1. Execute the spark master pod (You will need to do a portion of the Word Count tutorial to generate this pod)
   ```
   kubectl exec -it spark-master-0 -- bash
   ```

2. Start pyspark: pyspark

   ```
   montaos19518@cloudshell:~ (cs571-new)$ kubectl exec -it spark-master-0 -- bash
   I have no name!@spark-master-0:/opt/bitnami/spark$ pyspark
   Python 3.6.13 (default, Apr 19 2021, 18:12:00)
   [GCC 8.3.0] on linux
   Type "help", "copyright", "credits" or "license" for more information.
   21/04/22 18:26:03 WARN NativeCodeLoader: Unable to load native-hadoop library for your platform... using builtin-java classes where applicable
   Using Spark's default log4j profile: org/apache/spark/log4j-defaults.properties
   Setting default log level to "WARN".
   To adjust logging level use sc.setLogLevel(newLevel). For SparkR, use setLogLevel(newLevel).
   Welcome to
         ____              __
        / __/__  ___ _____/ /__
       _\ \/ _ \/ _ `/ __/  '_/
      /__ / .__/\_,_/_/ /_/\_\   version 3.1.1
         /_/

   Using Python version 3.6.13 (default, Apr 19 2021 18:12:00)
   Spark context Web UI available at http://spark-master-0.spark-headless.default.svc.cluster.local:4040
   Spark context available as 'sc' (master = local[*], app id = local-1619115966209).
   SparkSession available as 'spark'.
   ```

3. Exit pyspark: exit()

   ```
   >>> exit()
   I have no name!@spark-master-0:/opt/bitnami/spark$
   ```

4. Go to the directory where pagerank.py is located:
   ```
   cd /opt/bitnami/spark/examples/src/main/python
   ```

5. Run pagerank.py using pyspark (/opt is the directory; 2 is the number of iterations to run pagerank)
   ```
   spark-submit pagerank.py /opt 2
   ```

```
file:/opt/bitnami/spark/venv/lib/python3.6/site-packages/botocore/data/iotanalytics/2017-11-27
file:/opt/bitnami/spark/venv/lib/python3.6/site-packages/pytz/zoneinfo/america/argentina
file:/opt/bitnami/java/demo/jvmti/compiledmethodload/lib
file:/opt/bitnami/spark/venv/lib/python3.6/site-packages/botocore/data/cloudfront/2019-03-26
file:/opt/bitnami/spark/data/mllib/images/origin/kittens
file:/opt/bitnami/spark/venv/lib/python3.6/site-packages/pytz
file:/opt/bitnami/spark/venv/lib/python3.6/site-packages/botocore/data/dlm/2018-01-12
file:/opt/bitnami/java/jre/bin
file:/opt/bitnami/spark/venv/lib/python3.6/site-packages/pandas/tests/groupby/aggregate
file:/opt/bitnami/java/sample/jmx/jmx-scandir/src/com/sun/jmx/examples/scandir/config
file:/opt/bitnami/spark/venv/lib/python3.6/site-packages/awscli/examples/waf-regional
file:/opt/bitnami/spark/venv/lib/python3.6/site-packages/pandas/io/formats
file:/opt/bitnami/spark/venv/lib/python3.6/site-packages/awscli/examples/pinpoint
file:/opt/bitnami/python/lib/python3.6/test/test_email
file:/opt/bitnami/spark/venv/lib/python3.6/site-packages/botocore/data/kafka/2018-11-14
file:/opt/bitnami/spark/venv/lib/python3.6/site-packages/botocore/data/mediatailor/2018-04-23
file:/opt/bitnami/spark/venv/lib/python3.6/site-packages/numpy/ma
file:/opt/bitnami/spark/venv/lib/python3.6/site-packages/awscli/examples/xray
file:/opt/bitnami/java/demo/applets/moleculeviewer
file:/opt/bitnami/spark/examples/src/main/python/sql/streaming
file:/opt/bitnami/spark/examples/src/main/resources/dir1
file:/opt/bitnami/spark/venv/lib/python3.6/site-packages/docutils/writers/latex2e
file:/opt/bitnami/spark/venv/lib/python3.6/site-packages/pandas/tests/extension/base
file:/opt/bitnami/spark/venv/lib/python3.6/site-packages/botocore/data/iotsecuretunneling/2018-10-05
file:/opt/bitnami/spark/venv/lib/python3.6/site-packages/awscli/examples/serverlessrepo
file:/opt/bitnami/spark/venv/lib/python3.6/site-packages/numpy/random/tests
file:/opt/bitnami/java/demo/nbproject/management/jtop
file:/opt/bitnami/python/lib/python3.6/test/test_importlib/extension
file:/opt/bitnami/spark/venv/lib/python3.6/site-packages/botocore/data/ec2/2014-10-01
file:/opt/bitnami/python/lib/python3.6/test/subprocessdata
file:/opt/bitnami/spark/venv/lib/python3.6/site-packages/boto3/examples
file:/opt/bitnami/spark/venv/lib/python3.6/site-packages/botocore/data/resourcegroupstaggingapi/2017-01-26
file:/opt/bitnami/spark/venv/lib/python3.6/site-packages/botocore/data/iotsitewise/2019-12-02
file:/opt/bitnami/spark/venv/lib/python3.6/site-packages/botocore/data/greengrass/2017-06-07
file:/opt/bitnami/spark/venv/lib/python3.6/site-packages/boto3-1.17.53.dist-info
file:/opt/bitnami/spark/venv/lib/python3.6/site-packages/awscli/examples/ec2
file:/opt/bitnami/spark/venv/lib/python3.6/site-packages/pandas/tests/indexes/period
file:/opt/bitnami/spark/venv/lib/python3.6/site-packages/botocore/data/personalize-events/2018-03-22
file:/opt/bitnami/python/lib/python3.6/test/cjkencodings
file:/opt/bitnami/java/demo/applets/wireframe
file:/opt/bitnami/spark/venv/lib/python3.6/site-packages/botocore/data/cur/2017-01-06
file:/opt/bitnami/spark/examples/src/main/java/org/apache/spark/examples/mllib
file:/opt/bitnami/spark/venv/lib/python3.6/site-packages/botocore/data/appstream/2016-12-01
file:/opt/bitnami/spark/venv/lib/python3.6/site-packages/botocore/data/secretsmanager/2017-10-17
file:/opt/bitnami/spark/venv/lib/python3.6/site-packages/awscli/examples/redshift
file:/opt/bitnami/spark/python/pyspark/python/pyspark
file:/opt/bitnami/spark/venv/lib/python3.6/site-packages/botocore/data/elb/2012-06-01
file:/opt/bitnami/spark/venv/lib/python3.6/site-packages/botocore/data/ec2/2015-03-01
```