

VectorCAST Python 2 to Python 3 Upgrade

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Author	Vector North America Inc.
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Abstract	Information on Python2 to Python 3 Upgrade

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1 Overview

The Python implementation that VectorCAST delivers with the product, vpython, will be switching from Python 2 to Python 3. The reason for the switch is that Python 2 has reached its end of life. (Read more about the sunseting of Python 2 here: <https://www.python.org/doc/sunset-python-2/>). With the VectorCAST version 2021 release the python scripts delivered with the product, as well as public integrations like the Jenkins integration, will be Python 3 compliant.

2 Instructions

2.1 Initial Setup

Install a version of VectorCAST that has the upgraded vpython that is utilizing Python 3.

2.2 Python 2 Review

Review the custom RSPs and custom Python scripts that you are using with VectorCAST and verify they are ready for Python 3. As an example, one of the biggest differences between Python 2 and Python 3 that we see in a lot of custom RSPs is the print command. Where Python 2 allowed for prints like this:

```
print "Hello World"
```

Python 3 requires enclosing data in parenthesis:

```
print ("Hello World")
```

There are additional changes that could be needed. Some of the common issues are things like bytes to strings conversions, calls to open that use 'wb' or 'rb', import issues, and catching/raising exceptions. This list is not exhaustive, but it gives you an idea of the types of things you may run into. The links below will have much more info on the issues mentioned as well as many others.

If you were to run a non-compliant Python script, vpython does do some basic checking and will print out the following:

```
-----  
  
VectorCAST has detected an error in the currently executing vpython interpreter that  
may be a result of an incompatibility between Python 2 and Python 3. vpython has been  
upgraded to use Python 3 as its base.  
  
If you have not yet upgraded your scripts, please consult relevant Python 2to3  
upgrade documentation or run the following command to learn more.  
  
vpython --help-py2to3  
  
If you have already upgraded your RSP scripts and other Python files to be Python 3  
compliant please ignore this message and resolve the issue using the following error  
message.  
  
-----
```

2.3 Porting Python 2 Code to Python 3

The link below is the official Python documentation on porting Python 2 to Python 3.

<https://docs.python.org/3/howto/pyporting.html>

A quick cheat sheet for writing Python 2-3 compatible code with essential syntax differences.

https://python-future.org/compatible_idioms.html

Some of the more common differences.

<https://hackaday.com/2018/08/15/stop-using-python-2-what-you-need-to-know-about-python-3/>

Porting best practices.

<https://developer.shotgunsoftware.com/5583eab1/>

2.4 Python 2to3

Python 2to3 is an automatic translation program that comes with Python 3. It's designed to find and automatically replace common idioms that have direct translations to Python 3.

The following link is the official documentation for 2to3 from Python with explanations and examples.

<https://docs.python.org/3/library/2to3.html>

Additional usage and explanation on 2to3.

<https://diveintopython3.problemsolving.io/porting-code-to-python-3-with-2to3.html>

Using Python 2to3 is not necessary. Here are a few situations when bypassing 2to3 has been helpful.

<http://python3porting.com/noconv.html>

2.5 Common Problems Porting Python

The following site lists common issues encountered when porting Python 2 to Python 3.

<http://python3porting.com/problems.html>

3 Additional Resources

Tips and tricks:

<https://dzone.com/articles/tips-and-tricks-for-upgrading-from-python-2-to-pyt>

4 Trademarks

All mentioned names are either registered or unregistered trademarks of their respective owners.

5 Contacts

For a full list of all Vector locations and addresses worldwide, please visit <http://vector.com/contact/>.