packages

packages are heart of DATA SCIENCE and AI

-------steps that includes are---------

$step1$:

import(package)

ex: import random

$step2$:

dir(package)

ex:dir(random)

$step3$:

help(package name.method name) #instead of help we can also get help by pressing shift+tab button

ex : help(random.randint)

$step4$:

apply the code

ex : random.randint(10,36)

```
In [ ]:
```

```
In [ ]:
```

```
In [ ]:
```

```
In [ ]:
```

```
In [ ]: import random
```

```
In [3]: import math
```

```
In [4]: import time
```

```
In [5]: import cv2
```

```
---------------------------------------------------------------------------
ModuleNotFoundError                       Traceback (most recent call last)
Cell In[5], line 1
----> 1 import cv2

ModuleNotFoundError: No module named 'cv2'
```

```python
In [7]: dir(random)
```

```
Out[7]: ['BPF',
         'LOG4',
         'NV_MAGICCONST',
         'RECIP_BPF',
         'Random',
         'SG_MAGICCONST',
         'SystemRandom',
         'TWOPI',
         '_ONE',
         '_Sequence',
         '_Set',
         '__all__',
         '__builtins__',
         '__cached__',
         '__doc__',
         '__file__',
         '__loader__',
         '__name__',
         '__package__',
         '__spec__',
         '_accumulate',
         '_acos',
         '_bisect',
         '_ceil',
         '_cos',
         '_e',
         '_exp',
         '_floor',
         '_index',
         '_inst',
         '_isfinite',
         '_log',
         '_os',
         '_pi',
         '_random',
         '_repeat',
         '_sha512',
         '_sin',
         '_sqrt',
         '_test',
         '_test_generator',
         '_urandom',
         '_warn',
         'betavariate',
         'choice',
         'choices',
         'expovariate',
         'gammavariate',
         'gauss',
         'getrandbits',
         'getstate',
         'lognormvariate',
         'normalvariate',
         'paretovariate',
         'randbytes',
         'randint',
         'random',
         'randrange',
         'sample',
         'seed',
```

```
       'setstate',
       'shuffle',
       'triangular',
       'uniform',
       'vonmisesvariate',
       'weibullvariate']
```

In [9]:
```python
import math
```

In [10]:
```python
dir(math)
```

```
Out[10]:  ['__doc__',
           '__loader__',
           '__name__',
           '__package__',
           '__spec__',
           'acos',
           'acosh',
           'asin',
           'asinh',
           'atan',
           'atan2',
           'atanh',
           'cbrt',
           'ceil',
           'comb',
           'copysign',
           'cos',
           'cosh',
           'degrees',
           'dist',
           'e',
           'erf',
           'erfc',
           'exp',
           'exp2',
           'expm1',
           'fabs',
           'factorial',
           'floor',
           'fmod',
           'frexp',
           'fsum',
           'gamma',
           'gcd',
           'hypot',
           'inf',
           'isclose',
           'isfinite',
           'isinf',
           'isnan',
           'isqrt',
           'lcm',
           'ldexp',
           'lgamma',
           'log',
           'log10',
           'log1p',
           'log2',
           'modf',
           'nan',
           'nextafter',
           'perm',
           'pi',
           'pow',
           'prod',
           'radians',
           'remainder',
           'sin',
           'sinh',
           'sqrt',
```

```
        'tan',
        'tanh',
        'tau',
        'trunc',
        'ulp']
```

In [11]:
```
help(random.randint)
```

```
Help on method randint in module random:

randint(a, b) method of random.Random instance
    Return random integer in range [a, b], including both end points.
```

In [12]:
```
random.randit(1,10)
```

```
---------------------------------------------------------------------------
AttributeError                            Traceback (most recent call last)
Cell In[12], line 1
----> 1 random.randit(1,10)

AttributeError: module 'random' has no attribute 'randit'
```

In [ ]:
```
step1 - import package
step2 - dir(<package>)
step3- help(<pacakge name>.<method name>)
step4- apply the code
```

In [13]:
```
import random
```

In [14]:
```
dir(random)
```

```
Out[14]: ['BPF',
         'LOG4',
         'NV_MAGICCONST',
         'RECIP_BPF',
         'Random',
         'SG_MAGICCONST',
         'SystemRandom',
         'TWOPI',
         '_ONE',
         '_Sequence',
         '_Set',
         '__all__',
         '__builtins__',
         '__cached__',
         '__doc__',
         '__file__',
         '__loader__',
         '__name__',
         '__package__',
         '__spec__',
         '_accumulate',
         '_acos',
         '_bisect',
         '_ceil',
         '_cos',
         '_e',
         '_exp',
         '_floor',
         '_index',
         '_inst',
         '_isfinite',
         '_log',
         '_os',
         '_pi',
         '_random',
         '_repeat',
         '_sha512',
         '_sin',
         '_sqrt',
         '_test',
         '_test_generator',
         '_urandom',
         '_warn',
         'betavariate',
         'choice',
         'choices',
         'expovariate',
         'gammavariate',
         'gauss',
         'getrandbits',
         'getstate',
         'lognormvariate',
         'normalvariate',
         'paretovariate',
         'randbytes',
         'randint',
         'random',
         'randrange',
         'sample',
         'seed',
```

```
        'setstate',
        'shuffle',
        'triangular',
        'uniform',
        'vonmisesvariate',
        'weibullvariate']
```

In [15]: `help(random.randint)`

```
Help on method randint in module random:

randint(a, b) method of random.Random instance
    Return random integer in range [a, b], including both end points.
```

In [16]: `random.randint(1,10)`

Out[16]: 4

In [17]:
```python
import random
dir(random)
help(random.randint)
random.randint(20,50)
```

```
Help on method randint in module random:

randint(a, b) method of random.Random instance
    Return random integer in range [a, b], including both end points.
```

Out[17]: 36

random method

In [18]:
```python
import random
dir(random)
help(random.random)
random.random()
```

```
Help on built-in function random:

random() method of random.Random instance
    random() -> x in the interval [0, 1).
```

