# Beginner-friendly Python for Oracle DBAs

This beginner-friendly Python lecture will take you from zero to programming in Python.

## EPICO TECH

"Opinions expressed are solely my own and do not express the views or opinions of my employer."



#### Bruno Reis da Silva

- Afro-Brazilian
- Outside the coding world:
- Loves to travel: 30 countries and counting;
- Learn Languages: Portuguese, Spanish, English and currently learning Swedish;
- Working out.



#### CAREER PATH



- Joined at IBM Brazil as a contractor. (June 2011 -December 2013). Role: Junior Oracle DBA



- Became an IBM employee (IBMER), (December 2013 -December 2016). Role: Oracle DBA Specialist -Subject Matter Expert



- Promoted to Hungary, Europe. (December 2016 -October 2018). Role: Senior Oracle Cloud Database Administrator. (IT Advisory).



- Promoted to Sweden, Europe. (October 2018 -Second Semester 2020). Role: Senior Oracle Database Admiinstrator & Database Cloud Support Engineer.



Joined an Oracle Partner in Sweden called Epico Tech, former Miracle Sweden. (Second Semester 2020 onwards). Role: Oracle Consultant

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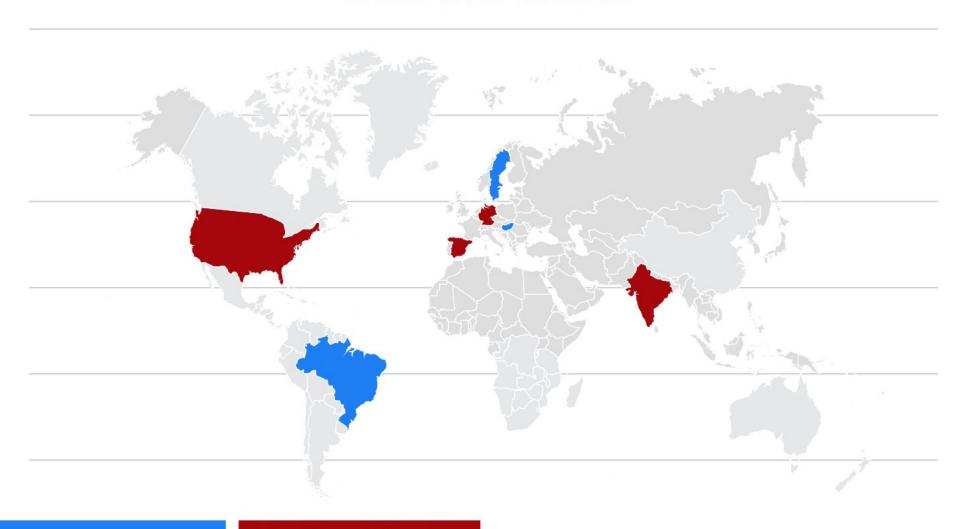


https://github.com/brunorsreis/oraclepython - Oracle IBM, Open Group Certified

- Collaborator of LUXOUG and member of SWEOUG.



#### Bruno Reis da Silva



#### **Project I have worked locally:** South America:

- Brazil (5 years) 2011-2016 Europe:
- Hungary (2 years) 2016-2018 Sweden (2 years) 2018- onwards

#### Projects I have worked remotely: •North America:

- The United States of America (USA)
- •Europe:
   Spain, Germany
- ·Asia:
- India

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- Oracle ACE Director
- Oracle ACE
- Oracle ACE Associate

bit.ly/OracleACEProgram

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oracle-ace\_ww@oracle.com



Facebook.com/oracleaces



@oracleace



Nominate yourself or someone you know: acenomination.oracle.com

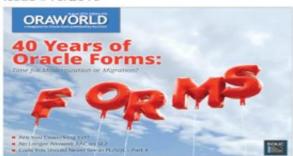


#### Issue #19/2020



Our first issue of 2020 dives into the history of AskTOM. Connor McDonald reflects on its inception and how his personal journey intertwines with it. Meanwhile, Jim Czuprynski reveals his super-power: Autonomous DB and ML. Enjoy these and many more stories!

