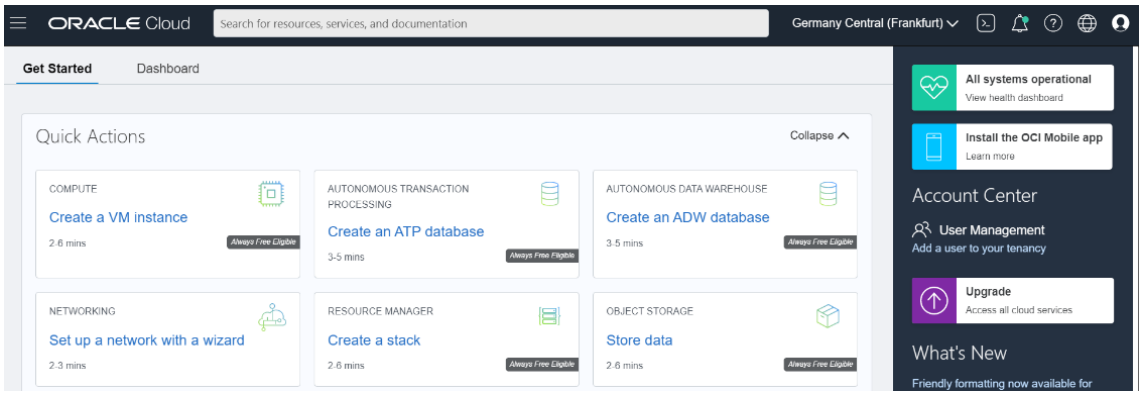
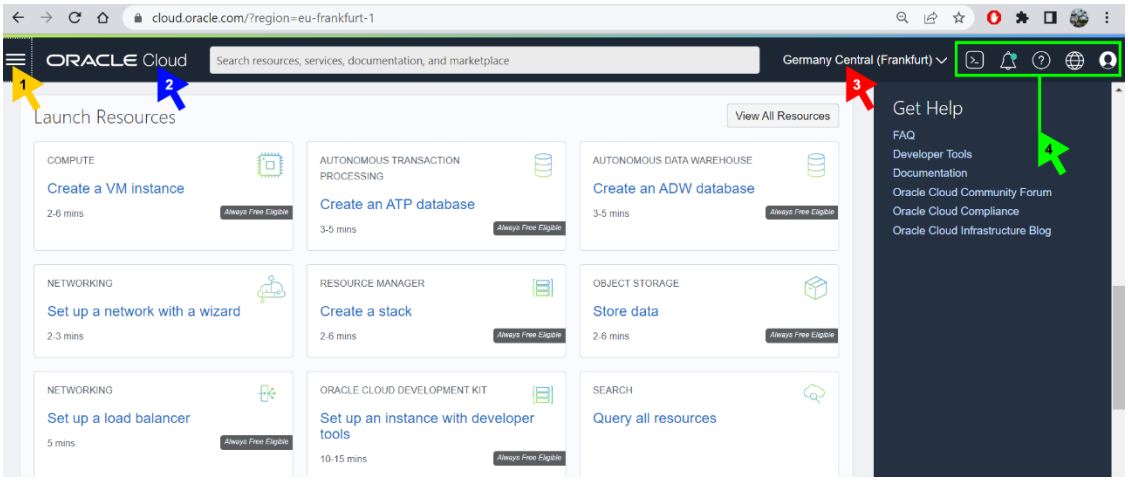
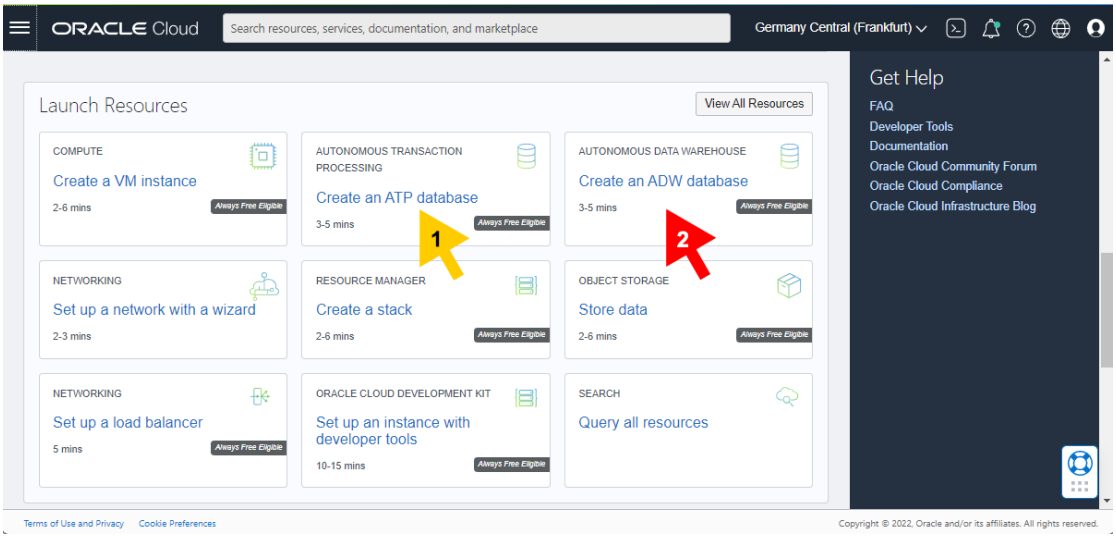
Chapter 1: Oracle Cloud Fundamentals







Provide basic information for the Autonomous Database

Compartment

kvetmichal (root)

Display name

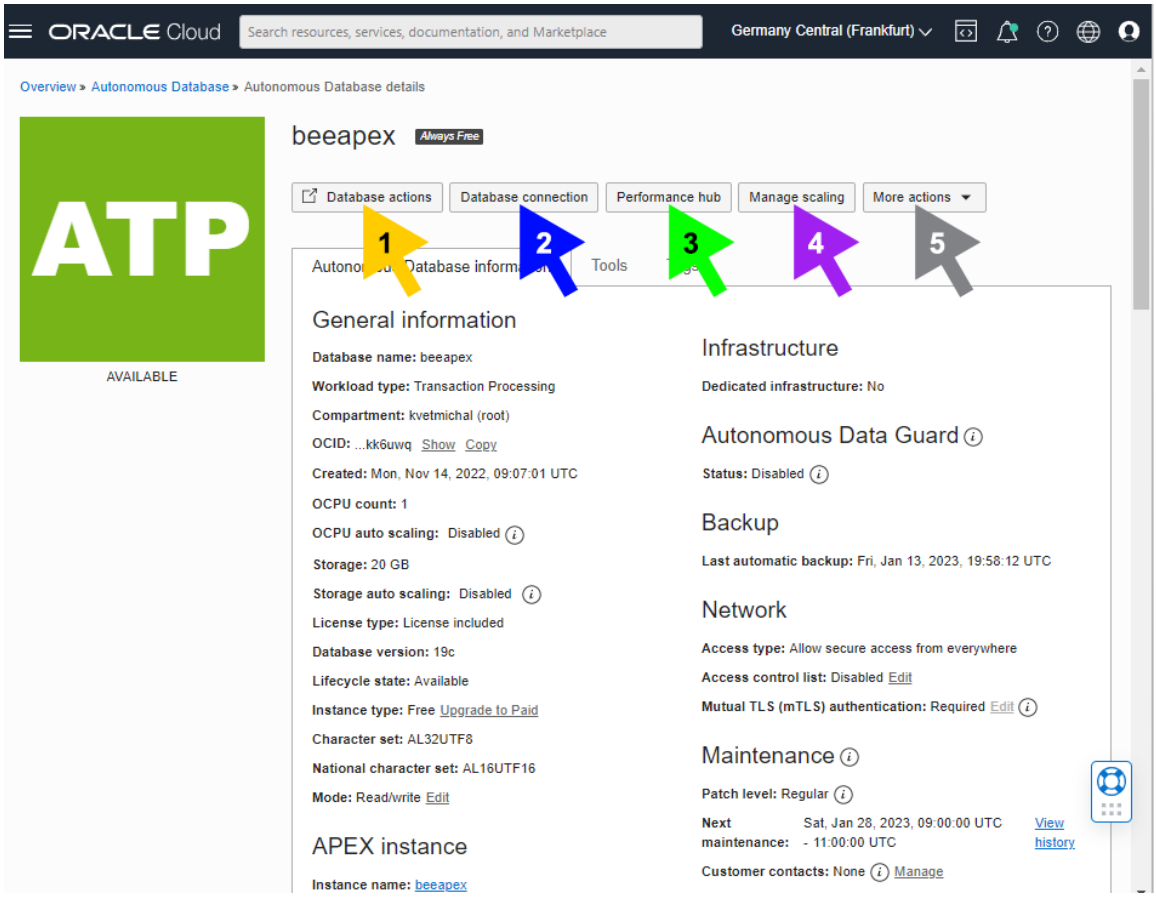
Database_for_library

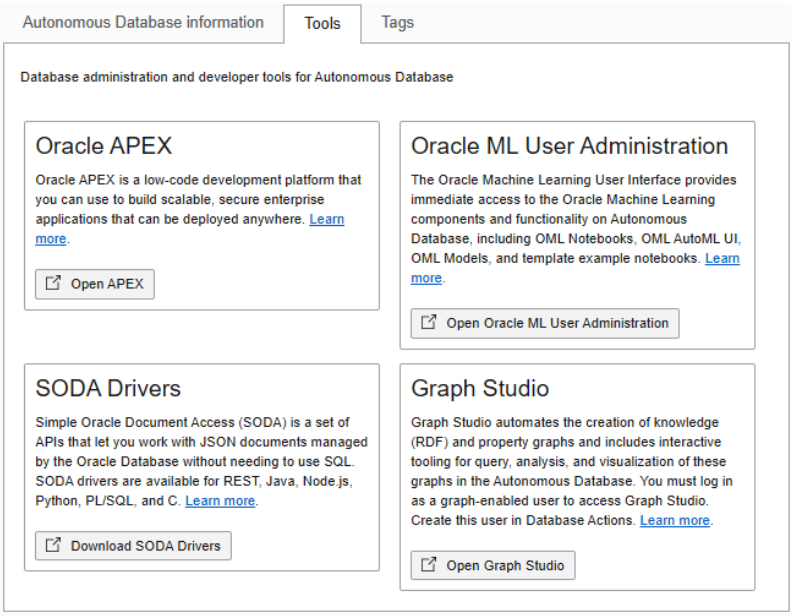
A user-friendly name to help you easily identify the resource.

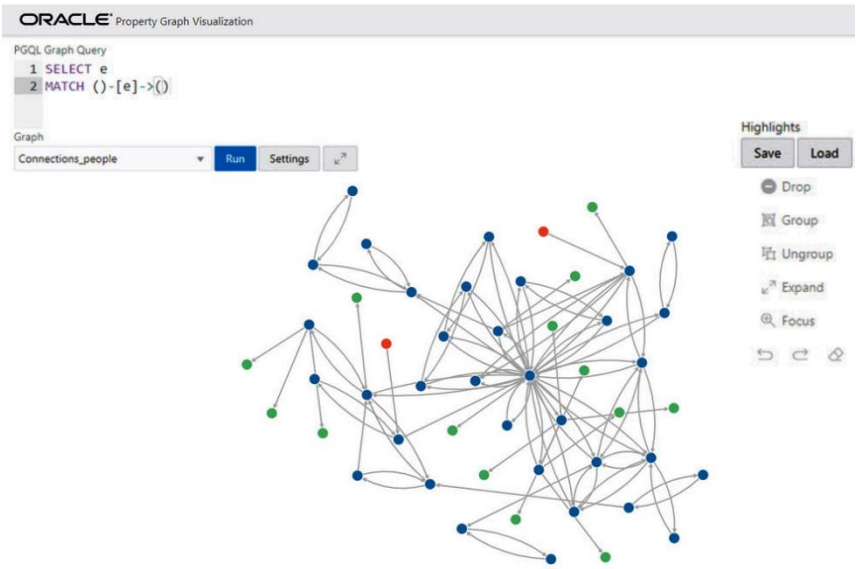
Database name

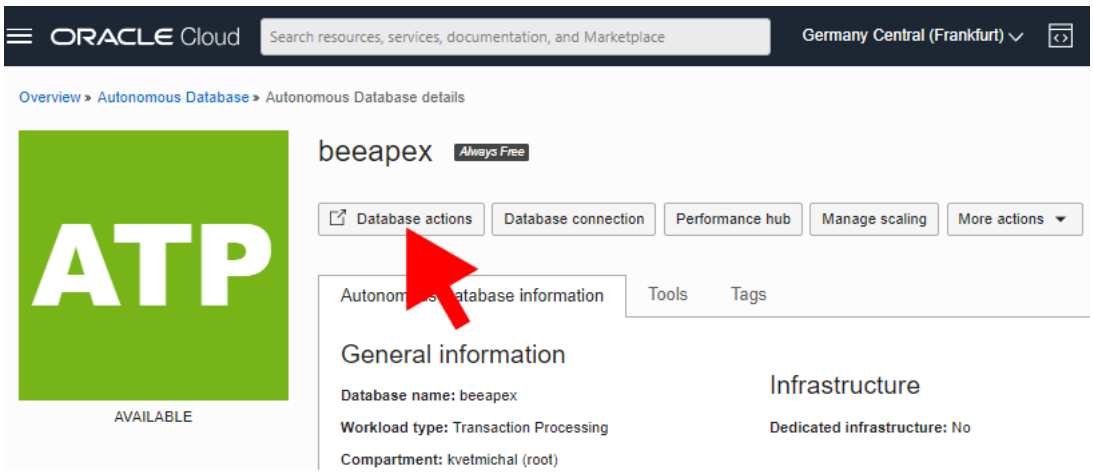
libraryDB

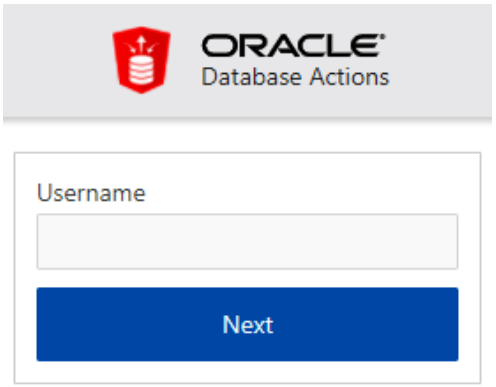
The name must contain only letters and numbers, starting with a letter. Maximum of 30 characters.

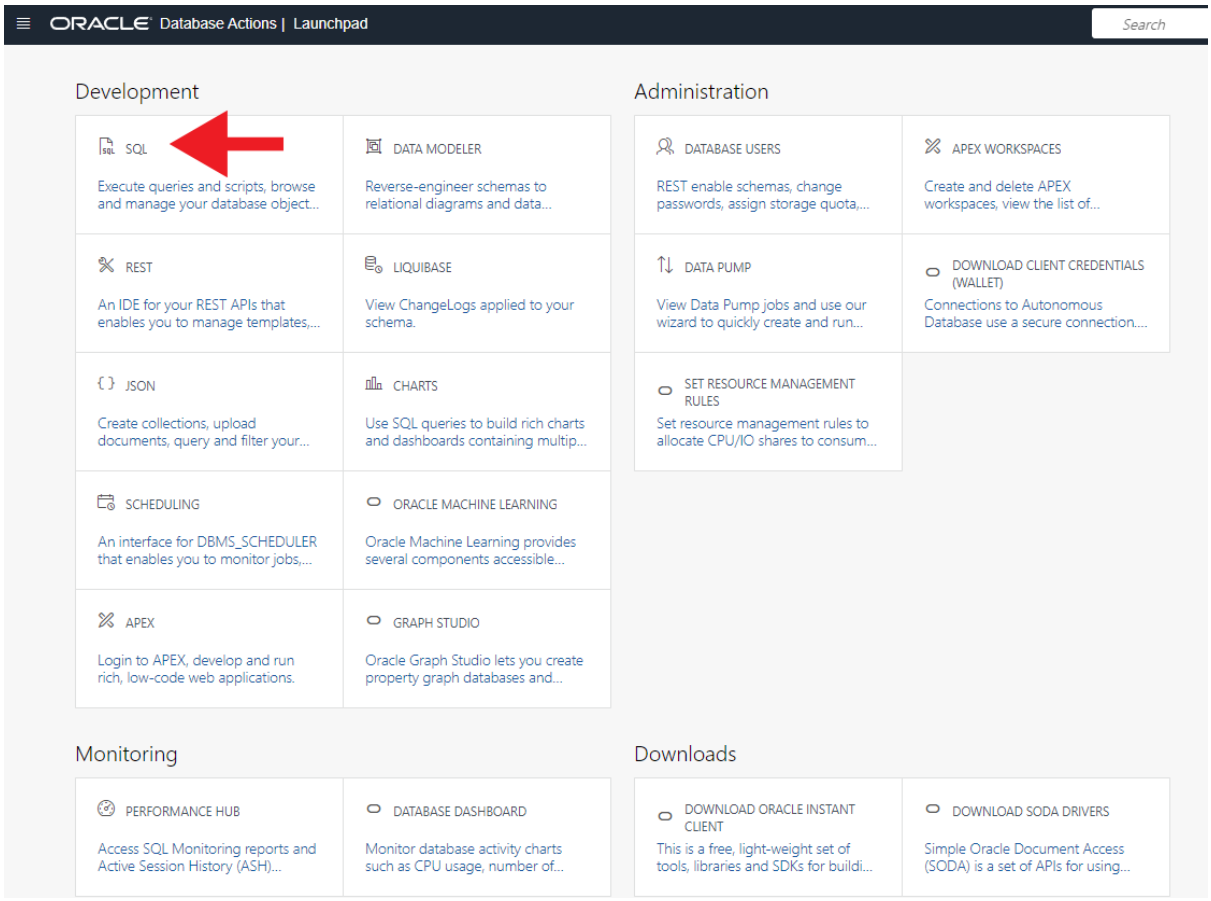


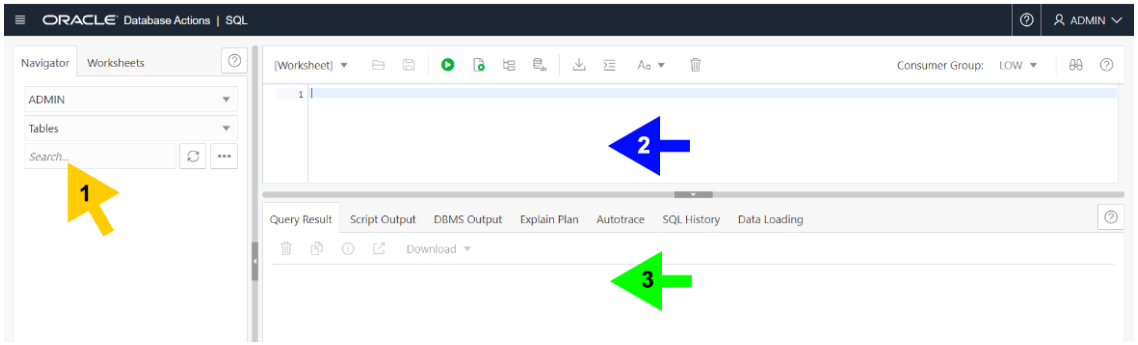

Autonomous Database information
Tools
Tags
Database administration and developer tools for Autonomous Database
Oracle APEX
Oracle APEX is a low-code development platform that you can use to build scalable, secure enterprise applications that can be deployed anywhere. Learn more.
Open APEX
Oracle ML User Administration
The Oracle Machine Learning User Interface provides immediate access to the Oracle Machine Learning components and functionality on Autonomous Database, including OML Notebooks, OML AutoML UI, OML Models, and template example notebooks. Learn more.
Open Oracle ML User Administration
SODA Drivers
Simple Oracle Document Access (SODA) is a set of APIs that let you work with JSON documents managed by the Oracle Database without needing to use SQL. SODA drivers are available for REST, Java, Node.js, Python, PL/SQL, and C. Learn more.
Download SODA Drivers
Graph Studio
Graph Studio automates the creation of knowledge (RDF) and property graphs and includes interactive tooling for query, analysis, and visualization of these graphs in the Autonomous Database. You must log in as a graph-enabled user to access Graph Studio. Create this user in Database Actions. Learn more.
Open Graph Studio

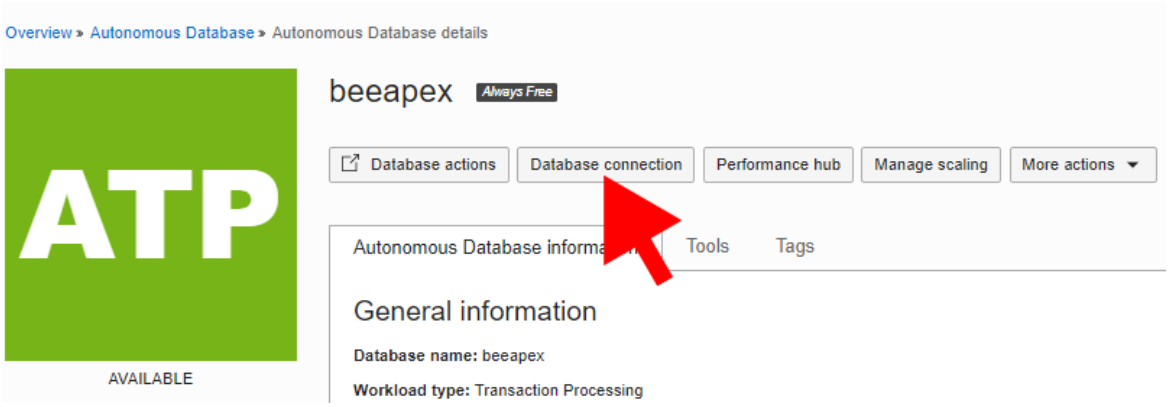

ORACLE Property Graph Visualization
PGQL Graph Query
1 SELECT e
2 MATCH ()-[e]->()
Graph
Connections_people
Run
Settings
Highlights
Save
Load
Drop
Group
Ungroup
Expand
Focus


ORACLE Cloud
Search resources, services, documentation, and Marketplace
Germany Central (Frankfurt)
Overview » Autonomous Database » Autonomous Database details
ATP
AVAILABLE
beeapex
Always Free
Database actions
Database connection
Performance hub
Manage scaling
More actions
Tools
Tags
General information
Database name: beeapex
Workload type: Transaction Processing
Compartment: kvetmichal (root)
Infrastructure
Dedicated infrastructure: No


ORACLE
Database Actions
Username
Next


ORACLE Database Actions | Launchpad
Search
Development
SQL
Execute queries and scripts, browse and manage your database object...
DATA MODELER
Reverse-engineer schemas to relational diagrams and data...
REST
An IDE for your REST APIs that enables you to manage templates,...
LIQUIBASE
View ChangeLogs applied to your schema.
JSON
Create collections, upload documents, query and filter your...
CHARTS
Use SQL queries to build rich charts and dashboards containing multip...
SCHEDULING
An interface for DBMS_SCHEDULER that enables you to monitor jobs,...
ORACLE MACHINE LEARNING
Oracle Machine Learning provides several components accessible...
APEX
Login to APEX, develop and run rich, low-code web applications.
GRAPH STUDIO
Oracle Graph Studio lets you create property graph databases and...
Administration
DATABASE USERS
REST enable schemas, change passwords, assign storage quota,...
APEX WORKSPACES
Create and delete APEX workspaces, view the list of...
DATA PUMP
View Data Pump jobs and use our wizard to quickly create and run...
DOWNLOAD CLIENT CREDENTIALS (WALLET)
Connections to Autonomous Database use a secure connection....
SET RESOURCE MANAGEMENT RULES
Set resource management rules to allocate CPU/IO shares to consum...
Monitoring
PERFORMANCE HUB
Access SQL Monitoring reports and Active Session History (ASH)...
DATABASE DASHBOARD
Monitor database activity charts such as CPU usage, number of...
Downloads
DOWNLOAD ORACLE INSTANT CLIENT
This is a free, light-weight set of tools, libraries and SDKs for buildi...
DOWNLOAD SODA DRIVERS
Simple Oracle Document Access (SODA) is a set of APIs for using...