Out[18]: 0.46501083635601526

In [19]: `random.randint(18,45)`

Out[19]: 45

In [24]: `random.random()`

Out[24]: 0.08987575055733088

In [25]: `import keyword`

In [26]: `dir(keyword)`

```
Out[26]: ['__all__',
          '__builtins__',
          '__cached__',
          '__doc__',
          '__file__',
          '__loader__',
          '__name__',
          '__package__',
          '__spec__',
          'iskeyword',
          'issoftkeyword',
          'kwlist',
          'softkwlist']
```

In [28]: `import keyword`

In [29]: `import kwlist`

```
---------------------------------------------------------------------------
ModuleNotFoundError                       Traceback (most recent call last)
Cell In[29], line 1
----> 1 import kwlist

ModuleNotFoundError: No module named 'kwlist'
```

In [30]: `help(keyword.kwlist)`

```
Help on list object:

class list(object)
 |  list(iterable=(), /)
 |
 |  Built-in mutable sequence.
 |
 |  If no argument is given, the constructor creates a new empty list.
 |  The argument must be an iterable if specified.
 |
 |  Methods defined here:
 |
 |  __add__(self, value, /)
 |      Return self+value.
 |
 |  __contains__(self, key, /)
 |      Return key in self.
 |
 |  __delitem__(self, key, /)
 |      Delete self[key].
 |
 |  __eq__(self, value, /)
 |      Return self==value.
 |
 |  __ge__(self, value, /)
 |      Return self>=value.
 |
 |  __getattribute__(self, name, /)
 |      Return getattr(self, name).
 |
 |  __getitem__(...)
 |      x.__getitem__(y) <==> x[y]
 |
 |  __gt__(self, value, /)
 |      Return self>value.
 |
 |  __iadd__(self, value, /)
 |      Implement self+=value.
 |
 |  __imul__(self, value, /)
 |      Implement self*=value.
 |
 |  __init__(self, /, *args, **kwargs)
 |      Initialize self.  See help(type(self)) for accurate signature.
 |
 |  __iter__(self, /)
 |      Implement iter(self).
 |
 |  __le__(self, value, /)
 |      Return self<=value.
 |
 |  __len__(self, /)
 |      Return len(self).
 |
 |  __lt__(self, value, /)
 |      Return self<value.
 |
 |  __mul__(self, value, /)
 |      Return self*value.
 |
```

```
 |  __ne__(self, value, /)
 |      Return self!=value.
 |
 |  __repr__(self, /)
 |      Return repr(self).
 |
 |  __reversed__(self, /)
 |      Return a reverse iterator over the list.
 |
 |  __rmul__(self, value, /)
 |      Return value*self.
 |
 |  __setitem__(self, key, value, /)
 |      Set self[key] to value.
 |
 |  __sizeof__(self, /)
 |      Return the size of the list in memory, in bytes.
 |
 |  append(self, object, /)
 |      Append object to the end of the list.
 |
 |  clear(self, /)
 |      Remove all items from list.
 |
 |  copy(self, /)
 |      Return a shallow copy of the list.
 |
 |  count(self, value, /)
 |      Return number of occurrences of value.
 |
 |  extend(self, iterable, /)
 |      Extend list by appending elements from the iterable.
 |
 |  index(self, value, start=0, stop=9223372036854775807, /)
 |      Return first index of value.
 |
 |      Raises ValueError if the value is not present.
 |
 |  insert(self, index, object, /)
 |      Insert object before index.
 |
 |  pop(self, index=-1, /)
 |      Remove and return item at index (default last).
 |
 |      Raises IndexError if list is empty or index is out of range.
 |
 |  remove(self, value, /)
 |      Remove first occurrence of value.
 |
 |      Raises ValueError if the value is not present.
 |
 |  reverse(self, /)
 |      Reverse *IN PLACE*.
 |
 |  sort(self, /, *, key=None, reverse=False)
 |      Sort the list in ascending order and return None.
 |
 |      The sort is in-place (i.e. the list itself is modified) and stable (i.e.
the
 |      order of two equal elements is maintained).
```

```
 |
 |      If a key function is given, apply it once to each list item and sort the
m,
 |      ascending or descending, according to their function values.
 |
 |      The reverse flag can be set to sort in descending order.
 |
 |  ----------------------------------------------------------------------
 |  Class methods defined here:
 |
 |  __class_getitem__(...) from builtins.type
 |      See PEP 585
 |
 |  ----------------------------------------------------------------------
 |  Static methods defined here:
 |
 |  __new__(*args, **kwargs) from builtins.type
 |      Create and return a new object.  See help(type) for accurate signature.
 |
 |  ----------------------------------------------------------------------
 |  Data and other attributes defined here:
 |
 |  __hash__ = None
```

In [31]: `keyword.kwlist`

```
Out[31]:  ['False',
           'None',
           'True',
           'and',
           'as',
           'assert',
           'async',
           'await',
           'break',
           'class',
           'continue',
           'def',
           'del',
           'elif',
           'else',
           'except',
           'finally',
           'for',
           'from',
           'global',
           'if',
           'import',
           'in',
           'is',
           'lambda',
           'nonlocal',
           'not',
           'or',
           'pass',
           'raise',
           'return',
           'try',
           'while',
           'with',
           'yield']
```

In [32]: `len(keyword.kwlist)`

Out[32]: 35

In [33]: `import random`

In [34]: `help(random.randint)`

```
Help on method randint in module random:

randint(a, b) method of random.Random instance
    Return random integer in range [a, b], including both end points.
```