Issue #16/2019



Issue #16 celebrates 40 years of Oracle Forms. We look at the history of the famous software tool including an interview with its developer Bill Friend. Also, we conclude

#### Issue #18/2019



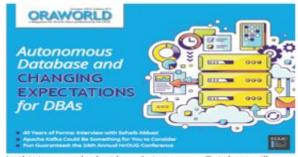
Issue 18 takes a look at Self-Service Integration with author Arturo Viveros answering the questions What?, Why? and How? The last issue of the year also marks the starts of a new series on APEX by Carsten Czarski. Of course, you can expect many more stories from the Oracle world.

#### Issue #15/2019



The focus of issue #15 is on games: We have an interview with gamification expert Dr. Mathias Fuchs who examines the phenomenon from a cultural and political perspective.

#### Issue #17/2019



In this issue we look at how Autonomous Database will change the work for DBAs. Also, concluding our 40 Years of Forms feature, we bring you an insightful interview with Sohaib Abbasi, the former Senior Vice President of Oracle's Tools and Education divisions.

#### Issue #14/2019

#### **ORAWORLD**

#### User Experience -An Introduction



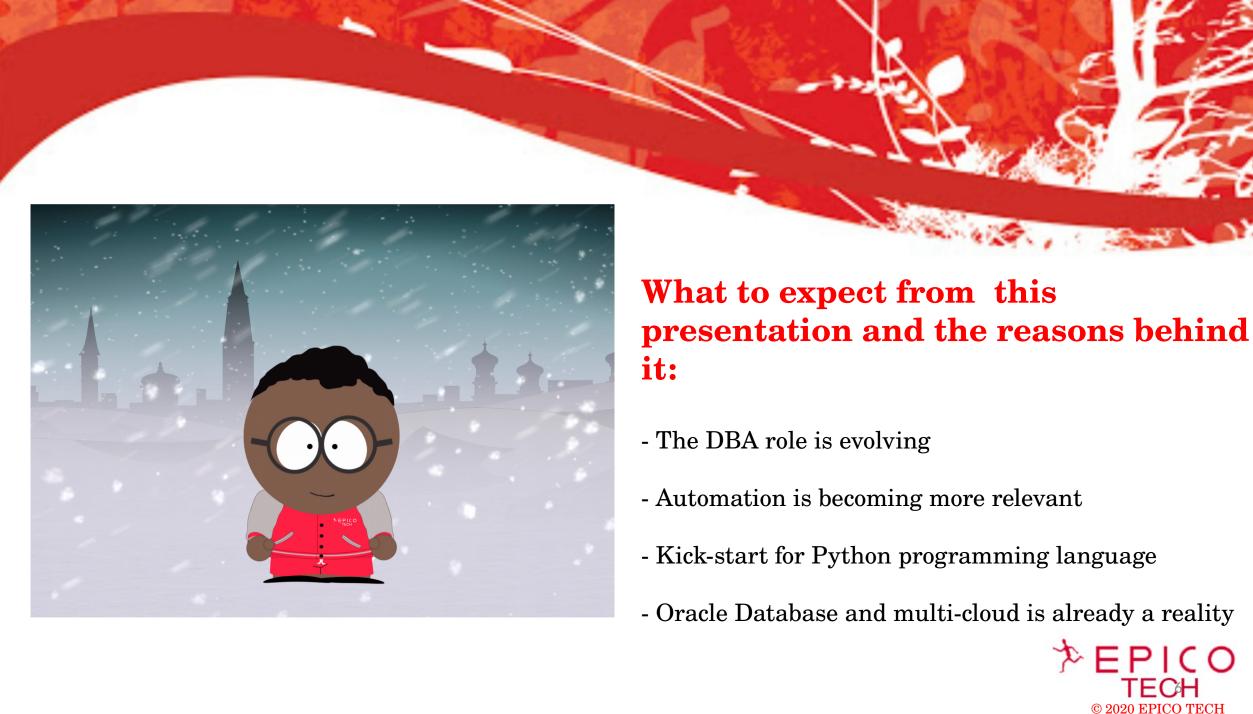
- . Thoughts on Digitalization and Seniors
- . Importance of Data Clustering

- \* The APEX Tour Or the Power of a Good Mojito
- \* The Best of Browser Extensions



Issue #14 highlights ways to generate the perfect user experience. You will dive deep into such diverse topics as digitalization for seniors, the importance of data clustering,







#### Autonomous Database

### Advice for Upwardly Mobile DBAs

Ten Ways to Advance Your Career in an Era of Autonomous Database Technology

#### https://www.oracle.com/a/ocom/docs/applications/50704-oracle-strategic-dba-checklist.pdf

As enterprises transition to Oracle Autonomous Database, routine administrative and infrastructure tasks—such as provisioning new databases, upgrading or patching existing databases, tuning queries, and making backups—are no longer necessary. While some database administrators (DBAs) may be uneasy about this incursion into their traditional administrative turf, others see the potential to liberate themselves from routine maintenance tasks. Here are 10 ways to enhance your career, get in front of this rising wave of automation, and learn to spearhead new business initiatives.

