Article
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Using Embedded Python to generate data streamflow

Hi Developers,

Python has a large and powerful ecosystem that contains thousands of libraries and packages available, especially in data science.

Therefore, I wanted to have a first try in using a recent feature of IRIS called Embedded Python, to simply import a python library called *datetime*, generate data with a timestamp component and persist it in InterSystems IRIS for Health Data Platform. The same will work on IRIS Data Platform as well.

I have broken down this small project into 2 main pieces:

- Set up the Embedded Python environment following the IRIS for Health Data Platform documentation
- Create the timestamp data as an example using Embedded Python and persist to IRIS, using the datetime package

1. Setup Embedded Python on InterSystems IRIS for Health Data Platform 2022.1

- On Windows, open CMD terminal:

C:\InterSystems\IRISHealth\bin>irispip install --target C:\InterSystems\IRISHealth\mgr\python numpy

Note: This is the step for checking the Embedded Python environment, because I find out when I use IRIS 2021.0 eairly the *irispip* is not working

- Test Python functionality by importing a Python math package

Open IRIS terminal and execute the following in the USER namespace: *set pymath = ##class(%SYS.Python).Import("math")*

Then execute *write pymath.pi,* You can see you have successfully called the python package, with the output as follows:

USER>write pymath.pi

3.141592653589793116

- And we can also start the Python shell by opening from the IRIS terminal:

do ##class(%SYS.Python).Shell()

```
Class User.PythonFirstTry Extends %RegisteredObject
{

ClassMethod pyHello() As %Status
{
 set pythonBuiltins = ##class(%SYS.Python).Builtins()
 do pythonBuiltins.print("Hello World!")
}

ClassMethod pyForLoop() [ Language = python ]
{
 for i in range(5):
  print("Python")
}

}
```

I have written two class methods that you can try to put in a .cls file, compile them and see the output.

Execute the methods as below:

USER>do ##class(User.PythonFirstTry).pyHello()

Hello World!

USER>do ##class(User. PythonFirstTry).pyForLoop()

Python

Python

Python

Python

Python

2. Use python library to generate dataflow and persist to InterSystems IRIS

Python Library needed for data flow generation*:*

- *Import datetime package (this do not require extra installation using CLI)*

In addition to the *datetime* package, I tried using other libraries and packages however some of them are not present natively with Embedded Python. To install these, open CMD terminal (for Windows) then run the following (XX is to be replaced with the package name):

C:\InterSystems\IRISHealth\bin>irispip install XX

Here are the steps followed to generate data and persist into IRIS.