In [36]: `import math`

In [37]: `dir(math)`

```
Out[37]:  ['__doc__',
           '__loader__',
           '__name__',
           '__package__',
           '__spec__',
           'acos',
           'acosh',
           'asin',
           'asinh',
           'atan',
           'atan2',
           'atanh',
           'cbrt',
           'ceil',
           'comb',
           'copysign',
           'cos',
           'cosh',
           'degrees',
           'dist',
           'e',
           'erf',
           'erfc',
           'exp',
           'exp2',
           'expm1',
           'fabs',
           'factorial',
           'floor',
           'fmod',
           'frexp',
           'fsum',
           'gamma',
           'gcd',
           'hypot',
           'inf',
           'isclose',
           'isfinite',
           'isinf',
           'isnan',
           'isqrt',
           'lcm',
           'ldexp',
           'lgamma',
           'log',
           'log10',
           'log1p',
           'log2',
           'modf',
           'nan',
           'nextafter',
           'perm',
           'pi',
           'pow',
           'prod',
           'radians',
           'remainder',
           'sin',
           'sinh',
           'sqrt',
```

```
        'tan',
        'tanh',
        'tau',
        'trunc',
        'ulp']
```

`help(math.pi)`

```
Help on float object:

class float(object)
 |  float(x=0, /)
 |
 |  Convert a string or number to a floating point number, if possible.
 |
 |  Methods defined here:
 |
 |  __abs__(self, /)
 |      abs(self)
 |
 |  __add__(self, value, /)
 |      Return self+value.
 |
 |  __bool__(self, /)
 |      True if self else False
 |
 |  __ceil__(self, /)
 |      Return the ceiling as an Integral.
 |
 |  __divmod__(self, value, /)
 |      Return divmod(self, value).
 |
 |  __eq__(self, value, /)
 |      Return self==value.
 |
 |  __float__(self, /)
 |      float(self)
 |
 |  __floor__(self, /)
 |      Return the floor as an Integral.
 |
 |  __floordiv__(self, value, /)
 |      Return self//value.
 |
 |  __format__(self, format_spec, /)
 |      Formats the float according to format_spec.
 |
 |  __ge__(self, value, /)
 |      Return self>=value.
 |
 |  __getattribute__(self, name, /)
 |      Return getattr(self, name).
 |
 |  __getnewargs__(self, /)
 |
 |  __gt__(self, value, /)
 |      Return self>value.
 |
 |  __hash__(self, /)
 |      Return hash(self).
 |
 |  __int__(self, /)
 |      int(self)
 |
 |  __le__(self, value, /)
 |      Return self<=value.
 |
 |  __lt__(self, value, /)
```

```
|      Return self<value.
|
|  __mod__(self, value, /)
|      Return self%value.
|
|  __mul__(self, value, /)
|      Return self*value.
|
|  __ne__(self, value, /)
|      Return self!=value.
|
|  __neg__(self, /)
|      -self
|
|  __pos__(self, /)
|      +self
|
|  __pow__(self, value, mod=None, /)
|      Return pow(self, value, mod).
|
|  __radd__(self, value, /)
|      Return value+self.
|
|  __rdivmod__(self, value, /)
|      Return divmod(value, self).
|
|  __repr__(self, /)
|      Return repr(self).
|
|  __rfloordiv__(self, value, /)
|      Return value//self.
|
|  __rmod__(self, value, /)
|      Return value%self.
|
|  __rmul__(self, value, /)
|      Return value*self.
|
|  __round__(self, ndigits=None, /)
|      Return the Integral closest to x, rounding half toward even.
|
|      When an argument is passed, work like built-in round(x, ndigits).
|
|  __rpow__(self, value, mod=None, /)
|      Return pow(value, self, mod).
|
|  __rsub__(self, value, /)
|      Return value-self.
|
|  __rtruediv__(self, value, /)
|      Return value/self.
|
|  __sub__(self, value, /)
|      Return self-value.
|
|  __truediv__(self, value, /)
|      Return self/value.
|
|  __trunc__(self, /)
|      Return the Integral closest to x between 0 and x.
```

```
 |
 |  as_integer_ratio(self, /)
 |      Return integer ratio.
 |
 |      Return a pair of integers, whose ratio is exactly equal to the original f
loat
 |      and with a positive denominator.
 |
 |      Raise OverflowError on infinities and a ValueError on NaNs.
 |
 |      >>> (10.0).as_integer_ratio()
 |      (10, 1)
 |      >>> (0.0).as_integer_ratio()
 |      (0, 1)
 |      >>> (-.25).as_integer_ratio()
 |      (-1, 4)
 |
 |  conjugate(self, /)
 |      Return self, the complex conjugate of any float.
 |
 |  hex(self, /)
 |      Return a hexadecimal representation of a floating-point number.
 |
 |      >>> (-0.1).hex()
 |      '-0x1.999999999999ap-4'
 |      >>> 3.14159.hex()
 |      '0x1.921f9f01b866ep+1'
 |
 |  is_integer(self, /)
 |      Return True if the float is an integer.
 |
 |  ----------------------------------------------------------------------
 |  Class methods defined here:
 |
 |  __getformat__(typestr, /) from builtins.type
 |      You probably don't want to use this function.
 |
 |        typestr
 |          Must be 'double' or 'float'.
 |
 |      It exists mainly to be used in Python's test suite.
 |
 |      This function returns whichever of 'unknown', 'IEEE, big-endian' or 'IEE
E,
 |      little-endian' best describes the format of floating point numbers used b
y the
 |      C type named by typestr.
 |
 |  fromhex(string, /) from builtins.type
 |      Create a floating-point number from a hexadecimal string.
 |
 |      >>> float.fromhex('0x1.ffffp10')
 |      2047.984375
 |      >>> float.fromhex('-0x1p-1074')
 |      -5e-324
 |
 |  ----------------------------------------------------------------------
 |  Static methods defined here:
 |
 |  __new__(*args, **kwargs) from builtins.type
```

```
|       Create and return a new object.  See help(type) for accurate signature.
|
|       ----------------------------------------------------------------
|   Data descriptors defined here:
|
|   imag
|       the imaginary part of a complex number
|
|   real
|       the real part of a complex number
```

In [39]: `math.pi`

Out[39]: 3.141592653589793

In [40]: `help(math.sqrt)`

```
Help on built-in function sqrt in module math:

sqrt(x, /)
    Return the square root of x.
```