ORACLE Database Actions | SQL
ADMIN
Navigator
Worksheets
ADMIN
Tables
Search...
1
(Worksheet)
Consumer Group: LOW
2
Query Result
Script Output
DBMS Output
Explain Plan
Autotrace
SQL History
Data Loading
Download
3



Download client credentials (Wallet)

To download your client credentials, select the wallet type, and click **Download wallet**. You then enter a password for the wallet. This client credential download only contains information for mTLS connections. **You do not need a wallet for TLS connections.**

Wallet type

Instance Wallet

Download wallet | Rotate wallet

Database Connection

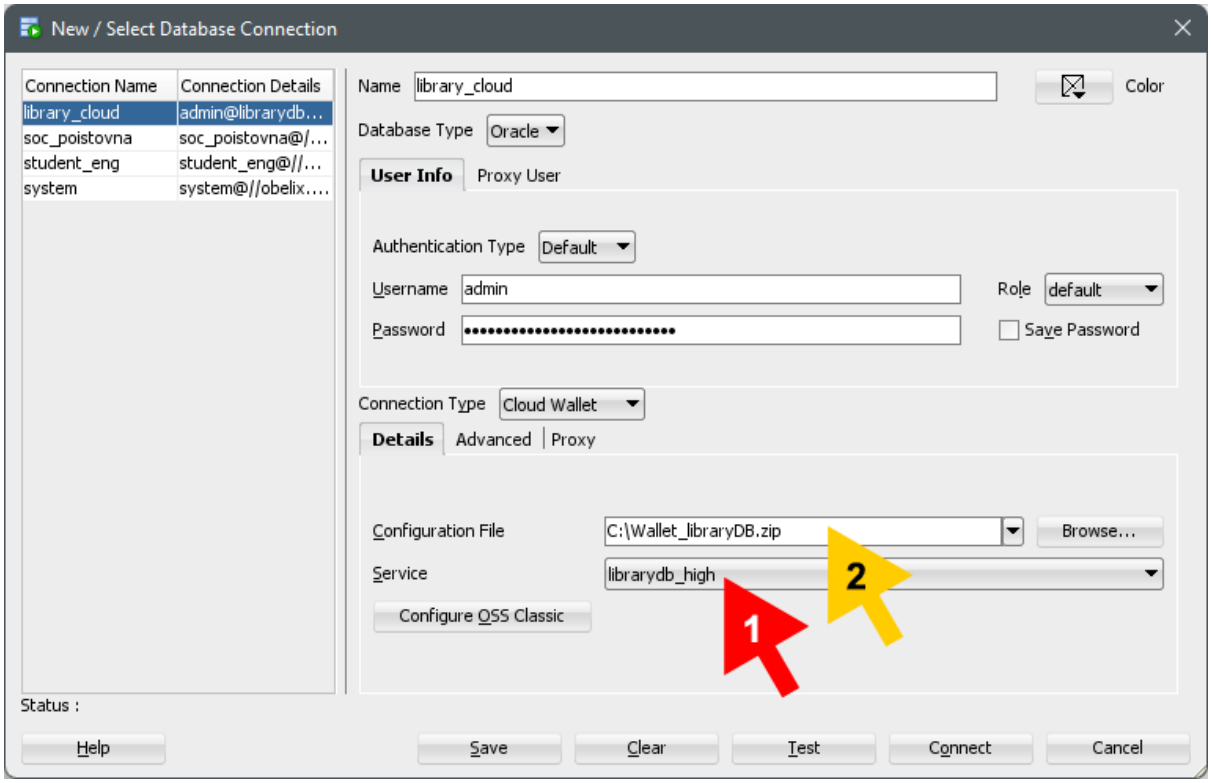
Connection Strings

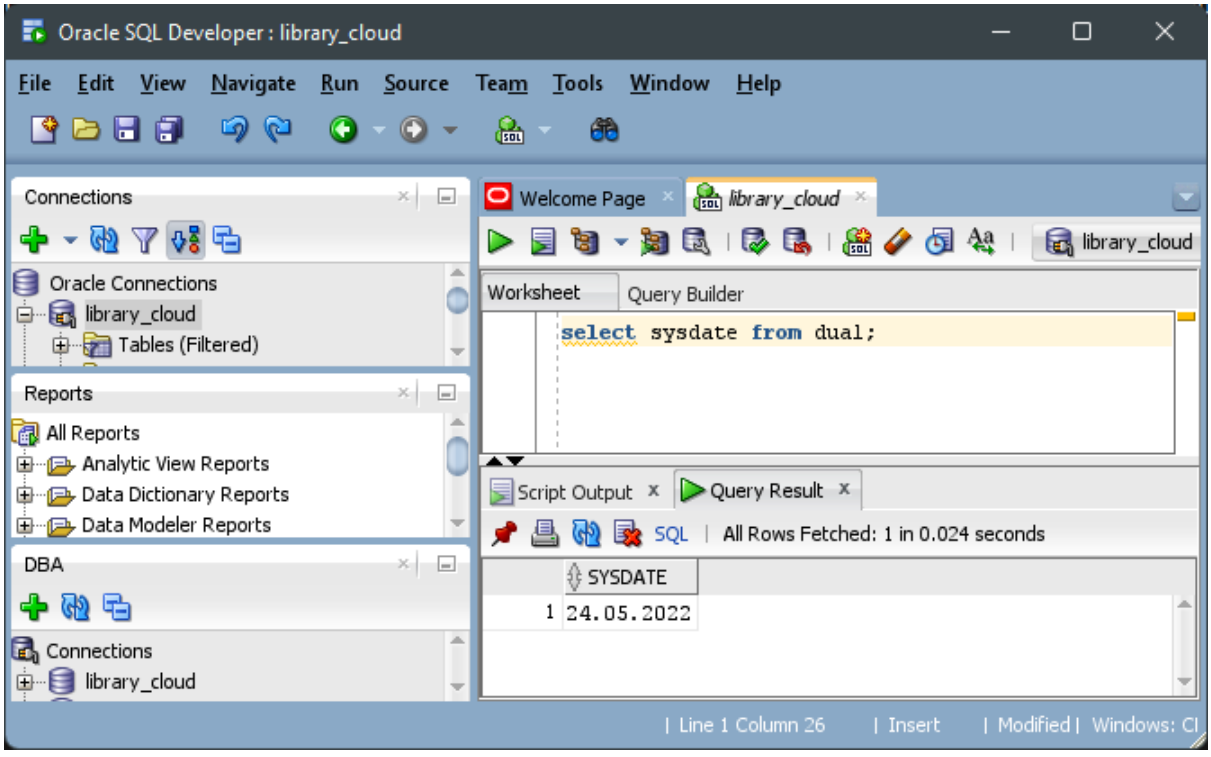
Use the following connection strings or TNS names for your connections. See the documentation for details.

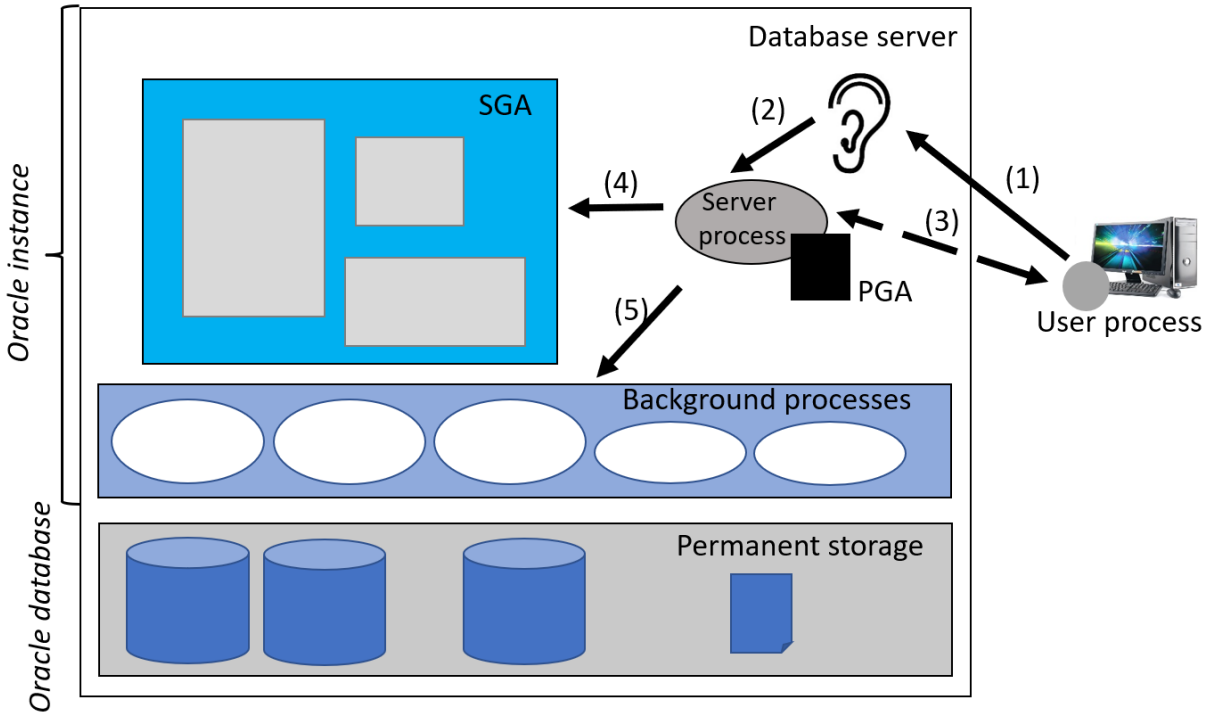
TLS Authentication

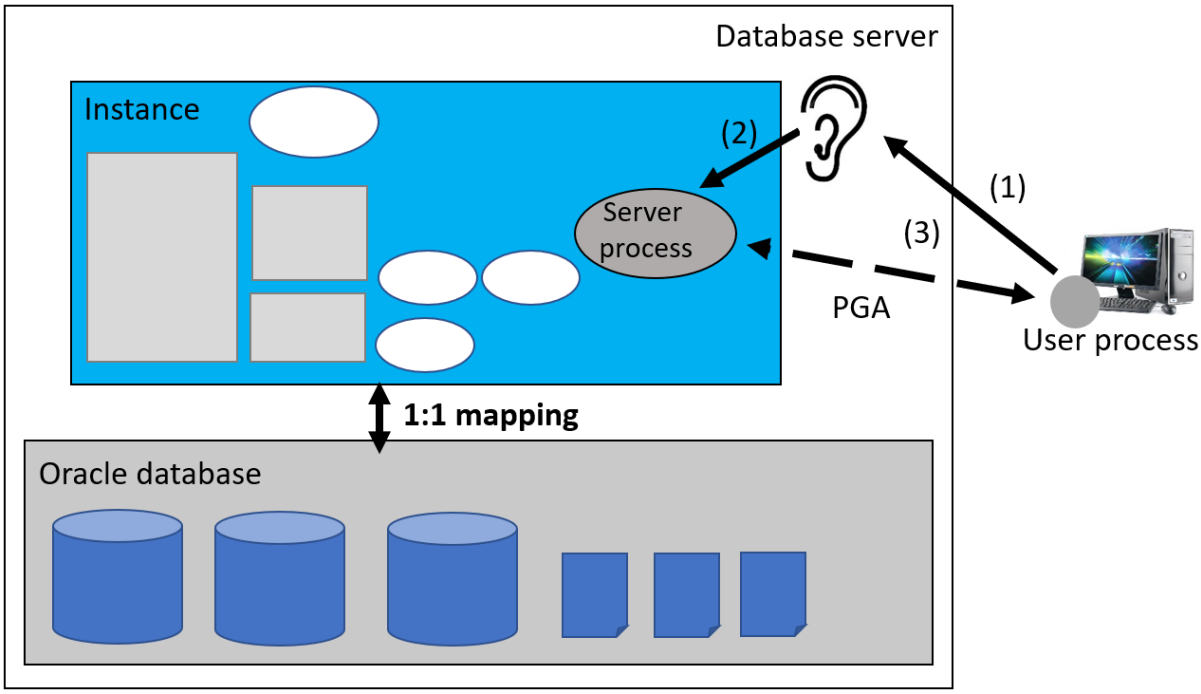
Mutual TLS

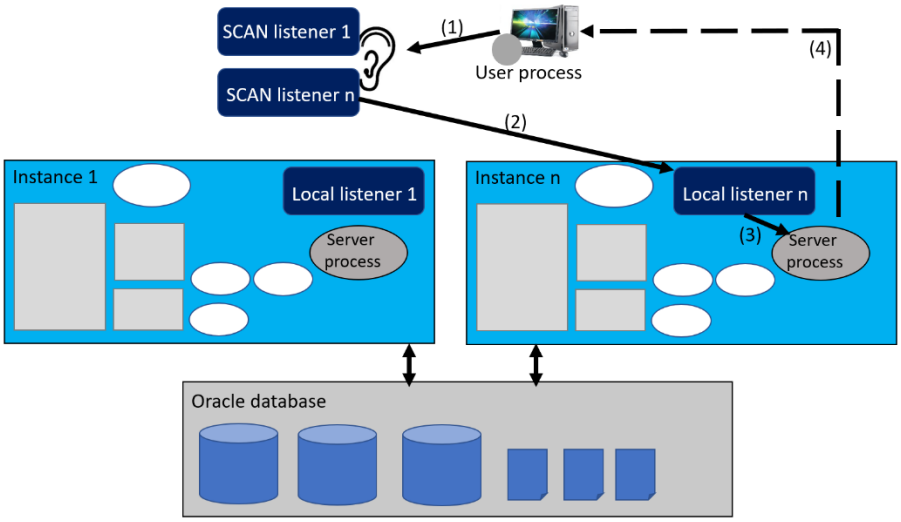
TNS Name	Connection String
librarydb_high	(description= (retry_count=20)(retry_delay=3)(address=(protocol=tcps)(port=1522)(host=adb.eu-frankfurt-1.oraclecloud.com))(connect_data=(service_name=fwuydcbkqbsqo83_librarydb_high.adb.oraclecloud.com))(security=(ssl_server_cert_dn="CN=adwc.eucom-central-1.oraclecloud.com, OU=Oracle BMCS FRANKFURT, O=Oracle Corporation, L=Redwood City, ST=California, C=US"))) Hide Copy
librarydb_low	...dwood City, ST=California, C=US"))) Show Copy
librarydb_medium	...dwood City, ST=California, C=US"))) Show Copy

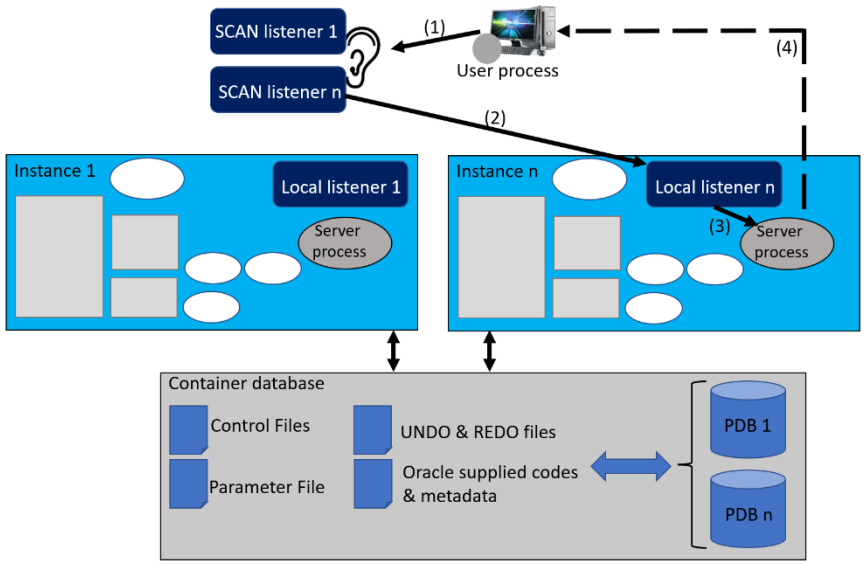

New / Select Database Connection
Connection Name
Connection Details
library_cloud
admin@librarydb...
soc_poistovna
soc_poistovna@/...
student_eng
student_eng@//...
system
system@//obelix....
Name
library_cloud
Color
Database Type
Oracle
User Info
Proxy User
Authentication Type
Default
Username
admin
Role
default
Password
Save Password
Connection Type
Cloud Wallet
Details
Advanced
Proxy
Configuration File
C:\Wallet_libraryDB.zip
Browse...
Service
librarydb_high
Configure OSS Classic
1
2
Status :
Help
Save
Clear
Test
Connect
Cancel

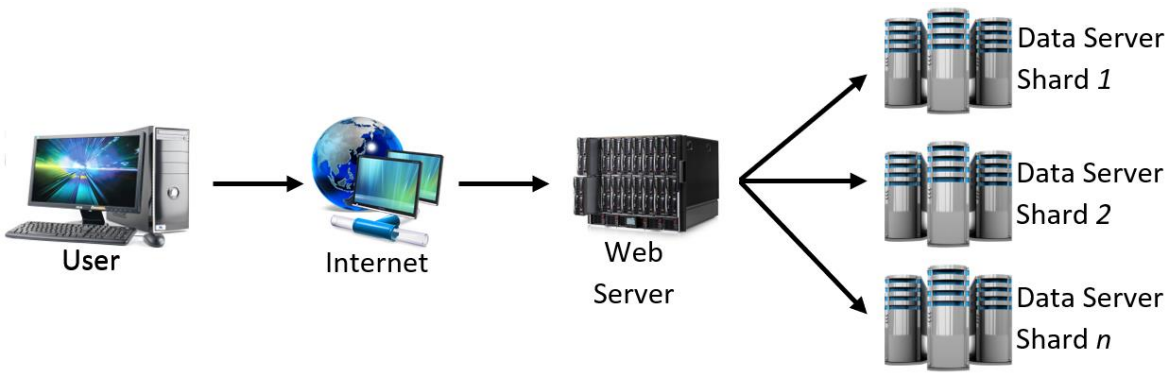

Oracle SQL Developer : library_cloud
File
Edit
View
Navigate
Run
Source
Team
Tools
Window
Help
Connections
Oracle Connections
library_cloud
Tables (Filtered)
Reports
All Reports
Analytic View Reports
Data Dictionary Reports
Data Modeler Reports
DBA
Connections
library_cloud
Welcome Page
library_cloud
Worksheet
Query Builder
select sysdate from dual;
Script Output
Query Result
SQL
All Rows Fetched: 1 in 0.024 seconds
SYSDATE
1
24.05.2022
Line 1 Column 26
Insert
Modified
Windows: Cl


Database server
SGA
(2)
(4)
Server process
(1)
(3)
PGA
User process
(5)
Background processes
Permanent storage
Oracle instance
Oracle database


Database server
Instance
(2)
Server process
(1)
(3)
PGA
User process
1:1 mapping
Oracle database

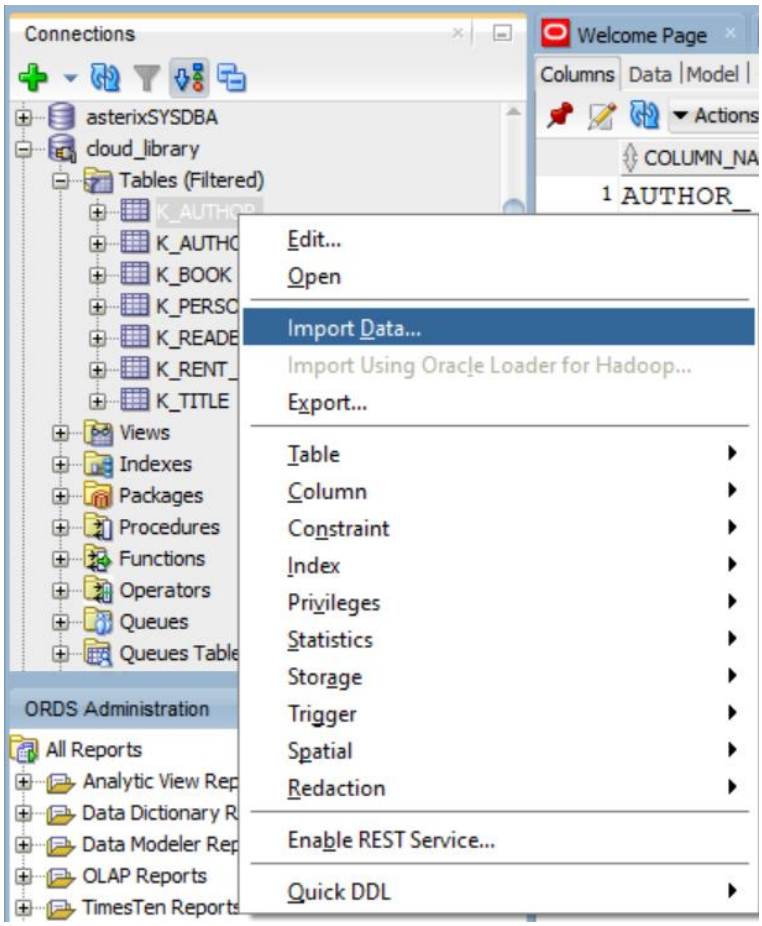

SCAN listener 1
SCAN listener n
(1)
User process
(4)
(2)
Instance 1
Local listener 1
Server process
Instance n
Local listener n
(3)
Server process
Oracle database

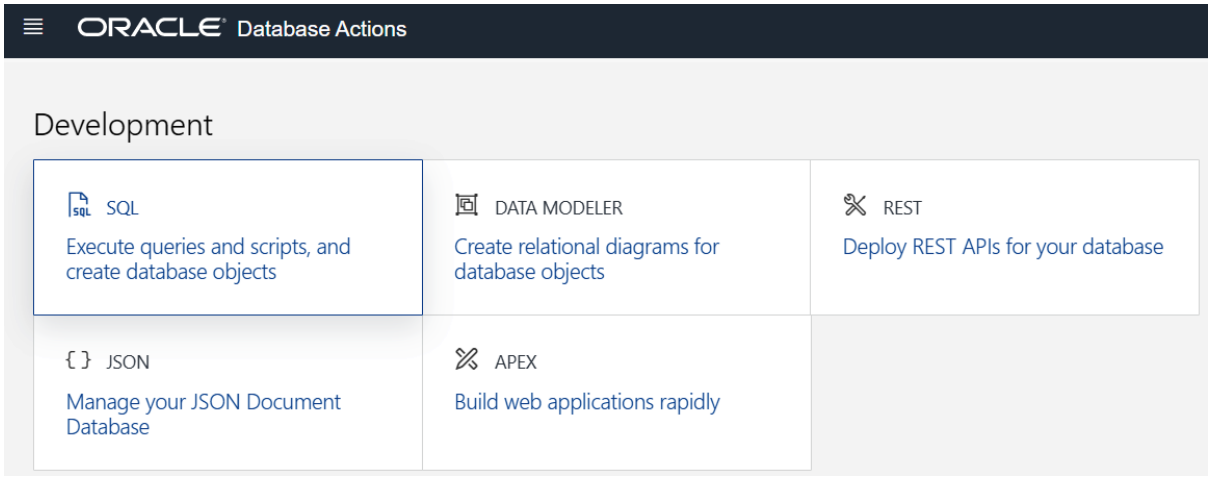

SCAN listener 1
SCAN listener n
(1)
User process
(4)
(2)
Instance 1
Local listener 1
Server process
Instance n
Local listener n
(3)
Server process
Container database
Control Files
Parameter File
UNDO & REDO files
Oracle supplied codes & metadata
PDB 1
PDB n

