattr', 'globals', 'hasatt
r', 'hash', 'help', 'hex', 'id', 'input', 'int', 'isinstance', 'issubclass', 'iter',
'len', 'license', 'list', 'locals', 'map', 'max', 'memoryview', 'min', 'next', 'obje
ct', 'oct', 'open', 'ord', 'pow', 'print', 'property', 'range', 'repr', 'reversed',
'round', 'set', 'setattr', 'slice', 'sorted', 'staticmethod', 'str', 'sum', 'super',
'tuple', 'type', 'vars', 'zip'], 105: ['DirEntry', 'F_OK', 'MutableMapping', 'O_APPE
ND', 'O_BINARY', 'O_CREAT', 'O_EXCL', 'O_NOINHERIT', 'O_RANDOM', 'O_RDONLY', 'O_RDW
R', 'O_SEQUENTIAL', 'O_SHORT_LIVED', 'O_TEMPORARY', 'O_TEXT', 'O_TRUNC', 'O_WRONLY',
'P_DETACH', 'P_NOWAIT', 'P_NOWAITO', 'P_OVERLAY', 'P_WAIT', 'PathLike', 'R_OK', 'SEE
K_CUR', 'SEEK_END', 'SEEK_SET', 'TMP_MAX', 'W_OK', 'X_OK', '_Environ', '__all__', '_
_builtins__', '__cached__', '__doc__', '__file__', '__loader__', '__name__', '__pack
age__', '__spec__', '_execvpe', '_exists', '_exit', '_fspath', '_get_exports_list',
'_putenv', '_unsetenv', '_wrap_close', 'abc', 'abort', 'access', 'altsep', 'chdir',
'chmod', 'close', 'closerange', 'cpu_count', 'curdir', 'defpath', 'device_encoding',
'devnull', 'dup', 'dup2', 'environ', 'errno', 'error', 'execl', 'execle', 'execlp',

'execlpe', 'execv', 'execve', 'execvp', 'execvpe', 'extsep', 'fdopen', 'fsdecode',
'fsencode', 'fspath', 'fstat', 'fsync', 'ftruncate', 'get_exec_path', 'get_handle_in
heritable', 'get_inheritable', 'get_terminal_size', 'getcwd', 'getcwdb', 'getenv',
'getlogin', 'getpid', 'getppid', 'isatty', 'kill', 'linesep', 'link', 'listdir', 'ls
eek', 'lstat', 'makedirs', 'mkdir', 'name', 'open', 'pardir', 'path', 'pathsep', 'pi
pe', 'popen', 'putenv', 'read', 'readlink', 'remove', 'removedirs', 'rename', 'renam
es', 'replace', 'rmdir', 'scandir', 'sep', 'set_handle_inheritable', 'set_inheritabl
e', 'spawnl', 'spawnle', 'spawnv', 'spawnve', 'st', 'startfile', 'stat', 'stat_float
_times', 'stat_result', 'statvfs_result', 'strerror', 'supports_bytes_environ', 'sup
ports_dir_fd', 'supports_effective_ids', 'supports_fd', 'supports_follow_symlinks',
'symlink', 'sys', 'system', 'terminal_size', 'times', 'times_result', 'truncate', 'u
mask', 'uname_result', 'unlink', 'urandom', 'utime', 'waitpid', 'walk', 'write'], 10
8: 'E:\\STUDY\\GIT\\aaic_practice\\MODULES\\Module_1_All_about_Python', 110: 'E:\\ST
UDY\\PROJECTS\\AAIC_Practice', 112: ['ASSIGNMENTS', 'INTERVIEW_Qs', 'MODULES', 'VIDE
O_PRACTICE_TEST'], 115: ['ASSIGNMENTS', 'INTERVIEW_Qs', 'MODULES', 'VIDEO_PRACTICE_T
EST2'], 118: 'E:\\STUDY\\PROJECTS\\AAIC_Practice', 120: 'E:\\STUDY\\PROJECTS\\AAIC_P
ractice\\VIDEO_PRACTICE_TEST2\\test_file2.txt', 121: 'E:\\STUDY\\PROJECTS\\AAIC_Prac
tice', 123: ['Error', 'ExecError', 'ReadError', 'RegistryError', 'SameFileError', 'S
pecialFileError', '_ARCHIVE_FORMATS', '_BZ2_SUPPORTED', '_LZMA_SUPPORTED', '_UNPACK_
FORMATS', '_ZLIB_SUPPORTED', '__all__', '__builtins__', '__cached__', '__doc__', '__
file__', '__loader__', '__name__', '__package__', '__spec__', '_basename', '_check_u
npack_options', '_copyxattr', '_destinsrc', '_ensure_directory', '_find_unpack_forma
t', '_get_gid', '_get_uid', '_make_tarball', '_make_zipfile', '_ntuple_diskusage',
'_rmtree_safe_fd', '_rmtree_unsafe', '_samefile', '_unpack_tarfile', '_unpack_zipfil
e', '_use_fd_functions', 'chown', 'collections', 'copy', 'copy2', 'copyfile', 'copyf
ileobj', 'copymode', 'copystat', 'copytree', 'disk_usage', 'errno', 'fnmatch', 'get_
archive_formats', 'get_terminal_size', 'get_unpack_formats', 'getgrnam', 'getpwnam',
'ignore_patterns', 'make_archive', 'move', 'nt', 'os', 'register_archive_format', 'r
egister_unpack_format', 'rmtree', 'stat', 'sys', 'unpack_archive', 'unregister_archi
ve_format', 'unregister_unpack_format', 'which'], 125: ['Pdb', 'Restart', 'TESTCMD',
'__all__', '__builtins__', '__cached__', '__doc__', '__file__', '__loader__', '__nam
e__', '__package__', '__spec__', '_rstr', '_usage', 'bdb', 'cmd', 'code', 'dis', 'fi
nd_function', 'getsourcelines', 'glob', 'help', 'inspect', 'lasti2lineno', 'line_pre
fix', 'linecache', 'main', 'os', 'pm', 'post_mortem', 'pprint', 're', 'run', 'runcal
l', 'runctx', 'runeval', 'set_trace', 'signal', 'sys', 'test', 'traceback'], 127:
[2, 3, 4, 5, 6, 7, 8, 9], 129: [1, 1, 5, 6, 7, 8, 9], 131: [1, 1], 133: [1, 1], 136:
array([1, 1, 1, 1, 1, 1, 1, 1, 1, 1]), 138: array([1, 1, 1, 1, 1, 1, 1, 1, 1, 1]), 1
39: array([1, 1, 1]), 140: 10, 143: array([1, 1, 1, 1, 1, 1, 1, 1, 1, 1])}, 'get_ipy
thon': <bound method InteractiveShell.get_ipython of <ipykernel.zmqshell.ZMQInteract
iveShell object at 0x000001E757DC3438>>, 'exit': <IPython.core.autocall.ZMQExitAutoc
all object at 0x000001E757E65B38>, 'quit': <IPython.core.autocall.ZMQExitAutocall ob
ject at 0x000001E757E65B38>, '_': array([1, 1, 1, 1, 1, 1, 1, 1, 1, 1]), '__': 10,
'___': array([1, 1, 1]), '_i': 'multiple_of_4(np_ones)', '_ii': 'multiple_of_4(np_on
es)', '_iii': 'def multiple_of_4(val):\n   for n in range(1,len(val)+1,1):\n
pdb.set_trace()\n   print(n*4)', '_i1': 'def print_name(name):\n   """This fun
ction prints the name of the person."""\n   print(name)', 'print_name': <function p
rint_name at 0x000001E757EBA048>, '_i2': "print_name('Rajesh')", '_i3': 'print_name.
__doc__', '_3': 'This function prints the name of the person.', '_i4': 'num1 = 98\nn
um2 = 78', 'num1': 4, 'num2': 50, '_i5': 'def compute_hcf(num1, num2):\n   """\n
This function will compute the HCF of the given numbers.\n   """\n   if num1 > num
2:\n   smaller = num2\n   else:\n   smaller = num1\n\n   hcf = []\n\n
for num in range(1,smaller+1):\n   if num1%num == 0 and num2%num == 0:\n
hcf.append(num)\n   return hcf[-1]', 'compute_hcf': <function compute_hcf at 0x0000
01E757EBA8C8>, '_i6': 'print("HCF of 98 and 78 is {}".format(compute_hcf(num1,num
2)))', '_i7': 'num1, num2 = 4,16', '_i8': 'print("HCF of {} and {} is {}".format(num
1, num2, compute_hcf(num1,num2)))', '_i9': 'num1, num2 = 16, 96', '_i10': 'print("HC
F of {} and {} is {}".format(num1, num2, compute_hcf(num1,num2)))', '_i11': 'abs(-44
545)', '_11': 44545, '_i12': "abs('Function name')", '_i13': 'os.getcwd()', '_i14':
'len(np_ones)', '_i15': 'def print_name(name):\n   """This function prints the name
of the person."""\n   print(name)', '_i16': "print_name('Rajesh')", '_i17': 'print_
name.__doc__', '_17': 'This function prints the name of the person.', '_i18': 'num1
= 98\nnum2 = 78', '_i19': 'def compute_hcf(num1, num2):\n   """\n   This function
will compute the HCF of the given numbers.\n   """\n   if num1 > num2:\n   sm
aller = num2\n   else:\n   smaller = num1\n\n   hcf = []\n\n   for num in ra
nge(1,smaller+1):\n   if num1%num == 0 and num2%num == 0:\n   hcf.appe
nd(num)\n   return hcf[-1]', '_i20': 'print("HCF of 98 and 78 is {}".format(compute
_hcf(num1,num2)))', '_i21': 'num1, num2 = 4,16', '_i22': 'print("HCF of {} and {} is
{}".format(num1, num2, compute_hcf(num1,num2)))', '_i23': 'num1, num2 = 16, 96', '_i
24': 'print("HCF of {} and {} is {}".format(num1, num2, compute_hcf(num1,num2)))',

'_i25': 'abs(-44545)', '_25': 44545, '_i26': "abs('Function name')", '_i27': 'abs(-8
9.8475)', '_27': 89.8475, '_i28': 'divmod(4,2) # Returns quotient and re
mainder', '_28': (2, 0), '_i29': 'divmod(8,3)', '_29': (2, 2), '_i30': 'all([1,2,3,
4]) # it returns the bool(x) or bool for all values of x', '_30': Tru
e, '_i31': 'all([1,2,3,4,])', '_31': True, '_i32': 'all([1,2,3,4,0]) #
0 in python is False internally thus it returned False', '_32': False, '_i33': 'all
([False,1,2,3,4])', '_33': False, '_i34': 'bool(7)', '_34': True, '_i35': "bool
('X')", '_35': True, '_i36': 'bool(0)', '_36': False, '_i37': 'bool(-1)', '_37': Tru
e, '_i38': 'import pandas', 'pandas': <module 'pandas' from 'c:\\users\\rajsh\\appda
ta\\local\\programs\\python\\python36\\lib\\site-packages\\pandas__init__.py'>, '_
i39': 'print(dir(pandas))', '_i40': "numbers = [10,20,30,40,50]\n\nfor num1 , num2 i
n enumerate(numbers):\n   print(num1, ' || ', num2)", 'numbers': [10, 20, 30, 40, 5
0], '_i41': 'for idx, num in enumerate(numbers):\n   print("Index ---> {} && Number
---> {}".format(idx,num))', 'idx': 504, 'num': 9, '_i42': "for idx, num in enumerate
(numbers,500):\n   print(idx, ' ||| ', num)", '_i43': 'def fil_f(num):\n   return
num >= abs(num)', 'fil_f': <function fil_f at 0x000001E76007D620>, '_i44': 'list(fil
ter(fil_f,[1,2,3,4,5,6,7,8,9]))', '_44': [1, 2, 3, 4, 5, 6, 7, 8, 9], '_i45': 'tuple
(filter(fil_f,[1,2,3,4,5,6,7,8,9]))', '_45': (1, 2, 3, 4, 5, 6, 7, 8, 9), '_i46': 's
et(filter(fil_f,[1,2,3,4,5,6,7,8,9]))', '_46': {1, 2, 3, 4, 5, 6, 7, 8, 9}, '_i47':