In [51]: `math.sqrt(16)`

Out[51]: 4.0

In [42]: `help(math.sin)`

```
Help on built-in function sin in module math:

sin(x, /)
    Return the sine of x (measured in radians).
```

In [44]: `math.sin(5)`

Out[44]: -0.9589242746631385

In [45]: `help(math.pow)`

```
Help on built-in function pow in module math:

pow(x, y, /)
    Return x**y (x to the power of y).
```

In [50]: `math.pow(2,6)`

Out[50]: 64.0

In [53]: `math.sqrt(78),math.pi,math.pow(2,5),math.sin(45)`

Out[53]: (8.831760866327848, 3.141592653589793, 32.0, 0.8509035245341184)

In [54]: `import time`

```
In [55]: dir(time)
```

```
Out[55]: ['_STRUCT_TM_ITEMS',
          '__doc__',
          '__loader__',
          '__name__',
          '__package__',
          '__spec__',
          'altzone',
          'asctime',
          'ctime',
          'daylight',
          'get_clock_info',
          'gmtime',
          'localtime',
          'mktime',
          'monotonic',
          'monotonic_ns',
          'perf_counter',
          'perf_counter_ns',
          'process_time',
          'process_time_ns',
          'sleep',
          'strftime',
          'strptime',
          'struct_time',
          'thread_time',
          'thread_time_ns',
          'time',
          'time_ns',
          'timezone',
          'tzname']
```

```
In [56]: time.sleep(5)
         print(10)
```

```
10
```

```
In [61]: import random
         import math
         import time
         num=random.randint(10,45)
         num2=math.sqrt(23)
         time.sleep(5)
         print(num)
         time.sleep(5)
         print(num2)
```

```
18
4.795831523312719
```

- whenever you got the error first understand the error
- if package is not avaliable no module name found
- 90% syntax is same
- **pip install**
- but 10% is different