- 1. Pivot: Shift your role from database administrator to data architect.
- 2. Create: Focus on data delivery and data modeling, not on routine maintenance.
- 3. Evolve: Look for opportunities to work on projects that involve security, information lifecycle management, and application tuning.
- 4. Learn: Educate yourself on the latest Oracle Database product offerings, so you know when to recommend Oracle Autonomous Database rather than another cloud service.
- 5. Experiment: Volunteer to try out new software by signing up for beta test programs, so you can stay abreast of new product capabilities that will keep your organization at the cutting edge.

- 6. Collaborate: Get involved with agile development projects to help developers quickly create new applications and iterations.
- 7. Innovate: Devise better ways to predict how data can be used to deliver better predictive insight, improve customer experience or apply data to create new revenue opportunities.
- 8. Analyze: Help business professionals discern trends and patterns in their data and use new types of analytics tools.
- 9. Orchestrate: Develop broader insight into data life cycle and help broker a smooth transition to the cloud.
- 10. Strategize: Don't let user requests dominate your time. Get involved in security, performance tuning, high availability, migrations, and upgrades—all the things that move your business forward.

Read the new ipaper here.  $\rightarrow$ 



It contains other relevant insights from IT experts: Oracle Database experts, ACE Directors, and savvy database professionals who see the wisdom and advantages of embracing automation.









# - What is Python Programming Language? Duthon is an interpreted high level general numbers are growning longuage.

- Python is an interpreted, high-level, general-purpose programming language;
- Guido van Rossum is the creator and the first released of Python was in 1991;
- Easy and intuitive language;
- Open Source
- Suitability for everyday tasks
- Python is case sensitive: BR <> br
- Comments #
- Similar PL/SQL but not the same. It's a plus if you already know PL/SQL.





#### Basics concepts:

1 - Types :

#### 1.1 INT: E.g 12

- Integers can be negative or positive;
- Finite range;

#### 1.2 FLOAT :

- Real numbers: E.g 12.21
- Float can be an integer





Basics concepts:

1 - Types :

#### 1.3 STRINGS:

Description = "SKI IS BLUE"

S	K	I		I	S		В	L	U	E
0	1	3	4	5	6	7	8	9	10	11

#### 1.4 BOOLEAN:

True (T) - 1

False (F) - 0





- Typecasting

Integer 2 -> Float 2.0; Float 1.1 -> Integer 1;







#### Expressions

Example: 5+10=15

+	addition operator		
_	subtraction operator		
*	multiplication operator		
/	division operator		
//	integer divide operator		
%	modulus (remainder) operator		





Variables

```
_salary = 500.000
Name = "Reis"
print(_salary)
print(Name)
```





#### **Tuples**

- Here is a TUPLE "numbers":

numbers=(0,23,5,6,7,2,4,24)

- Tuples are immutable.





#### Lists

- Here is a List "B":

## **B=['Lebron James', 15.2, 1975]**

- List are mutable





**Dictionaries** 

{"key01":1,"key02":"02","key03":[3,3,3],"key04":(4,4,4),"key05":5}





Sets

```
players_list=["Ronaldo","Real Madrid", "Real Madrid", 2001]
players_set=set(players_list)
players_set:{'Ronaldo','Real Madrid', 2001}
```





#### **Functions**

- Python has many built-in functions.

```
def function(d):
    #add 20 to d

f=d+20;
print(d, "Plus 20 is =", f)
return f;
```





#### **Objects**

```
class myexampleclass:
d=250;
b1=myexampleclass()
print(b1.d)
```





#### **Objects**

```
- built-in __init__() function

class Customer:
    def __init__(person, name, age):
        person.name = name
        person.age = age

p1 = Customer("Maria", 52)

print(p1.name)
print(p1.age)
```