'set(filter(fil_f,[1,2,3,4,5,6,7,8,9,0,-1,-2,-3,-4]))', '_47': {0, 1, 2, 3, 4, 5, 6,
7, 8, 9}, '_i48': 'scores = {10,39,89,99,105,175}', 'scores': {99, 39, 105, 10, 175,
89}, '_i49': 'isinstance(scores,list)', '_49': False, '_i50': 'isinstance(scores,dic
t)', '_50': False, '_i51': 'isinstance(scores,tuple)', '_51': False, '_i52': 'isinst
ance(scores,set)', '_52': True, '_i53': 'def divide_num_by_4(num):\n   return num/
4', 'divide_num_by_4': <function divide_num_by_4 at 0x000001E757EACBF8>, '_i54': 'li
st(map(divide_num_by_4,scores))', '_54': [24.75, 9.75, 26.25, 2.5, 43.75, 22.25], '_
i55': 'from functools import reduce', 'reduce': <built-in function reduce>, '_i56':
'def cume(val1, val2):\n   return val1+val2', 'cume': <function cume at 0x000001E76
00876A8>, '_i57': 'nums = [1,2,3,4,5]', 'nums': [1, 2, 3, 4, 5, 6, 7, 8, 9], '_i58':
'reduce(cume,nums)', '_58': 15, '_i59': "def hello_world(**kwargs):\n   return (kwa
rgs['first_name'], kwargs['middle_name'],kwargs['last_name'])", 'hello_world': <func
tion hello_world at 0x000001E76009DC80>, '_i60': "hello_world(first_name='Rajesh',mi
ddle_name='Kumar',last_name='sharma',an_name='titu')", '_60': ('Rajesh', 'Kumar', 's
harma'), '_i61': "%timeit hello_world(first_name='Rajesh',middle_name='Kumar',last_n
ame='sharma')", '_i62': "def hello_world(**kwargs):\n   print (kwargs['first_nam
e'], kwargs['middle_name'],kwargs['last_name'])", '_i63': "hello_world(first_name='R
ajesh',middle_name='Kumar',last_name='sharma')", '_i64': "hello_world(first_name='Ra
jesh',middle_name='Kumar',last_name='sharma',an_name='titu')", '_i65': 'def name_pri
nting(*names):\n   for l_name in names:\n   print("First name is Rajesh and La
st name is {0}".format(l_name))', 'name_printing': <function name_printing at 0x0000
01E7600A2730>, '_i66': "name_printing('sharma','kumar','kapoor')", '_i67': 'def fact
orial(num):\n   return num if num == 1 else num * factorial(num-1)', 'factorial': <
function factorial at 0x000001E7600A2B70>, '_i68': 'factorial(5)', '_68': 120, '_i6
9': 'def fibonacci(num):\n   return num if num <=1 else fibonacci(num-1) + fibonacc
i(num-2)', 'fibonacci': <function fibonacci at 0x000001E7600A82F0>, '_i70': 'nums =
range(0,10)', '_i71': 'for num in nums:\n   print(fibonacci(num))', '_i72': 'sqr =
lambda x: x**2', 'sqr': <function <lambda> at 0x000001E7600A8B70>, '_i73': '[sqr(nu
m) for num in nums]', '_73': [0, 1, 4, 9, 16, 25, 36, 49, 64, 81], '_i74': 'sum_of_2
s = lambda x,y : x+y', 'sum_of_2s': <function <lambda> at 0x000001E7600AD1E0>, '_i7
5': 'sum_of_2s(3,5)', '_75': 8, '_i76': 'nums = [1,2,3,4,5,6,7,8,9]', '_i77': 'num
s', '_77': [1, 2, 3, 4, 5, 6, 7, 8, 9], '_i78': 'from functools import reduce', '_i7
9': 'sum_list = reduce(lambda x,y:x+y,nums)', 'sum_list': 45, '_i80': 'sum_list', '_
80': 45, '_i81': 'nums', '_81': [1, 2, 3, 4, 5, 6, 7, 8, 9], '_i82': 'reduce(lambda
x,y:x+y,map(lambda x : x/2,filter(lambda x: x%2==0,nums)))', '_82': 10.0, '_i83': "f
= open('test_file.txt','x')", 'f': <_io.TextIOWrapper name='test_file.txt' mode='x'
encoding='cp1252'>, '_i84': 'f.write("I\'m Rajesh Sharma and one day I\'ll be a Data
Scientist.")', '_84': 55, '_i85': 'f.close()', '_i86': "f1 = open('test_file.tx
t','r')", 'f1': <_io.TextIOWrapper name='test_file.txt' mode='r' encoding='cp1252'>,
'_i87': 'f1.read()', '_87': "I'm Rajesh Sharma and one day I'll be a Data Scientis
t.", '_i88': 'f1.tell()', '_88': 55, '_i89': 'f1.seek(1)', '_89': 1, '_i90': 'f1.tel
l()', '_90': 1, '_i91': 'f1.read(5)', '_91': "'m Ra", '_i92': 'f1.seek(50)', '_92':
50, '_i93': 'f1.read()', '_93': 'tist.', '_i94': 'f1.tell()', '_94': 55, '_i95': 'ty
pe(f1.readlines())', '_95': <class 'list'>, '_i96': 'type(f1.readline())', '_96': <c
lass 'str'>, '_i97': 'f1.seek(20)', '_97': 20, '_i98': 'f1.readlines()', '_98': ["d
one day I'll be a Data Scientist."], '_i99': 'f1.readline()', '_99': '', '_i100': 'f
1.seek(20)', '_100': 20, '_i101': 'f1.readline()', '_101': "d one day I'll be a Data
Scientist.", '_i102': 'f1.close()', '_i103': 'import os', 'os': <module 'os' from
'c:\\users\\rajsh\\appdata\\local\\programs\\python\\python36\\lib\\os.py'>, '_i10
4': 'dir(__builtins__)', '_104': ['ArithmeticError', 'AssertionError', 'AttributeErr

or', 'BaseException', 'BlockingIOError', 'BrokenPipeError', 'BufferError', 'BytesWar
ning', 'ChildProcessError', 'ConnectionAbortedError', 'ConnectionError', 'Connection
RefusedError', 'ConnectionResetError', 'DeprecationWarning', 'EOFError', 'Ellipsis',
'EnvironmentError', 'Exception', 'False', 'FileExistsError', 'FileNotFoundError', 'F
loatingPointError', 'FutureWarning', 'GeneratorExit', 'IOError', 'ImportError', 'Imp
ortWarning', 'IndentationError', 'IndexError', 'InterruptedError', 'IsADirectoryErro
r', 'KeyError', 'KeyboardInterrupt', 'LookupError', 'MemoryError', 'ModuleNotFoundEr
ror', 'NameError', 'None', 'NotADirectoryError', 'NotImplemented', 'NotImplementedEr
ror', 'OSError', 'OverflowError', 'PendingDeprecationWarning', 'PermissionError', 'P
rocessLookupError', 'RecursionError', 'ReferenceError', 'ResourceWarning', 'RuntimeE
rror', 'RuntimeWarning', 'StopAsyncIteration', 'StopIteration', 'SyntaxError', 'Synt
axWarning', 'SystemError', 'SystemExit', 'TabError', 'TimeoutError', 'True', 'TypeEr
ror', 'UnboundLocalError', 'UnicodeDecodeError', 'UnicodeEncodeError', 'UnicodeErro
r', 'UnicodeTranslateError', 'UnicodeWarning', 'UserWarning', 'ValueError', 'Warnin
g', 'WindowsError', 'ZeroDivisionError', '__IPYTHON__', '__build_class__', '__debug_
_', '__doc__', '__import__', '__loader__', '__name__', '__package__', '__spec__', 'a
bs', 'all', 'any', 'ascii', 'bin', 'bool', 'bytearray', 'bytes', 'callable', 'chr',
'classmethod', 'compile', 'complex', 'copyright', 'credits', 'delattr', 'dict', 'di
r', 'display', 'divmod', 'enumerate', 'eval', 'exec', 'filter', 'float', 'format',
'frozenset', 'get_ipython', 'getattr', 'globals', 'hasattr', 'hash', 'help', 'hex',
'id', 'input', 'int', 'isinstance', 'issubclass', 'iter', 'len', 'license', 'list',
'locals', 'map', 'max', 'memoryview', 'min', 'next', 'object', 'oct', 'open', 'ord',
'pow', 'print', 'property', 'range', 'repr', 'reversed', 'round', 'set', 'setattr',
'slice', 'sorted', 'staticmethod', 'str', 'sum', 'super', 'tuple', 'type', 'vars',
'zip'], '_i105': 'dir(os)', '_105': ['DirEntry', 'F_OK', 'MutableMapping', 'O_APPEN
D', 'O_BINARY', 'O_CREAT', 'O_EXCL', 'O_NOINHERIT', 'O_RANDOM', 'O_RDONLY', 'O_RDW
R', 'O_SEQUENTIAL', 'O_SHORT_LIVED', 'O_TEMPORARY', 'O_TEXT', 'O_TRUNC', 'O_WRONLY',
'P_DETACH', 'P_NOWAIT', 'P_NOWAITO', 'P_OVERLAY', 'P_WAIT', 'PathLike', 'R_OK', 'SEE
K_CUR', 'SEEK_END', 'SEEK_SET', 'TMP_MAX', 'W_OK', 'X_OK', '_Environ', '__all__', '_
_builtins__', '__cached__', '__doc__', '__file__', '__loader__', '__name__', '__pack
age__', '__spec__', '_execvpe', '_exists', '_exit', '_fspath', '_get_exports_list',
'_putenv', '_unsetenv', '_wrap_close', 'abc', 'abort', 'access', 'altsep', 'chdir',
'chmod', 'close', 'closerange', 'cpu_count', 'curdir', 'defpath', 'device_encoding',
'devnull', 'dup', 'dup2', 'environ', 'errno', 'error', 'execl', 'execle', 'execlp',
'execlpe', 'execv', 'execve', 'execvp', 'execvpe', 'extsep', 'fdopen', 'fsdecode',
'fsencode', 'fspath', 'fstat', 'fsync', 'ftruncate', 'get_exec_path', 'get_handle_in
heritable', 'get_inheritable', 'get_terminal_size', 'getcwd', 'getcwdb', 'getenv',
'getlogin', 'getpid', 'getppid', 'isatty', 'kill', 'linesep', 'link', 'listdir', 'ls
eek', 'lstat', 'makedirs', 'mkdir', 'name', 'open', 'pardir', 'path', 'pathsep', 'pi
pe', 'popen', 'putenv', 'read', 'readlink', 'remove', 'removedirs', 'rename', 'renam
es', 'replace', 'rmdir', 'scandir', 'sep', 'set_handle_inheritable', 'set_inheritabl
e', 'spawnl', 'spawnle', 'spawnv', 'spawnve', 'st', 'startfile', 'stat', 'stat_float
_times', 'stat_result', 'statvfs_result', 'strerror', 'supports_bytes_environ', 'sup
ports_dir_fd', 'supports_effective_ids', 'supports_fd', 'supports_follow_symlinks',
'symlink', 'sys', 'system', 'terminal_size', 'times', 'times_result', 'truncate', 'u
mask', 'uname_result', 'unlink', 'urandom', 'utime', 'waitpid', 'walk', 'write'], '_
i106': "os.rename('test_file.txt','file_manipulations.txt')", '_i107': 'f1.read()
because file is closed', '_i108': 'os.getcwd()', '_108': 'E:\\STUDY\\GIT\\aaic_pra
ctice\\MODULES\\Module_1_All_about_Python', '_i109': "os.chdir('E:\\\\STUDY\\\\PROJE
CTS\\\\AAIC_Practice')", '_i110': 'os.getcwd()', '_110': 'E:\\STUDY\\PROJECTS\\AAIC_
Practice', '_i111': "os.mkdir('VIDEO_PRACTICE_TEST')", '_i112': 'os.listdir()', '_11
2': ['ASSIGNMENTS', 'INTERVIEW_Qs', 'MODULES', 'VIDEO_PRACTICE_TEST'], '_i113': "os.