- we can check the package name we can check in google,but you need to confrom with python organization

```
In [63]: import cv2
```

```
In [64]: dir(cv2)
```

```
Out[64]: ['ACCESS_FAST',
          'ACCESS_MASK',
          'ACCESS_READ',
          'ACCESS_RW',
          'ACCESS_WRITE',
          'ADAPTIVE_THRESH_GAUSSIAN_C',
          'ADAPTIVE_THRESH_MEAN_C',
          'AGAST_FEATURE_DETECTOR_AGAST_5_8',
          'AGAST_FEATURE_DETECTOR_AGAST_7_12D',
          'AGAST_FEATURE_DETECTOR_AGAST_7_12S',
          'AGAST_FEATURE_DETECTOR_NONMAX_SUPPRESSION',
          'AGAST_FEATURE_DETECTOR_OAST_9_16',
          'AGAST_FEATURE_DETECTOR_THRESHOLD',
          'AKAZE',
          'AKAZE_DESCRIPTOR_KAZE',
          'AKAZE_DESCRIPTOR_KAZE_UPRIGHT',
          'AKAZE_DESCRIPTOR_MLDB',
          'AKAZE_DESCRIPTOR_MLDB_UPRIGHT',
          'AKAZE_create',
          'AffineFeature',
          'AffineFeature_create',
          'AgastFeatureDetector',
          'AgastFeatureDetector_AGAST_5_8',
          'AgastFeatureDetector_AGAST_7_12d',
          'AgastFeatureDetector_AGAST_7_12s',
          'AgastFeatureDetector_NONMAX_SUPPRESSION',
          'AgastFeatureDetector_OAST_9_16',
          'AgastFeatureDetector_THRESHOLD',
          'AgastFeatureDetector_create',
          'Algorithm',
          'AlignExposures',
          'AlignMTB',
          'AsyncArray',
          'BFMatcher',
          'BFMatcher_create',
          'BORDER_CONSTANT',
          'BORDER_DEFAULT',
          'BORDER_ISOLATED',
          'BORDER_REFLECT',
          'BORDER_REFLECT101',
          'BORDER_REFLECT_101',
          'BORDER_REPLICATE',
          'BORDER_TRANSPARENT',
          'BORDER_WRAP',
          'BOWImgDescriptorExtractor',
          'BOWKMeansTrainer',
          'BOWTrainer',
          'BRISK',
          'BRISK_create',
          'BackgroundSubtractor',
          'BackgroundSubtractorKNN',
          'BackgroundSubtractorMOG2',
          'BaseCascadeClassifier',
          'CALIB_CB_ACCURACY',
          'CALIB_CB_ADAPTIVE_THRESH',
          'CALIB_CB_ASYMMETRIC_GRID',
          'CALIB_CB_CLUSTERING',
          'CALIB_CB_EXHAUSTIVE',
          'CALIB_CB_FAST_CHECK',
          'CALIB_CB_FILTER_QUADS',
```

```
'CALIB_CB_LARGER',
'CALIB_CB_MARKER',
'CALIB_CB_NORMALIZE_IMAGE',
'CALIB_CB_PLAIN',
'CALIB_CB_SYMMETRIC_GRID',
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'COLOR_BGRA2BGR555',
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'COLOR_BGRA2YUV_IYUV',
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'COLOR_BGRA2YUV_UYVY',
'COLOR_BGRA2YUV_Y422',
'COLOR_BGRA2YUV_YUNV',
'COLOR_BGRA2YUV_YUY2',
'COLOR_BGRA2YUV_YUYV',
'COLOR_BGRA2YUV_YV12',
'COLOR_BGRA2YUV_YVYU',
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'COLOR_BayerBG2BGRA',
'COLOR_BayerBG2BGR_EA',
'COLOR_BayerBG2BGR_VNG',
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'COLOR_BayerBG2RGB',
'COLOR_BayerBG2RGBA',
'COLOR_BayerBG2RGB_EA',
'COLOR_BayerBG2RGB_VNG',
'COLOR_BayerBGGR2BGR',
'COLOR_BayerBGGR2BGRA',
'COLOR_BayerBGGR2BGR_EA',
```

```
'COLOR_BayerBGGR2BGR_VNG',
'COLOR_BayerBGGR2GRAY',
'COLOR_BayerBGGR2RGB',
'COLOR_BayerBGGR2RGBA',
'COLOR_BayerBGGR2RGB_EA',
'COLOR_BayerBGGR2RGB_VNG',
'COLOR_BayerGB2BGR',
'COLOR_BayerGB2BGRA',
'COLOR_BayerGB2BGR_EA',
'COLOR_BayerGB2BGR_VNG',
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'COLOR_BayerGB2RGB',
'COLOR_BayerGB2RGBA',
'COLOR_BayerGB2RGB_EA',
'COLOR_BayerGB2RGB_VNG',
'COLOR_BayerGBRG2BGR',
'COLOR_BayerGBRG2BGRA',
'COLOR_BayerGBRG2BGR_EA',
'COLOR_BayerGBRG2BGR_VNG',
'COLOR_BayerGBRG2GRAY',
'COLOR_BayerGBRG2RGB',
'COLOR_BayerGBRG2RGBA',
'COLOR_BayerGBRG2RGB_EA',
'COLOR_BayerGBRG2RGB_VNG',
'COLOR_BayerGR2BGR',
'COLOR_BayerGR2BGRA',
'COLOR_BayerGR2BGR_EA',
'COLOR_BayerGR2BGR_VNG',
'COLOR_BayerGR2GRAY',
'COLOR_BayerGR2RGB',
'COLOR_BayerGR2RGBA',
'COLOR_BayerGR2RGB_EA',
'COLOR_BayerGR2RGB_VNG',
'COLOR_BayerGRBG2BGR',
'COLOR_BayerGRBG2BGRA',
'COLOR_BayerGRBG2BGR_EA',
'COLOR_BayerGRBG2BGR_VNG',
'COLOR_BayerGRBG2GRAY',
'COLOR_BayerGRBG2RGB',
'COLOR_BayerGRBG2RGBA',
'COLOR_BayerGRBG2RGB_EA',
'COLOR_BayerGRBG2RGB_VNG',
'COLOR_BayerRG2BGR',
'COLOR_BayerRG2BGRA',
'COLOR_BayerRG2BGR_EA',
'COLOR_BayerRG2BGR_VNG',
'COLOR_BayerRG2GRAY',
'COLOR_BayerRG2RGB',
'COLOR_BayerRG2RGBA',
'COLOR_BayerRG2RGB_EA',
'COLOR_BayerRG2RGB_VNG',
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'COLOR_BayerRGGB2BGRA',
'COLOR_BayerRGGB2BGR_EA',
'COLOR_BayerRGGB2BGR_VNG',
'COLOR_BayerRGGB2GRAY',
'COLOR_BayerRGGB2RGB',
'COLOR_BayerRGGB2RGBA',
'COLOR_BayerRGGB2RGB_EA',
'COLOR_BayerRGGB2RGB_VNG',
```

```
'COLOR_COLORCVT_MAX',
'COLOR_GRAY2BGR',
'COLOR_GRAY2BGR555',
'COLOR_GRAY2BGR565',
'COLOR_GRAY2BGRA',
'COLOR_GRAY2RGB',
'COLOR_GRAY2RGBA',
'COLOR_HLS2BGR',
'COLOR_HLS2BGR_FULL',
'COLOR_HLS2RGB',
'COLOR_HLS2RGB_FULL',
'COLOR_HSV2BGR',
'COLOR_HSV2BGR_FULL',
'COLOR_HSV2RGB',
'COLOR_HSV2RGB_FULL',
'COLOR_LAB2BGR',
'COLOR_LAB2LBGR',
'COLOR_LAB2LRGB',
'COLOR_LAB2RGB',
'COLOR_LBGR2LAB',
'COLOR_LBGR2LUV',
'COLOR_LBGR2Lab',
'COLOR_LBGR2Luv',
'COLOR_LRGB2LAB',
'COLOR_LRGB2LUV',
'COLOR_LRGB2Lab',
'COLOR_LRGB2Luv',
'COLOR_LUV2BGR',
'COLOR_LUV2LBGR',
'COLOR_LUV2LRGB',
'COLOR_LUV2RGB',
'COLOR_Lab2BGR',
'COLOR_Lab2LBGR',
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'COLOR_Luv2BGR',