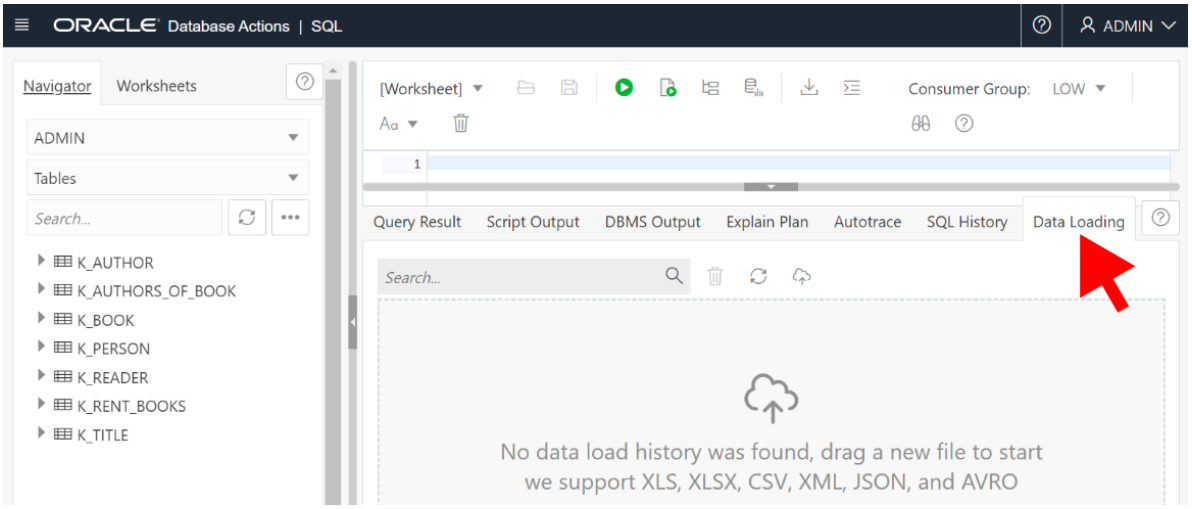

User
Internet
Web Server
Data Server Shard 1
Data Server Shard 2
Data Server Shard n

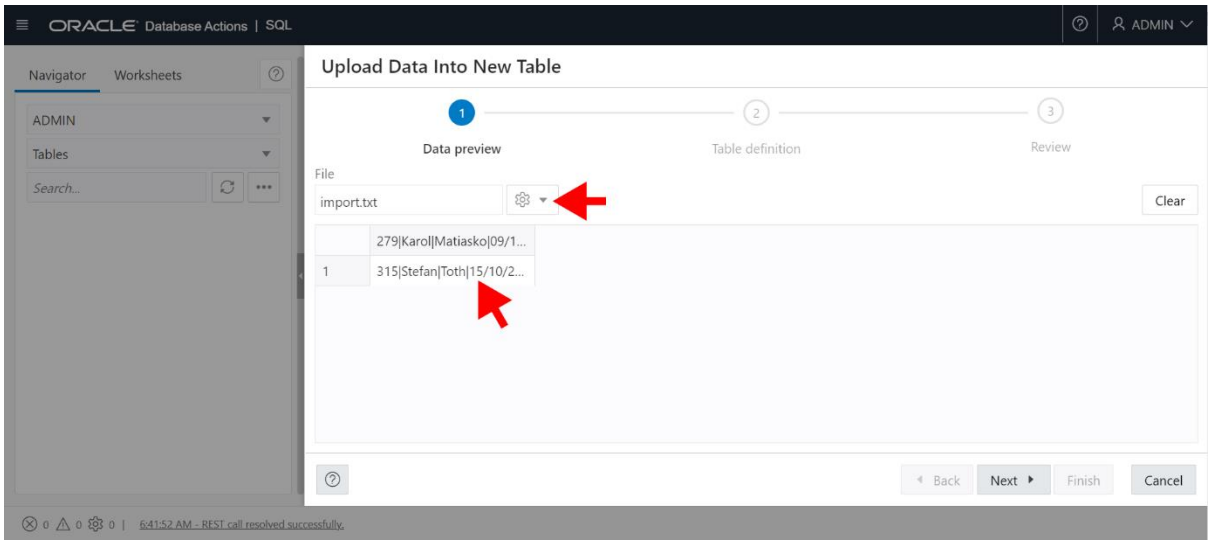
Chapter 2: Data Loading and Migration Perspectives

```
Enter user-name: admin@librarydb_high
Enter password:
Last Successful login time: Tue Mar 16 2021 10:22:28 +01:00

Connected to:
Oracle Database 21c Enterprise Edition Release 21.0.0.0.0 - Production
Version 21.2.0.0.0

Ahoj Michal :)

PL/SQL procedure successfully completed.

SQL> host sqlldr  admin@librarydb_high control='title.ctl'
Password:

SQL*Loader: Release 19.0.0.0.0 - Production on Tue Mar 16 15:34:27 2021
Version 19.8.0.0.0

Copyright (c) 1982, 2020, Oracle and/or its affiliates.  All rights reserved.

Path used:      Conventional
Commit point reached - logical record count 100

Table K_TITLE:
  100 Rows successfully loaded.
```

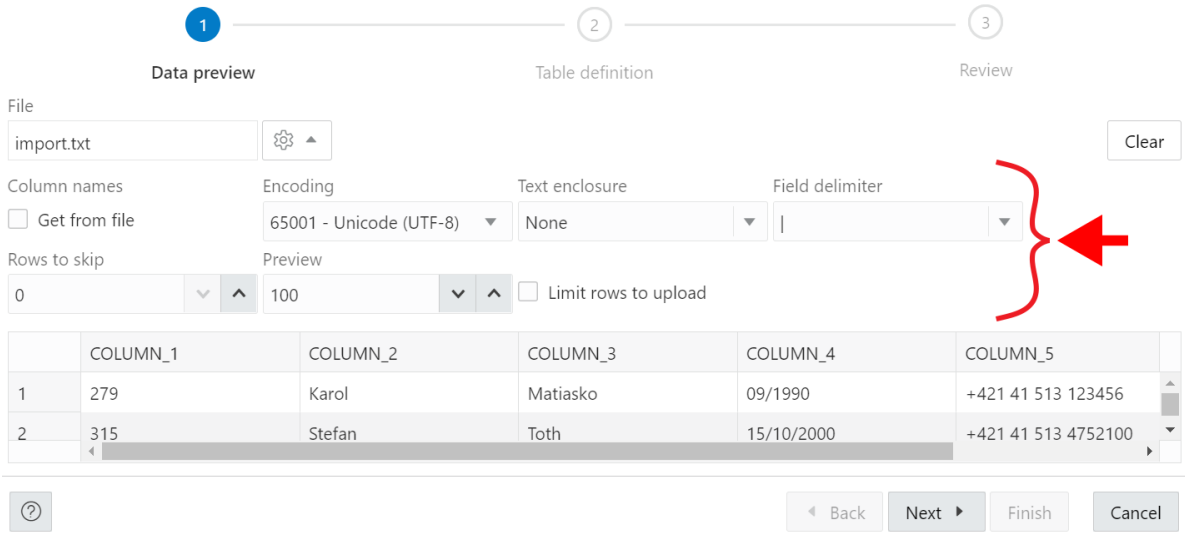


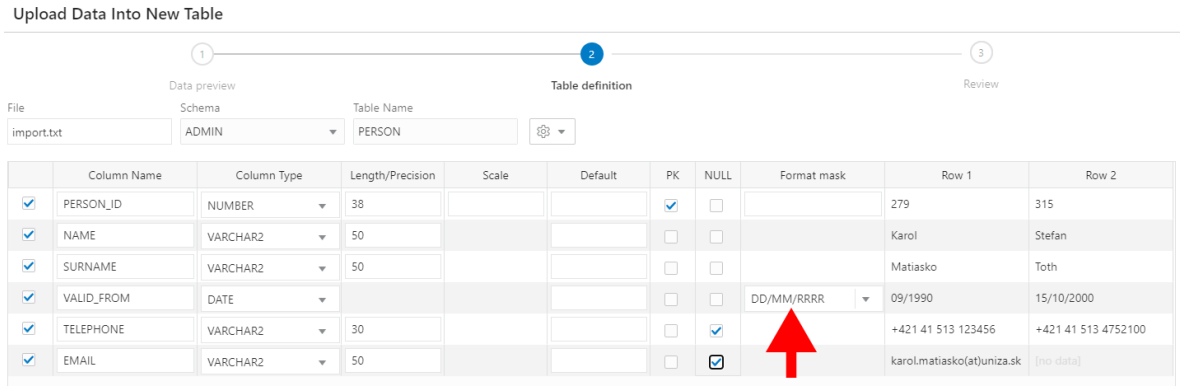

ORACLE Database Actions
Development
SQL
Execute queries and scripts, and create database objects
DATA MODELER
Create relational diagrams for database objects
REST
Deploy REST APIs for your database
JSON
Manage your JSON Document Database
APEX
Build web applications rapidly


ORACLE Database Actions | SQL
ADMIN
Navigator
Worksheets
ADMIN
Tables
Search...
K_AUTHOR
K_AUTHORS_OF_BOOK
K_BOOK
K_PERSON
K_READER
K_RENT_BOOKS
K_TITLE
[Worksheet]
Consumer Group: LOW
Query Result
Script Output
DBMS Output
Explain Plan
Autotrace
SQL History
Data Loading
Search...
No data load history was found, drag a new file to start
we support XLS, XLSX, CSV, XML, JSON, and AVRO


ORACLE Database Actions | SQL
ADMIN
Navigator
Worksheets
ADMIN
Tables
Search...
Upload Data Into New Table
1
Data preview
2
Table definition
3
Review
File
import.txt
Clear
279|Karol|Matiasko|09/1...
1
315|Stefan|Toth|15/10/2...
Back
Next
Finish
Cancel
6:41:52 AM - REST call resolved successfully.

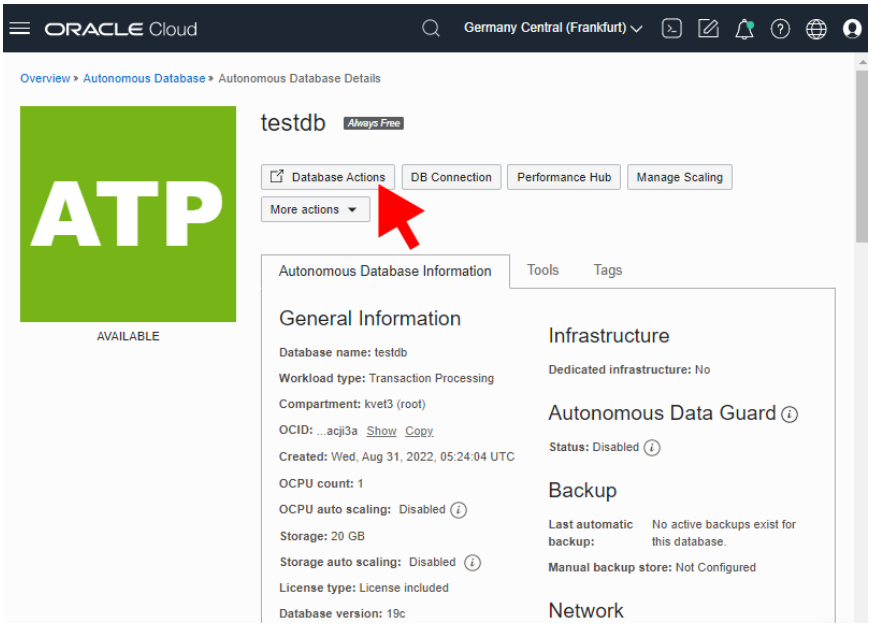
Upload Data Into New Table

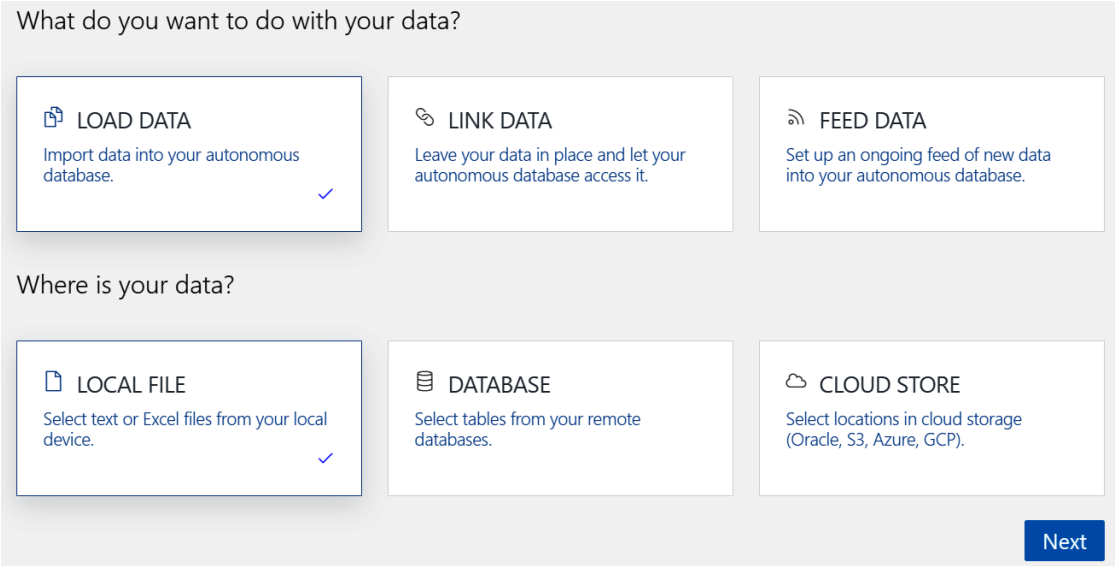


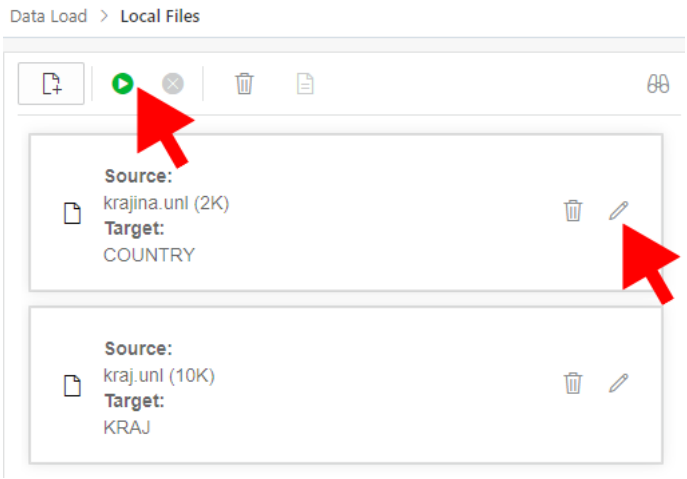


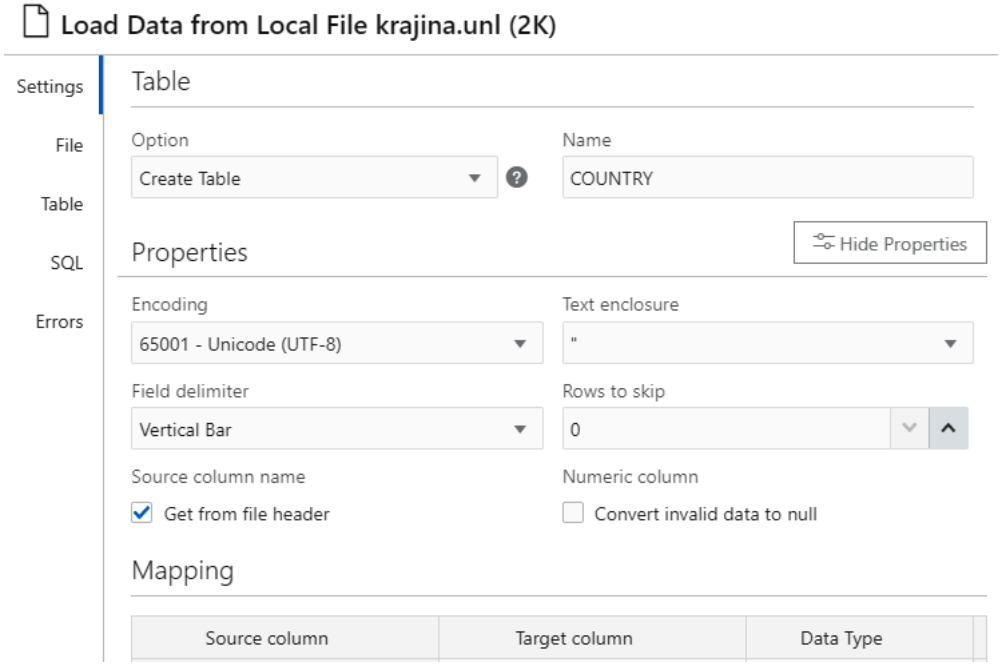
Failed rows

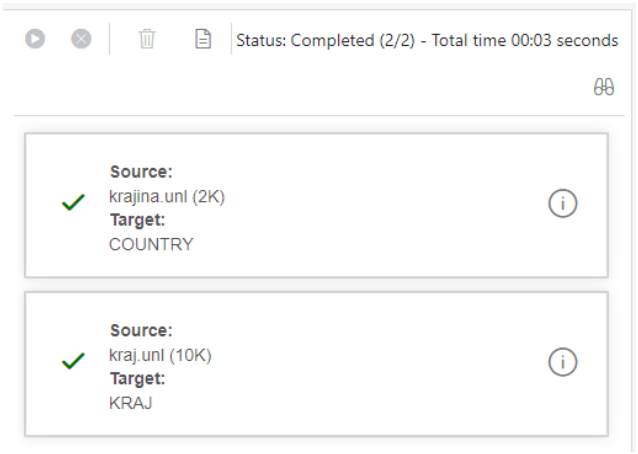
	Error Message	person_id	name	surname	valid_from	telephone	email
1	ORA-01843: not a valid month	279	Karol	Matiasko	09/1990	+421 41 513 12345	karol.matiasko(at)uniza.sk

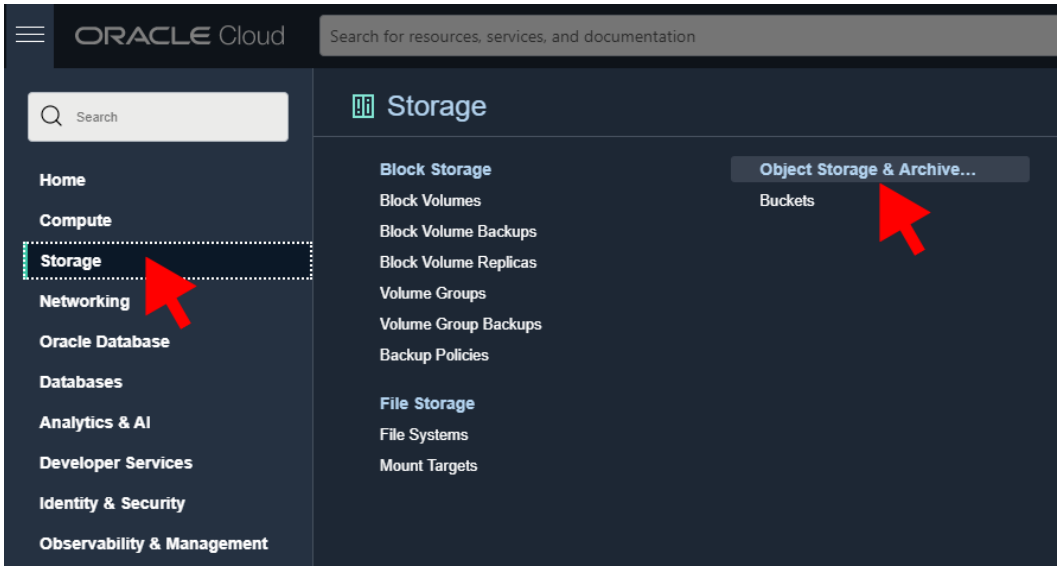

ORACLE Cloud
Germany Central (Frankfurt)
Overview » Autonomous Database » Autonomous Database Details
ATP
AVAILABLE
testdb
Always Free
Database Actions
DB Connection
Performance Hub
Manage Scaling
More actions
Autonomous Database Information
Tools
Tags
General Information
Database name: testdb
Workload type: Transaction Processing
Compartment: kvel3 (root)
OCID: ...acji3a Show Copy
Created: Wed, Aug 31, 2022, 05:24:04 UTC
OCPU count: 1
OCPU auto scaling: Disabled
Storage: 20 GB
Storage auto scaling: Disabled
License type: License included
Database version: 19c
Infrastructure
Dedicated infrastructure: No
Autonomous Data Guard
Status: Disabled
Backup
Last automatic backup: No active backups exist for this database.
Manual backup store: Not Configured
Network

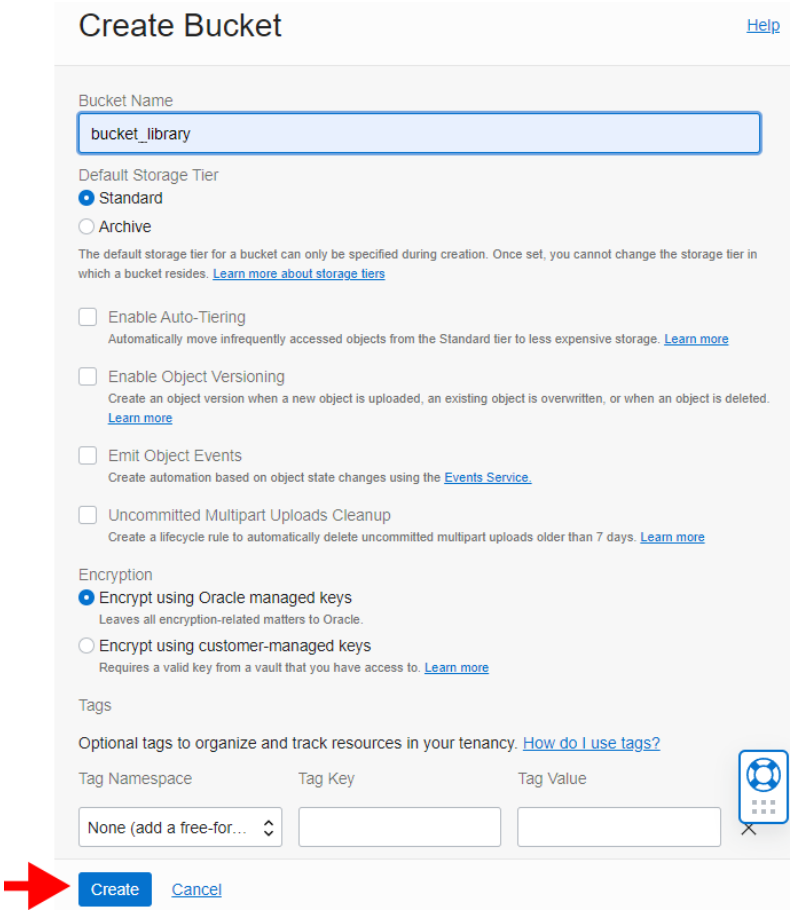

What do you want to do with your data?
LOAD DATA
Import data into your autonomous database.
LINK DATA
Leave your data in place and let your autonomous database access it.
FEED DATA
Set up an ongoing feed of new data into your autonomous database.
Where is your data?
LOCAL FILE
Select text or Excel files from your local device.
DATABASE
Select tables from your remote databases.
CLOUD STORE
Select locations in cloud storage (Oracle, S3, Azure, GCP).
Next