rmdir('VIDEO_PRACTICE_TEST')", '_i114': "os.mkdir('VIDEO_PRACTICE_TEST2')", '_i115':
'os.listdir()', '_115': ['ASSIGNMENTS', 'INTERVIEW_Qs', 'MODULES', 'VIDEO_PRACTICE_T
EST2'], '_i116': 'lines = ["This is not a hellow world!!", "This is much more than a
hello world!!", "Thats my feelings for DS, ML and DL."]', 'lines': ['This is not a h
ellow world!!', 'This is much more than a hello world!!', 'Thats my feelings for DS,
ML and DL.'], '_i117': "with open('test_file2.txt','x') as f_test:\n   f_test.write
lines(lines)", 'f_test': <_io.TextIOWrapper name='test_file2.txt' mode='x' encoding
='cp1252'>, '_i118': 'os.getcwd()', '_118': 'E:\\STUDY\\PROJECTS\\AAIC_Practice', '_
i119': 'import shutil', 'shutil': <module 'shutil' from 'c:\\users\\rajsh\\appdata
\\local\\programs\\python\\python36\\lib\\shutil.py'>, '_i120': 'shutil.move(\'test_
file2.txt\',os.getcwd()+"\\\\VIDEO_PRACTICE_TEST2")', '_120': 'E:\\STUDY\\PROJECTS
\\AAIC_Practice\\VIDEO_PRACTICE_TEST2\\test_file2.txt', '_i121': 'os.getcwd()', '_12
1': 'E:\\STUDY\\PROJECTS\\AAIC_Practice', '_i122': "os.rmdir('VIDEO_PRACTICE_TEST2')
As said it only deletes a empty directory", '_i123': 'dir(shutil)', '_123': ['Erro
r', 'ExecError', 'ReadError', 'RegistryError', 'SameFileError', 'SpecialFileError',
'_ARCHIVE_FORMATS', '_BZ2_SUPPORTED', '_LZMA_SUPPORTED', '_UNPACK_FORMATS', '_ZLIB_S
UPPORTED', '__all__', '__builtins__', '__cached__', '__doc__', '__file__', '__loader

```
__', '__name__', '__package__', '__spec__', '_basename', '_check_unpack_options', '_
copyxattr', '_destinsrc', '_ensure_directory', '_find_unpack_format', '_get_gid', '_
get_uid', '_make_tarball', '_make_zipfile', '_ntuple_diskusage', '_rmtree_safe_fd',
'_rmtree_unsafe', '_samefile', '_unpack_tarfile', '_unpack_zipfile', '_use_fd_functi
ons', 'chown', 'collections', 'copy', 'copy2', 'copyfile', 'copyfileobj', 'copymod
e', 'copystat', 'copytree', 'disk_usage', 'errno', 'fnmatch', 'get_archive_formats',
'get_terminal_size', 'get_unpack_formats', 'getgrnam', 'getpwnam', 'ignore_pattern
s', 'make_archive', 'move', 'nt', 'os', 'register_archive_format', 'register_unpack_
format', 'rmtree', 'stat', 'sys', 'unpack_archive', 'unregister_archive_format', 'un
register_unpack_format', 'which'], '_i124': 'import pdb', 'pdb': <module 'pdb' from
'c:\\users\\rajsh\\appdata\\local\\programs\\python\\python36\\lib\\pdb.py'>, '_i12
5': 'dir(pdb)', '_125': ['Pdb', 'Restart', 'TESTCMD', '__all__', '__builtins__', '__
cached__', '__doc__', '__file__', '__loader__', '__name__', '__package__', '__spec_
_', '_rstr', '_usage', 'bdb', 'cmd', 'code', 'dis', 'find_function', 'getsourceline
s', 'glob', 'help', 'inspect', 'lasti2lineno', 'line_prefix', 'linecache', 'main',
'os', 'pm', 'post_mortem', 'pprint', 're', 'run', 'runcall', 'runctx', 'runeval', 's
et_trace', 'signal', 'sys', 'test', 'traceback'], '_i126': 'test_ones = [1,2,3,4,5,
6,7,8,9]', 'test_ones': [1, 1, 5, 6, 7, 8, 9], '_i127': 'test_ones[1:]', '_127': [2,
3, 4, 5, 6, 7, 8, 9], '_i128': 'test_ones[1:4] = [1]', '_i129': 'test_ones', '_129':
[1, 1, 5, 6, 7, 8, 9], '_i130': 'ones = [val for val in range(1,11)]', 'ones': [1,
1], '_i131': 'ones', '_131': [1, 1], '_i132': 'ones[1:] = [1]', '_i133': 'ones', '_1
33': [1, 1], '_i134': 'import numpy as np', 'np': <module 'numpy' from 'c:\\users\\r
ajsh\\appdata\\local\\programs\\python\\python36\\lib\\site-packages\\numpy\\__init_
_.py'>, '_i135': 'np_ones = np.arange(1,11)', 'np_ones': [1, 2, 3, 4, 5], '_i136':
'np_ones', '_136': array([1, 1, 1, 1, 1, 1, 1, 1, 1, 1]), '_i137': 'np_ones[1:] =
[1] ', '_i138': 'np_ones', '_138': array([1, 1, 1, 1, 1, 1, 1, 1, 1, 1]), '_i139':
'np_ones[1:4]', '_139': array([1, 1, 1]), '_i140': 'len(np_ones)', '_140': 10, '_i14
1': 'def multiple_of_4(val):\n    for n in range(1,len(val)+1,1):\n        pdb.set_t
race()\n        print(n*4)', 'multiple_of_4': <function multiple_of_4 at 0x000001E76
007DAE8>, '_i142': 'multiple_of_4(np_ones)', '_i143': 'np_ones', '_143': array([1,
1, 1, 1, 1, 1, 1, 1, 1, 1]), '_i144': 'def multiple_of_4(val):\n    for n in range
(1,len(val)+1,1):\n        pdb.set_trace()\n        print(n*4)', '_i145': 'multiple_
of_4(np_ones)', '_i146': 'multiple_of_4(np_ones)', '_i147': 'np_ones = [1,2,3,4,5]',
'_i148': 'def multiple_of_4(val):\n    for n in range(1,len(val)+1,1):\n        pdb.
set_trace()\n        print(n*4)', '_i149': 'multiple_of_4(np_ones)', '_i150': 'def m
ultiple_of_4(val):\n    for n in range(1,len(val)+1,1):\n        pdb.set_trace()\n
print(n*4)', '_i151': 'multiple_of_4(np_ones)', '_i152': 'def multiple_of_4(val):\n
for n in range(1,len(val)+1,1):\n#         pdb.set_trace()\n        print(n*4)', '_i
153': 'multiple_of_4(np_ones)', '_i154': 'def multiple_of_4(val):\n    for n in rang
e(1,len(val)+1,1):\n        pdb.set_trace()\n        print(n*4)', '_i155': 'multiple
_of_4(np_ones)', '_i156': 'multiple_of_4(np_ones)', '_i157': 'multiple_of_4(np_one
s)'}

{'n': 3, 'val': [1, 2, 3, 4, 5]}

12
> <ipython-input-154-281fd9f942ac>(3)multiple_of_4()
      1 def multiple_of_4(val):
      2     for n in range(1,len(val)+1,1):
----> 3         pdb.set_trace()
      4         print(n*4)


16
> <ipython-input-154-281fd9f942ac>(4)multiple_of_4()
      1 def multiple_of_4(val):
      2     for n in range(1,len(val)+1,1):
      3         pdb.set_trace()
----> 4         print(n*4)


20
```

Current Scope Global Variables

In [158…
```
globals()
```

Out[158…
```
{'__name__': '__main__',
 '__doc__': 'Automatically created module for IPython interactive environment',
 '__package__': None,
```

```
 '__loader__': None,
 '__spec__': None,
 '__builtin__': <module 'builtins' (built-in)>,
 '__builtins__': <module 'builtins' (built-in)>,
 '_ih': ['',
  'def print_name(name):\n    """This function prints the name of the person."""\n
print(name)',
  "print_name('Rajesh')",
  'print_name.__doc__',
  'num1 = 98\nnum2 = 78',
  'def compute_hcf(num1, num2):\n    """\n    This function will compute the HCF of
the given numbers.\n    """\n    if num1 > num2:\n        smaller = num2\n    els
e:\n        smaller = num1\n\n    hcf = []\n\n    for num in range(1,smaller+1):\n
if num1%num == 0 and num2%num == 0:\n            hcf.append(num)\n    return hcf[-
1]',
  'print("HCF of 98 and 78 is {}".format(compute_hcf(num1,num2)))',
  'num1, num2 = 4,16',
  'print("HCF of {} and {} is {}".format(num1, num2, compute_hcf(num1,num2)))',
  'num1, num2 = 16, 96',
  'print("HCF of {} and {} is {}".format(num1, num2, compute_hcf(num1,num2)))',
  'abs(-44545)',
  "abs('Function name')",
  'os.getcwd()',
  'len(np_ones)',
  'def print_name(name):\n    """This function prints the name of the person."""\n
print(name)',
  "print_name('Rajesh')",
  'print_name.__doc__',
  'num1 = 98\nnum2 = 78',
  'def compute_hcf(num1, num2):\n    """\n    This function will compute the HCF of
the given numbers.\n    """\n    if num1 > num2:\n        smaller = num2\n    els
e:\n        smaller = num1\n\n    hcf = []\n\n    for num in range(1,smaller+1):\n
if num1%num == 0 and num2%num == 0:\n            hcf.append(num)\n    return hcf[-
1]',
  'print("HCF of 98 and 78 is {}".format(compute_hcf(num1,num2)))',
  'num1, num2 = 4,16',
  'print("HCF of {} and {} is {}".format(num1, num2, compute_hcf(num1,num2)))',
  'num1, num2 = 16, 96',
  'print("HCF of {} and {} is {}".format(num1, num2, compute_hcf(num1,num2)))',
  'abs(-44545)',
  "abs('Function name')",
  'abs(-89.8475)',
  'divmod(4,2)             # Returns quotient and remainder',
  'divmod(8,3)',
  'all([1,2,3,4])               # it returns the bool(x) or bool for all values of
x',
  'all([1,2,3,4,])',
  'all([1,2,3,4,0])             # 0 in python is False internally thus it returned
False',
  'all([False,1,2,3,4])',
  'bool(7)',
  "bool('X')",
  'bool(0)',
  'bool(-1)',
  'import pandas',
  'print(dir(pandas))',
  "numbers = [10,20,30,40,50]\n\nfor num1 , num2 in enumerate(numbers):\n    print(n
um1, ' || ', num2)",
  'for idx, num in enumerate(numbers):\n    print("Index ---> {} && Number ---> {}".
format(idx,num))',
  "for idx, num in enumerate(numbers,500):\n    print(idx, ' ||| ', num)",
  'def fil_f(num):\n    return num >= abs(num)',
  'list(filter(fil_f,[1,2,3,4,5,6,7,8,9]))',
  'tuple(filter(fil_f,[1,2,3,4,5,6,7,8,9]))',
  'set(filter(fil_f,[1,2,3,4,5,6,7,8,9]))',
  'set(filter(fil_f,[1,2,3,4,5,6,7,8,9,0,-1,-2,-3,-4]))',
  'scores = {10,39,89,99,105,175}',
  'isinstance(scores,list)',
  'isinstance(scores,dict)',
```

```
  'isinstance(scores,tuple)',
  'isinstance(scores,set)',
  'def divide_num_by_4(num):\n    return num/4',
  'list(map(divide_num_by_4,scores))',
  'from functools import reduce',
  'def cume(val1, val2):\n    return val1+val2',
  'nums = [1,2,3,4,5]',
  'reduce(cume,nums)',
  "def hello_world(**kwargs):\n    return (kwargs['first_name'], kwargs['middle_nam
e'],kwargs['last_name'])",
  "hello_world(first_name='Rajesh',middle_name='Kumar',last_name='sharma',an_name='t
itu')",
  'get_ipython().run_line_magic(\'timeit\', "hello_world(first_name=\'Rajesh\',middl
e_name=\'Kumar\',last_name=\'sharma\')")',
  "def hello_world(**kwargs):\n    print (kwargs['first_name'], kwargs['middle_nam
e'],kwargs['last_name'])",
  "hello_world(first_name='Rajesh',middle_name='Kumar',last_name='sharma')",
  "hello_world(first_name='Rajesh',middle_name='Kumar',last_name='sharma',an_name='t
itu')",
  'def name_printing(*names):\n    for l_name in names:\n        print("First name i
s Rajesh and Last name is {0}".format(l_name))',
  "name_printing('sharma','kumar','kapoor')",
  'def factorial(num):\n    return num if num == 1 else num * factorial(num-1)',
  'factorial(5)',
  'def fibonacci(num):\n    return num if num <=1 else fibonacci(num-1) + fibonacci
(num-2)',
  'nums = range(0,10)',
  'for num in nums:\n    print(fibonacci(num))',
  'sqr = lambda x: x**2',
  '[sqr(num) for num in nums]',
  'sum_of_2s = lambda x,y : x+y',
  'sum_of_2s(3,5)',
  'nums = [1,2,3,4,5,6,7,8,9]',
  'nums',
  'from functools import reduce',
  'sum_list = reduce(lambda x,y:x+y,nums)',
  'sum_list',
  'nums',
  'reduce(lambda x,y:x+y,map(lambda x : x/2,filter(lambda x: x%2==0,nums)))',
  "f = open('test_file.txt','x')",
  'f.write("I\'m Rajesh Sharma and one day I\'ll be a Data Scientist.")',
  'f.close()',
  "f1 = open('test_file.txt','r')",
  'f1.read()',
  'f1.tell()',
  'f1.seek(1)',
  'f1.tell()',
  'f1.read(5)',
  'f1.seek(50)',
  'f1.read()',
  'f1.tell()',
  'type(f1.readlines())',
  'type(f1.readline())',
  'f1.seek(20)',
  'f1.readlines()',
  'f1.readline()',
  'f1.seek(20)',
  'f1.readline()',
  'f1.close()',
  'import os',
  'dir(__builtins__)',
  'dir(os)',
  "os.rename('test_file.txt','file_manipulations.txt')",
  'f1.read()              # because file is closed',
  'os.getcwd()',
  "os.chdir('E:\\\\STUDY\\\\PROJECTS\\\\AAIC_Practice')",
  'os.getcwd()',
  "os.mkdir('VIDEO_PRACTICE_TEST')",
  'os.listdir()',
```

```
  "os.rmdir('VIDEO_PRACTICE_TEST')",
  "os.mkdir('VIDEO_PRACTICE_TEST2')",
  'os.listdir()',
  'lines = ["This is not a hellow world!!", "This is much more than a hello worl
d!!", "Thats my feelings for DS, ML and DL."]',
  "with open('test_file2.txt','x') as f_test:\n    f_test.writelines(lines)",
  'os.getcwd()',
  'import shutil',
  'shutil.move(\'test_file2.txt\',os.getcwd()+"\\\\VIDEO_PRACTICE_TEST2")',
  'os.getcwd()',
  "os.rmdir('VIDEO_PRACTICE_TEST2')           # As said it only deletes a empty dire
ctory",
  'dir(shutil)',
  'import pdb',
  'dir(pdb)',
  'test_ones = [1,2,3,4,5,6,7,8,9]',
  'test_ones[1:]',
  'test_ones[1:4] = [1]',
  'test_ones',
  'ones = [val for val in range(1,11)]',
  'ones',
  'ones[1:] = [1]',
  'ones',
  'import numpy as np',
  'np_ones = np.arange(1,11)',
  'np_ones',
  'np_ones[1:] = [1] ',
  'np_ones',
  'np_ones[1:4]',
  'len(np_ones)',
  'def multiple_of_4(val):\n    for n in range(1,len(val)+1,1):\n        pdb.set_tra
ce()\n        print(n*4)',
  'multiple_of_4(np_ones)',
  'np_ones',
  'def multiple_of_4(val):\n    for n in range(1,len(val)+1,1):\n        pdb.set_tra
ce()\n        print(n*4)',
  'multiple_of_4(np_ones)',
  'multiple_of_4(np_ones)',
  'np_ones = [1,2,3,4,5]',
  'def multiple_of_4(val):\n    for n in range(1,len(val)+1,1):\n        pdb.set_tra
ce()\n        print(n*4)',
  'multiple_of_4(np_ones)',
  'def multiple_of_4(val):\n    for n in range(1,len(val)+1,1):\n        pdb.set_tra
ce()\n        print(n*4)',
  'multiple_of_4(np_ones)',
  'def multiple_of_4(val):\n    for n in range(1,len(val)+1,1):\n#         pdb.set_t
race()\n        print(n*4)',
  'multiple_of_4(np_ones)',
  'def multiple_of_4(val):\n    for n in range(1,len(val)+1,1):\n        pdb.set_tra
ce()\n        print(n*4)',
  'multiple_of_4(np_ones)',
  'multiple_of_4(np_ones)',
  'multiple_of_4(np_ones)',
  'globals()'],
 '_oh': {3: 'This function prints the name of the person.',
  11: 44545,
  17: 'This function prints the name of the person.',
  25: 44545,
  27: 89.8475,
  28: (2, 0),
  29: (2, 2),
  30: True,
  31: True,
  32: False,
  33: False,
  34: True,
  35: True,
  36: False,
  37: True,
```

```
44: [1, 2, 3, 4, 5, 6, 7, 8, 9],
45: (1, 2, 3, 4, 5, 6, 7, 8, 9),
46: {1, 2, 3, 4, 5, 6, 7, 8, 9},
47: {0, 1, 2, 3, 4, 5, 6, 7, 8, 9},
49: False,
50: False,
51: False,
52: True,
54: [24.75, 9.75, 26.25, 2.5, 43.75, 22.25],
58: 15,
60: ('Rajesh', 'Kumar', 'sharma'),
68: 120,
73: [0, 1, 4, 9, 16, 25, 36, 49, 64, 81],
75: 8,
77: [1, 2, 3, 4, 5, 6, 7, 8, 9],
80: 45,
81: [1, 2, 3, 4, 5, 6, 7, 8, 9],
82: 10.0,
84: 55,
87: "I'm Rajesh Sharma and one day I'll be a Data Scientist.",
88: 55,
89: 1,
90: 1,
91: "'m Ra",
92: 50,
93: 'tist.',
94: 55,
95: list,
96: str,
97: 20,
98: ["d one day I'll be a Data Scientist."],
99: '',
100: 20,
101: "d one day I'll be a Data Scientist.",
104: ['ArithmeticError',
 'AssertionError',
 'AttributeError',
 'BaseException',
 'BlockingIOError',
 'BrokenPipeError',
 'BufferError',
 'BytesWarning',
 'ChildProcessError',
 'ConnectionAbortedError',
 'ConnectionError',
 'ConnectionRefusedError',
 'ConnectionResetError',
 'DeprecationWarning',
 'EOFError',
 'Ellipsis',
 'EnvironmentError',
 'Exception',
 'False',
 'FileExistsError',
 'FileNotFoundError',
 'FloatingPointError',
 'FutureWarning',
 'GeneratorExit',
 'IOError',
 'ImportError',
 'ImportWarning',
 'IndentationError',
 'IndexError',
 'InterruptedError',
 'IsADirectoryError',
 'KeyError',
 'KeyboardInterrupt',
 'LookupError',
 'MemoryError',
```

```
 'ModuleNotFoundError',
 'NameError',
 'None',
 'NotADirectoryError',
 'NotImplemented',
 'NotImplementedError',
 'OSError',
 'OverflowError',
 'PendingDeprecationWarning',
 'PermissionError',
 'ProcessLookupError',
 'RecursionError',
 'ReferenceError',
 'ResourceWarning',
 'RuntimeError',
 'RuntimeWarning',
 'StopAsyncIteration',
 'StopIteration',
 'SyntaxError',
 'SyntaxWarning',
 'SystemError',
 'SystemExit',
 'TabError',
 'TimeoutError',
 'True',
 'TypeError',
 'UnboundLocalError',
 'UnicodeDecodeError',
 'UnicodeEncodeError',
 'UnicodeError',
 'UnicodeTranslateError',
 'UnicodeWarning',
 'UserWarning',
 'ValueError',
 'Warning',
 'WindowsError',
 'ZeroDivisionError',
 '__IPYTHON__',
 '__build_class__',
 '__debug__',
 '__doc__',
 '__import__',
 '__loader__',
 '__name__',
 '__package__',
 '__spec__',
 'abs',
 'all',
 'any',
 'ascii',
 'bin',
 'bool',
 'bytearray',
 'bytes',
 'callable',
 'chr',
 'classmethod',
 'compile',
 'complex',
 'copyright',
 'credits',
 'delattr',
 'dict',
 'dir',
 'display',
 'divmod',
 'enumerate',
 'eval',
 'exec',
```

```
 'filter',
 'float',
 'format',
 'frozenset',
 'get_ipython',
 'getattr',
 'globals',
 'hasattr',
 'hash',
 'help',
 'hex',
 'id',
 'input',
 'int',
 'isinstance',
 'issubclass',
 'iter',
 'len',
 'license',
 'list',
 'locals',
 'map',
 'max',
 'memoryview',
 'min',
 'next',
 'object',
 'oct',
 'open',
 'ord',
 'pow',
 'print',
 'property',
 'range',
 'repr',
 'reversed',
 'round',
 'set',
 'setattr',
 'slice',
 'sorted',
 'staticmethod',
 'str',
 'sum',
 'super',
 'tuple',
 'type',
 'vars',
 'zip'],
105: ['DirEntry',
 'F_OK',
 'MutableMapping',
 'O_APPEND',
 'O_BINARY',
 'O_CREAT',
 'O_EXCL',
 'O_NOINHERIT',
 'O_RANDOM',
 'O_RDONLY',
 'O_RDWR',
 'O_SEQUENTIAL',
 'O_SHORT_LIVED',
 'O_TEMPORARY',
 'O_TEXT',
 'O_TRUNC',
 'O_WRONLY',
 'P_DETACH',
 'P_NOWAIT',
 'P_NOWAITO',
```

```
 'P_OVERLAY',
 'P_WAIT',
 'PathLike',
 'R_OK',
 'SEEK_CUR',
 'SEEK_END',
 'SEEK_SET',
 'TMP_MAX',
 'W_OK',
 'X_OK',
 '_Environ',
 '__all__',
 '__builtins__',
 '__cached__',
 '__doc__',
 '__file__',
 '__loader__',
 '__name__',
 '__package__',
 '__spec__',
 '_execvpe',
 '_exists',
 '_exit',
 '_fspath',
 '_get_exports_list',
 '_putenv',
 '_unsetenv',
 '_wrap_close',
 'abc',
 'abort',
 'access',
 'altsep',
 'chdir',
 'chmod',
 'close',
 'closerange',
 'cpu_count',
 'curdir',
 'defpath',
 'device_encoding',
 'devnull',
 'dup',
 'dup2',
 'environ',
 'errno',
 'error',
 'execl',
 'execle',
 'execlp',
 'execlpe',
 'execv',
 'execve',
 'execvp',
 'execvpe',
 'extsep',
 'fdopen',
 'fsdecode',
 'fsencode',
 'fspath',
 'fstat',
 'fsync',
 'ftruncate',
 'get_exec_path',
 'get_handle_inheritable',
 'get_inheritable',
 'get_terminal_size',