'COLOR_Luv2LBGR',
'COLOR_Luv2LRGB',
'COLOR_Luv2RGB',
'COLOR_M_RGBA2RGBA',
'COLOR_RGB2BGR',
'COLOR_RGB2BGR555',
'COLOR_RGB2BGR565',
'COLOR_RGB2BGRA',
'COLOR_RGB2GRAY',
'COLOR_RGB2HLS',
'COLOR_RGB2HLS_FULL',
'COLOR_RGB2HSV',
'COLOR_RGB2HSV_FULL',
'COLOR_RGB2LAB',
'COLOR_RGB2LUV',
'COLOR_RGB2Lab',
'COLOR_RGB2Luv',
'COLOR_RGB2RGBA',
'COLOR_RGB2XYZ',
'COLOR_RGB2YCR_CB',
'COLOR_RGB2YCrCb',
'COLOR_RGB2YUV',
'COLOR_RGB2YUV_I420',
'COLOR_RGB2YUV_IYUV',
```

```
'COLOR_RGB2YUV_UYNV',
'COLOR_RGB2YUV_UYVY',
'COLOR_RGB2YUV_Y422',
'COLOR_RGB2YUV_YUNV',
'COLOR_RGB2YUV_YUY2',
'COLOR_RGB2YUV_YUYV',
'COLOR_RGB2YUV_YV12',
'COLOR_RGB2YUV_YVYU',
'COLOR_RGBA2BGR',
'COLOR_RGBA2BGR555',
'COLOR_RGBA2BGR565',
'COLOR_RGBA2BGRA',
'COLOR_RGBA2GRAY',
'COLOR_RGBA2M_RGBA',
'COLOR_RGBA2RGB',
'COLOR_RGBA2YUV_I420',
'COLOR_RGBA2YUV_IYUV',
'COLOR_RGBA2YUV_UYNV',
'COLOR_RGBA2YUV_UYVY',
'COLOR_RGBA2YUV_Y422',
'COLOR_RGBA2YUV_YUNV',
'COLOR_RGBA2YUV_YUY2',
'COLOR_RGBA2YUV_YUYV',
'COLOR_RGBA2YUV_YV12',
'COLOR_RGBA2YUV_YVYU',
'COLOR_RGBA2mRGBA',
'COLOR_XYZ2BGR',
'COLOR_XYZ2RGB',
'COLOR_YCR_CB2BGR',
'COLOR_YCR_CB2RGB',
'COLOR_YCrCb2BGR',
'COLOR_YCrCb2RGB',
'COLOR_YUV2BGR',
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'COLOR_YUV2BGRA_IYUV',
'COLOR_YUV2BGRA_NV12',
'COLOR_YUV2BGRA_NV21',
'COLOR_YUV2BGRA_UYNV',
'COLOR_YUV2BGRA_UYVY',
'COLOR_YUV2BGRA_Y422',
'COLOR_YUV2BGRA_YUNV',
'COLOR_YUV2BGRA_YUY2',
'COLOR_YUV2BGRA_YUYV',
'COLOR_YUV2BGRA_YV12',
'COLOR_YUV2BGRA_YVYU',
'COLOR_YUV2BGR_I420',
'COLOR_YUV2BGR_IYUV',
'COLOR_YUV2BGR_NV12',
'COLOR_YUV2BGR_NV21',
'COLOR_YUV2BGR_UYNV',
'COLOR_YUV2BGR_UYVY',
'COLOR_YUV2BGR_Y422',
'COLOR_YUV2BGR_YUNV',
'COLOR_YUV2BGR_YUY2',
'COLOR_YUV2BGR_YUYV',
'COLOR_YUV2BGR_YV12',
'COLOR_YUV2BGR_YVYU',
'COLOR_YUV2GRAY_420',
'COLOR_YUV2GRAY_I420',
'COLOR_YUV2GRAY_IYUV',
```

```
'COLOR_YUV2GRAY_NV12',
'COLOR_YUV2GRAY_NV21',
'COLOR_YUV2GRAY_UYNV',
'COLOR_YUV2GRAY_UYVY',
'COLOR_YUV2GRAY_Y422',
'COLOR_YUV2GRAY_YUNV',
'COLOR_YUV2GRAY_YUY2',
'COLOR_YUV2GRAY_YUYV',
'COLOR_YUV2GRAY_YV12',
'COLOR_YUV2GRAY_YVYU',
'COLOR_YUV2RGB',
'COLOR_YUV2RGBA_I420',
'COLOR_YUV2RGBA_IYUV',
'COLOR_YUV2RGBA_NV12',
'COLOR_YUV2RGBA_NV21',
'COLOR_YUV2RGBA_UYNV',
'COLOR_YUV2RGBA_UYVY',
'COLOR_YUV2RGBA_Y422',
'COLOR_YUV2RGBA_YUNV',
'COLOR_YUV2RGBA_YUY2',
'COLOR_YUV2RGBA_YUYV',
'COLOR_YUV2RGBA_YV12',
'COLOR_YUV2RGBA_YVYU',
'COLOR_YUV2RGB_I420',
'COLOR_YUV2RGB_IYUV',
'COLOR_YUV2RGB_NV12',
'COLOR_YUV2RGB_NV21',
'COLOR_YUV2RGB_UYNV',
'COLOR_YUV2RGB_UYVY',
'COLOR_YUV2RGB_Y422',
'COLOR_YUV2RGB_YUNV',
'COLOR_YUV2RGB_YUY2',
'COLOR_YUV2RGB_YUYV',
'COLOR_YUV2RGB_YV12',
'COLOR_YUV2RGB_YVYU',
'COLOR_YUV420P2BGR',
'COLOR_YUV420P2BGRA',
'COLOR_YUV420P2GRAY',
'COLOR_YUV420P2RGB',
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'COLOR_YUV420SP2BGRA',
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'COLOR_YUV420SP2RGB',
'COLOR_YUV420SP2RGBA',
'COLOR_YUV420p2BGR',
'COLOR_YUV420p2BGRA',
'COLOR_YUV420p2GRAY',
'COLOR_YUV420p2RGB',
'COLOR_YUV420p2RGBA',
'COLOR_YUV420sp2BGR',
'COLOR_YUV420sp2BGRA',
'COLOR_YUV420sp2GRAY',
'COLOR_YUV420sp2RGB',
'COLOR_YUV420sp2RGBA',
'COLOR_mRGBA2RGBA',
'CONTOURS_MATCH_I1',
'CONTOURS_MATCH_I2',
'CONTOURS_MATCH_I3',
'COVAR_COLS',
```

```
'COVAR_NORMAL',
'COVAR_ROWS',
'COVAR_SCALE',
'COVAR_SCRAMBLED',
'COVAR_USE_AVG',
'COV_POLISHER',
'CV_16F',
'CV_16FC',
'CV_16FC1',
'CV_16FC2',
'CV_16FC3',
'CV_16FC4',
'CV_16S',
'CV_16SC',
'CV_16SC1',
'CV_16SC2',
'CV_16SC3',
'CV_16SC4',
'CV_16U',
'CV_16UC',
'CV_16UC1',
'CV_16UC2',
'CV_16UC3',
'CV_16UC4',
'CV_32F',
'CV_32FC',
'CV_32FC1',
'CV_32FC2',
'CV_32FC3',
'CV_32FC4',
'CV_32S',
'CV_32SC',
'CV_32SC1',
'CV_32SC2',
'CV_32SC3',
'CV_32SC4',
'CV_64F',
'CV_64FC',
'CV_64FC1',
'CV_64FC2',
'CV_64FC3',
'CV_64FC4',
'CV_8S',
'CV_8SC',
'CV_8SC1',
'CV_8SC2',
'CV_8SC3',
'CV_8SC4',
'CV_8U',
'CV_8UC',
'CV_8UC1',
'CV_8UC2',
'CV_8UC3',
'CV_8UC4',
'CV_MAKETYPE',
'CalibrateCRF',
'CalibrateDebevec',
'CalibrateRobertson',
'CamShift',
'Canny',
```

```
        'CascadeClassifier',
        'CascadeClassifier_convert',
        'CirclesGridFinderParameters',
        'CirclesGridFinderParameters_ASYMMETRIC_GRID',
        'CirclesGridFinderParameters_SYMMETRIC_GRID',
        'DCT_INVERSE',
        'DCT_ROWS',
        'DECOMP_CHOLESKY',
        'DECOMP_EIG',
        'DECOMP_LU',
        'DECOMP_NORMAL',
        'DECOMP_QR',
        'DECOMP_SVD',
        'DESCRIPTOR_MATCHER_BRUTEFORCE',
        'DESCRIPTOR_MATCHER_BRUTEFORCE_HAMMING',
        'DESCRIPTOR_MATCHER_BRUTEFORCE_HAMMINGLUT',
        'DESCRIPTOR_MATCHER_BRUTEFORCE_L1',
        'DESCRIPTOR_MATCHER_BRUTEFORCE_SL2',
        'DESCRIPTOR_MATCHER_FLANNBASED',
        'DFT_COMPLEX_INPUT',
        'DFT_COMPLEX_OUTPUT',
        'DFT_INVERSE',
        'DFT_REAL_OUTPUT',
        'DFT_ROWS',
        'DFT_SCALE',
        'DISOPTICAL_FLOW_PRESET_FAST',
        'DISOPTICAL_FLOW_PRESET_MEDIUM',
        'DISOPTICAL_FLOW_PRESET_ULTRAFAST',
        'DISOpticalFlow',
        'DISOpticalFlow_PRESET_FAST',
        'DISOpticalFlow_PRESET_MEDIUM',
        'DISOpticalFlow_PRESET_ULTRAFAST',
        'DISOpticalFlow_create',
        'DIST_C',
        'DIST_FAIR',
        'DIST_HUBER',
        'DIST_L1',
        'DIST_L12',
        'DIST_L2',
        'DIST_LABEL_CCOMP',
        ...]
```