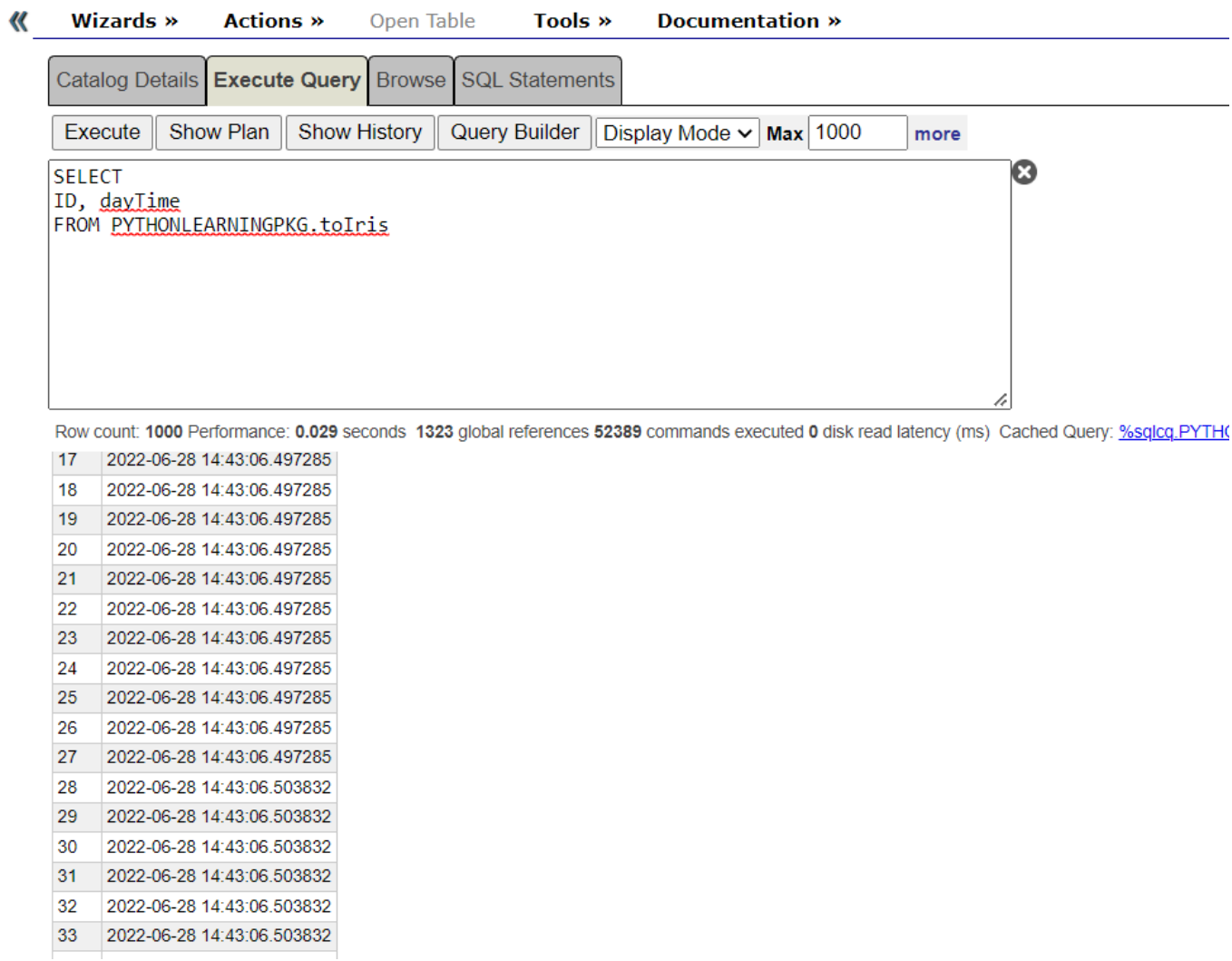
1. Create *%Persistent* class
2. Create Property
3. Set a classmethod (e.g. GetData) and specify *[Language = python]*
4. Generate data by calling *datetime* python library, using the following code snippet:

```
Class PYTHONLEARNINGPKG.toIris Extends %Persistent
{

Property dayTime As %String;

Debug this method
ClassMethod GetData() As %Status [ Language = python ]
{
    import iris
    import datetime
    timeNow = datetime.datetime.now()
    print(timeNow)
    setTime = iris.cls("PYTHONLEARNINGPKG.toIris")._New()
    setTime.dayTime = str(timeNow)
    setTime._Save()
}
```

Note: *timeNow* needs to be converted into a String datatype

5. Execute the method GetData() via IRIS Terminal, execute SQL query

Note: You could use a simple for loop to control the volume of data that is generated by this method.



17	2022-06-28 14:43:06.497285
18	2022-06-28 14:43:06.497285
19	2022-06-28 14:43:06.497285
20	2022-06-28 14:43:06.497285
21	2022-06-28 14:43:06.497285
22	2022-06-28 14:43:06.497285
23	2022-06-28 14:43:06.497285
24	2022-06-28 14:43:06.497285
25	2022-06-28 14:43:06.497285
26	2022-06-28 14:43:06.497285
27	2022-06-28 14:43:06.497285
28	2022-06-28 14:43:06.503832
29	2022-06-28 14:43:06.503832
30	2022-06-28 14:43:06.503832
31	2022-06-28 14:43:06.503832
32	2022-06-28 14:43:06.503832
33	2022-06-28 14:43:06.503832

#Embedded Python #InterSystems IRIS #InterSystems IRIS for Health

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