#### **Objects methods**

- built-in \_\_init\_\_() function

```
class Customer:
    def __init__(person, name, age):
        person.name = name
        person.age = age

    def function01(person):
        print("The name of the person is " + person.name)

pl = Customer("Maria", 52)

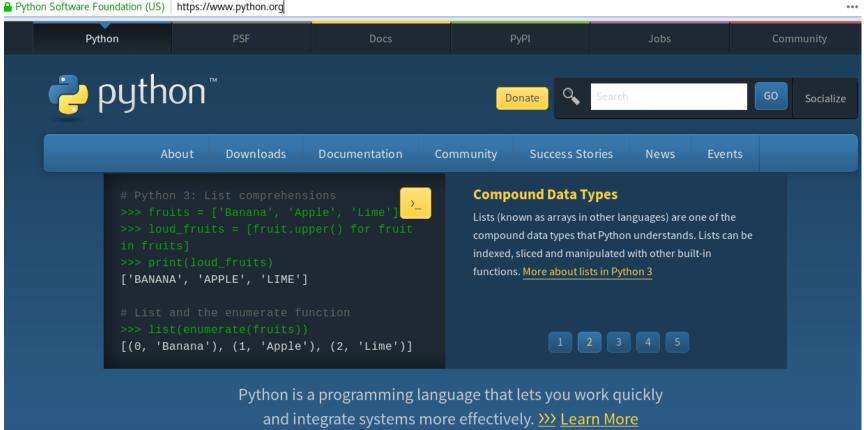
pl.function01()
```

The name of the person is Maria





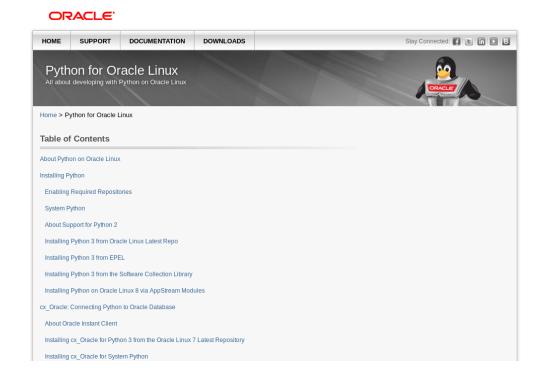








https://yum.oracle.com/oracle-linux-python.html







- Install in Oracle Linux 6
- Documentation: http://yum.oracle.com/repo/OracleLinux/OL6/latest/x86\_64/index.html

yum.oracle.com/repo/OracleLinux/OL6/latest/x86\_64/index.html

	10.55
python-2.6.6-66.0.1.el6_8.x86_64.rpm	18- Aug-2016 75.8 K 15:49
python-2.6.6-68.0.1.el6_10.x86_64.rpm	13- Jun-2019 76.0 K 12:49
python-2.6.6-68.0.2.el6_10.i686.rpm	05- Dec-2019 76.2 K 01:13
python-2.6.6-68.0.2.el6_10.x86_64.rpm	05- Dec-2019 76.2 K 01:13
	03-





- Install in Oracle Linux 7
- Documentation: http://yum.oracle.com/repo/OracleLinux/OL7/latest/x86\_64/index.html

yum.oracle.com/repo/OracleLinux/OL7/latest/x86\_64/index.html

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1	(pm	python-2.7.5-88.0.1.el7.x86_64.rpm	Nov-2019	95.4 K
			10.30	



#### What can you do with Python?

- Know the Python version in your system:
- Python on Oracle Linux 6.10

```
[root@se1 ~]# which python
/usr/bin/python
[root@se1 ~]# python --version
Python 2.6.6
[root@vm2 ~]# cat /etc/oracle-release
Oracle Linux Server release 6.10
[root@se1 ~]# |
```

#### - Python on Oracle Linux 7.6

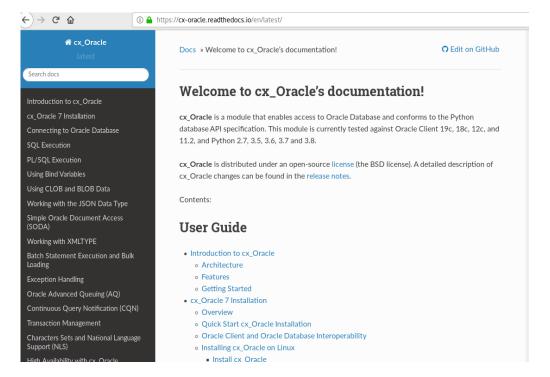
```
[oracle@localhost ~1$ which python
/bin/python
[oracle@localhost ~1$ python --version
Python 2.7.5
[oracle@localhost ~1$ cat /etc/oracle-release
Oracle Linux Server release 7.6
[oracle@localhost ~1$ uname -a
Linux localhost.localdomain 4.14.35-1818.3.3.el7uek.x86_64 #2 SMP Mon Sep 24 14:
45:01 PDT 2018 x86_64 x86_64 x86_64 GNU/Linux
```





#### 1.1 - cx\_Oracle x Installation :

Documentation: https://cx-oracle.readthedocs.io/en/latest/







oraclelinux7]# python --version Python 2.7.5

oraclelinux7]# yum install -y python3 Loaded plugins: langpacks, ulninfo Resolving Dependencies

- --> Running transaction check
- ---> Package python3.x86\_64 0:3.6.8-13.0.1.el7 will be installed
- --> Processing Dependency: python3-libs(x86-64) = 3.6.8-13.0.1.el7 for package: python3-3.6.8-13.0.1.el7.x86\_64
- --> Processing Dependency: python3-pip for package: python3-3.6.8-13.0.1.el7.x86\_64
- --> Processing Dependency: python3-setuptools for package: python3-3.6.8-13.0.1.el7.x86\_64
- --> Processing Dependency: libpython3.6m.so.1.0()(64bit) for package: python3-3.6.8-13.0.1.el7.x86\_64
- --> Running transaction check
- ---> Package python3-libs.x86\_64 0:3.6.8-13.0.1.el7 will be installed
- ---> Package python3-pip.noarch 0:9.0.3-7.el7\_8 will be installed
- ---> Package python3-setuptools.noarch 0:39.2.0-10.el7 will be installed

• •

Dependency Installed: python3-libs.x86\_64 0:3.6.8-13.0.1.el7 0:39.2.0-10.el7

python3-pip.noarch 0:9.0.3-7.el7\_8

python3-setuptools.noarch





- cx\_Oracle x Installation – Pre-requisites:

• Install Cx\_Oracle 7 from Pypi: https://pypi.org/project/cx-Oracle/

oraclelinux7] python3 -m pip install cx\_Oracle --upgrade Collecting cx\_Oracle Using cached

https://files.pythonhosted.org/packages/d5/15/d38862a4bd0e18d8ef2a3c98f39e743b8951ec 5efd8bc63e75db04b9bc31/cx Oracle-7.3.0-cp36-cp36m-manylinux1 x86 64.whl Installing collected packages: cx-Oracle Successfully installed cx-Oracle-7.3.0





Oracle Instant Client Zip Files

https://www.oracle.com/ae/database/technologies/instant-client/linux-x86-64-downloads.html

Oracle Instant Client RPMs yum install oracle-instantclient12.1-basic-12.1.0.2.0-1.x86\_64.rpm

#### (Example of Instant Client Installation for Oracle Database 12cR1):

oraclelinux7]# yum install oracle-instantclient12.1-basic-12.1.0.2.0-1.x86\_64.rpm
Loaded plugins: langpacks, ulninfo
Examining oracle-instantclient12.1-basic-12.1.0.2.0-1.x86\_64.rpm: oracle-instantclient12.1-basic-12.1.0.2.0-1.x86\_64
Marking oracle-instantclient12.1-basic-12.1.0.2.0-1.x86\_64.rpm to be installed
Resolving Dependencies

- --> Running transaction check
- ---> Package oracle-instantclient12.1-basic.x86\_64 0:12.1.0.2.0-1 will be installed Installed:

oracle-instantclient12.1-basic.x86\_64

• • •

Complete! oraclelinux7]#





- cx\_Oracle x Installation Pre-requisites:
- Add Instant Client to the runtime link path .
- oraclelinux7]# sh -c "echo /usr/lib/oracle/12.2/client64/lib > /etc/ld.so.conf.d/oracle-instantclient.conf"
   oraclelinux7]# ldconfig
   oraclelinux7]\$ export LD\_LIBRARY\_PATH=/usr/lib/oracle/12.1/client64/lib:\$LD\_LIBRARY\_PATH



#### - What can you do with Python?

1 - Connect to the Oracle Database.

1.2 - Install the Oracle Database software (Example of a 12Cr1 Oracle Database software installed in a Oracle Linux 7.6):

SQL\*Plus: Release 12.1.0.2.0 Production on Mon Jun 1 05:24:19 2020

Copyright (c) 1982, 2014, Oracle. All rights reserved.

Connected to:

Oracle Database 12c Enterprise Edition Release 12.1.0.2.0 - 64bit Production With the Partitioning, OLAP, Advanced Analytics and Real Application Testing options

SQL> select instance\_name, status from v\$instance;

INSTANCE\_NAME STATUS
----pythondb OPEN





1.3 - Create the script to connect to the Oracle Database (Script called myconnectdb.py):

```
oraclelinux7]$ cat myconnectdb.py
from __future__ import print_function
import cx_Oracle

# Connect as user "hr" with password "welcome" to the "oraclepdb" service running on this computer.
connection = cx_Oracle.connect("c##brunors", "112233", "localhost.localdomain/pythondb.localdomain")

cursor = connection.cursor()
cursor.execute(
    'SELECT count(*) from all_users')
for value in cursor:
    print("Values:", value)

oraclelinux7]$ python3 myconnectdb.py
Values: (36,)
```





## 2.1 File: File techtable1.txt:

oraclelinux7]\$ cat techtable1.txt BRZ,Brazil,Portuguese NEZ,New Zealand,English PRT,Portugal,Portuguese SPN,Spain,Spanish

### File techtable2.txt:

oraclelinux7]\$ cat techtable2.txt ITL,Italy,Italian ENG,England,English SWE,Sweden,Swedish HUN,Hungary,Hungarian





## 2.2 File comparetablefiles.py:

```
oraclelinux7]$ cat comparetablefiles.py
f1=open("techtable1.txt","r")
f2=open("techtable2.txt","r")
n = 0
for line1 in f1:
  for line2 in f2:
     if line1==line2:
       print("Same value in both lines.\n", line1[n])
      n += 1
     else:
       print("The line",n, "at the file techtable1.txt is:")
       print(line1)
       print(" The line", n, "at the file techtable2.txt is:")
       print(line2)
       n += 1
     break
f1.close()
f2.close()
```





oraclelinux7]\$ python comparetablefiles.py ('The line', 0, 'at the file techtable1.txt is:') BRZ,Brazil,Portuguese

('The line', 0, 'at the file techtable2.txt is:') ITL,Italy,Italian

('The line', 1, 'at the file techtable1.txt is:') NEZ,New Zealand,English

('The line', 1, 'at the file techtable2.txt is:') ENG,England,English

('The line', 2, 'at the file techtable1.txt is:') PRT,Portugal,Portuguese

('The line', 2, 'at the file techtable2.txt is:') SWE,Sweden,Swedish

('The line', 3, 'at the file techtable1.txt is:') SPN,Spain,Spanish

('The line', 3, 'at the file techtable2.txt is:') HUN,Hungary,Hungarian





Documentation:https://docs.cloud.oracle.com/en-us/iaas/Content/API/SDKDocs/pythonsdk.htm Github Oracle: https://github.com/oracle/oci-python-sdk



- Getting Started
- Oracle Cloud's Free Tier
- Oracle Cloud Infrastructure Government Cloud
- Services
- Developer Resources
- Developer Guide
- Setup and Prerequisites
- Working with Cloud Shell
- Working with the Command Line Interface (CLI)
- ▼ SDK Guides
- SDK for Java

#### SDK for Python

SDK for Ruby SDK for Go

### SDK for Python

The Oracle Cloud Infrastructure SDK for Python enables you to write code to manage Oracle Cloud Infrastructure resources.

This SDK and sample is dual-licensed under the Universal Permissive License 1.0 and the Apache License 2.0; third-party content is separately licensed as described in the code.

**Download:** The SDK for Python is available on <u>GitHub</u> or the <u>Python Package Index (PyPi)</u> ↔.

Documentation: Available on readthedocs.io ↔.

#### Services Supported

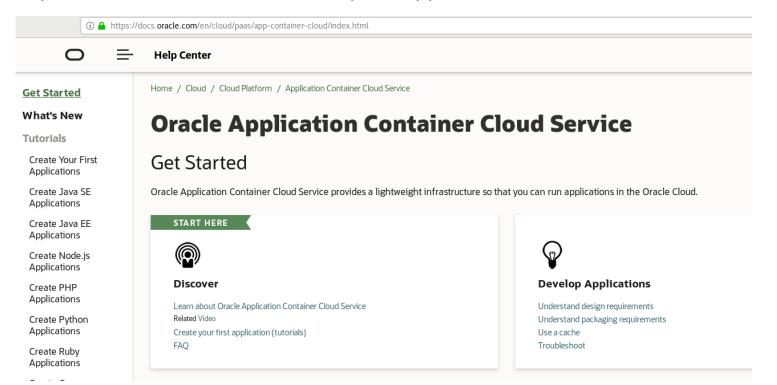
- Analytics Cloud
- Announcements





## 4.2 - Oracle Application Container Cloud Service:

https://docs.oracle.com/en/cloud/paas/app-container-cloud/index.html







4.2 - Oracle Application Container Cloud Service : Deploy a Python Application to Oracle Cloud

## 3- Steps:

- Create a Python Application
- Prepare the Application for Deployment
- Deploy Your Application to Oracle Application Container Cloud Service





# - Python and Oracle DBA career?

## - Oracle Database Administrator L3 role

We are currently looking for a Oracle Database Administrator L3 to integrated to a team dedicated to a digital transformation on client's infrastructure in the context of missions for a client in sea transport business.

#### Your role:

- . Maintain existing databases by investigating key factors (storage, input/output frequencies, access time etc.) and unusual incidents and problems
- . Install patches and upgrade software to enhance database performance and compliance
- · Maintain and manage database backup and recovery, data propagation (replication) and performance monitoring/tuning.
- Oracle DBA Monitors database disk space usage and perform RCA of database issues and recommend solutions or workaround.
- · Research, recommend and implement automation methods to proactively manage databases.
- Perform database design tasks related to the structure of a database including analysis, logical data model review, and physical database design.
- . Implement monitoring procedures to maximize availability and performance of the database.
- Participate and/or take a lead role with the infrastructure and database configurations/changes, upgrades etc.
- Offer based on an indefinite-term employment contract which term is linked to a temporary assignment

#### Required Expertise

- · Ability to drive projects in international environment
- · Strong drive on technical experts
- . Minimum 3 years of experience in administering of Oracle databases and Oracle Goldengate
- Good knowledge of Oracle 11g and Oracle 12c architecture
- · Experience with database optimization and SQL tuning
- Good knowledge of administrative tasks in Oracle 11g and Oracle 12c
- . Good knowledge and experience with following Oracle products and technologies: RAC, ASM, Data Guard, RMAN, Cloud Control
- . Good knowledge of SQL, PL/SQL
- . Good knowledge of administration of Linux/UNIX OS in terms of database management

#### Preferred Expertise

- · Experience in ExaData administration
- Experience in administering databases in Oracle Public Cloud
- Programming in BASH, PERL, Python
- · Certificates OCM, OCE RAC, OCE Data Guard
- French speaker required



## - Python and Oracle DBA career?

- Oracle DBA role

Title: Oracle DBA

Length: 12+ Months Contract

Location: Tarrytown, NY

Job Description

Key Responsibilities:

Works as part of the team to provide technical support for applications that have database requirements, including requirements gathering, through installation, configuration, testing and other production.

Expertise on database versions 11g,12c,18c including upgrades. Expertise with automating repetitive tasks using shell/python scripts.

Expertise with configuring and maintaining RAC clusters and Dataguard configurations. Experience with SQL and PL/SQL tuning, including in-depth tuning analysis with highly complex and vendor supplied code Experience working in a Linux/Unix environment, with equivalent experience writing, maintaining, and/or debugging operating system shell scripts Experience with database Backups, including RMAN, RMAN in a Data Guard Environment, classic export/import, and Oracle data pump. Experience working with traditional Data Warehousing databases, including Database Design and implementation skills, tuning and troubleshooting, Design, Installation, configuration, patching and upgrading of database server software and related products. Establish and maintain sound recovery and backup policies and procedures Implement and maintain database security (create and maintain users and roles, assign privileges). Ensuring data integrity and availability Establish and execute periodic disaster recovery testing Performance management, and tuning Database management, monitoring, and maintenance Capacity planning, Database licensing, Database security and encryption Evaluation of database features and database related products Provide Database compliance for Sarbanes Oxley (SOX)

Seniority level: Entry level Employment type: Full-time

Job function: Information Technology

Industries: Information Technology and ServicesComputer SoftwareFinancial Services



100000

# - Python and Oracle DBA career? - Oracle Database Administrator

Title: Oracle Database Administrator

What will you be doing in this role?

Installs and upgrades database software on the following server platforms and ensures license compliance: Oracle on RHEL/AIX, SQL Server on Windows, MySQL on RHEL

Performs database migrations from on-prem to AWS RDS and EC2 instances

Manages storage associated with Oracle/SQL Server/MySQL databases and assists system administrators with storage allocation and planning related to the database.

Monitors and optimizes the performance of Oracle instances in a networked environment.

Monitors and optimizes the performance of SQL Server and MySQL instances in a networked environment.

Designs and implements viable database backup, recovery, and high availability strategies and mechanisms. Executes database recovery, restoration, and/or restart as required.

Defines and implements database security, audit, and resource allocation policies and procedures. Defines, creates, and manages user accounts, profiles, privileges, roles, and required audit information.

Monitors and optimizes database instance using database administration tools, SQL scripts, and database utilities. Monitors SGA, resource utilization, and configures database parameters accordingly.

Designs and implements the data extraction, data load, and database synchronization routines and functions.

Assists in specification and implementation of tables, views, indexes, integrity, security, and business rules using DDL, DCL, DML, and PL/SQL functions, procedures, and packages.

Provides on-call support for enterprise-wide databases and responds to incidents in a timely manner.

#### Requirements:

Bachelor's Degree in related field or equivalent experience.

Requires 3 years in production database administration experience in a Production environment

Requires experience in project management, systems and database administration and integration, user relations, and vendor interactions.

Requires solid experience in monitoring, tuning, and administrating Oracle 11g/12c and/or SQL Server 2012/2014/2016 databases

Requires solid experience installing, configuring, and administering Oracle RAC and Oracle ASM.

Requires solid experience with, Oracle SQL\*NET, SQL\*Loader, SQL Plus and Import/Export utilities in a Windows server or Linux environment.

What else are we looking for?

Experience with patient care-oriented databases and hospital-based financial and administrative database applications preferred.

Experience with MySQL administration a plus

Experience with cloud technologies a plus, especially AWS (RDS/EC2)

Experience with Epic Clarity administration a plus

Requires experience in SQL, DDL, DCL, and DML programming. PowerShell, Python and/or Shell Scripting a plus.

Oracle or SQL Server DBA Certification required

Knowledge of Oracle Enterprise Manager, Oracle Internet Directory and/or WebLogic is preferred.





# I'm Speaking

**Beginner-friendly Python for Oracle Techies** 



# Oracle Groundbreakers Online Ualra 2020

Date: 1-16 July 2020

https://ogyatra.in/

#OGYatra









BRUNO REIS DA SILVA
Senior Oracle DBA &
Database Cloud Support
Engineer
IBM

# "Beginner-friendly Python for Oracle Techies"

Thursday, July 2, 2020

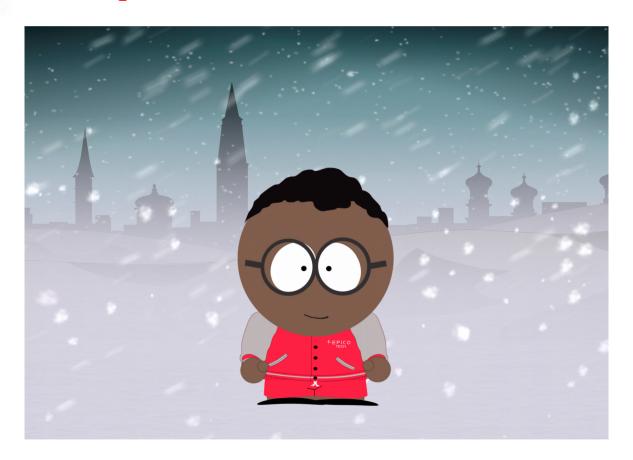
03:00 - 04:00 PM (GMT+5:30)

Place: Zoom Webinars

Global Webinar Series (APAC, EMEA, AMS)

14 Days, 125+ Hrs, 75+Sessions, 100+ Speakers from 25+ Countries

## **QUESTIONS?**







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