In [1]:
```python
import cv2
```

In [117…
```python
import streamlist
```

```
---------------------------------------------------------------------------
ModuleNotFoundError                       Traceback (most recent call last)
Cell In[117], line 1
----> 1 import streamlist

ModuleNotFoundError: No module named 'streamlist'
```

In [2]:
```python
import random
```

In [3]:
```python
dir(random)
```

```
Out[3]:  ['BPF',
          'LOG4',
          'NV_MAGICCONST',
          'RECIP_BPF',
          'Random',
          'SG_MAGICCONST',
          'SystemRandom',
          'TWOPI',
          '_ONE',
          '_Sequence',
          '_Set',
          '__all__',
          '__builtins__',
          '__cached__',
          '__doc__',
          '__file__',
          '__loader__',
          '__name__',
          '__package__',
          '__spec__',
          '_accumulate',
          '_acos',
          '_bisect',
          '_ceil',
          '_cos',
          '_e',
          '_exp',
          '_floor',
          '_index',
          '_inst',
          '_isfinite',
          '_log',
          '_os',
          '_pi',
          '_random',
          '_repeat',
          '_sha512',
          '_sin',
          '_sqrt',
          '_test',
          '_test_generator',
          '_urandom',
          '_warn',
          'betavariate',
          'choice',
          'choices',
          'expovariate',
          'gammavariate',
          'gauss',
          'getrandbits',
          'getstate',
          'lognormvariate',
          'normalvariate',
          'paretovariate',
          'randbytes',
          'randint',
          'random',
          'randrange',
          'sample',
          'seed',
```

```
            'setstate',
            'shuffle',
            'triangular',
            'uniform',
            'vonmisesvariate',
            'weibullvariate']
```

In [8]:
```
random.randint(19,56)
```

Out[8]: 45

In [9]:
```
random.random()
```

Out[9]: 0.16438936425628314

In [10]:
```
import keyword
```

In [11]:
```
dir(keyword)
```

Out[11]:
```
['__all__',
 '__builtins__',
 '__cached__',
 '__doc__',
 '__file__',
 '__loader__',
 '__name__',
 '__package__',
 '__spec__',
 'iskeyword',
 'issoftkeyword',
 'kwlist',
 'softkwlist']
```

In [14]:
```
len(keyword.softkwlist)
```

Out[14]: 3

In [17]:
```
help(keyword.__doc__)
```

```
No Python documentation found for 'Keywords (from "Grammar/python.gram")\n\nThis
file is automatically generated; please don\'t muck it up!\n\nTo update the symbo
ls in this file, \'cd\' to the top directory of\nthe python source tree and ru
n:\n\n    PYTHONPATH=Tools/peg_generator python3 -m pegen.keywordgen           Gram
mar/python.gram          Grammar/Tokens           Lib/keyword.py\n\nAlternatively, y
ou can run \'make regen-keyword\'.'.
Use help() to get the interactive help utility.
Use help(str) for help on the str class.
```

In [18]:
```
import math
```

In [19]:
```
dir(math)
```

```
Out[19]: ['__doc__',
          '__loader__',
          '__name__',
          '__package__',
          '__spec__',
          'acos',
          'acosh',
          'asin',
          'asinh',
          'atan',
          'atan2',
          'atanh',
          'cbrt',
          'ceil',
          'comb',
          'copysign',
          'cos',
          'cosh',
          'degrees',
          'dist',
          'e',
          'erf',
          'erfc',
          'exp',
          'exp2',
          'expm1',
          'fabs',
          'factorial',
          'floor',
          'fmod',
          'frexp',
          'fsum',
          'gamma',
          'gcd',
          'hypot',
          'inf',
          'isclose',
          'isfinite',
          'isinf',
          'isnan',
          'isqrt',
          'lcm',
          'ldexp',
          'lgamma',
          'log',
          'log10',
          'log1p',
          'log2',
          'modf',
          'nan',
          'nextafter',
          'perm',
          'pi',
          'pow',
          'prod',
          'radians',
          'remainder',
          'sin',
          'sinh',
          'sqrt',
```

```
      'tan',
      'tanh',
      'tau',
      'trunc',
      'ulp']
```

In [24]: `math.lcm(2,3)`

Out[24]: 6

math.lcm(567,67)

In [25]: `math.nextafter(5,7)`

Out[25]: 5.000000000000001

In [27]: `math.remainder(9,8)`

Out[27]: 1.0

In [33]: `math.ulp(9)`

Out[33]: 1.7763568394002505e-15

In [34]: `import time`

In [35]: `dir(time)`

Out[35]:
```
['_STRUCT_TM_ITEMS',
 '__doc__',
 '__loader__',
 '__name__',
 '__package__',
 '__spec__',
 'altzone',
 'asctime',
 'ctime',
 'daylight',
 'get_clock_info',
 'gmtime',
 'localtime',
 'mktime',
 'monotonic',
 'monotonic_ns',
 'perf_counter',
 'perf_counter_ns',
 'process_time',
 'process_time_ns',
 'sleep',
 'strftime',
 'strptime',
 'struct_time',
 'thread_time',
 'thread_time_ns',
 'time',
 'time_ns',
 'timezone',
 'tzname']
```

```
In [37]: time.time()
```

Out[37]: 1716968321.53637

```
In [46]: import keyword
         import math
         import random
         import time
         num=random.randint(10,45)
         num2=math.sqrt(4)
         time.sleep(2)
         print(num)
         time.sleep(2)
         print(num2)
```

21
2.0

- [10,20] ==== it means it includes the range of with 10 and 20

- [10,20) ==== it means it includes the range of with 10 and upto 19

- (10,20) ==== it means it includes the range of with 11 and upto only 19

- (10,20] ==== it means it includes the range of with 11 and upto 20

```
In [4]: import math
```

```
In [5]: dir(math)
```

```
Out[5]:  ['__doc__',
          '__loader__',
          '__name__',
          '__package__',
          '__spec__',
          'acos',
          'acosh',
          'asin',
          'asinh',
          'atan',
          'atan2',
          'atanh',
          'cbrt',
          'ceil',
          'comb',
          'copysign',
          'cos',
          'cosh',
          'degrees',
          'dist',
          'e',
          'erf',
          'erfc',
          'exp',
          'exp2',
          'expm1',
          'fabs',
          'factorial',
          'floor',
          'fmod',
          'frexp',
          'fsum',
          'gamma',
          'gcd',
          'hypot',
          'inf',
          'isclose',
          'isfinite',
          'isinf',
          'isnan',
          'isqrt',
          'lcm',
          'ldexp',
          'lgamma',
          'log',
          'log10',
          'log1p',
          'log2',
          'modf',
          'nan',
          'nextafter',
          'perm',
          'pi',
          'pow',
          'prod',
          'radians',
          'remainder',
          'sin',
          'sinh',
          'sqrt',
```

```
        'tan',
        'tanh',
        'tau',
        'trunc',
        'ulp']
```

In [8]: `math.isqrt(27)`

Out[8]: 5

In [9]: `math.lgamma(4)`

Out[9]: 1.7917594692280554

In [10]: `math.modf(6)`

Out[10]: (0.0, 6.0)

In [12]: `math.perm(8,)`

Out[12]: 40320

In [13]: `math.radians(8)`

Out[13]: 0.13962634015954636

In [14]: `math.cbrt(4)`

Out[14]: 1.5874010519681994

In [16]: `import random`

In [17]: `dir(random)`

```
Out[17]:  ['BPF',
           'LOG4',
           'NV_MAGICCONST',
           'RECIP_BPF',
           'Random',
           'SG_MAGICCONST',
           'SystemRandom',
           'TWOPI',
           '_ONE',
           '_Sequence',
           '_Set',
           '__all__',
           '__builtins__',
           '__cached__',
           '__doc__',
           '__file__',
           '__loader__',
           '__name__',
           '__package__',
           '__spec__',
           '_accumulate',
           '_acos',
           '_bisect',
           '_ceil',
           '_cos',
           '_e',
           '_exp',
           '_floor',
           '_index',
           '_inst',
           '_isfinite',
           '_log',
           '_os',
           '_pi',
           '_random',
           '_repeat',
           '_sha512',
           '_sin',
           '_sqrt',
           '_test',
           '_test_generator',
           '_urandom',
           '_warn',
           'betavariate',
           'choice',
           'choices',
           'expovariate',
           'gammavariate',
           'gauss',
           'getrandbits',
           'getstate',
           'lognormvariate',
           'normalvariate',
           'paretovariate',
           'randbytes',
           'randint',
           'random',
           'randrange',
           'sample',
           'seed',
```

```
            'setstate',
            'shuffle',
            'triangular',
            'uniform',
            'vonmisesvariate',
            'weibullvariate']
```

In [23]: `random.gauss(2.4,5.6)`

Out[23]: 4.491124949894329

In [25]: `random.randint(10,45)`

Out[25]: 18

In [26]: `random.random()`

Out[26]: 0.1931166477860281

In [27]: `import keyword`

In [28]: `dir(keyword)`

Out[28]:
```
['__all__',
 '__builtins__',
 '__cached__',
 '__doc__',
 '__file__',
 '__loader__',
 '__name__',
 '__package__',
 '__spec__',
 'iskeyword',
 'issoftkeyword',
 'kwlist',
 'softkwlist']
```

In [29]: `len(keyword.__all__)`

Out[29]: 4

In [32]: `len(keyword.softkwlist)`

Out[32]: 3

In [ ]: