Introduction to Python

MSDS 6306 Unit 12

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Download Python

- Anaconda

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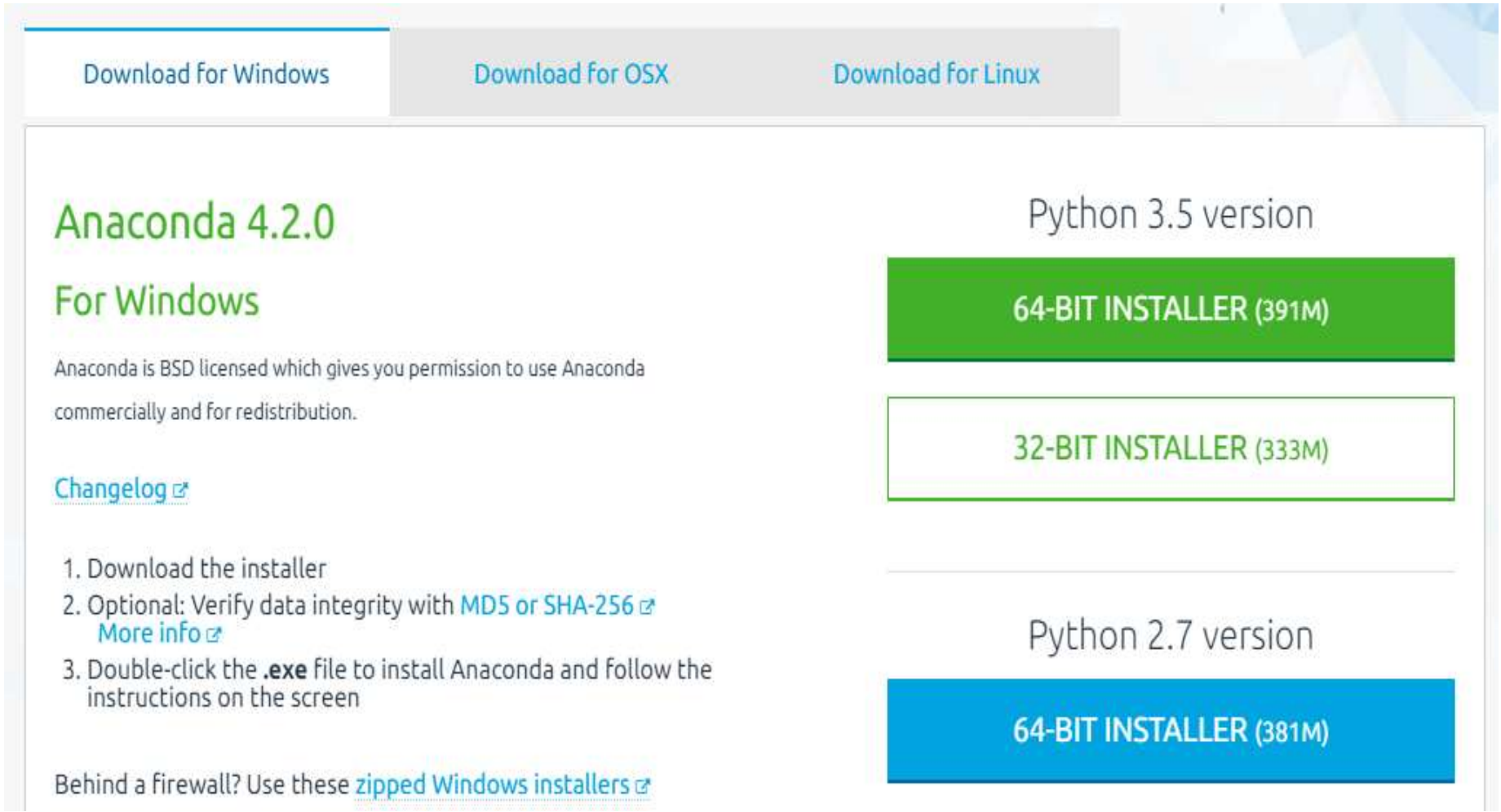
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3. Double-click the .exe file to install Anaconda and follow the instructions on the screen
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Python 3.5 version
64-BIT INSTALLER (391M)
32-BIT INSTALLER (333M)
Python 2.7 version
64-BIT INSTALLER (381M)

Anaconda ("Anaconda Distribution") is a free, easy-to-install package manager, environment manager, Python distribution, and collection of over 720 open source packages with free community support. Hundreds more open source packages and their dependencies can be installed with a simple "conda install [packagename]". It's platform-agnostic, can be used on Windows, OS X and Linux. Or even easier, with new Anaconda Navigator for point and click install of environments and packages!

Python

- https://www.enthought.com/
  - Canopy IDE
  - Utilize your fantastic @smu.edu to sign up for training that they have.

Exercise 12.2.3

Python can be run only from a web browser

a) TRUE


b) FALSE

Variable Types

```
int_val = 8
long_val = 23423423235L
float_val = 2.0
bool_val = True
```

Input	Output
`print "Variable type examples:"`	`Variable type examples:`
`print type(int_val)`	`<type 'int'>`
`print type(long_val)`	`<type 'long'>`
`print type(float_val)`	`<type 'float'>`
`print type(bool_val)`	`<type 'bool'>`

```
# testing for the type of a variable
isinstance(float_val,float)      True
isinstance(float_val,int)        False
```

Exercise 12.3.1

- What type are each of the following variables?

  a = 50L

  b = 5.0

  c = 2**32+1

- What would you do if you wanted to find out the type of a variable?

```
a = 50L
b = 5.0
c = 2**32+1

print 'a', type(a)
print 'b', type(b)
print 'c', type(c)
```

```
a <type 'long'>
b <type 'float'>
c <type 'long'>
```

Exercise 12.3.2.1

- What type is the result, and what is the value for the following expressions?
- a = 5/2, b = 6/0

```
a <type 'int'>
```

```
    b = 6/0

ZeroDivisionError: integer division or modulo by zero
```

- c = 5.0/2.0 ??

```
c <type 'float'>
```

12.3.3.1

- What is outcome of the following?

  a = 'Databases are great!'

  b = "'Databases are great '"

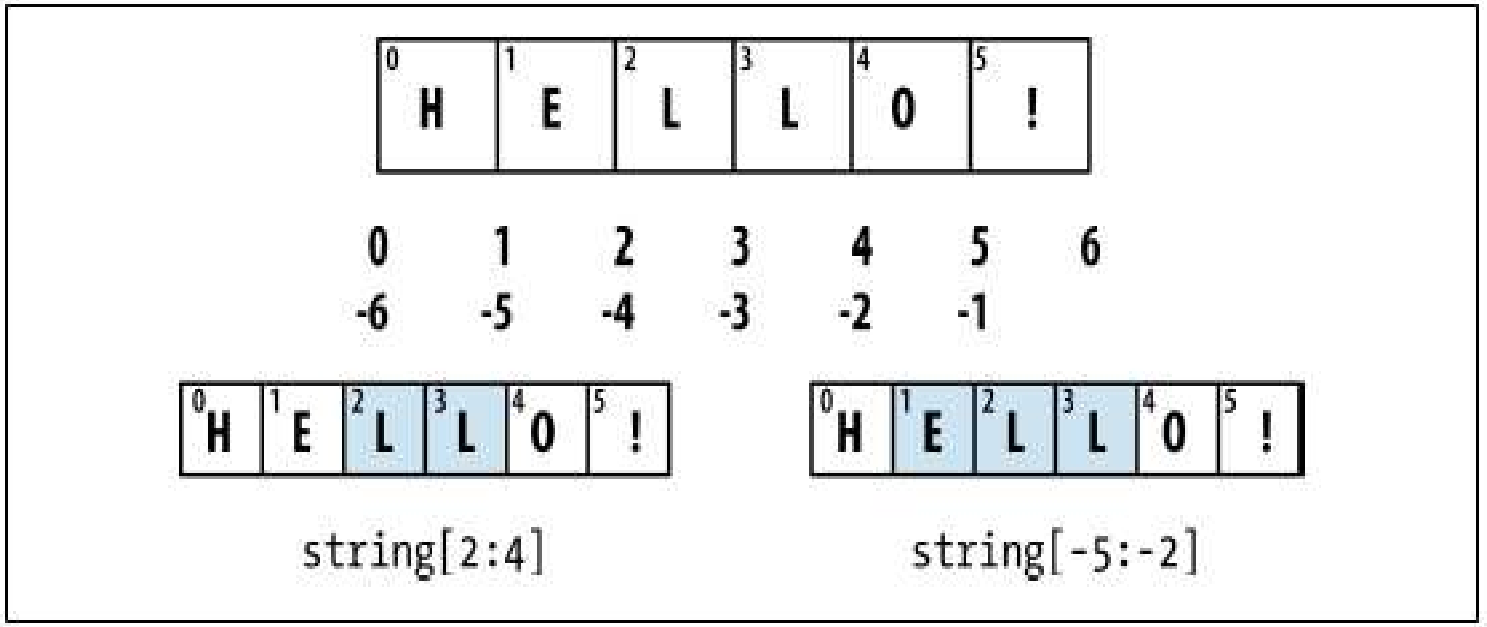
```
print(a)
print(b)
```

```
Databases are great!
'Databases are great'
```

a[3:8]+a[9:10] abase

b[3:6]+b[-1] tab'

Index



12.3.4.1

- What is the outcome of the following code snippet?
- fruit_list = ['apple', 'orange', 'lime', 'pear', 'tomato']
- fruit_list.pop()
- fruit_list.pop()
- fruit_list.pop()
- fruit_list.insert(2, 'lemon')
- fruit_list.insert(2, 'lemon')
- fruit_list.append('in the coconut')
- print fruit_list

```
['apple', 'orange', 'lime', 'pear']
['apple', 'orange', 'lime']
['apple', 'orange']
['apple', 'orange', 'lemon']
['apple', 'orange', 'lemon', 'lemon']
['apple', 'orange', 'lemon', 'lemon', 'in the coconut']
```

`list.` **`append`**(*x*)

Add an item to the end of the list; equivalent to `a[len(a):] = [x]`.

`list.` **`extend`**(*L*)

Extend the list by appending all the items in the given list; equivalent to `a[len(a):] = L`.

`list.` **`insert`**(*i*, *x*)

Insert an item at a given position. The first argument is the index of the element before which to insert, so `a.insert(0, x)` inserts at the front of the list, and `a.insert(len(a), x)` is equivalent to `a.append(x)`.

`list.` **`remove`**(*x*)

Remove the first item from the list whose value is *x*. It is an error if there is no such item.

`list.` **`pop`**([*i*])

Remove the item at the given position in the list, and return it. If no index is specified, `a.pop()` removes and returns the last item in the list. (The square brackets around the *i* in the method signature denote that the parameter is optional, not that you should type square brackets at that position. You will see this notation frequently in the Python Library Reference.)

`list.` **`index`**(*x*)

Return the index in the list of the first item whose value is *x*. It is an error if there is no such item.

https://docs.python.org/2/tutorial/datastructures.html

12.5.5.1

- After the following code is run, what is the output of fruit_list?
- fruit_list = set(['apple', 'orange', 'lime', 'pear', 'tomato'])
- fruit_list &= set(['tomato', 'lemon', 'papaya'])
- print fruit_list

```
set(['tomato'])
```

Operation	Equivalent	Result
`s.update(t)`	*s* |= *t*	return set *s* with elements added from *t*
`s.intersection_update(t)`	*s* &= *t*	return set *s* keeping only elements also found in *t*
`s.difference_update(t)`	*s* -= *t*	return set *s* after removing elements found in *t*
`s.symmetric_difference_update(t)`	*s* ^= *t*	return set *s* with elements from *s* or *t* but not both
`s.add(x)`		add element *x* to set *s*
`s.remove(x)`		remove *x* from set *s*; raises `KeyError` if not present
`s.discard(x)`		removes *x* from set *s* if present

https://docs.python.org/2/library/sets.html

12.5.5.1

- s = set(['apple', 'orange', 'lime', 'pear', 'tomato'])
- t = set(['tomato', 'lemon', 'papaya'])
- s |= t
- print s

```
set(['tomato', 'papaya', 'apple', 'pear', 'orange', 'lemon', 'lime'])
```

```
print(sorted(s))    ['apple', 'lemon', 'lime', 'orange', 'papaya', 'pear', 'tomato']
```

12.3.6.1.

- Which of the following variables are allowed as keys for a dictionary?

  a = ["knights", 'ni']

  b = frozenset(["knights, ni"])

  c = None

```
a = ["knights", 'ni']
b = frozenset(["knights, ni"])
c = None

example_dictionary = {}
example_dictionary[b] = "This is a valid key"
example_dictionary[c] = "This is another valid key"
print(example_dictionary)
```

```
{None: 'This is another valid key', frozenset(['knights, ni']): 'This is a valid key'}
```

12.4.1 – Python Loops

- What is the value of val once this loop is run?

```
val = 0
for i in range(5):
    val += 2
    if val > 9:
        break
else:
    val = None

print(val)
```

10

Favorite IDE

(Integrated Development Environment)

- What is your favorite Python IDE?

Last Live Session – (Apr 18)

- Find an "interesting" Python package. When you make your choice, post it to the wall. If someone posts the same library to the wall that you want to do – first come, first serve!
- Prepare no more than 10 PPT slides (6 minutes maximum) to describe your chosen Python package, much like we presented API in R.
- Slides should mention what the package does, how to install it, and give an example using the package.
- Post your slides to Live Session Unit 13 Assignment before class.

https://pypi.python.org/pypi