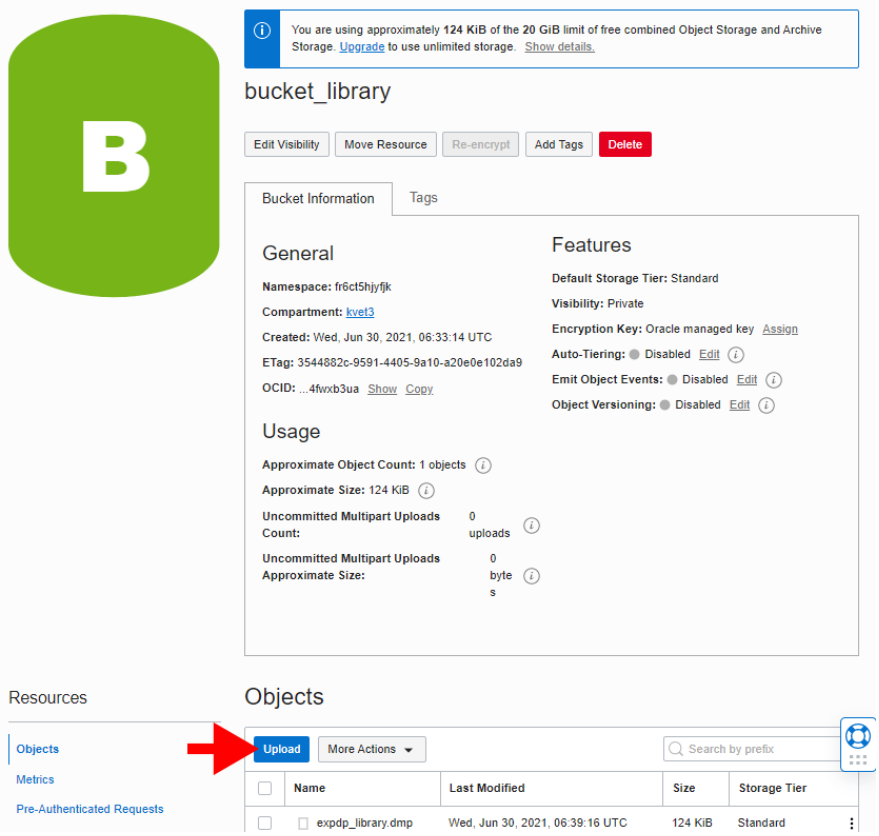

Data Load > Local Files
Source:
krajina.unl (2K)
Target:
COUNTRY
Source:
kraj.unl (10K)
Target:
KRAJ

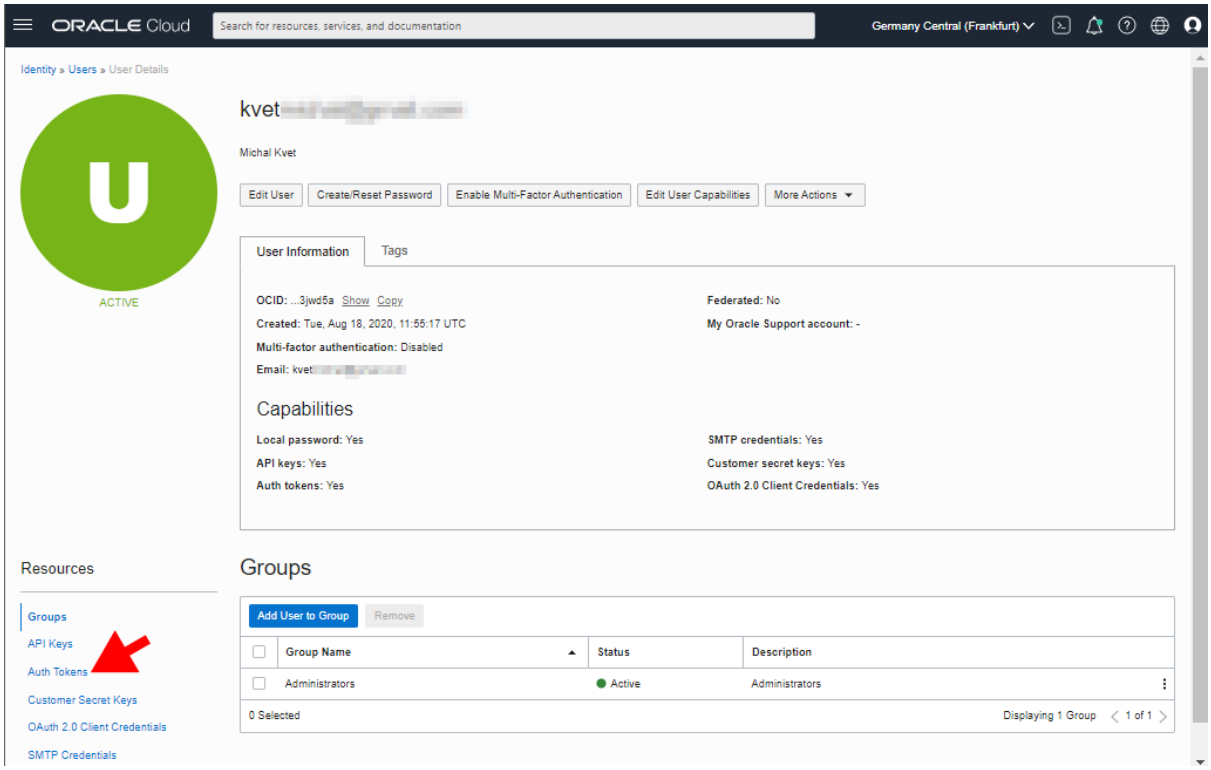

Load Data from Local File krajina.unl (2K)
Settings
File
Table
SQL
Errors
Table
Option
Create Table
Name
COUNTRY
Properties
Hide Properties
Encoding
65001 - Unicode (UTF-8)
Text enclosure
"
Field delimiter
Vertical Bar
Rows to skip
0
Source column name
Get from file header
Numeric column
Convert invalid data to null
Mapping
Source column
Target column
Data Type

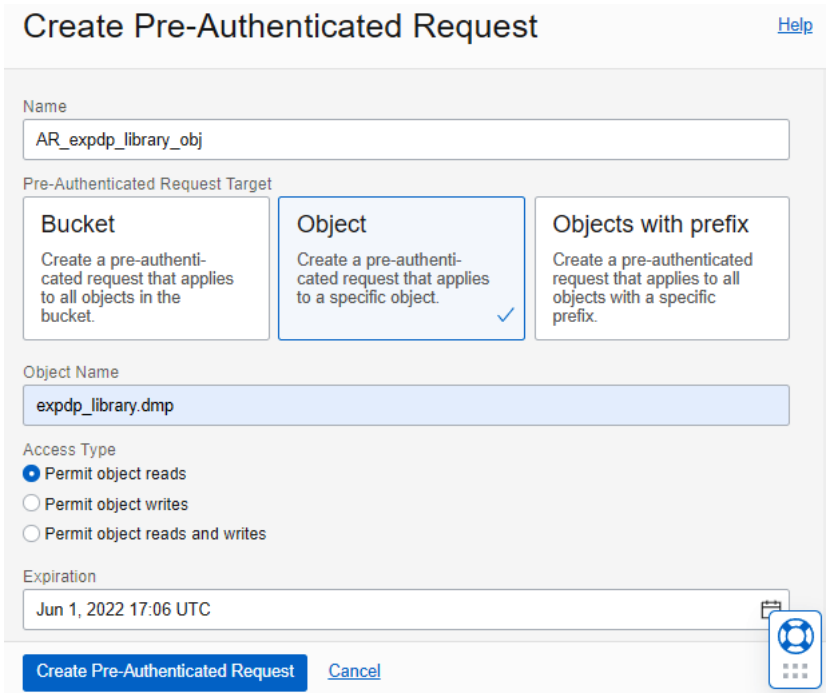

Status: Completed (2/2) - Total time 00:03 seconds
Source:
krajina.unl (2K)
Target:
COUNTRY
Source:
kraj.unl (10K)
Target:
KRAJ

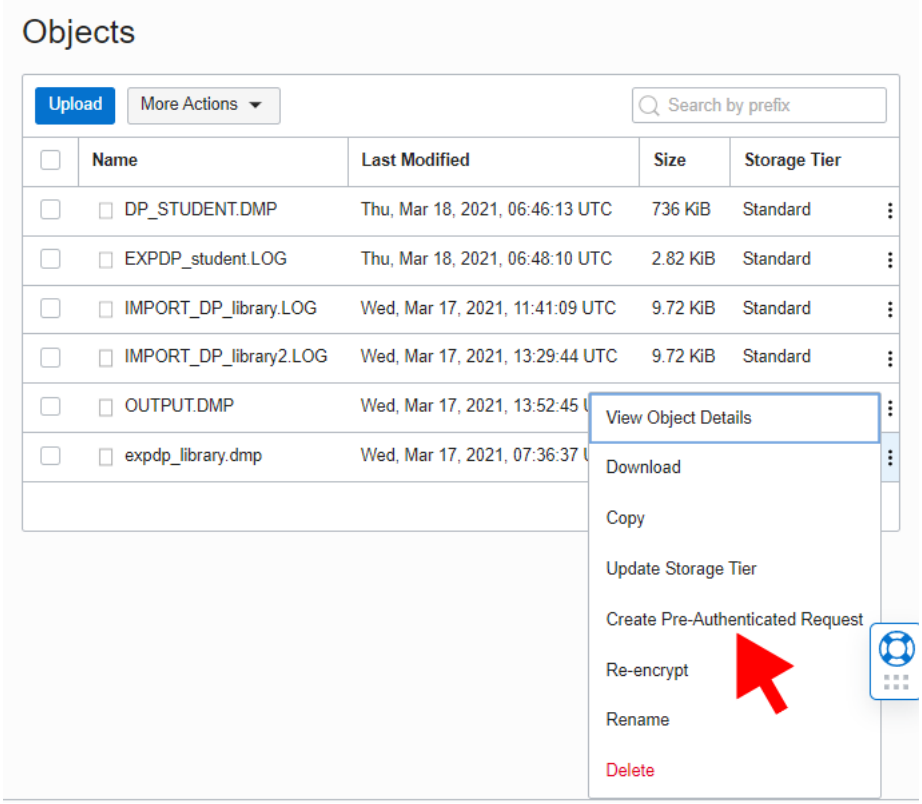

ORACLE Cloud
Search for resources, services, and documentation
Search
Home
Compute
Storage
Networking
Oracle Database
Databases
Analytics & AI
Developer Services
Identity & Security
Observability & Management
Storage
Block Storage
Block Volumes
Block Volume Backups
Block Volume Replicas
Volume Groups
Volume Group Backups
Backup Policies
File Storage
File Systems
Mount Targets
Object Storage & Archive...
Buckets

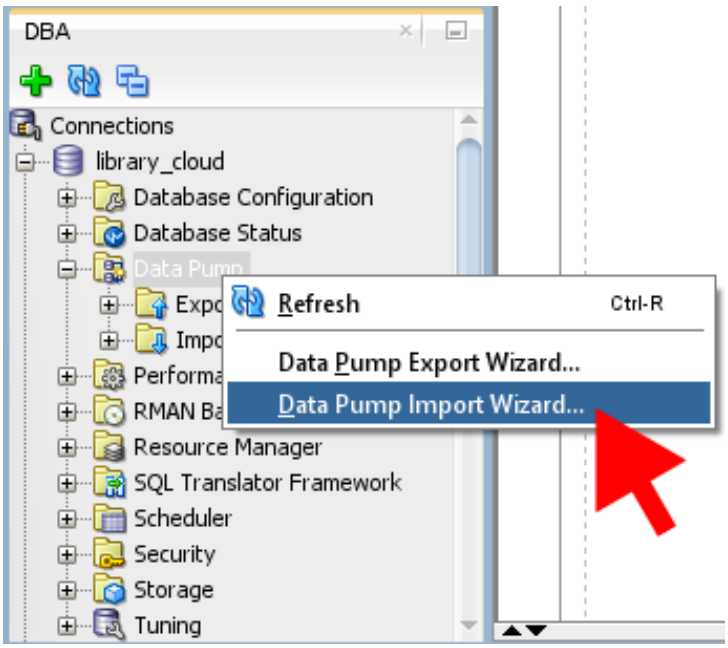

Create Bucket
Help
Bucket Name
bucket_library
Default Storage Tier
Standard
Archive
The default storage tier for a bucket can only be specified during creation. Once set, you cannot change the storage tier in which a bucket resides. Learn more about storage tiers
Enable Auto-Tiering
Automatically move infrequently accessed objects from the Standard tier to less expensive storage. Learn more
Enable Object Versioning
Create an object version when a new object is uploaded, an existing object is overwritten, or when an object is deleted. Learn more
Emit Object Events
Create automation based on object state changes using the Events Service.
Uncommitted Multipart Uploads Cleanup
Create a lifecycle rule to automatically delete uncommitted multipart uploads older than 7 days. Learn more
Encryption
Encrypt using Oracle managed keys
Leaves all encryption-related matters to Oracle.
Encrypt using customer-managed keys
Requires a valid key from a vault that you have access to. Learn more
Tags
Optional tags to organize and track resources in your tenancy. How do I use tags?
Tag Namespace
Tag Key
Tag Value
None (add a free-for...
Create
Cancel

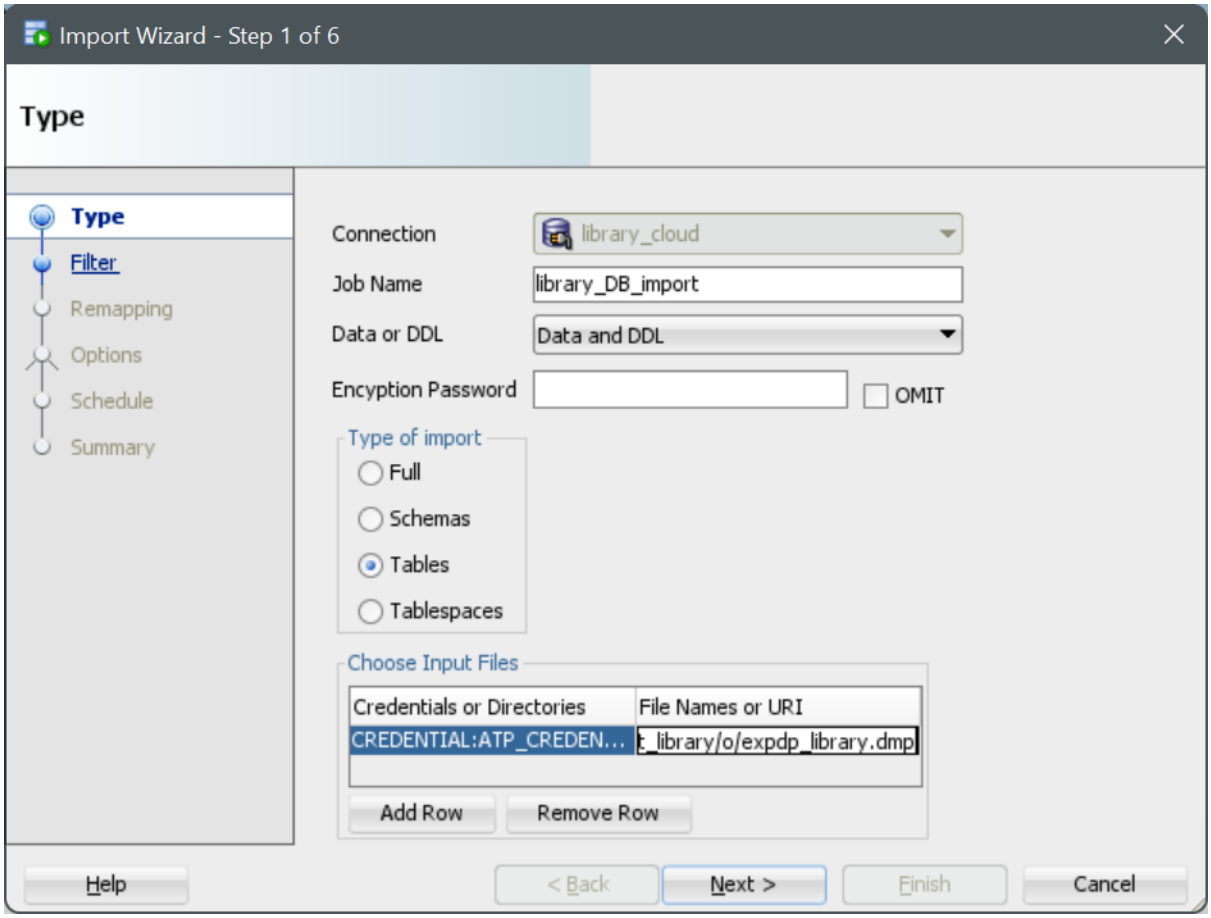

B
You are using approximately 124 KiB of the 20 GiB limit of free combined Object Storage and Archive Storage. Upgrade to use unlimited storage. Show details.
bucket_library
Edit Visibility
Move Resource
Re-encrypt
Add Tags
Delete
Bucket Information
Tags
General
Namespace: fr6ct5hjyfjk
Compartment: kvet3
Created: Wed, Jun 30, 2021, 06:33:14 UTC
ETag: 3544882c-9591-4405-9a10-a20e0e102da9
OCID: ...4fwxb3ua Show Copy
Usage
Approximate Object Count: 1 objects
Approximate Size: 124 KiB
Uncommitted Multipart Uploads Count: 0 uploads
Uncommitted Multipart Uploads Approximate Size: 0 bytes
Features
Default Storage Tier: Standard
Visibility: Private
Encryption Key: Oracle managed key Assign
Auto-Tiering: Disabled Edit
Emit Object Events: Disabled Edit
Object Versioning: Disabled Edit
Resources
Objects
Metrics
Pre-Authenticated Requests
Objects
Upload
More Actions
Search by prefix
Name
Last Modified
Size
Storage Tier
expdp_library.dmp
Wed, Jun 30, 2021, 06:39:16 UTC
124 KiB
Standard


ORACLE Cloud
Search for resources, services, and documentation
Germany Central (Frankfurt)
Identity » Users » User Details
kvet
Michal Kvet
Edit User
Create/Reset Password
Enable Multi-Factor Authentication
Edit User Capabilities
More Actions
ACTIVE
User Information
Tags
OCID: ...3jwd5a Show Copy
Created: Tue, Aug 18, 2020, 11:55:17 UTC
Multi-factor authentication: Disabled
Email: kvet
Federated: No
My Oracle Support account: -
Capabilities
Local password: Yes
API keys: Yes
Auth tokens: Yes
SMTP credentials: Yes
Customer secret keys: Yes
OAuth 2.0 Client Credentials: Yes
Resources
Groups
API Keys
Auth Tokens
Customer Secret Keys
OAuth 2.0 Client Credentials
SMTP Credentials
Groups
Add User to Group
Remove
Group Name
Status
Description
Administrators
Active
Administrators
0 Selected
Displaying 1 Group
1 of 1

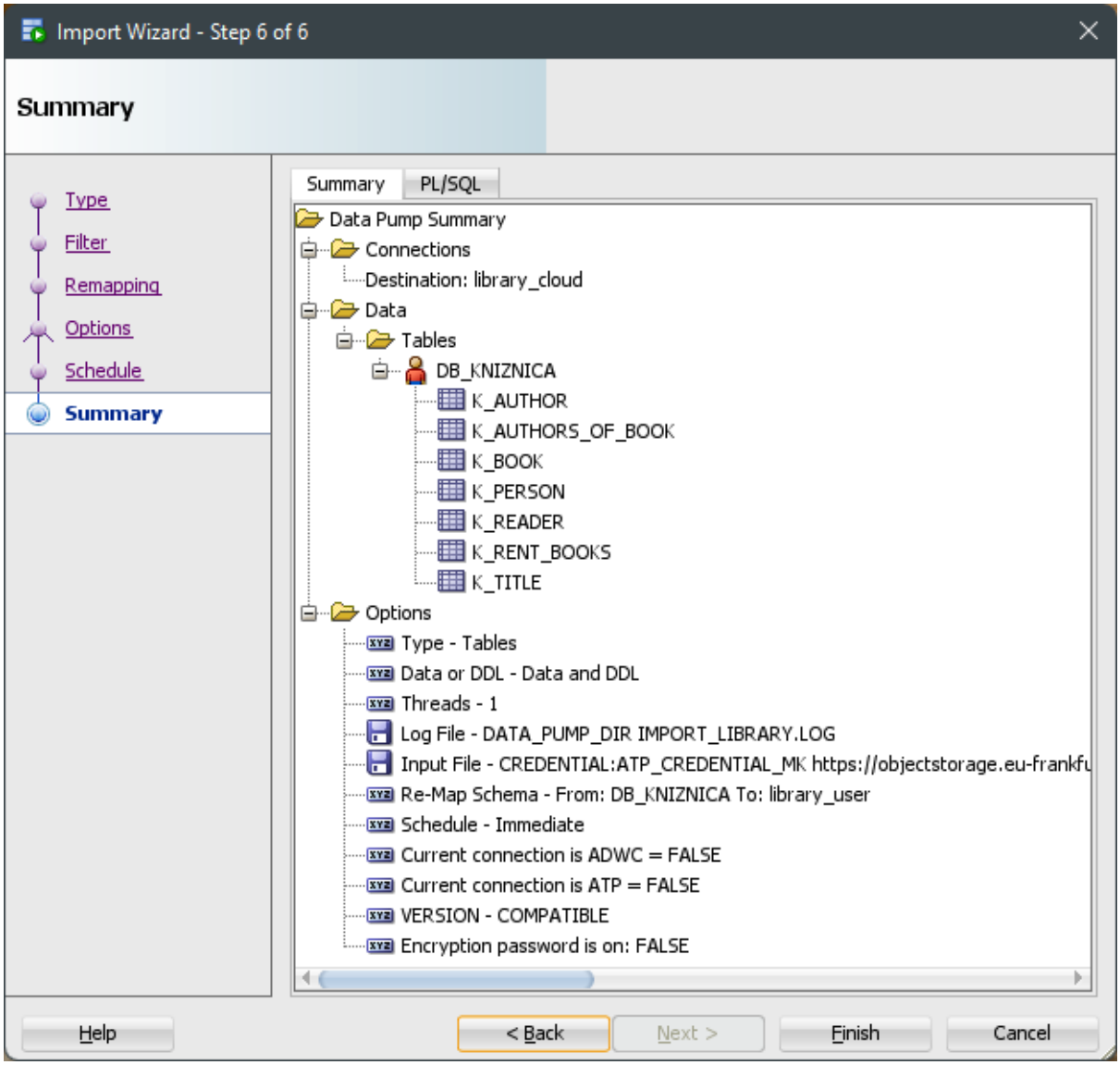

Create Pre-Authenticated Request
Help
Name
AR_expdp_library_obj
Pre-Authenticated Request Target
Bucket
Create a pre-authenti-cated request that applies to all objects in the bucket.
Object
Create a pre-authenti-cated request that applies to a specific object.
Objects with prefix
Create a pre-authenticated request that applies to all objects with a specific prefix.
Object Name
expdp_library.dmp
Access Type
Permit object reads
Permit object writes
Permit object reads and writes
Expiration
Jun 1, 2022 17:06 UTC
Create Pre-Authenticated Request
Cancel

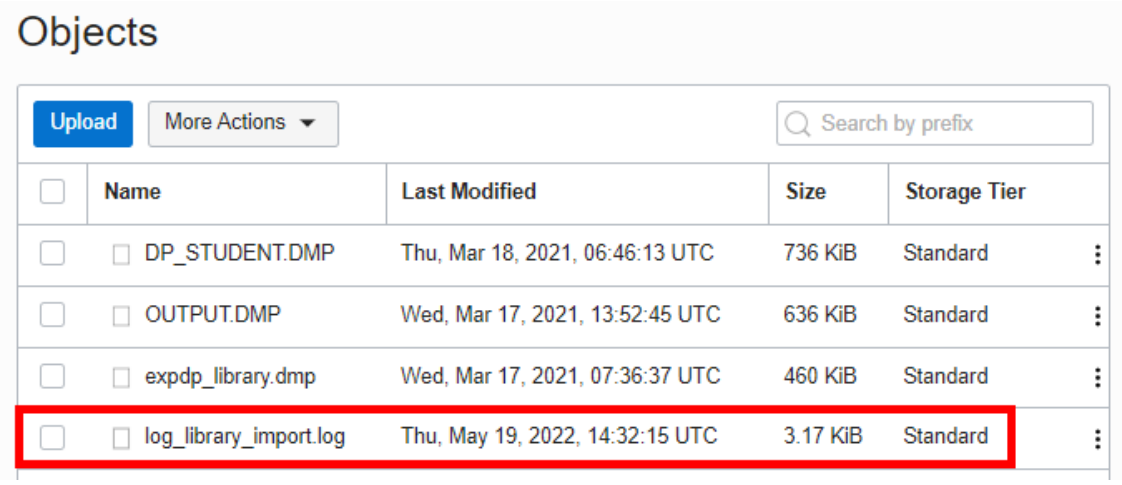

Objects
Upload
More Actions
Search by prefix
Name
Last Modified
Size
Storage Tier
DP_STUDENT.DMP
Thu, Mar 18, 2021, 06:46:13 UTC
736 KiB
Standard
EXPDP_student.LOG
Thu, Mar 18, 2021, 06:48:10 UTC
2.82 KiB
Standard
IMPORT_DP_library.LOG
Wed, Mar 17, 2021, 11:41:09 UTC
9.72 KiB
Standard
IMPORT_DP_library2.LOG
Wed, Mar 17, 2021, 13:29:44 UTC
9.72 KiB
Standard
OUTPUT.DMP
Wed, Mar 17, 2021, 13:52:45
expdp_library.dmp
Wed, Mar 17, 2021, 07:36:37
View Object Details
Download
Copy
Update Storage Tier
Create Pre-Authenticated Request
Re-encrypt
Rename
Delete

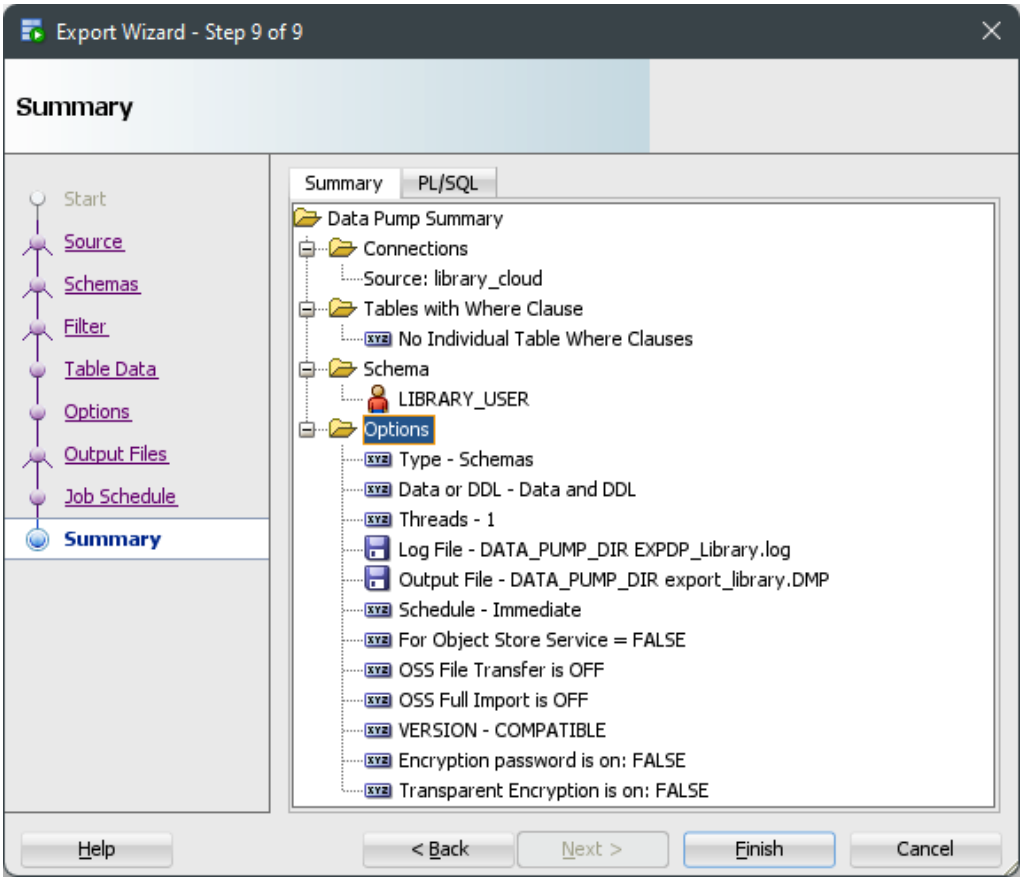

DBA
Connections
library_cloud
Database Configuration
Database Status
Data Pump
Refresh
Ctrl-R
Data Pump Export Wizard...
Data Pump Import Wizard...
Resource Manager
SQL Translator Framework
Scheduler
Security
Storage
Tuning

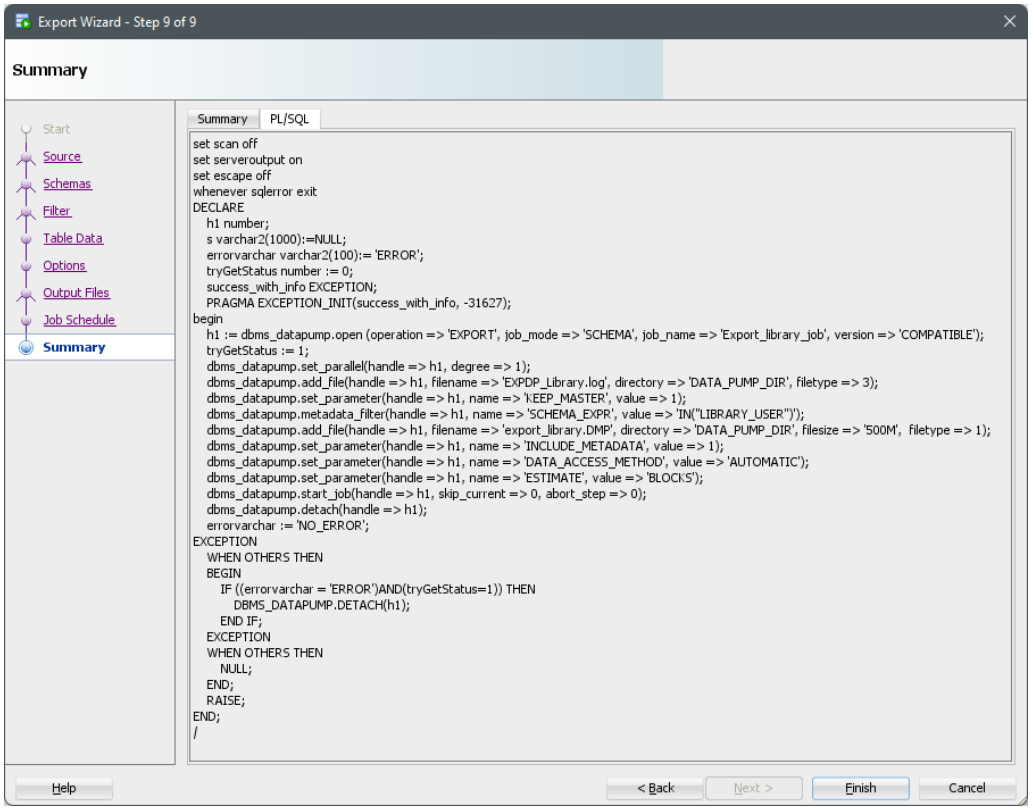

Import Wizard - Step 1 of 6
Type
Type
Filter
Remapping
Options
Schedule
Summary
Connection
library_cloud
Job Name
library_DB_import
Data or DDL
Data and DDL
Encyption Password
OMIT
Type of import
Full
Schemas
Tables
Tablespaces
Choose Input Files
Credentials or Directories
File Names or URI
CREDENTIAL:ATP_CREDEN...
t_library/o/expdp_library.dmp
Add Row
Remove Row
Help
< Back
Next >
Finish
Cancel

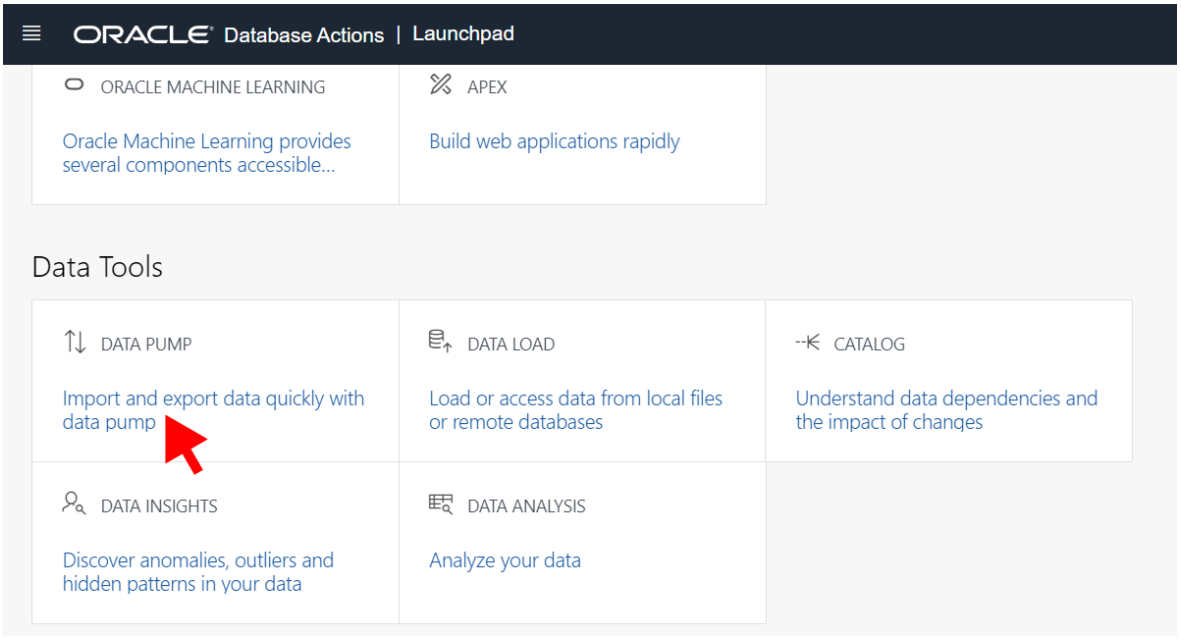

Enable Logging
Log File
DATA_PUMP_DIR
IMPORT_LIBRARY.LOG

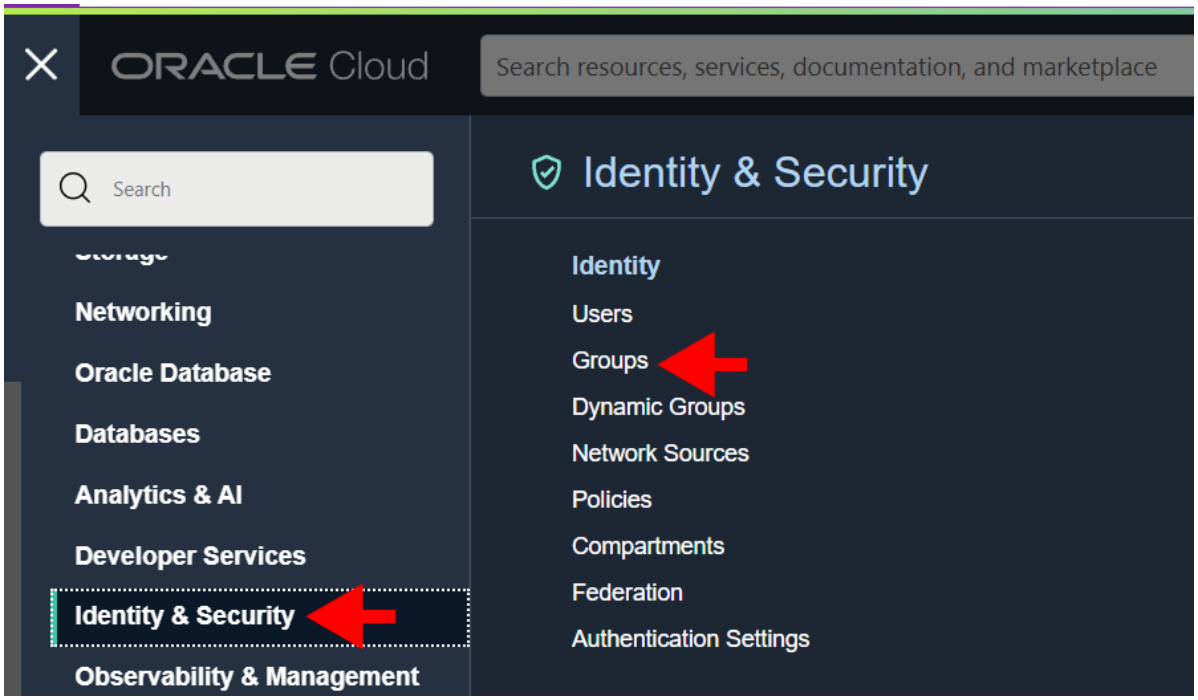

Import Wizard - Step 6 of 6
Summary
Type
Filter
Remapping
Options
Schedule
Summary
Summary
PL/SQL
Data Pump Summary
Connections
Destination: library_cloud
Data
Tables
DB_KNIZNICA
K_AUTHOR
K_AUTHORS_OF_BOOK
K_BOOK
K_PERSON
K_READER
K_RENT_BOOKS
K_TITLE
Options
Type - Tables
Data or DDL - Data and DDL
Threads - 1
Log File - DATA_PUMP_DIR IMPORT_LIBRARY.LOG
Input File - CREDENTIAL:ATP_CREDENTIAL_MK https://objectstorage.eu-frankfu
Re-Map Schema - From: DB_KNIZNICA To: library_user
Schedule - Immediate
Current connection is ADWC = FALSE
Current connection is ATP = FALSE
VERSION - COMPATIBLE
Encryption password is on: FALSE
Help
< Back
Next >
Finish
Cancel

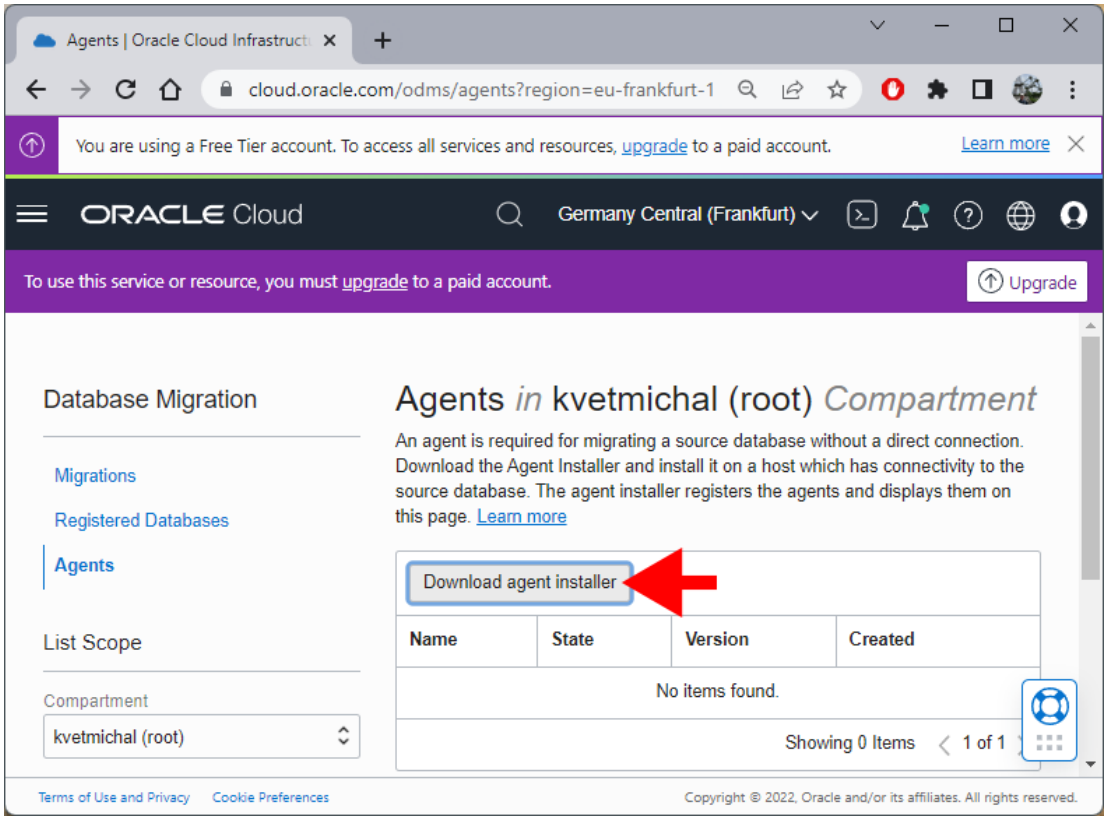

Objects
Upload
More Actions
Search by prefix
Name
Last Modified
Size
Storage Tier
DP_STUDENT.DMP
Thu, Mar 18, 2021, 06:46:13 UTC
736 KiB
Standard
OUTPUT.DMP
Wed, Mar 17, 2021, 13:52:45 UTC
636 KiB
Standard
expdp_library.dmp
Wed, Mar 17, 2021, 07:36:37 UTC
460 KiB
Standard
log_library_import.log
Thu, May 19, 2022, 14:32:15 UTC
3.17 KiB
Standard


Export Wizard - Step 9 of 9
Summary
Start
Source
Schemas
Filter
Table Data
Options
Output Files
Job Schedule
Summary
Summary
PL/SQL
Data Pump Summary
Connections
Source: library_cloud
Tables with Where Clause
No Individual Table Where Clauses
Schema
LIBRARY_USER
Options
Type - Schemas
Data or DDL - Data and DDL
Threads - 1
Log File - DATA_PUMP_DIR EXPDP_Library.log
Output File - DATA_PUMP_DIR export_library.DMP
Schedule - Immediate
For Object Store Service = FALSE
OSS File Transfer is OFF
OSS Full Import is OFF
VERSION - COMPATIBLE
Encryption password is on: FALSE
Transparent Encryption is on: FALSE
Help
< Back
Next >
Finish
Cancel


Export Wizard - Step 9 of 9
Summary
Start
Source
Schemas
Filter
Table Data
Options
Output Files
Job Schedule
Summary
Summary
PL/SQL
set scan off
set serveroutput on
set escape off
whenever sqlerror exit
DECLARE
h1 number;
s varchar2(1000):=NULL;
errorvarchar varchar2(100):= 'ERROR';
tryGetStatus number := 0;
success_with_info EXCEPTION;
PRAGMA EXCEPTION_INIT(success_with_info, -31627);
begin
h1 := dbms_datapump.open (operation => 'EXPORT', job_mode => 'SCHEMA', job_name => 'Export_library_job', version => 'COMPATIBLE');
tryGetStatus := 1;
dbms_datapump.set_parallel(handle => h1, degree => 1);
dbms_datapump.add_file(handle => h1, filename => 'EXPDP_Library.log', directory => 'DATA_PUMP_DIR', filetype => 3);
dbms_datapump.set_parameter(handle => h1, name => 'KEEP_MASTER', value => 1);
dbms_datapump.metadata_filter(handle => h1, name => 'SCHEMA_EXPR', value => 'IN('LIBRARY_USER'')');
dbms_datapump.add_file(handle => h1, filename => 'export_library.DMP', directory => 'DATA_PUMP_DIR', filesize => '500M', filetype => 1);
dbms_datapump.set_parameter(handle => h1, name => 'INCLUDE_METADATA', value => 1);
dbms_datapump.set_parameter(handle => h1, name => 'DATA_ACCESS_METHOD', value => 'AUTOMATIC');
dbms_datapump.set_parameter(handle => h1, name => 'ESTIMATE', value => 'BLOCKS');
dbms_datapump.start_job(handle => h1, skip_current => 0, abort_step => 0);
dbms_datapump.detach(handle => h1);
errorvarchar := 'NO_ERROR';
EXCEPTION
WHEN OTHERS THEN
BEGIN
IF ((errorvarchar = 'ERROR')AND(tryGetStatus=1)) THEN
DBMS_DATAPUMP.DETACH(h1);
END IF;
EXCEPTION
WHEN OTHERS THEN
NULL;
END;
RAISE;
END;
/
Help
< Back
Next >
Finish
Cancel


ORACLE Database Actions | Launchpad
ORACLE MACHINE LEARNING
Oracle Machine Learning provides several components accessible...
APEX
Build web applications rapidly
Data Tools
DATA PUMP
Import and export data quickly with data pump
DATA LOAD
Load or access data from local files or remote databases
CATALOG
Understand data dependencies and the impact of changes
DATA INSIGHTS
Discover anomalies, outliers and hidden patterns in your data
DATA ANALYSIS
Analyze your data


ORACLE Cloud
Search resources, services, documentation, and marketplace
Search
Networking
Oracle Database
Databases
Analytics & AI
Developer Services
Identity & Security
Observability & Management
Identity & Security
Identity
Users
Groups
Dynamic Groups
Network Sources
Policies
Compartments
Federation
Authentication Settings


Agents | Oracle Cloud Infrastruct
cloud.oracle.com/odms/agents?region=eu-frankfurt-1
You are using a Free Tier account. To access all services and resources, upgrade to a paid account.
Learn more
ORACLE Cloud
Germany Central (Frankfurt)
To use this service or resource, you must upgrade to a paid account.
Upgrade
Database Migration
Migrations
Registered Databases
Agents
List Scope
Compartment
kvetmichal (root)
Agents in kvetmichal (root) Compartment
An agent is required for migrating a source database without a direct connection. Download the Agent Installer and install it on a host which has connectivity to the source database. The agent installer registers the agents and displays them on this page. Learn more
Download agent installer
Name
State
Version
Created
No items found.
Showing 0 Items
1 of 1
Terms of Use and Privacy
Cookie Preferences
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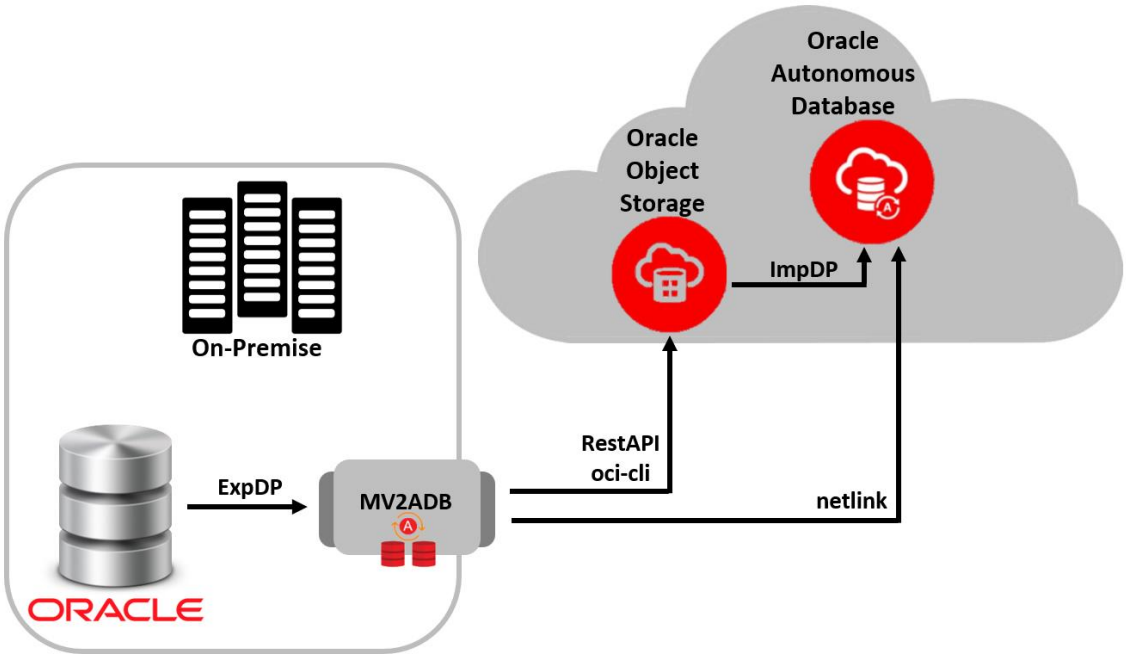
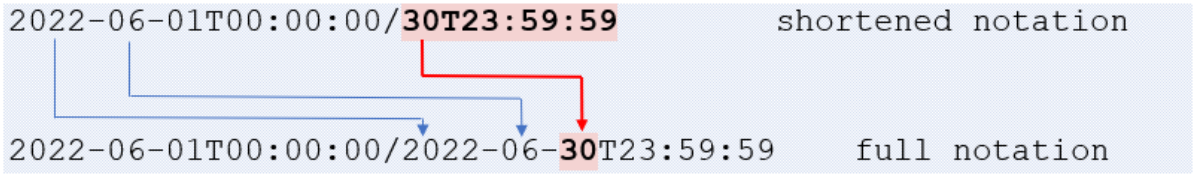
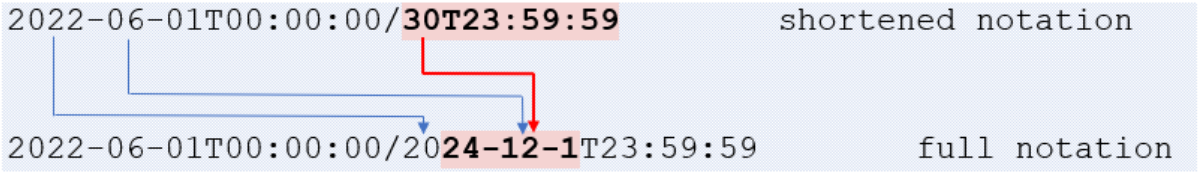
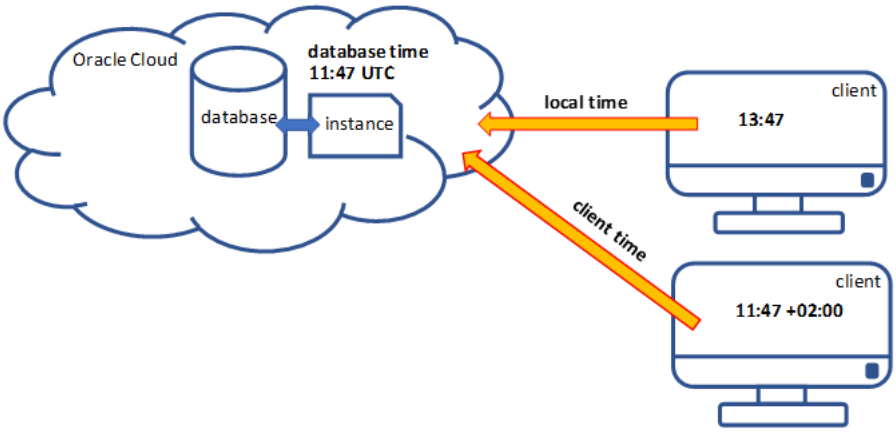

Oracle
Autonomous
Database
Oracle
Object
Storage
ImpDP
On-Premise
RestAPI
oci-cli
ExpDP
MV2ADB
netlink
ORACLE

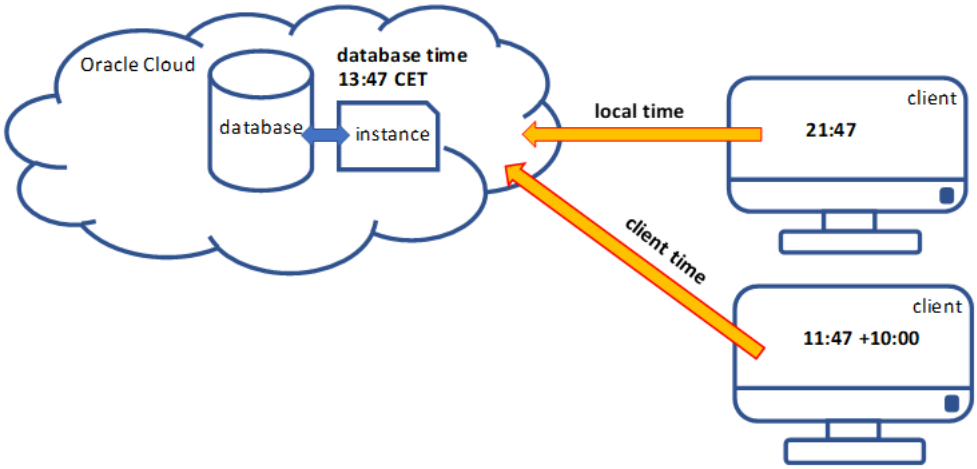
Chapter 3: Date and Time Standardization Principles

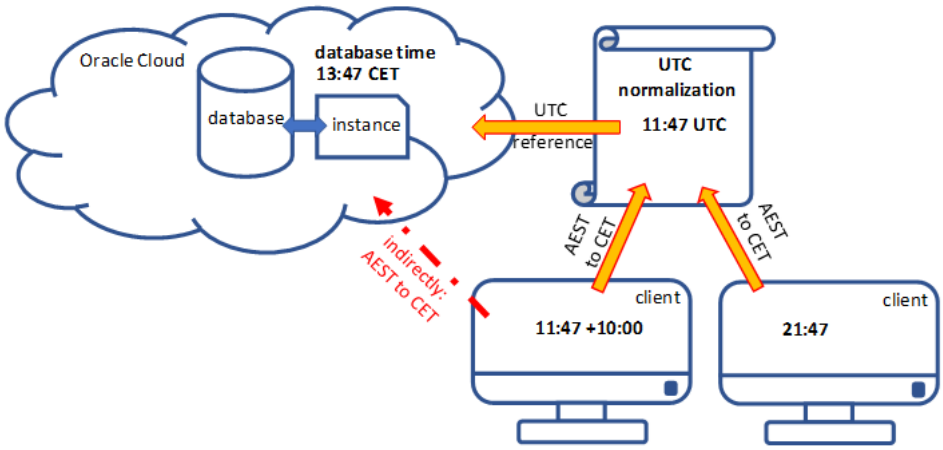




Chapter 4: Concepts of Temporality







Chapter 5: Modeling and Storage Principles

13.6.2022 6:46

DATE

2022-06-13 6:46:12.576000

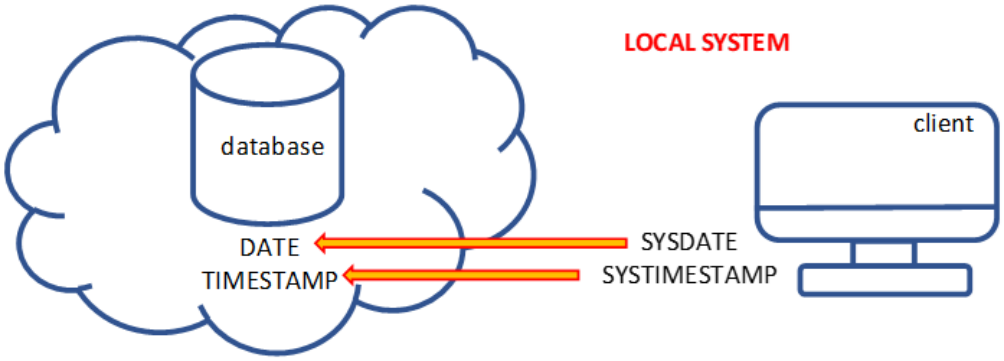
TIMESTAMP

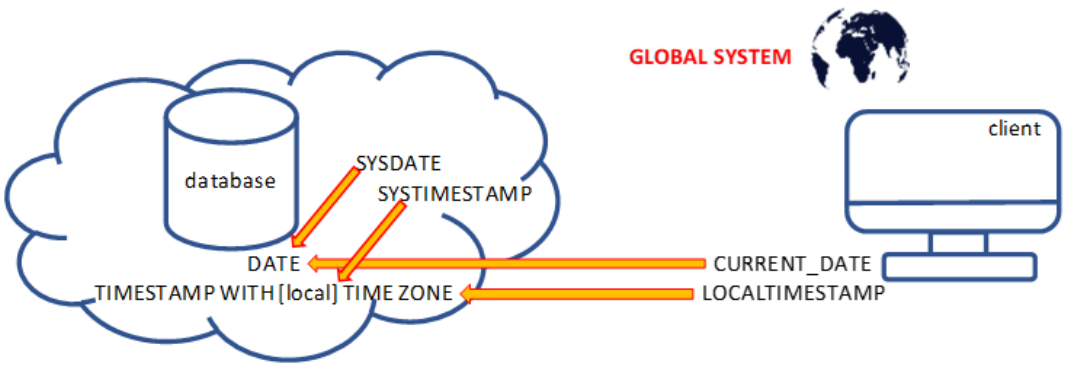
2022-06-13 6:46:12.576000 GMT

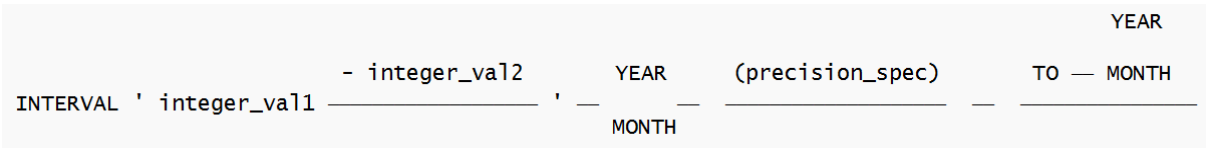
TIMESTAMP WITH TIME ZONE

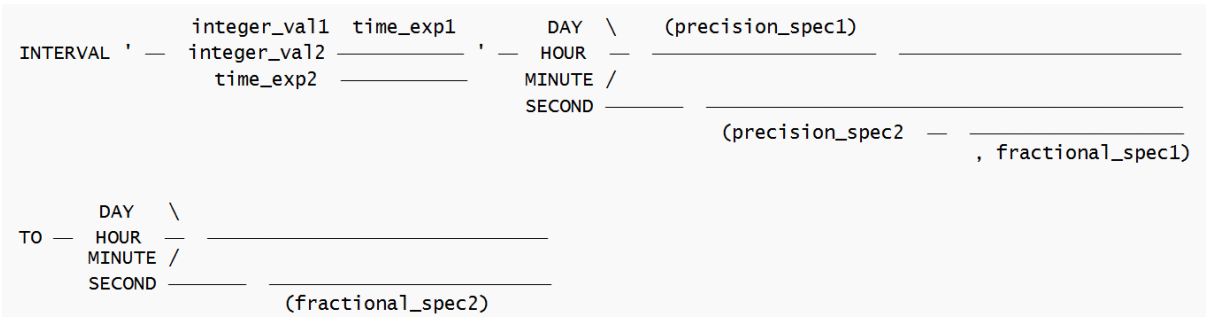
2022-06-13 4:46:12.576000

TIMESTAMP WITH LOCAL TIME ZONE

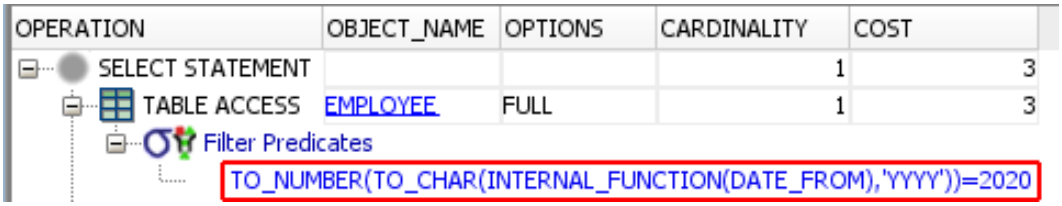




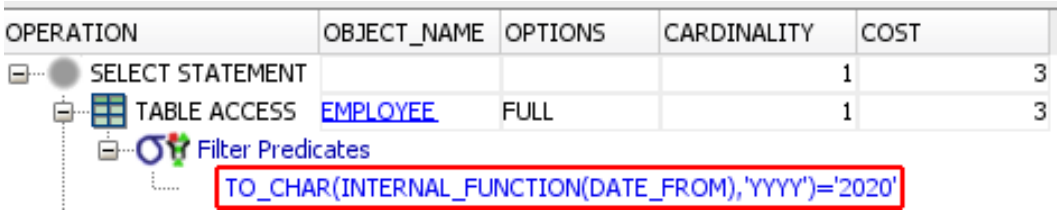

INTERVAL ' integer_val1
- integer_val2
' YEAR MONTH
(precision_spec)
TO YEAR MONTH


INTERVAL '
integer_val1 time_exp1
integer_val2
time_exp2
' DAY HOUR MINUTE SECOND
(precision_spec1)
(precision_spec2
, fractional_spec1)
TO DAY HOUR MINUTE SECOND
(fractional_spec2)

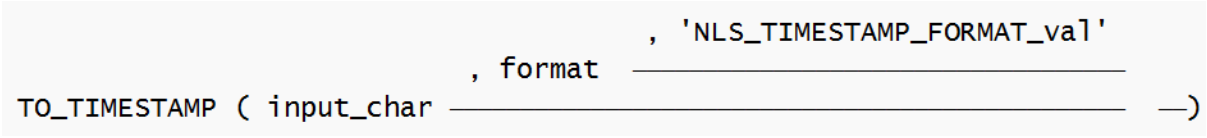
Chapter 6: Conversion Functions and Element Extraction



OPERATION	OBJECT_NAME	OPTIONS	CARDINALITY	COST
SELECT STATEMENT			1	3
TABLE ACCESS	EMPLOYEE	FULL	1	3
Filter Predicates				
TO_NUMBER(TO_CHAR(INTERNAL_FUNCTION(DATE_FROM),'YYYY'))=2020				



OPERATION	OBJECT_NAME	OPTIONS	CARDINALITY	COST
SELECT STATEMENT			1	3
TABLE ACCESS	EMPLOYEE	FULL	1	3
Filter Predicates				
TO_CHAR(INTERNAL_FUNCTION(DATE_FROM),'YYYY')='2020'				

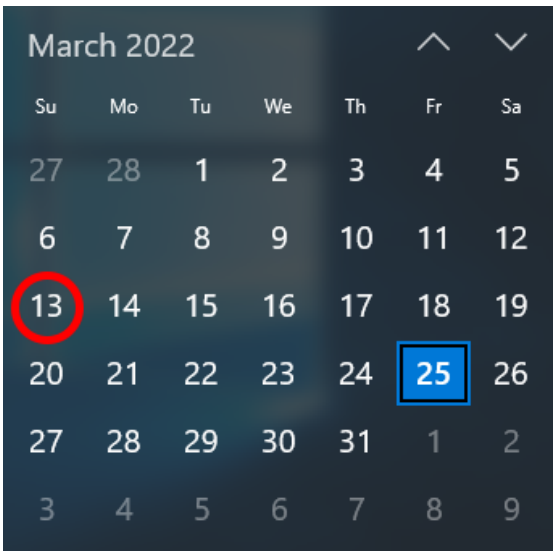


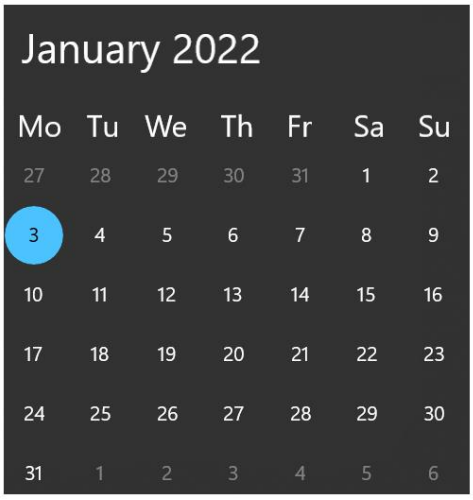
Chapter 7: Date and Time Management Functions

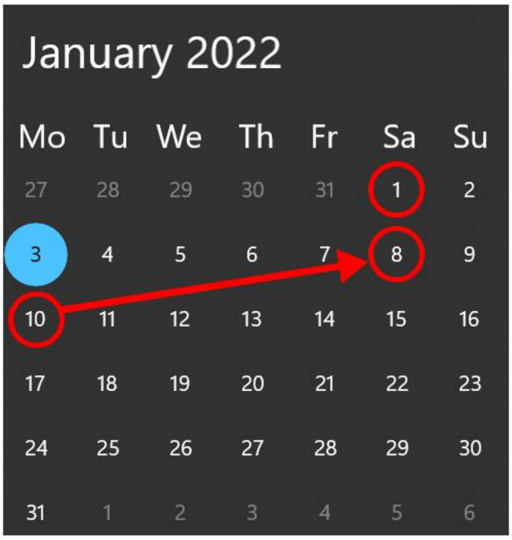
	1	2	3	4	5	6	7
1	7	1	2	3	4	5	6
2	6	7	1	2	3	4	5
3	5	6	7	1	2	3	4
4	4	5	6	7	1	2	3
5	3	4	5	6	7	1	2
6	2	3	4	5	6	7	1
7	1	2	3	4	5	6	7

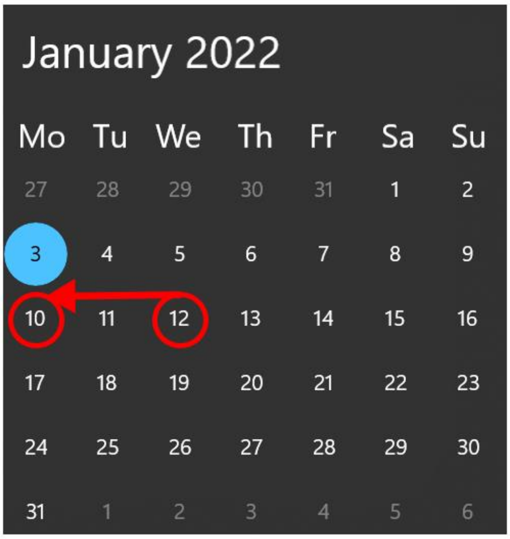
j

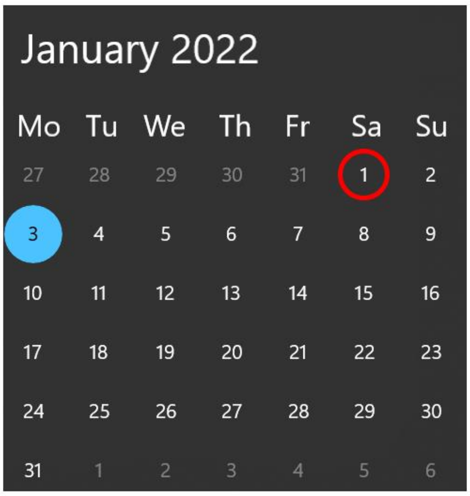
i

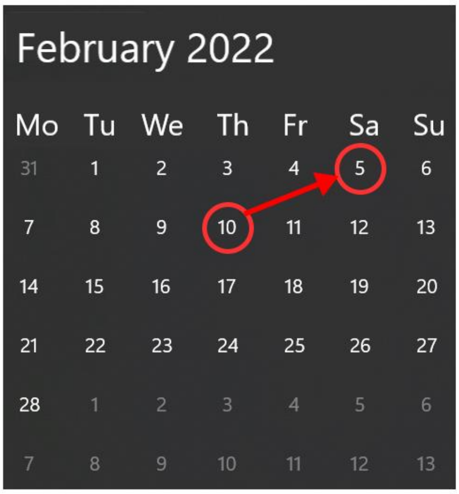





January 2022
Mo Tu We Th Fr Sa Su
27 28 29 30 31 1 2
3 4 5 6 7 8 9
10 11 12 13 14 15 16
17 18 19 20 21 22 23
24 25 26 27 28 29 30
31 1 2 3 4 5 6

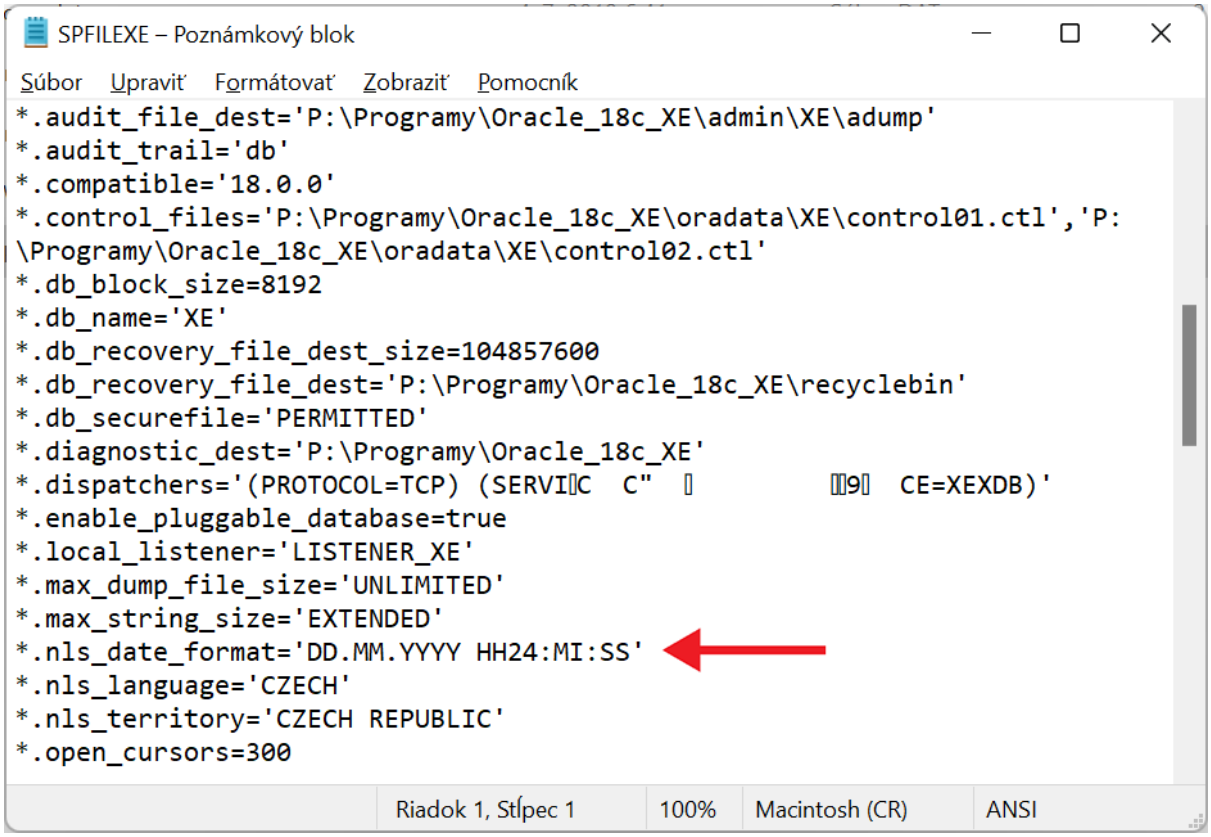

January 2022
Mo Tu We Th Fr Sa Su
27 28 29 30 31 1 2
3 4 5 6 7 8 9
10 11 12 13 14 15 16
17 18 19 20 21 22 23
24 25 26 27 28 29 30
31 1 2 3 4 5 6

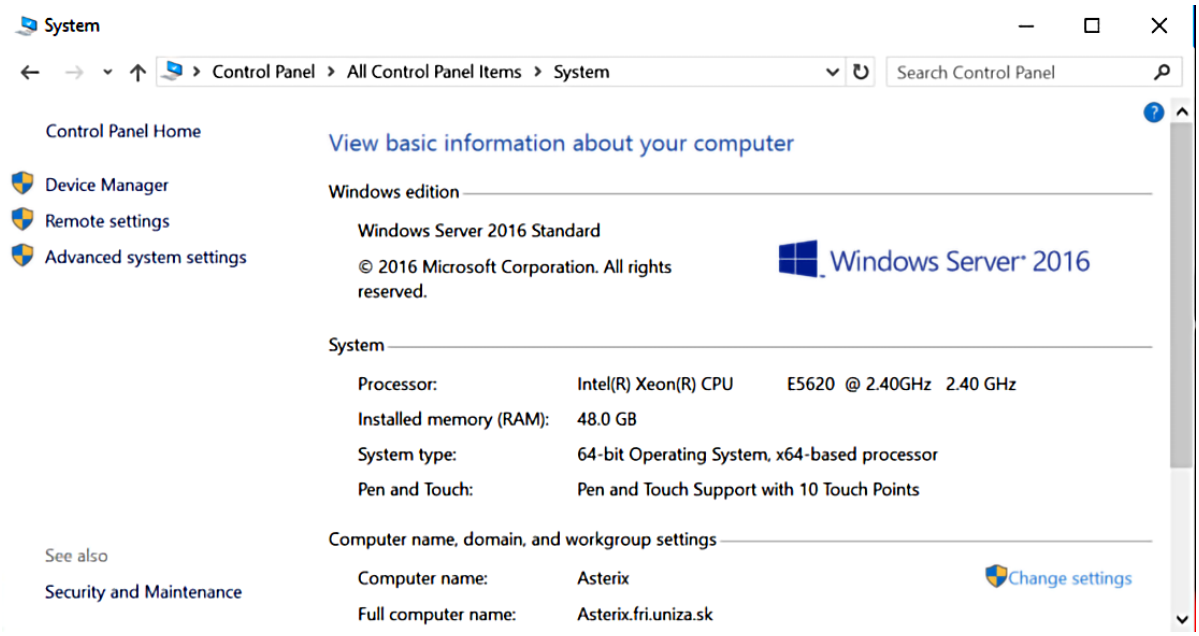

January 2022
Mo Tu We Th Fr Sa Su
27 28 29 30 31 1 2
3 4 5 6 7 8 9
10 11 12 13 14 15 16
17 18 19 20 21 22 23
24 25 26 27 28 29 30
31 1 2 3 4 5 6

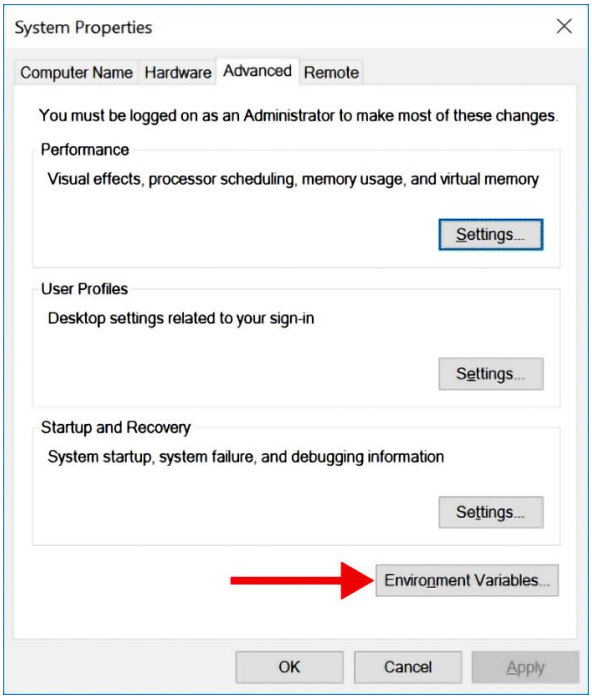

February 2022
Mo Tu We Th Fr Sa Su
31 1 2 3 4 5 6
7 8 9 10 11 12 13
14 15 16 17 18 19 20
21 22 23 24 25 26 27
28 1 2 3 4 5 6
7 8 9 10 11 12 13

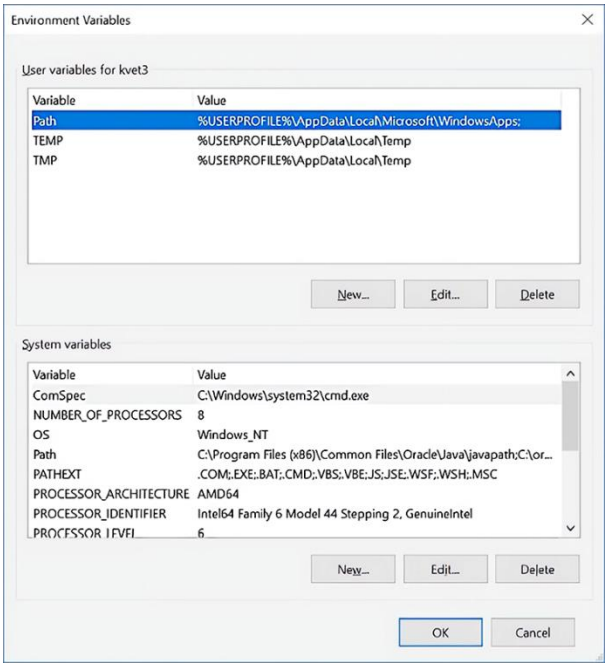

February 2022
Mo Tu We Th Fr Sa Su
31 1 2 3 4 5 6
7 8 9 10 11 12 13
14 15 16 17 18 19 20
21 22 23 24 25 26 27
28 1 2 3 4 5 6
7 8 9 10 11 12 13

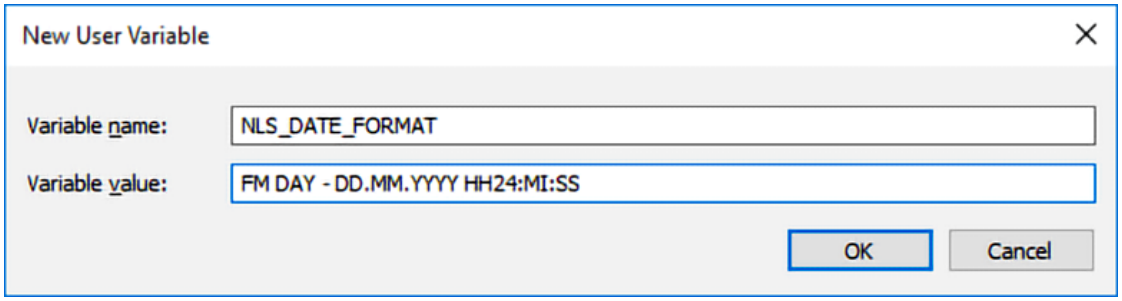
Chapter 8: Delving into National Language Support Parameters





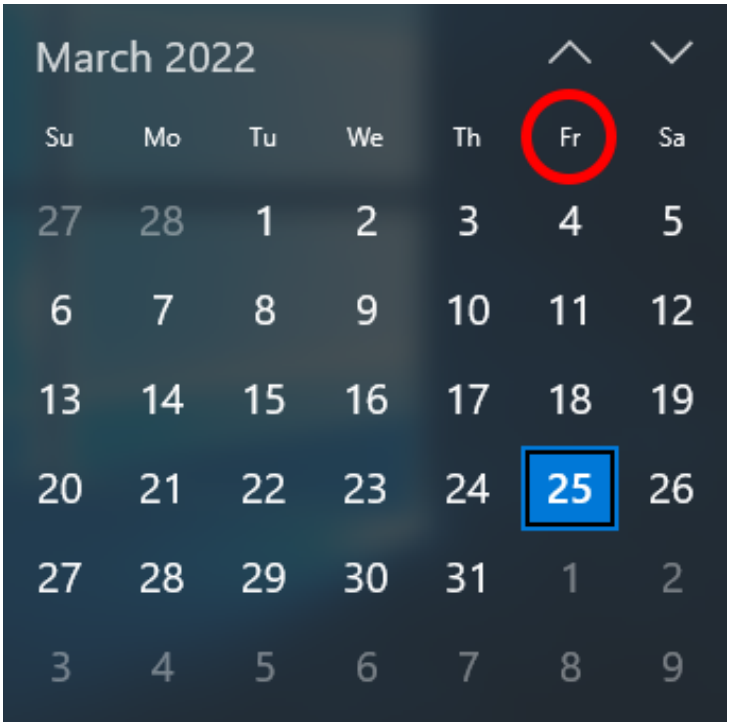

System Properties
Computer Name
Hardware
Advanced
Remote
You must be logged on as an Administrator to make most of these changes.
Performance
Visual effects, processor scheduling, memory usage, and virtual memory
Settings...
User Profiles
Desktop settings related to your sign-in
Settings...
Startup and Recovery
System startup, system failure, and debugging information
Settings...
Environment Variables...
OK
Cancel
Apply


Environment Variables
User variables for kvet3
Variable
Value
Path
%USERPROFILE%\AppData\Local\Microsoft\WindowsApps;
TEMP
%USERPROFILE%\AppData\Local\Temp
TMP
%USERPROFILE%\AppData\Local\Temp
New...
Edit...
Delete
System variables
Variable
Value
ComSpec
C:\Windows\system32\cmd.exe
NUMBER_OF_PROCESSORS
8
OS
Windows_NT
Path
C:\Program Files (x86)\Common Files\Oracle\Java\javapath;C:\or...
PATHEXT
.COM;.EXE;.BAT;.CMD;.VBS;.VBE;.JS;.JSE;.WSF;.WSH;.MSC
PROCESSOR_ARCHITECTURE
AMD64
PROCESSOR_IDENTIFIER
Intel64 Family 6 Model 44 Stepping 2, GenuineIntel
PROCESSOR_LEVEL
6
New...
Edit...
Delete
OK
Cancel


New User Variable
Variable name:
NLS_DATE_FORMAT
Variable value:
FM DAY - DD.MM.YYYY HH24:MI:SS
OK
Cancel

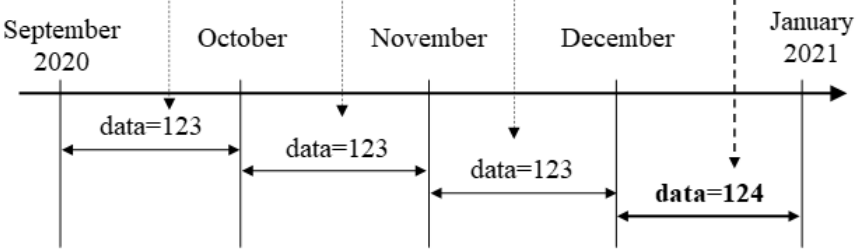
```
SQL> select sysdate from dual;

SYSDATE
--------------------------------
 FRIDAY - 25.3.2022 7:45:27
```

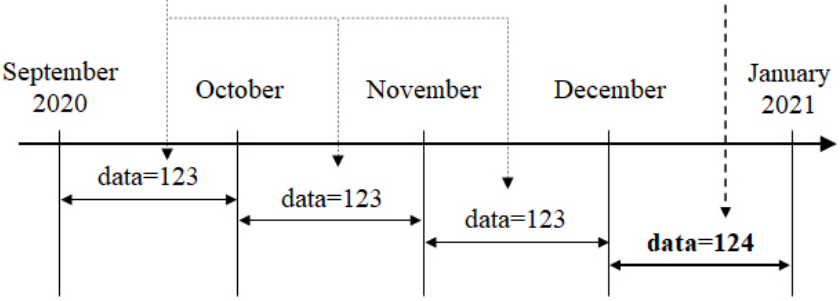


Chapter 9: Duration Modeling and Calculations

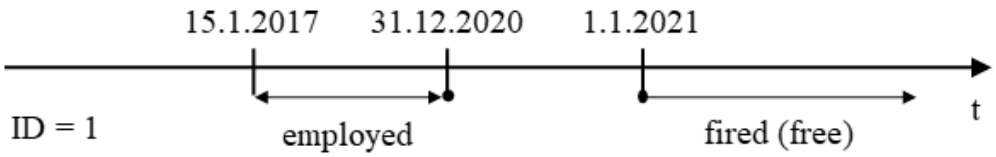
ID	BD	DATA
1	September 2020	123
1	October 2020	123
1	November 2020	123
1	**December 2020**	**124**

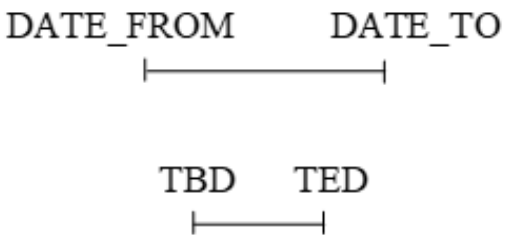


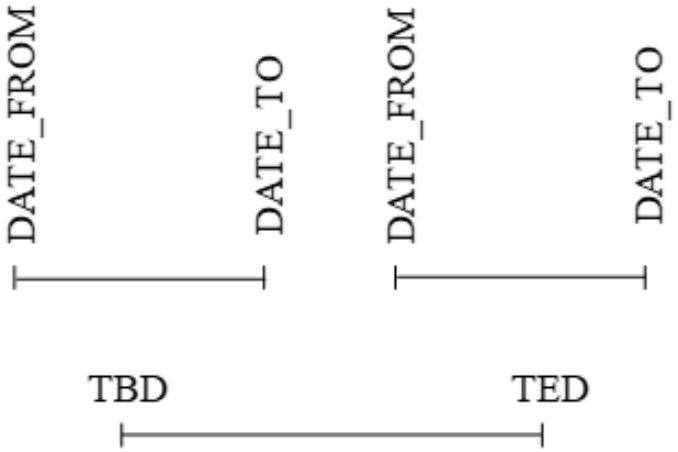
ID	BD	DATA
1	September 2020	123
1	**December 2020**	**124**

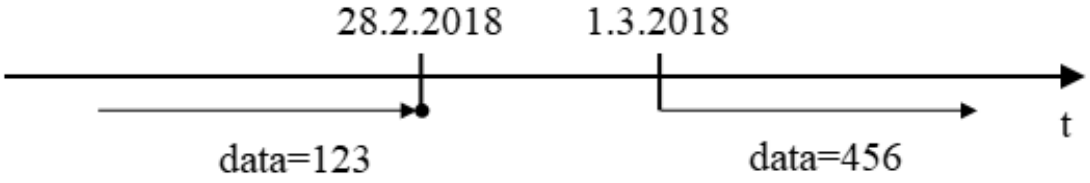


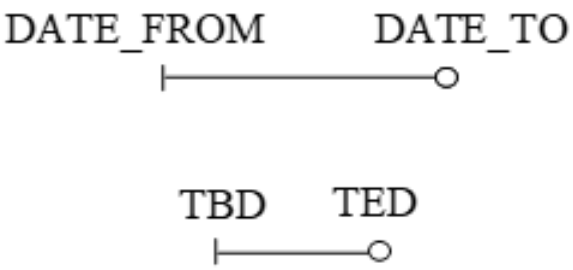
Employee			
Employee_id	Integer	NN	(PK)
Name	Varchar2(30)	NN	
Surname	Varchar2(30)	NN	
Date_from	Date	NN	
Date_to	Date		
Position	Varchar2(20)	NN	
Salary	Number(6,2)	NN	

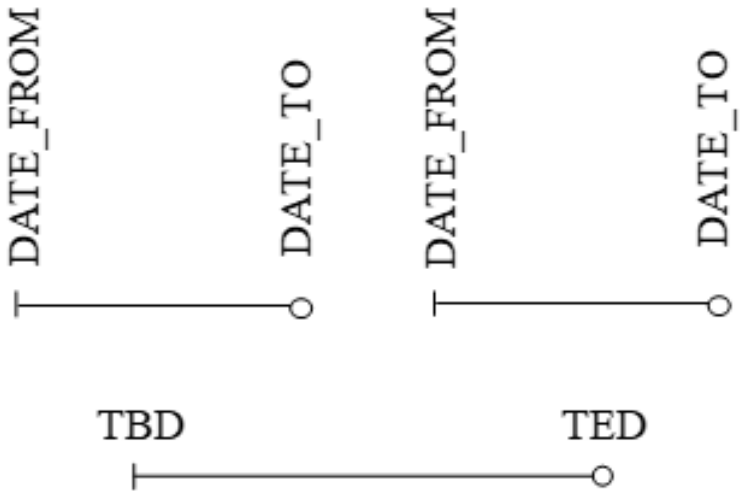

15.1.2017
31.12.2020
1.1.2021
t
ID = 1
employed
fired (free)


DATE_FROM
DATE_TO
TBD
TED

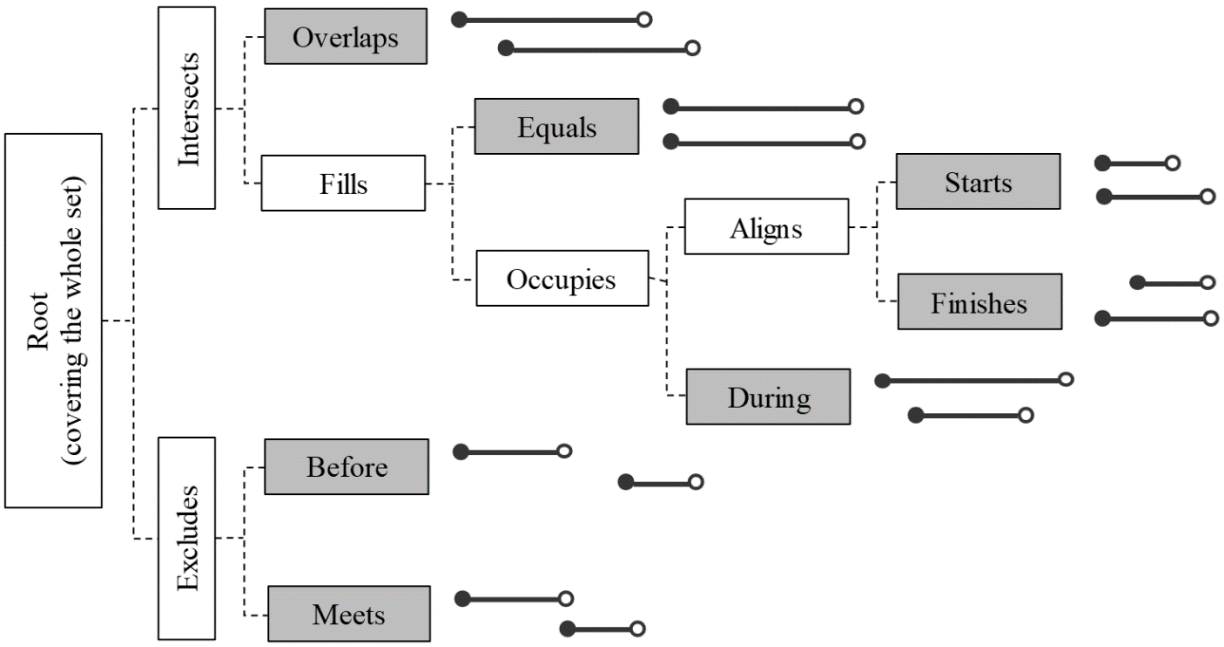

DATE_FROM
DATE_TO
DATE_FROM
DATE_TO
TBD
TED

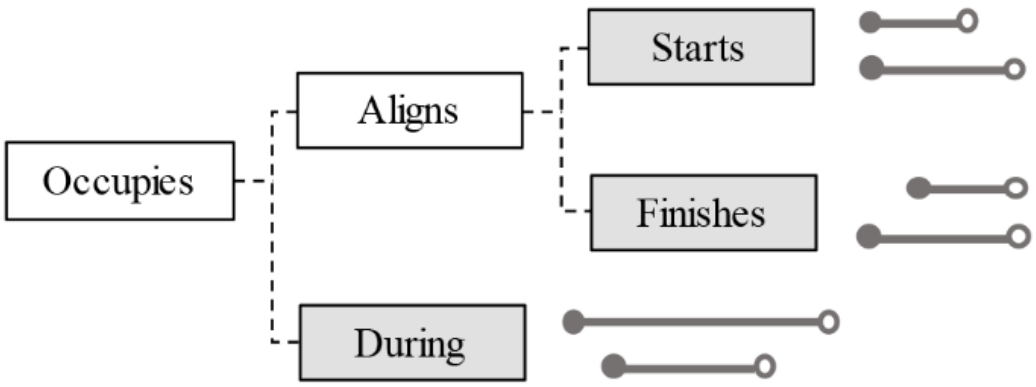

28.2.2018
1.3.2018
t
data=123
data=456


DATE_FROM
DATE_TO
TBD
TED

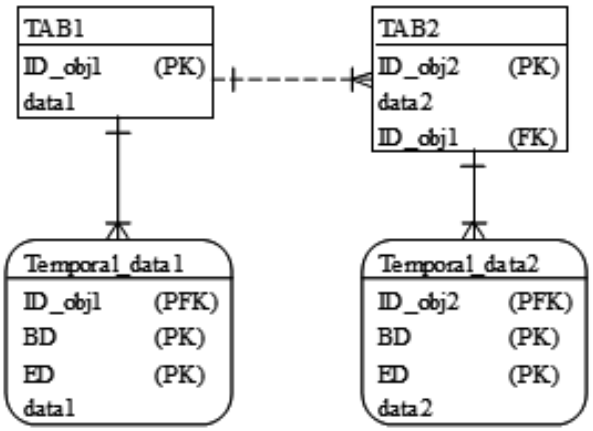

DATE_FROM
DATE_TO
DATE_FROM
DATE_TO
TBD
TED

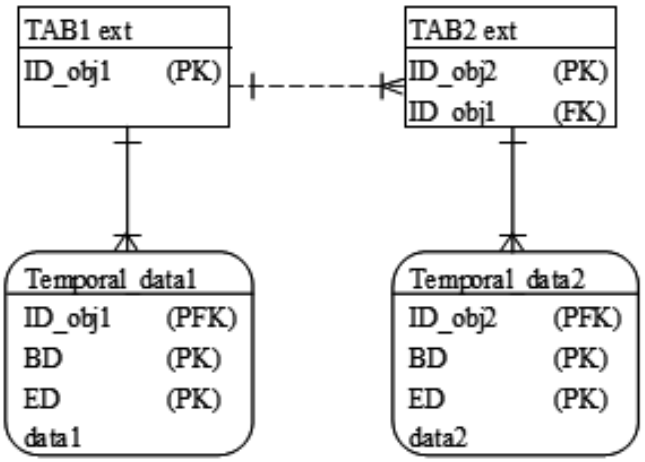
Chapter 10: Interval Representation and Type Relationships



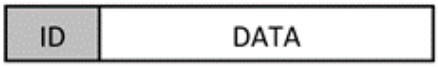


Chapter 11: Temporal Database Concepts



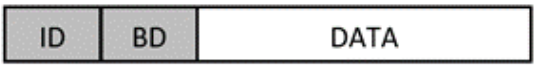


Conventional model with no temporal elements

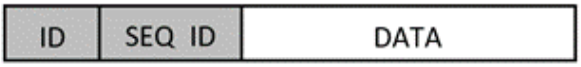


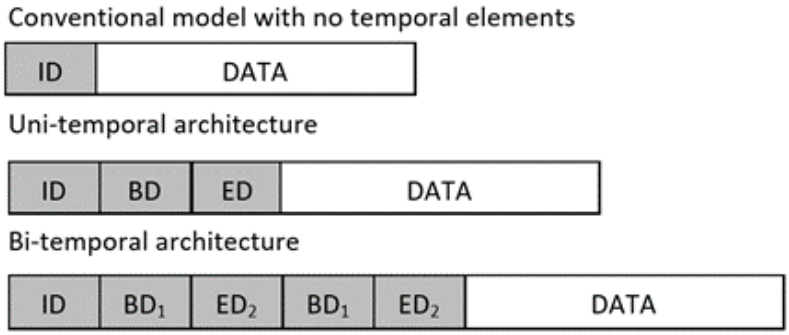
Uni-temporal architecture using validity duration frame (BD, ED)

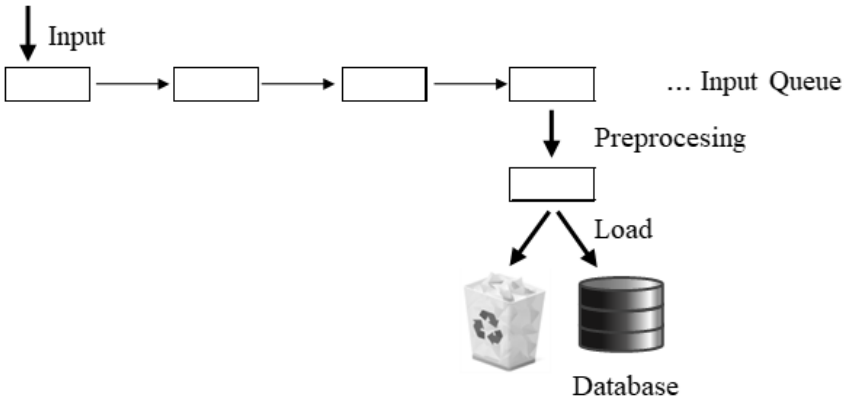
Uni-temporal architecture using one timepoint only (BD)

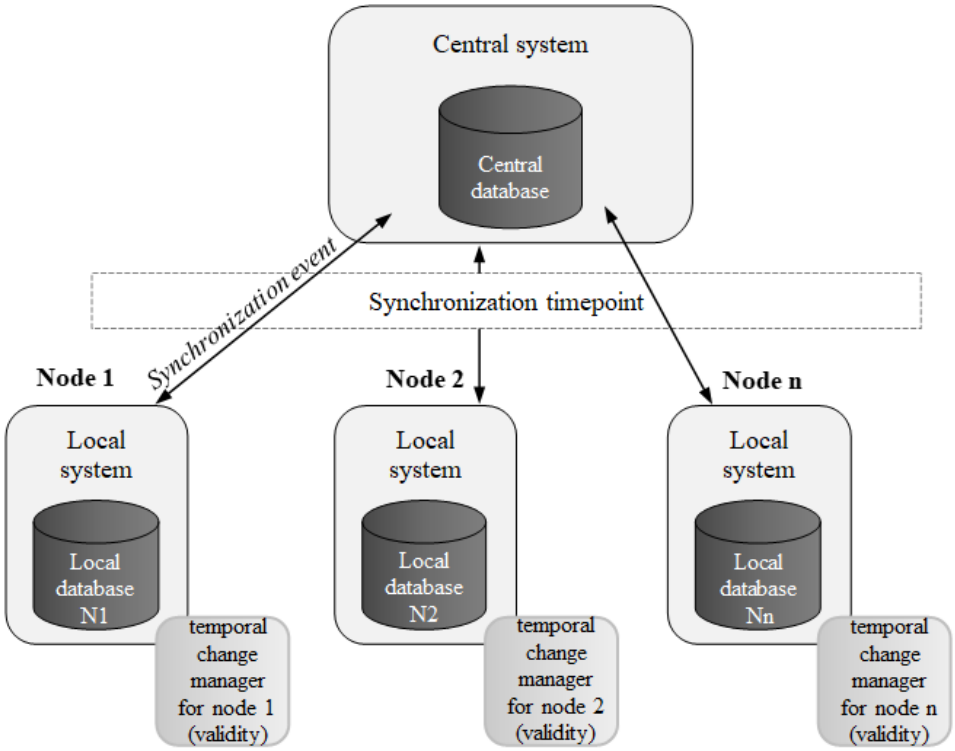


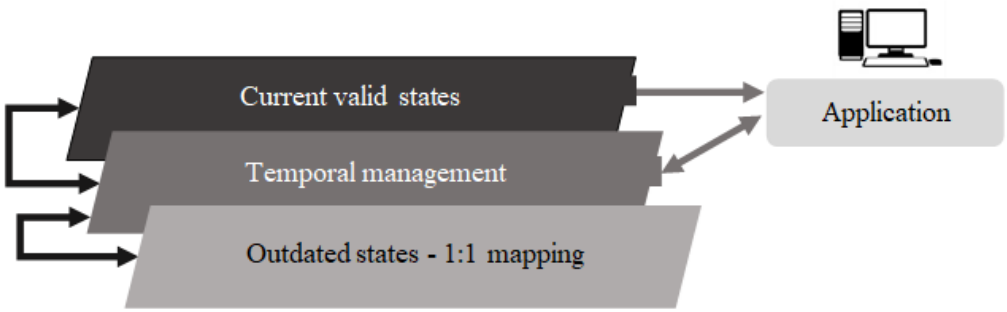
Versioning model

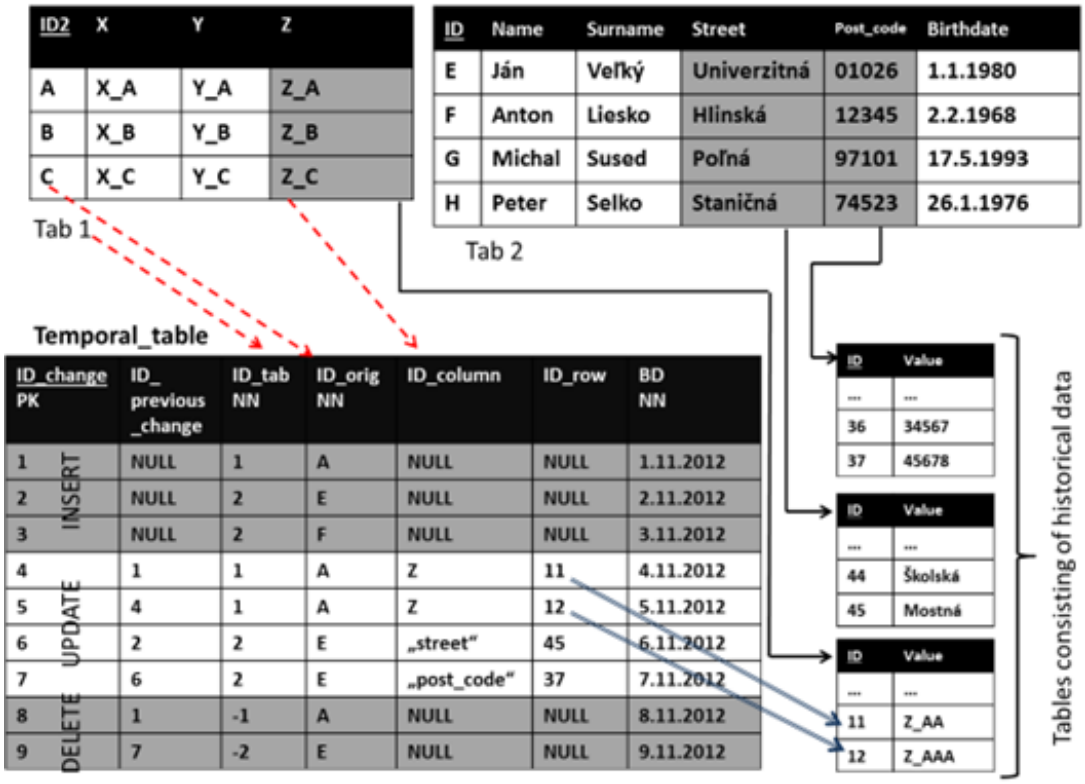


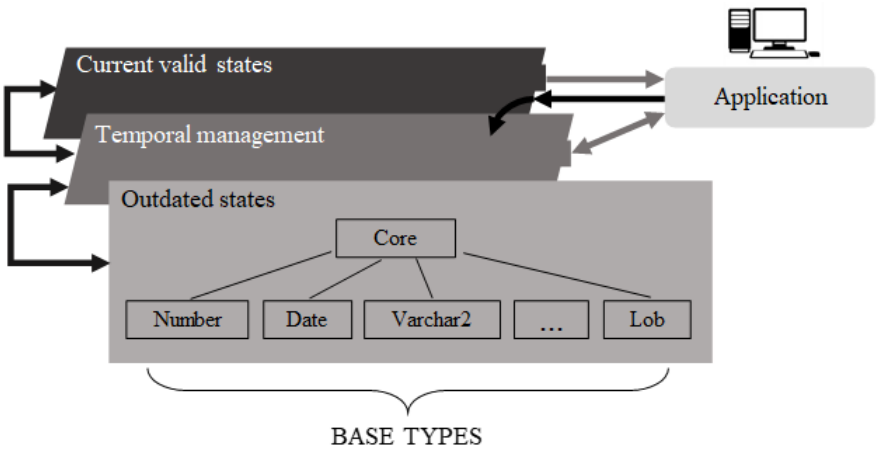

Conventional model with no temporal elements
ID
DATA
Uni-temporal architecture
ID
BD
ED
DATA
Bi-temporal architecture
ID
BD1
ED2
BD1
ED2
DATA


Input
… Input Queue
Preprocesing
Load
Database

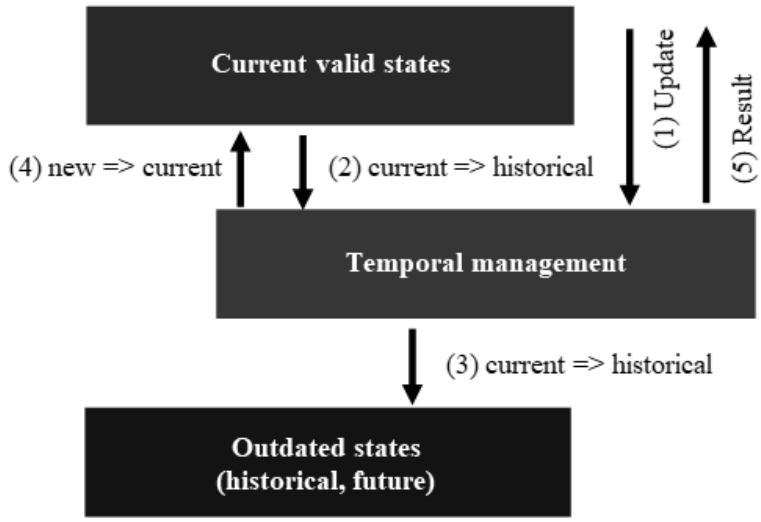

Central system
Central database
Synchronization event
Synchronization timepoint
Node 1
Node 2
Node n
Local system
Local database N1
Local system
Local database N2
Local system
Local database Nn
temporal change manager for node 1 (validity)
temporal change manager for node 2 (validity)
temporal change manager for node n (validity)


Current valid states
Temporal management
Outdated states - 1:1 mapping
Application

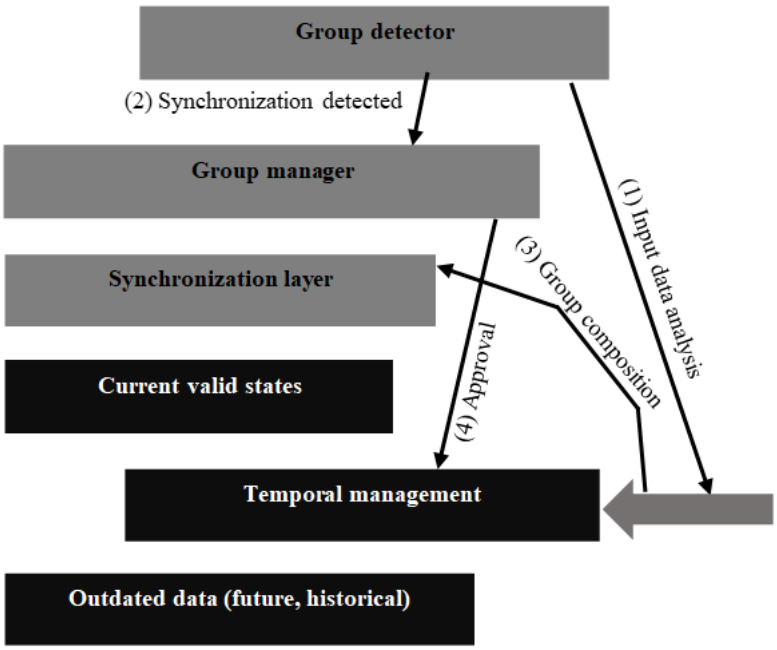

ID2 X Y Z
A X_A Y_A Z_A
B X_B Y_B Z_B
C X_C Y_C Z_C
Tab 1
ID Name Surname Street Post_code Birthdate
E Ján Veľký Univerzitná 01026 1.1.1980
F Anton Liesko Hlinská 12345 2.2.1968
G Michal Sused Poľná 97101 17.5.1993
H Peter Selko Staničná 74523 26.1.1976
Tab 2
Temporal_table
ID_change PK
ID_ previous _change
ID_tab NN
ID_orig NN
ID_column
ID_row
BD NN
1 INSERT NULL 1 A NULL NULL 1.11.2012
2 INSERT NULL 2 E NULL NULL 2.11.2012
3 INSERT NULL 2 F NULL NULL 3.11.2012
4 1 1 A Z 11 4.11.2012
5 UPDATE 4 1 A Z 12 5.11.2012
6 UPDATE 2 2 E „street" 45 6.11.2012
7 UPDATE 6 2 E „post_code" 37 7.11.2012
8 DELETE 1 -1 A NULL NULL 8.11.2012
9 DELETE 7 -2 E NULL NULL 9.11.2012
ID Value
36 34567
37 45678
ID Value
44 Školská
45 Mostná
ID Value
11 Z_AA
12 Z_AAA
Tables consisting of historical data

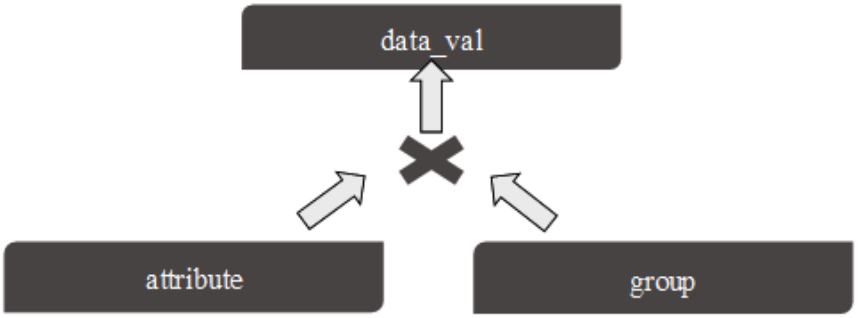

Current valid states
Temporal management
Outdated states
Core
Number
Date
Varchar2
...
Lob
Application
BASE TYPES

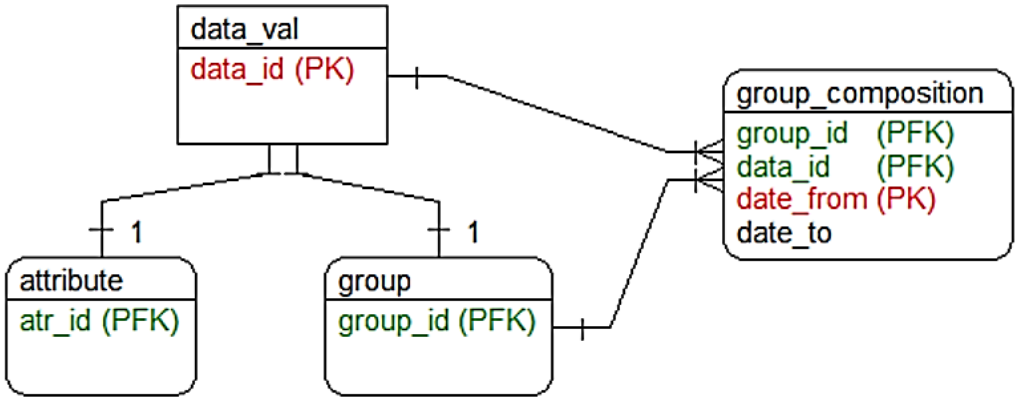
Extended_temporal_table			
id_change	Integer	NN	(PK)
id_previous_change	Integer		
statement_type	Char(1)	NN	
id_tab	Integer	NN	
id_orig	Integer	NN	
data_type	Char(1)		
id_column	Integer		
id_row	Integer		
bd	Date	NN	

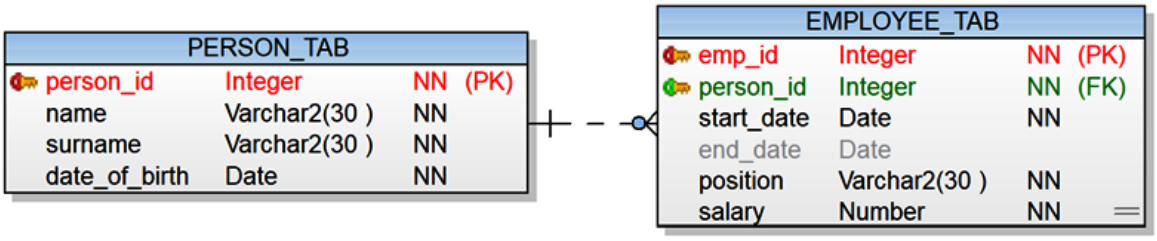


SYNCHRONIZATION GROUPS – DATA FLOW




data_val
attribute
group


data_val
data_id (PK)
group_composition
group_id (PFK)
data_id (PFK)
date_from (PK)
date_to
1
1
attribute
atr_id (PFK)
group
group_id (PFK)


PERSON_TAB
person_id Integer NN (PK)
name Varchar2(30) NN
surname Varchar2(30) NN
date_of_birth Date NN
EMPLOYEE_TAB
emp_id Integer NN (PK)
person_id Integer NN (FK)
start_date Date NN
end_date Date
position Varchar2(30) NN
salary Number NN

Chapter 12: Building Month Calendars Using SQL and PL/SQL

```
MON :         7   14   21   28
TUE :    1    8   15   22
WED :    2    9   16   23
THU :    3   10   17   24
FRI :    4   11   18   25
SAT :    5   12   19   26
SUN :    6   13   20   27
```

```
MON :    7   14   21   28
TUE :    1    8   15   22
WED :    2    9   16   23
THU :    3   10   17   24
FRI :    4   11   18   25
SAT :    5   12   19   26
SUN :    6   13   20   27
```

MON	TUE	WED	THU	FRI	SAT	SUN
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27

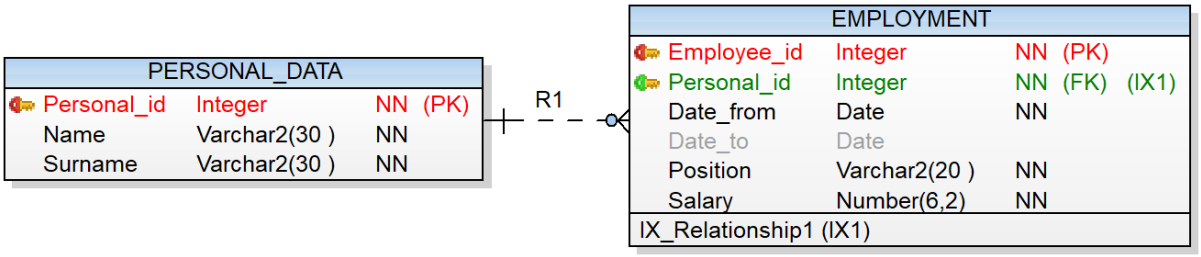
TEXT						
MON	TUE	WED	THU	FRI	SAT	SUN
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

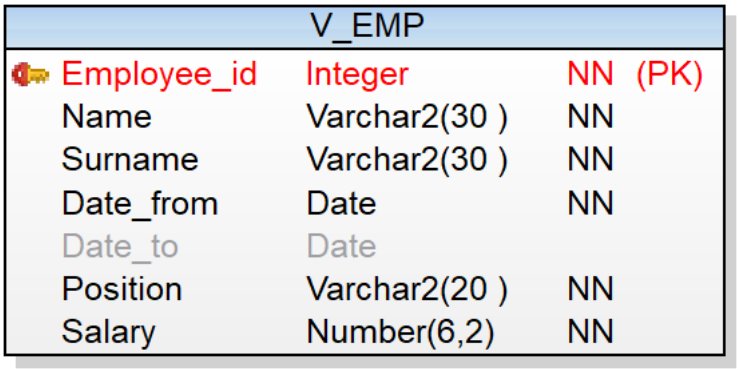
WEEK_DAY	CALENDAR			
MON		7	14	21	28
TUE	1	8	15	22	
WED	2	9	16	23	
THU	3	10	17	24	
FRI	4	11	18	25	
SAT	5	12	19	26	
SUN	6	13	20	27	

Chapter 13: Flashback Management for Reconstructing the Database Image

No images…

Chapter 14: Building Reliable Solutions to Avoid SQL Injection






```
select DBMS_ASSERT.ENQUOTE_LITERAL('Michal'), 'Michal'
  from dual;
--> 'Michal'          Michal
```

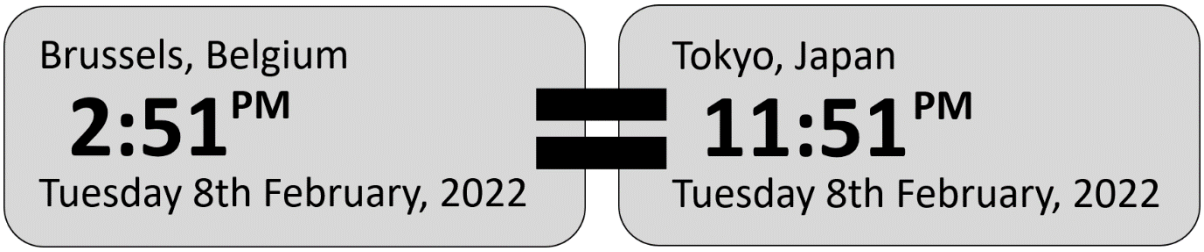
```
select DBMS_ASSERT.ENQUOTE_LITERAL(TO_CHAR(sysdate,
                                            'DD.MM.YYYY')),
       TO_CHAR(sysdate, 'DD.MM.YYYY')
  from dual;
--> '12.12.2022'           12.12.2022
```

Chapter 15: Timestamp Enhancements

Chapter 16: Oracle Cloud Time-Zone Reflection

Time in Brussels (Belgium) vs. Tokyo (Japan)

Tokyo time is 9:00 hours ahead of Brussels.



Assessments