 'getcwd',
 'getcwdb',
 'getenv',
```

```
 'getlogin',
 'getpid',
 'getppid',
 'isatty',
 'kill',
 'linesep',
 'link',
 'listdir',
 'lseek',
 'lstat',
 'makedirs',
 'mkdir',
 'name',
 'open',
 'pardir',
 'path',
 'pathsep',
 'pipe',
 'popen',
 'putenv',
 'read',
 'readlink',
 'remove',
 'removedirs',
 'rename',
 'renames',
 'replace',
 'rmdir',
 'scandir',
 'sep',
 'set_handle_inheritable',
 'set_inheritable',
 'spawnl',
 'spawnle',
 'spawnv',
 'spawnve',
 'st',
 'startfile',
 'stat',
 'stat_float_times',
 'stat_result',
 'statvfs_result',
 'strerror',
 'supports_bytes_environ',
 'supports_dir_fd',
 'supports_effective_ids',
 'supports_fd',
 'supports_follow_symlinks',
 'symlink',
 'sys',
 'system',
 'terminal_size',
 'times',
 'times_result',
 'truncate',
 'umask',
 'uname_result',
 'unlink',
 'urandom',
 'utime',
 'waitpid',
 'walk',
 'write'],
108: 'E:\\STUDY\\GIT\\aaic_practice\\MODULES\\Module_1_All_about_Python',
110: 'E:\\STUDY\\PROJECTS\\AAIC_Practice',
112: ['ASSIGNMENTS', 'INTERVIEW_Qs', 'MODULES', 'VIDEO_PRACTICE_TEST'],
115: ['ASSIGNMENTS', 'INTERVIEW_Qs', 'MODULES', 'VIDEO_PRACTICE_TEST2'],
118: 'E:\\STUDY\\PROJECTS\\AAIC_Practice',
120: 'E:\\STUDY\\PROJECTS\\AAIC_Practice\\VIDEO_PRACTICE_TEST2\\test_file2.txt',
```

```
121: 'E:\\STUDY\\PROJECTS\\AAIC_Practice',
123: ['Error',
 'ExecError',
 'ReadError',
 'RegistryError',
 'SameFileError',
 'SpecialFileError',
 '_ARCHIVE_FORMATS',
 '_BZ2_SUPPORTED',
 '_LZMA_SUPPORTED',
 '_UNPACK_FORMATS',
 '_ZLIB_SUPPORTED',
 '__all__',
 '__builtins__',
 '__cached__',
 '__doc__',
 '__file__',
 '__loader__',
 '__name__',
 '__package__',
 '__spec__',
 '_basename',
 '_check_unpack_options',
 '_copyxattr',
 '_destinsrc',
 '_ensure_directory',
 '_find_unpack_format',
 '_get_gid',
 '_get_uid',
 '_make_tarball',
 '_make_zipfile',
 '_ntuple_diskusage',
 '_rmtree_safe_fd',
 '_rmtree_unsafe',
 '_samefile',
 '_unpack_tarfile',
 '_unpack_zipfile',
 '_use_fd_functions',
 'chown',
 'collections',
 'copy',
 'copy2',
 'copyfile',
 'copyfileobj',
 'copymode',
 'copystat',
 'copytree',
 'disk_usage',
 'errno',
 'fnmatch',
 'get_archive_formats',
 'get_terminal_size',
 'get_unpack_formats',
 'getgrnam',
 'getpwnam',
 'ignore_patterns',
 'make_archive',
 'move',
 'nt',
 'os',
 'register_archive_format',
 'register_unpack_format',
 'rmtree',
 'stat',
 'sys',
 'unpack_archive',
 'unregister_archive_format',
 'unregister_unpack_format',
 'which'],
```

```
  125: ['Pdb',
   'Restart',
   'TESTCMD',
   '__all__',
   '__builtins__',
   '__cached__',
   '__doc__',
   '__file__',
   '__loader__',
   '__name__',
   '__package__',
   '__spec__',
   '_rstr',
   '_usage',
   'bdb',
   'cmd',
   'code',
   'dis',
   'find_function',
   'getsourcelines',
   'glob',
   'help',
   'inspect',
   'lasti2lineno',
   'line_prefix',
   'linecache',
   'main',
   'os',
   'pm',
   'post_mortem',
   'pprint',
   're',
   'run',
   'runcall',
   'runctx',
   'runeval',
   'set_trace',
   'signal',
   'sys',
   'test',
   'traceback'],
  127: [2, 3, 4, 5, 6, 7, 8, 9],
  129: [1, 1, 5, 6, 7, 8, 9],
  131: [1, 1],
  133: [1, 1],
  136: array([1, 1, 1, 1, 1, 1, 1, 1, 1, 1]),
  138: array([1, 1, 1, 1, 1, 1, 1, 1, 1, 1]),
  139: array([1, 1, 1]),
  140: 10,
  143: array([1, 1, 1, 1, 1, 1, 1, 1, 1, 1])},
 '_dh': ['E:\\STUDY\\GIT\\aaic_practice\\MODULES\\Module_1_All_about_Python'],
 'In': ['',
  'def print_name(name):\n    """This function prints the name of the person."""\n
print(name)',
  "print_name('Rajesh')",
  'print_name.__doc__',
  'num1 = 98\nnum2 = 78',
  'def compute_hcf(num1, num2):\n    """\n    This function will compute the HCF of
the given numbers.\n    """\n    if num1 > num2:\n        smaller = num2\n    els
e:\n        smaller = num1\n\n    hcf = []\n\n    for num in range(1,smaller+1):\n
if num1%num == 0 and num2%num == 0:\n            hcf.append(num)\n    return hcf[-
1]',
  'print("HCF of 98 and 78 is {}".format(compute_hcf(num1,num2)))',
  'num1, num2 = 4,16',
  'print("HCF of {} and {} is {}".format(num1, num2, compute_hcf(num1,num2)))',
  'num1, num2 = 16, 96',
  'print("HCF of {} and {} is {}".format(num1, num2, compute_hcf(num1,num2)))',
  'abs(-44545)',
  "abs('Function name')",
```

```
  'os.getcwd()',
  'len(np_ones)',
  'def print_name(name):\n    """This function prints the name of the person."""\n
print(name)',
  "print_name('Rajesh')",
  'print_name.__doc__',
  'num1 = 98\nnum2 = 78',
  'def compute_hcf(num1, num2):\n    """\n    This function will compute the HCF of
the given numbers.\n    """\n    if num1 > num2:\n        smaller = num2\n    els
e:\n        smaller = num1\n\n    hcf = []\n\n    for num in range(1,smaller+1):\n
if num1%num == 0 and num2%num == 0:\n            hcf.append(num)\n    return hcf[-
1]',
  'print("HCF of 98 and 78 is {}".format(compute_hcf(num1,num2)))',
  'num1, num2 = 4,16',
  'print("HCF of {} and {} is {}".format(num1, num2, compute_hcf(num1,num2)))',
  'num1, num2 = 16, 96',
  'print("HCF of {} and {} is {}".format(num1, num2, compute_hcf(num1,num2)))',
  'abs(-44545)',
  "abs('Function name')",
  'abs(-89.8475)',
  'divmod(4,2)             # Returns quotient and remainder',
  'divmod(8,3)',
  'all([1,2,3,4])               # it returns the bool(x) or bool for all values of
x',
  'all([1,2,3,4,])',
  'all([1,2,3,4,0])             # 0 in python is False internally thus it returned
False',
  'all([False,1,2,3,4])',
  'bool(7)',
  "bool('X')",
  'bool(0)',
  'bool(-1)',
  'import pandas',
  'print(dir(pandas))',
  "numbers = [10,20,30,40,50]\n\nfor num1 , num2 in enumerate(numbers):\n    print(n
um1, ' || ', num2)",
  'for idx, num in enumerate(numbers):\n    print("Index ---> {} && Number ---> {}".
format(idx,num))',
  "for idx, num in enumerate(numbers,500):\n    print(idx, ' ||| ', num)",
  'def fil_f(num):\n    return num >= abs(num)',
  'list(filter(fil_f,[1,2,3,4,5,6,7,8,9]))',
  'tuple(filter(fil_f,[1,2,3,4,5,6,7,8,9]))',
  'set(filter(fil_f,[1,2,3,4,5,6,7,8,9]))',
  'set(filter(fil_f,[1,2,3,4,5,6,7,8,9,0,-1,-2,-3,-4]))',
  'scores = {10,39,89,99,105,175}',
  'isinstance(scores,list)',
  'isinstance(scores,dict)',
  'isinstance(scores,tuple)',
  'isinstance(scores,set)',
  'def divide_num_by_4(num):\n    return num/4',
  'list(map(divide_num_by_4,scores))',
  'from functools import reduce',
  'def cume(val1, val2):\n    return val1+val2',
  'nums = [1,2,3,4,5]',
  'reduce(cume,nums)',
  "def hello_world(**kwargs):\n    return (kwargs['first_name'], kwargs['middle_nam
e'],kwargs['last_name'])",
  "hello_world(first_name='Rajesh',middle_name='Kumar',last_name='sharma',an_name='t
itu')",
  'get_ipython().run_line_magic(\'timeit\', "hello_world(first_name=\'Rajesh\',middl
e_name=\'Kumar\',last_name=\'sharma\')")',
  "def hello_world(**kwargs):\n    print (kwargs['first_name'], kwargs['middle_nam
e'],kwargs['last_name'])",
  "hello_world(first_name='Rajesh',middle_name='Kumar',last_name='sharma')",
  "hello_world(first_name='Rajesh',middle_name='Kumar',last_name='sharma',an_name='t
itu')",
  'def name_printing(*names):\n    for l_name in names:\n        print("First name i
s Rajesh and Last name is {0}".format(l_name))',
  "name_printing('sharma','kumar','kapoor')",
```

```
  'def factorial(num):\n    return num if num == 1 else num * factorial(num-1)',
  'factorial(5)',
  'def fibonacci(num):\n    return num if num <=1 else fibonacci(num-1) + fibonacci
(num-2)',
  'nums = range(0,10)',
  'for num in nums:\n    print(fibonacci(num))',
  'sqr = lambda x: x**2',
  '[sqr(num) for num in nums]',
  'sum_of_2s = lambda x,y : x+y',
  'sum_of_2s(3,5)',
  'nums = [1,2,3,4,5,6,7,8,9]',
  'nums',
  'from functools import reduce',
  'sum_list = reduce(lambda x,y:x+y,nums)',
  'sum_list',
  'nums',
  'reduce(lambda x,y:x+y,map(lambda x : x/2,filter(lambda x: x%2==0,nums)))',
  "f = open('test_file.txt','x')",
  'f.write("I\'m Rajesh Sharma and one day I\'ll be a Data Scientist.")',
  'f.close()',
  "f1 = open('test_file.txt','r')",
  'f1.read()',
  'f1.tell()',
  'f1.seek(1)',
  'f1.tell()',
  'f1.read(5)',
  'f1.seek(50)',
  'f1.read()',
  'f1.tell()',
  'type(f1.readlines())',
  'type(f1.readline())',
  'f1.seek(20)',
  'f1.readlines()',
  'f1.readline()',
  'f1.seek(20)',
  'f1.readline()',
  'f1.close()',
  'import os',
  'dir(__builtins__)',
  'dir(os)',
  "os.rename('test_file.txt','file_manipulations.txt')",
  'f1.read()               # because file is closed',
  'os.getcwd()',
  "os.chdir('E:\\\\STUDY\\\\PROJECTS\\\\AAIC_Practice')",
  'os.getcwd()',
  "os.mkdir('VIDEO_PRACTICE_TEST')",
  'os.listdir()',
  "os.rmdir('VIDEO_PRACTICE_TEST')",
  "os.mkdir('VIDEO_PRACTICE_TEST2')",
  'os.listdir()',
  'lines = ["This is not a hellow world!!", "This is much more than a hello worl
d!!", "Thats my feelings for DS, ML and DL."]',
  "with open('test_file2.txt','x') as f_test:\n    f_test.writelines(lines)",
  'os.getcwd()',
  'import shutil',
  'shutil.move(\'test_file2.txt\',os.getcwd()+"\\\\VIDEO_PRACTICE_TEST2")',
  'os.getcwd()',
  "os.rmdir('VIDEO_PRACTICE_TEST2')           # As said it only deletes a empty dire
ctory",
  'dir(shutil)',
  'import pdb',
  'dir(pdb)',
  'test_ones = [1,2,3,4,5,6,7,8,9]',
  'test_ones[1:]',
  'test_ones[1:4] = [1]',
  'test_ones',
  'ones = [val for val in range(1,11)]',
  'ones',
  'ones[1:] = [1]',
```

```
  'ones',
  'import numpy as np',
  'np_ones = np.arange(1,11)',
  'np_ones',
  'np_ones[1:] = [1] ',
  'np_ones',
  'np_ones[1:4]',
  'len(np_ones)',
  'def multiple_of_4(val):\n    for n in range(1,len(val)+1,1):\n        pdb.set_tra
ce()\n        print(n*4)',
  'multiple_of_4(np_ones)',
  'np_ones',
  'def multiple_of_4(val):\n    for n in range(1,len(val)+1,1):\n        pdb.set_tra
ce()\n        print(n*4)',
  'multiple_of_4(np_ones)',
  'multiple_of_4(np_ones)',
  'np_ones = [1,2,3,4,5]',
  'def multiple_of_4(val):\n    for n in range(1,len(val)+1,1):\n        pdb.set_tra
ce()\n        print(n*4)',
  'multiple_of_4(np_ones)',
  'def multiple_of_4(val):\n    for n in range(1,len(val)+1,1):\n        pdb.set_tra
ce()\n        print(n*4)',
  'multiple_of_4(np_ones)',
  'def multiple_of_4(val):\n    for n in range(1,len(val)+1,1):\n#         pdb.set_t
race()\n        print(n*4)',
  'multiple_of_4(np_ones)',
  'def multiple_of_4(val):\n    for n in range(1,len(val)+1,1):\n        pdb.set_tra
ce()\n        print(n*4)',
  'multiple_of_4(np_ones)',
  'multiple_of_4(np_ones)',
  'multiple_of_4(np_ones)',
  'globals()'],
 'Out': {3: 'This function prints the name of the person.',
  11: 44545,
  17: 'This function prints the name of the person.',
  25: 44545,
  27: 89.8475,
  28: (2, 0),
  29: (2, 2),
  30: True,
  31: True,
  32: False,
  33: False,
  34: True,
  35: True,
  36: False,
  37: True,
  44: [1, 2, 3, 4, 5, 6, 7, 8, 9],
  45: (1, 2, 3, 4, 5, 6, 7, 8, 9),
  46: {1, 2, 3, 4, 5, 6, 7, 8, 9},
  47: {0, 1, 2, 3, 4, 5, 6, 7, 8, 9},
  49: False,
  50: False,
  51: False,
  52: True,
  54: [24.75, 9.75, 26.25, 2.5, 43.75, 22.25],
  58: 15,
  60: ('Rajesh', 'Kumar', 'sharma'),
  68: 120,
  73: [0, 1, 4, 9, 16, 25, 36, 49, 64, 81],
  75: 8,
  77: [1, 2, 3, 4, 5, 6, 7, 8, 9],
  80: 45,
  81: [1, 2, 3, 4, 5, 6, 7, 8, 9],
  82: 10.0,
  84: 55,
  87: "I'm Rajesh Sharma and one day I'll be a Data Scientist.",
  88: 55,
  89: 1,
```

```
90: 1,
91: "'m Ra",
92: 50,
93: 'tist.',
94: 55,
95: list,
96: str,
97: 20,
98: ["d one day I'll be a Data Scientist."],
99: '',
100: 20,
101: "d one day I'll be a Data Scientist.",
104: ['ArithmeticError',
 'AssertionError',
 'AttributeError',
 'BaseException',
 'BlockingIOError',
 'BrokenPipeError',
 'BufferError',
 'BytesWarning',
 'ChildProcessError',
 'ConnectionAbortedError',
 'ConnectionError',
 'ConnectionRefusedError',
 'ConnectionResetError',
 'DeprecationWarning',
 'EOFError',
 'Ellipsis',
 'EnvironmentError',
 'Exception',
 'False',
 'FileExistsError',
 'FileNotFoundError',
 'FloatingPointError',
 'FutureWarning',
 'GeneratorExit',
 'IOError',
 'ImportError',
 'ImportWarning',
 'IndentationError',
 'IndexError',
 'InterruptedError',
 'IsADirectoryError',
 'KeyError',
 'KeyboardInterrupt',
 'LookupError',
 'MemoryError',
 'ModuleNotFoundError',
 'NameError',
 'None',
 'NotADirectoryError',
 'NotImplemented',
 'NotImplementedError',
 'OSError',
 'OverflowError',
 'PendingDeprecationWarning',
 'PermissionError',
 'ProcessLookupError',
 'RecursionError',
 'ReferenceError',
 'ResourceWarning',
 'RuntimeError',
 'RuntimeWarning',
 'StopAsyncIteration',
 'StopIteration',
 'SyntaxError',
 'SyntaxWarning',
 'SystemError',
 'SystemExit',
```

```
 'TabError',
 'TimeoutError',
 'True',
 'TypeError',
 'UnboundLocalError',
 'UnicodeDecodeError',
 'UnicodeEncodeError',
 'UnicodeError',
 'UnicodeTranslateError',
 'UnicodeWarning',
 'UserWarning',
 'ValueError',
 'Warning',
 'WindowsError',
 'ZeroDivisionError',
 '__IPYTHON__',
 '__build_class__',
 '__debug__',
 '__doc__',
 '__import__',
 '__loader__',
 '__name__',
 '__package__',
 '__spec__',
 'abs',
 'all',
 'any',
 'ascii',
 'bin',
 'bool',
 'bytearray',
 'bytes',
 'callable',
 'chr',
 'classmethod',
 'compile',
 'complex',
 'copyright',
 'credits',
 'delattr',
 'dict',
 'dir',
 'display',
 'divmod',
 'enumerate',
 'eval',
 'exec',
 'filter',
 'float',
 'format',
 'frozenset',
 'get_ipython',
 'getattr',
 'globals',
 'hasattr',
 'hash',
 'help',
 'hex',
 'id',
 'input',
 'int',
 'isinstance',
 'issubclass',
 'iter',
 'len',
 'license',
 'list',
 'locals',
 'map',
```

```
 'max',
 'memoryview',
 'min',
 'next',
 'object',
 'oct',
 'open',
 'ord',
 'pow',
 'print',
 'property',
 'range',
 'repr',
 'reversed',
 'round',
 'set',
 'setattr',
 'slice',
 'sorted',
 'staticmethod',
 'str',
 'sum',
 'super',
 'tuple',
 'type',
 'vars',
 'zip'],
105: ['DirEntry',
 'F_OK',
 'MutableMapping',
 'O_APPEND',
 'O_BINARY',
 'O_CREAT',
 'O_EXCL',
 'O_NOINHERIT',
 'O_RANDOM',
 'O_RDONLY',
 'O_RDWR',
 'O_SEQUENTIAL',
 'O_SHORT_LIVED',
 'O_TEMPORARY',
 'O_TEXT',
 'O_TRUNC',
 'O_WRONLY',
 'P_DETACH',
 'P_NOWAIT',
 'P_NOWAITO',
 'P_OVERLAY',
 'P_WAIT',
 'PathLike',
 'R_OK',
 'SEEK_CUR',
 'SEEK_END',
 'SEEK_SET',
 'TMP_MAX',
 'W_OK',
 'X_OK',
 '_Environ',
 '__all__',
 '__builtins__',
 '__cached__',
 '__doc__',
 '__file__',
 '__loader__',
 '__name__',
 '__package__',
 '__spec__',
 '_execvpe',
 '_exists',
```

```
'_exit',
'_fspath',
'_get_exports_list',
'_putenv',
'_unsetenv',
'_wrap_close',
'abc',
'abort',
'access',
'altsep',
'chdir',
'chmod',
'close',
'closerange',
'cpu_count',
'curdir',
'defpath',
'device_encoding',
'devnull',
'dup',
'dup2',
'environ',
'errno',
'error',
'execl',
'execle',
'execlp',
'execlpe',
'execv',
'execve',
'execvp',
'execvpe',
'extsep',
'fdopen',
'fsdecode',
'fsencode',
'fspath',
'fstat',
'fsync',
'ftruncate',
'get_exec_path',
'get_handle_inheritable',
'get_inheritable',
'get_terminal_size',
'getcwd',
'getcwdb',
'getenv',
'getlogin',
'getpid',
'getppid',
'isatty',
'kill',
'linesep',
'link',
'listdir',
'lseek',
'lstat',
'makedirs',
'mkdir',
'name',
'open',
'pardir',
'path',
'pathsep',
'pipe',
'popen',
'putenv',
'read',
'readlink',
```

```
 'remove',
 'removedirs',
 'rename',
 'renames',
 'replace',
 'rmdir',
 'scandir',
 'sep',
 'set_handle_inheritable',
 'set_inheritable',
 'spawnl',
 'spawnle',
 'spawnv',
 'spawnve',
 'st',
 'startfile',
 'stat',
 'stat_float_times',
 'stat_result',
 'statvfs_result',
 'strerror',
 'supports_bytes_environ',
 'supports_dir_fd',
 'supports_effective_ids',
 'supports_fd',
 'supports_follow_symlinks',
 'symlink',
 'sys',
 'system',
 'terminal_size',
 'times',
 'times_result',
 'truncate',
 'umask',
 'uname_result',
 'unlink',
 'urandom',
 'utime',
 'waitpid',
 'walk',
 'write'],
108: 'E:\\STUDY\\GIT\\aaic_practice\\MODULES\\Module_1_All_about_Python',
110: 'E:\\STUDY\\PROJECTS\\AAIC_Practice',
112: ['ASSIGNMENTS', 'INTERVIEW_Qs', 'MODULES', 'VIDEO_PRACTICE_TEST'],
115: ['ASSIGNMENTS', 'INTERVIEW_Qs', 'MODULES', 'VIDEO_PRACTICE_TEST2'],
118: 'E:\\STUDY\\PROJECTS\\AAIC_Practice',
120: 'E:\\STUDY\\PROJECTS\\AAIC_Practice\\VIDEO_PRACTICE_TEST2\\test_file2.txt',
121: 'E:\\STUDY\\PROJECTS\\AAIC_Practice',
123: ['Error',
 'ExecError',
 'ReadError',
 'RegistryError',
 'SameFileError',
 'SpecialFileError',
 '_ARCHIVE_FORMATS',
 '_BZ2_SUPPORTED',
 '_LZMA_SUPPORTED',
 '_UNPACK_FORMATS',
 '_ZLIB_SUPPORTED',
 '__all__',
 '__builtins__',
 '__cached__',
 '__doc__',
 '__file__',
 '__loader__',
 '__name__',
 '__package__',
 '__spec__',
 '_basename',
```

```
 '_check_unpack_options',
 '_copyxattr',
 '_destinsrc',
 '_ensure_directory',
 '_find_unpack_format',
 '_get_gid',
 '_get_uid',
 '_make_tarball',
 '_make_zipfile',
 '_ntuple_diskusage',
 '_rmtree_safe_fd',
 '_rmtree_unsafe',
 '_samefile',
 '_unpack_tarfile',
 '_unpack_zipfile',
 '_use_fd_functions',
 'chown',
 'collections',
 'copy',
 'copy2',
 'copyfile',
 'copyfileobj',
 'copymode',
 'copystat',
 'copytree',
 'disk_usage',
 'errno',
 'fnmatch',
 'get_archive_formats',
 'get_terminal_size',
 'get_unpack_formats',
 'getgrnam',
 'getpwnam',
 'ignore_patterns',
 'make_archive',
 'move',
 'nt',
 'os',
 'register_archive_format',
 'register_unpack_format',
 'rmtree',
 'stat',
 'sys',
 'unpack_archive',
 'unregister_archive_format',
 'unregister_unpack_format',
 'which'],
125: ['Pdb',
 'Restart',
 'TESTCMD',
 '__all__',
 '__builtins__',
 '__cached__',
 '__doc__',
 '__file__',
 '__loader__',
 '__name__',
 '__package__',
 '__spec__',
 '_rstr',
 '_usage',
 'bdb',
 'cmd',
 'code',
 'dis',
 'find_function',
 'getsourcelines',
 'glob',
 'help',
```

```
   'inspect',
   'lasti2lineno',
   'line_prefix',
   'linecache',
   'main',
   'os',
   'pm',
   'post_mortem',
   'pprint',
   're',
   'run',
   'runcall',
   'runctx',
   'runeval',
   'set_trace',
   'signal',
   'sys',
   'test',
   'traceback'],
  127: [2, 3, 4, 5, 6, 7, 8, 9],
  129: [1, 1, 5, 6, 7, 8, 9],
  131: [1, 1],
  133: [1, 1],
  136: array([1, 1, 1, 1, 1, 1, 1, 1, 1, 1]),
  138: array([1, 1, 1, 1, 1, 1, 1, 1, 1, 1]),
  139: array([1, 1, 1]),
  140: 10,
  143: array([1, 1, 1, 1, 1, 1, 1, 1, 1, 1])},
 'get_ipython': <bound method InteractiveShell.get_ipython of <ipykernel.zmqshell.ZM
QInteractiveShell object at 0x000001E757DC3438>>,
 'exit': <IPython.core.autocall.ZMQExitAutocall at 0x1e757e65b38>,
 'quit': <IPython.core.autocall.ZMQExitAutocall at 0x1e757e65b38>,
 '_': array([1, 1, 1, 1, 1, 1, 1, 1, 1, 1]),
 '__': 10,
 '___': array([1, 1, 1]),
 '_i': 'multiple_of_4(np_ones)',
 '_ii': 'multiple_of_4(np_ones)',
 '_iii': 'multiple_of_4(np_ones)',
 '_i1': 'def print_name(name):\n    """This function prints the name of the perso
n."""\n    print(name)',
 'print_name': <function __main__.print_name(name)>,
 '_i2': "print_name('Rajesh')",
 '_i3': 'print_name.__doc__',
 '_3': 'This function prints the name of the person.',
 '_i4': 'num1 = 98\nnum2 = 78',
 'num1': 4,
 'num2': 50,
 '_i5': 'def compute_hcf(num1, num2):\n    """\n    This function will compute the H
CF of the given numbers.\n    """\n    if num1 > num2:\n        smaller = num2\n
else:\n        smaller = num1\n\n    hcf = []\n\n    for num in range(1,smaller+
1):\n        if num1%num == 0 and num2%num == 0:\n            hcf.append(num)\n    r
eturn hcf[-1]',
 'compute_hcf': <function __main__.compute_hcf(num1, num2)>,
 '_i6': 'print("HCF of 98 and 78 is {}".format(compute_hcf(num1,num2)))',
 '_i7': 'num1, num2 = 4,16',
 '_i8': 'print("HCF of {} and {} is {}".format(num1, num2, compute_hcf(num1,num
2)))',
 '_i9': 'num1, num2 = 16, 96',
 '_i10': 'print("HCF of {} and {} is {}".format(num1, num2, compute_hcf(num1,num
2)))',
 '_i11': 'abs(-44545)',
 '_11': 44545,
 '_i12': "abs('Function name')",
 '_i13': 'os.getcwd()',
 '_i14': 'len(np_ones)',
 '_i15': 'def print_name(name):\n    """This function prints the name of the perso
n."""\n    print(name)',
 '_i16': "print_name('Rajesh')",
 '_i17': 'print_name.__doc__',
```

```
 '_17': 'This function prints the name of the person.',
 '_i18': 'num1 = 98\nnum2 = 78',
 '_i19': 'def compute_hcf(num1, num2):\n    """\n    This function will compute the
HCF of the given numbers.\n    """\n    if num1 > num2:\n        smaller = num2\n
else:\n        smaller = num1\n\n    hcf = []\n\n    for num in range(1,smaller+
1):\n        if num1%num == 0 and num2%num == 0:\n            hcf.append(num)\n    r
eturn hcf[-1]',
 '_i20': 'print("HCF of 98 and 78 is {}".format(compute_hcf(num1,num2)))',
 '_i21': 'num1, num2 = 4,16',
 '_i22': 'print("HCF of {} and {} is {}".format(num1, num2, compute_hcf(num1,num
2)))',
 '_i23': 'num1, num2 = 16, 96',
 '_i24': 'print("HCF of {} and {} is {}".format(num1, num2, compute_hcf(num1,num
2)))',
 '_i25': 'abs(-44545)',
 '_25': 44545,
 '_i26': "abs('Function name')",
 '_i27': 'abs(-89.8475)',
 '_27': 89.8475,
 '_i28': 'divmod(4,2)             # Returns quotient and remainder',
 '_28': (2, 0),
 '_i29': 'divmod(8,3)',
 '_29': (2, 2),
 '_i30': 'all([1,2,3,4])               # it returns the bool(x) or bool for all val
ues of x',
 '_30': True,
 '_i31': 'all([1,2,3,4,])',
 '_31': True,
 '_i32': 'all([1,2,3,4,0])             # 0 in python is False internally thus it re
turned False',
 '_32': False,
 '_i33': 'all([False,1,2,3,4])',
 '_33': False,
 '_i34': 'bool(7)',
 '_34': True,
 '_i35': "bool('X')",
 '_35': True,
 '_i36': 'bool(0)',
 '_36': False,
 '_i37': 'bool(-1)',
 '_37': True,
 '_i38': 'import pandas',
 'pandas': <module 'pandas' from 'c:\\users\\rajsh\\appdata\\local\\programs\\python
\\python36\\lib\\site-packages\\pandas\\__init__.py'>,
 '_i39': 'print(dir(pandas))',
 '_i40': "numbers = [10,20,30,40,50]\n\nfor num1 , num2 in enumerate(numbers):\n
print(num1, ' || ', num2)",
 'numbers': [10, 20, 30, 40, 50],
 '_i41': 'for idx, num in enumerate(numbers):\n    print("Index ---> {} && Number --
-> {}".format(idx,num))',
 'idx': 504,
 'num': 9,
 '_i42': "for idx, num in enumerate(numbers,500):\n    print(idx, ' ||| ', num)",
 '_i43': 'def fil_f(num):\n    return num >= abs(num)',
 'fil_f': <function __main__.fil_f(num)>,
 '_i44': 'list(filter(fil_f,[1,2,3,4,5,6,7,8,9]))',
 '_44': [1, 2, 3, 4, 5, 6, 7, 8, 9],
 '_i45': 'tuple(filter(fil_f,[1,2,3,4,5,6,7,8,9]))',
 '_45': (1, 2, 3, 4, 5, 6, 7, 8, 9),
 '_i46': 'set(filter(fil_f,[1,2,3,4,5,6,7,8,9]))',
 '_46': {1, 2, 3, 4, 5, 6, 7, 8, 9},
 '_i47': 'set(filter(fil_f,[1,2,3,4,5,6,7,8,9,0,-1,-2,-3,-4]))',
 '_47': {0, 1, 2, 3, 4, 5, 6, 7, 8, 9},
 '_i48': 'scores = {10,39,89,99,105,175}',
 'scores': {10, 39, 89, 99, 105, 175},
 '_i49': 'isinstance(scores,list)',
 '_49': False,
 '_i50': 'isinstance(scores,dict)',
 '_50': False,
```

```
 '_i51': 'isinstance(scores,tuple)',
 '_51': False,
 '_i52': 'isinstance(scores,set)',
 '_52': True,
 '_i53': 'def divide_num_by_4(num):\n    return num/4',
 'divide_num_by_4': <function __main__.divide_num_by_4(num)>,
 '_i54': 'list(map(divide_num_by_4,scores))',
 '_54': [24.75, 9.75, 26.25, 2.5, 43.75, 22.25],
 '_i55': 'from functools import reduce',
 'reduce': <function _functools.reduce>,
 '_i56': 'def cume(val1, val2):\n    return val1+val2',
 'cume': <function __main__.cume(val1, val2)>,
 '_i57': 'nums = [1,2,3,4,5]',
 'nums': [1, 2, 3, 4, 5, 6, 7, 8, 9],
 '_i58': 'reduce(cume,nums)',
 '_58': 15,
 '_i59': "def hello_world(**kwargs):\n    return (kwargs['first_name'], kwargs['midd
le_name'],kwargs['last_name'])",
 'hello_world': <function __main__.hello_world(**kwargs)>,
 '_i60': "hello_world(first_name='Rajesh',middle_name='Kumar',last_name='sharma',an_
name='titu')",
 '_60': ('Rajesh', 'Kumar', 'sharma'),
 '_i61': "%timeit hello_world(first_name='Rajesh',middle_name='Kumar',last_name='sha
rma')",
 '_i62': "def hello_world(**kwargs):\n    print (kwargs['first_name'], kwargs['middl
e_name'],kwargs['last_name'])",
 '_i63': "hello_world(first_name='Rajesh',middle_name='Kumar',last_name='sharma')",
 '_i64': "hello_world(first_name='Rajesh',middle_name='Kumar',last_name='sharma',an_
name='titu')",
 '_i65': 'def name_printing(*names):\n    for l_name in names:\n        print("First
name is Rajesh and Last name is {0}".format(l_name))',
 'name_printing': <function __main__.name_printing(*names)>,
 '_i66': "name_printing('sharma','kumar','kapoor')",
 '_i67': 'def factorial(num):\n    return num if num == 1 else num * factorial(num-
1)',
 'factorial': <function __main__.factorial(num)>,
 '_i68': 'factorial(5)',
 '_68': 120,
 '_i69': 'def fibonacci(num):\n    return num if num <=1 else fibonacci(num-1) + fib
onacci(num-2)',
 'fibonacci': <function __main__.fibonacci(num)>,
 '_i70': 'nums = range(0,10)',
 '_i71': 'for num in nums:\n    print(fibonacci(num))',
 '_i72': 'sqr = lambda x: x**2',
 'sqr': <function __main__.<lambda>(x)>,
 '_i73': '[sqr(num) for num in nums]',
 '_73': [0, 1, 4, 9, 16, 25, 36, 49, 64, 81],
 '_i74': 'sum_of_2s = lambda x,y : x+y',
 'sum_of_2s': <function __main__.<lambda>(x, y)>,
 '_i75': 'sum_of_2s(3,5)',
 '_75': 8,
 '_i76': 'nums = [1,2,3,4,5,6,7,8,9]',
 '_i77': 'nums',
 '_77': [1, 2, 3, 4, 5, 6, 7, 8, 9],
 '_i78': 'from functools import reduce',
 '_i79': 'sum_list = reduce(lambda x,y:x+y,nums)',
 'sum_list': 45,
 '_i80': 'sum_list',
 '_80': 45,
 '_i81': 'nums',
 '_81': [1, 2, 3, 4, 5, 6, 7, 8, 9],
 '_i82': 'reduce(lambda x,y:x+y,map(lambda x : x/2,filter(lambda x: x%2==0,nums)))',
 '_82': 10.0,
 '_i83': "f = open('test_file.txt','x')",
 'f': <_io.TextIOWrapper name='test_file.txt' mode='x' encoding='cp1252'>,
 '_i84': 'f.write("I\'m Rajesh Sharma and one day I\'ll be a Data Scientist.")',
 '_84': 55,
 '_i85': 'f.close()',
 '_i86': "f1 = open('test_file.txt','r')",
```

```
 'f1': <_io.TextIOWrapper name='test_file.txt' mode='r' encoding='cp1252'>,
 '_i87': 'f1.read()',
 '_87': "I'm Rajesh Sharma and one day I'll be a Data Scientist.",
 '_i88': 'f1.tell()',
 '_88': 55,
 '_i89': 'f1.seek(1)',
 '_89': 1,
 '_i90': 'f1.tell()',
 '_90': 1,
 '_i91': 'f1.read(5)',
 '_91': "'m Ra",
 '_i92': 'f1.seek(50)',
 '_92': 50,
 '_i93': 'f1.read()',
 '_93': 'tist.',
 '_i94': 'f1.tell()',
 '_94': 55,
 '_i95': 'type(f1.readlines())',
 '_95': list,
 '_i96': 'type(f1.readline())',
 '_96': str,
 '_i97': 'f1.seek(20)',
 '_97': 20,
 '_i98': 'f1.readlines()',
 '_98': ["d one day I'll be a Data Scientist."],
 '_i99': 'f1.readline()',
 '_99': '',
 '_i100': 'f1.seek(20)',
 '_100': 20,
 '_i101': 'f1.readline()',
 '_101': "d one day I'll be a Data Scientist.",
 '_i102': 'f1.close()',
 '_i103': 'import os',
 'os': <module 'os' from 'c:\\users\\rajsh\\appdata\\local\\programs\\python\\python
36\\lib\\os.py'>,
 '_i104': 'dir(__builtins__)',
 '_104': ['ArithmeticError',
  'AssertionError',
  'AttributeError',
  'BaseException',
  'BlockingIOError',
  'BrokenPipeError',
  'BufferError',
  'BytesWarning',
  'ChildProcessError',
  'ConnectionAbortedError',
  'ConnectionError',
  'ConnectionRefusedError',
  'ConnectionResetError',
  'DeprecationWarning',
  'EOFError',
  'Ellipsis',
  'EnvironmentError',
  'Exception',
  'False',
  'FileExistsError',
  'FileNotFoundError',
  'FloatingPointError',
  'FutureWarning',
  'GeneratorExit',
  'IOError',
  'ImportError',
  'ImportWarning',
  'IndentationError',
  'IndexError',
  'InterruptedError',
  'IsADirectoryError',
  'KeyError',
  'KeyboardInterrupt',
```

```
 'LookupError',
 'MemoryError',
 'ModuleNotFoundError',
 'NameError',
 'None',
 'NotADirectoryError',
 'NotImplemented',
 'NotImplementedError',
 'OSError',
 'OverflowError',
 'PendingDeprecationWarning',
 'PermissionError',
 'ProcessLookupError',
 'RecursionError',
 'ReferenceError',
 'ResourceWarning',
 'RuntimeError',
 'RuntimeWarning',
 'StopAsyncIteration',
 'StopIteration',
 'SyntaxError',
 'SyntaxWarning',
 'SystemError',
 'SystemExit',
 'TabError',
 'TimeoutError',
 'True',
 'TypeError',
 'UnboundLocalError',
 'UnicodeDecodeError',
 'UnicodeEncodeError',
 'UnicodeError',
 'UnicodeTranslateError',
 'UnicodeWarning',
 'UserWarning',
 'ValueError',
 'Warning',
 'WindowsError',
 'ZeroDivisionError',
 '__IPYTHON__',
 '__build_class__',
 '__debug__',
 '__doc__',
 '__import__',
 '__loader__',
 '__name__',
 '__package__',
 '__spec__',
 'abs',
 'all',
 'any',
 'ascii',
 'bin',
 'bool',
 'bytearray',
 'bytes',
 'callable',
 'chr',
 'classmethod',
 'compile',
 'complex',
 'copyright',
 'credits',
 'delattr',
 'dict',
 'dir',
 'display',
 'divmod',
 'enumerate',
```

```
 'eval',
 'exec',
 'filter',
 'float',
 'format',
 'frozenset',
 'get_ipython',
 'getattr',
 'globals',
 'hasattr',
 'hash',
 'help',
 'hex',
 'id',
 'input',
 'int',
 'isinstance',
 'issubclass',
 'iter',
 'len',
 'license',
 'list',
 'locals',
 'map',
 'max',
 'memoryview',
 'min',
 'next',
 'object',
 'oct',
 'open',
 'ord',
 'pow',
 'print',
 'property',
 'range',
 'repr',
 'reversed',
 'round',
 'set',
 'setattr',
 'slice',
 'sorted',
 'staticmethod',
 'str',
 'sum',
 'super',
 'tuple',
 'type',
 'vars',
 'zip'],
'_i105': 'dir(os)',
'_105': ['DirEntry',
 'F_OK',
 'MutableMapping',
 'O_APPEND',
 'O_BINARY',
 'O_CREAT',
 'O_EXCL',
 'O_NOINHERIT',
 'O_RANDOM',
 'O_RDONLY',
 'O_RDWR',
 'O_SEQUENTIAL',
 'O_SHORT_LIVED',
 'O_TEMPORARY',
 'O_TEXT',
 'O_TRUNC',
 'O_WRONLY',
```

```
 'P_DETACH',
 'P_NOWAIT',
 'P_NOWAITO',
 'P_OVERLAY',
 'P_WAIT',
 'PathLike',
 'R_OK',
 'SEEK_CUR',
 'SEEK_END',
 'SEEK_SET',
 'TMP_MAX',
 'W_OK',
 'X_OK',
 '_Environ',
 '__all__',
 '__builtins__',
 '__cached__',
 '__doc__',
 '__file__',
 '__loader__',
 '__name__',
 '__package__',
 '__spec__',
 '_execvpe',
 '_exists',
 '_exit',
 '_fspath',
 '_get_exports_list',
 '_putenv',
 '_unsetenv',
 '_wrap_close',
 'abc',
 'abort',
 'access',
 'altsep',
 'chdir',
 'chmod',
 'close',
 'closerange',
 'cpu_count',
 'curdir',
 'defpath',
 'device_encoding',
 'devnull',
 'dup',
 'dup2',
 'environ',
 'errno',
 'error',
 'execl',
 'execle',
 'execlp',
 'execlpe',
 'execv',
 'execve',
 'execvp',
 'execvpe',
 'extsep',
 'fdopen',
 'fsdecode',
 'fsencode',
 'fspath',
 'fstat',
 'fsync',
 'ftruncate',
 'get_exec_path',
 'get_handle_inheritable',
 'get_inheritable',
 'get_terminal_size',
```

```
 'getcwd',
 'getcwdb',
 'getenv',
 'getlogin',
 'getpid',
 'getppid',
 'isatty',
 'kill',
 'linesep',
 'link',
 'listdir',
 'lseek',
 'lstat',
 'makedirs',
 'mkdir',
 'name',
 'open',
 'pardir',
 'path',
 'pathsep',
 'pipe',
 'popen',
 'putenv',
 'read',
 'readlink',
 'remove',
 'removedirs',
 'rename',
 'renames',
 'replace',
 'rmdir',
 'scandir',
 'sep',
 'set_handle_inheritable',
 'set_inheritable',
 'spawnl',
 'spawnle',
 'spawnv',
 'spawnve',
 'st',
 'startfile',
 'stat',
 'stat_float_times',
 'stat_result',
 'statvfs_result',
 'strerror',
 'supports_bytes_environ',
 'supports_dir_fd',
 'supports_effective_ids',
 'supports_fd',
 'supports_follow_symlinks',
 'symlink',
 'sys',
 'system',
 'terminal_size',
 'times',
 'times_result',
 'truncate',
 'umask',
 'uname_result',
 'unlink',
 'urandom',
 'utime',
 'waitpid',
 'walk',
 'write'],
'_i106': "os.rename('test_file.txt','file_manipulations.txt')",
'_i107': 'f1.read()               # because file is closed',
'_i108': 'os.getcwd()',
```

```
 '_108': 'E:\\STUDY\\GIT\\aaic_practice\\MODULES\\Module_1_All_about_Python',
 '_i109': "os.chdir('E:\\\\STUDY\\\\PROJECTS\\\\AAIC_Practice')",
 '_i110': 'os.getcwd()',
 '_110': 'E:\\STUDY\\PROJECTS\\AAIC_Practice',
 '_i111': "os.mkdir('VIDEO_PRACTICE_TEST')",
 '_i112': 'os.listdir()',
 '_112': ['ASSIGNMENTS', 'INTERVIEW_Qs', 'MODULES', 'VIDEO_PRACTICE_TEST'],
 '_i113': "os.rmdir('VIDEO_PRACTICE_TEST')",
 '_i114': "os.mkdir('VIDEO_PRACTICE_TEST2')",
 '_i115': 'os.listdir()',
 '_115': ['ASSIGNMENTS', 'INTERVIEW_Qs', 'MODULES', 'VIDEO_PRACTICE_TEST2'],
 '_i116': 'lines = ["This is not a hellow world!!", "This is much more than a hello
world!!", "Thats my feelings for DS, ML and DL."]',
 'lines': ['This is not a hellow world!!',
  'This is much more than a hello world!!',
  'Thats my feelings for DS, ML and DL.'],
 '_i117': "with open('test_file2.txt','x') as f_test:\n    f_test.writelines(line
s)",
 'f_test': <_io.TextIOWrapper name='test_file2.txt' mode='x' encoding='cp1252'>,
 '_i118': 'os.getcwd()',
 '_118': 'E:\\STUDY\\PROJECTS\\AAIC_Practice',
 '_i119': 'import shutil',
 'shutil': <module 'shutil' from 'c:\\users\\rajsh\\appdata\\local\\programs\\python
\\python36\\lib\\shutil.py'>,
 '_i120': 'shutil.move(\'test_file2.txt\',os.getcwd()+"\\\\VIDEO_PRACTICE_TEST2")',
 '_120': 'E:\\STUDY\\PROJECTS\\AAIC_Practice\\VIDEO_PRACTICE_TEST2\\test_file2.txt',
 '_i121': 'os.getcwd()',
 '_121': 'E:\\STUDY\\PROJECTS\\AAIC_Practice',
 '_i122': "os.rmdir('VIDEO_PRACTICE_TEST2')          # As said it only deletes a em
pty directory",
 '_i123': 'dir(shutil)',
 '_123': ['Error',
  'ExecError',
  'ReadError',
  'RegistryError',
  'SameFileError',
  'SpecialFileError',
  '_ARCHIVE_FORMATS',
  '_BZ2_SUPPORTED',
  '_LZMA_SUPPORTED',
  '_UNPACK_FORMATS',
  '_ZLIB_SUPPORTED',
  '__all__',
  '__builtins__',
  '__cached__',
  '__doc__',
  '__file__',
  '__loader__',
  '__name__',
  '__package__',
  '__spec__',
  '_basename',
  '_check_unpack_options',
  '_copyxattr',
  '_destinsrc',
  '_ensure_directory',
  '_find_unpack_format',
  '_get_gid',
  '_get_uid',
  '_make_tarball',
  '_make_zipfile',
  '_ntuple_diskusage',
  '_rmtree_safe_fd',
  '_rmtree_unsafe',
  '_samefile',
  '_unpack_tarfile',
  '_unpack_zipfile',
  '_use_fd_functions',
  'chown',
```

```
  'collections',
  'copy',
  'copy2',
  'copyfile',
  'copyfileobj',
  'copymode',
  'copystat',
  'copytree',
  'disk_usage',
  'errno',
  'fnmatch',
  'get_archive_formats',
  'get_terminal_size',
  'get_unpack_formats',
  'getgrnam',
  'getpwnam',
  'ignore_patterns',
  'make_archive',
  'move',
  'nt',
  'os',
  'register_archive_format',
  'register_unpack_format',
  'rmtree',
  'stat',
  'sys',
  'unpack_archive',
  'unregister_archive_format',
  'unregister_unpack_format',
  'which'],
 '_i124': 'import pdb',
 'pdb': <module 'pdb' from 'c:\\users\\rajsh\\appdata\\local\\programs\\python\\pyth
on36\\lib\\pdb.py'>,
 '_i125': 'dir(pdb)',
 '_125': ['Pdb',
  'Restart',
  'TESTCMD',
  '__all__',
  '__builtins__',
  '__cached__',
  '__doc__',
  '__file__',
  '__loader__',
  '__name__',
  '__package__',
  '__spec__',
  '_rstr',
  '_usage',
  'bdb',
  'cmd',
  'code',
  'dis',
  'find_function',
  'getsourcelines',
  'glob',
  'help',
  'inspect',
  'lasti2lineno',
  'line_prefix',
  'linecache',
  'main',
  'os',
  'pm',
  'post_mortem',
  'pprint',
  're',
  'run',
  'runcall',
  'runctx',
```

```
 'runeval',
 'set_trace',
 'signal',
 'sys',
 'test',
 'traceback'],
'_i126': 'test_ones = [1,2,3,4,5,6,7,8,9]',
'test_ones': [1, 1, 5, 6, 7, 8, 9],
'_i127': 'test_ones[1:]',
'_127': [2, 3, 4, 5, 6, 7, 8, 9],
'_i128': 'test_ones[1:4] = [1]',
'_i129': 'test_ones',
'_129': [1, 1, 5, 6, 7, 8, 9],
'_i130': 'ones = [val for val in range(1,11)]',
'ones': [1, 1],
'_i131': 'ones',
'_131': [1, 1],
'_i132': 'ones[1:] = [1]',
'_i133': 'ones',
'_133': [1, 1],
'_i134': 'import numpy as np',
'np': <module 'numpy' from 'c:\\users\\rajsh\\appdata\\local\\programs\\python\\pyt
hon36\\lib\\site-packages\\numpy\\__init__.py'>,
'_i135': 'np_ones = np.arange(1,11)',
'np_ones': [1, 2, 3, 4, 5],
'_i136': 'np_ones',
'_136': array([1, 1, 1, 1, 1, 1, 1, 1, 1, 1]),
'_i137': 'np_ones[1:] = [1] ',
'_i138': 'np_ones',
'_138': array([1, 1, 1, 1, 1, 1, 1, 1, 1, 1]),
'_i139': 'np_ones[1:4]',
'_139': array([1, 1, 1]),
'_i140': 'len(np_ones)',
'_140': 10,
'_i141': 'def multiple_of_4(val):\n    for n in range(1,len(val)+1,1):\n        pd
b.set_trace()\n        print(n*4)',
'multiple_of_4': <function __main__.multiple_of_4(val)>,
'_i142': 'multiple_of_4(np_ones)',
'_i143': 'np_ones',
'_143': array([1, 1, 1, 1, 1, 1, 1, 1, 1, 1]),
'_i144': 'def multiple_of_4(val):\n    for n in range(1,len(val)+1,1):\n        pd
b.set_trace()\n        print(n*4)',
'_i145': 'multiple_of_4(np_ones)',
'_i146': 'multiple_of_4(np_ones)',
'_i147': 'np_ones = [1,2,3,4,5]',
'_i148': 'def multiple_of_4(val):\n    for n in range(1,len(val)+1,1):\n        pd
b.set_trace()\n        print(n*4)',
'_i149': 'multiple_of_4(np_ones)',
'_i150': 'def multiple_of_4(val):\n    for n in range(1,len(val)+1,1):\n        pd
b.set_trace()\n        print(n*4)',
'_i151': 'multiple_of_4(np_ones)',
'_i152': 'def multiple_of_4(val):\n    for n in range(1,len(val)+1,1):\n#         p
db.set_trace()\n        print(n*4)',
'_i153': 'multiple_of_4(np_ones)',
'_i154': 'def multiple_of_4(val):\n    for n in range(1,len(val)+1,1):\n        pd
b.set_trace()\n        print(n*4)',
'_i155': 'multiple_of_4(np_ones)',
'_i156': 'multiple_of_4(np_ones)',
'_i157': 'multiple_of_4(np_ones)',
'_i158': 'globals()'}
```

In [ ]: