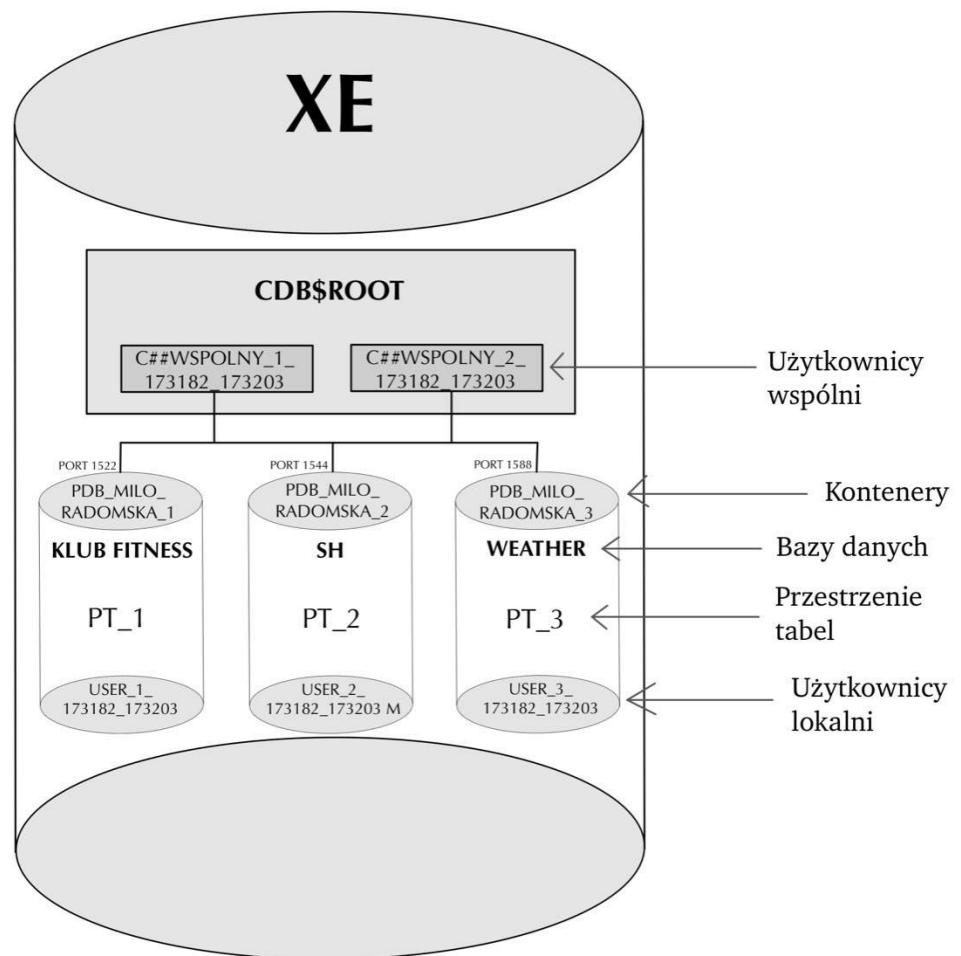


## Spis treści

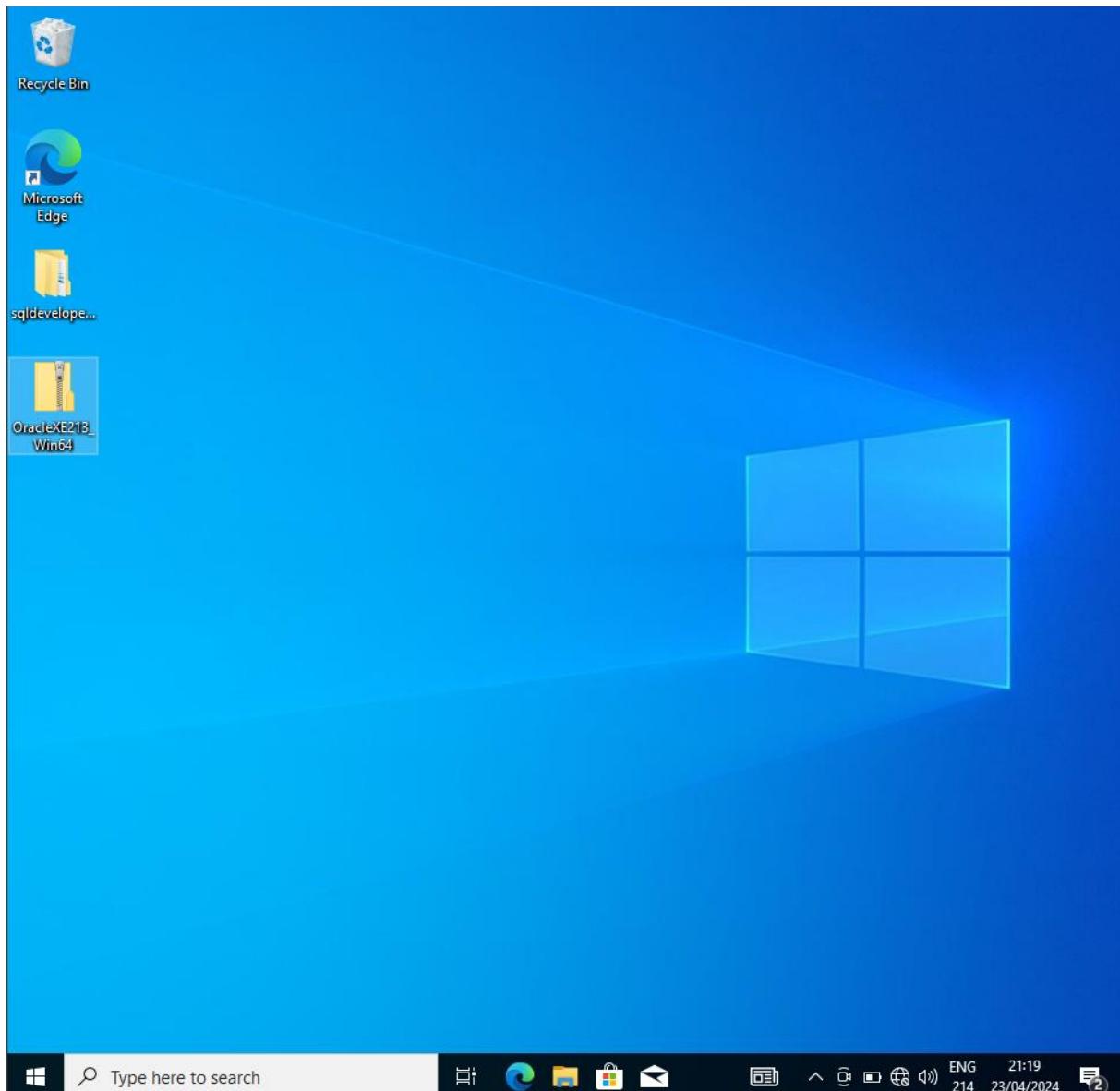
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## Plan rozmieszczenia kontenerów, przestrzeni tabel i użytkowników



## 1. Stworzenie maszyny wirtualnej oraz instalacja systemu operacyjnego.

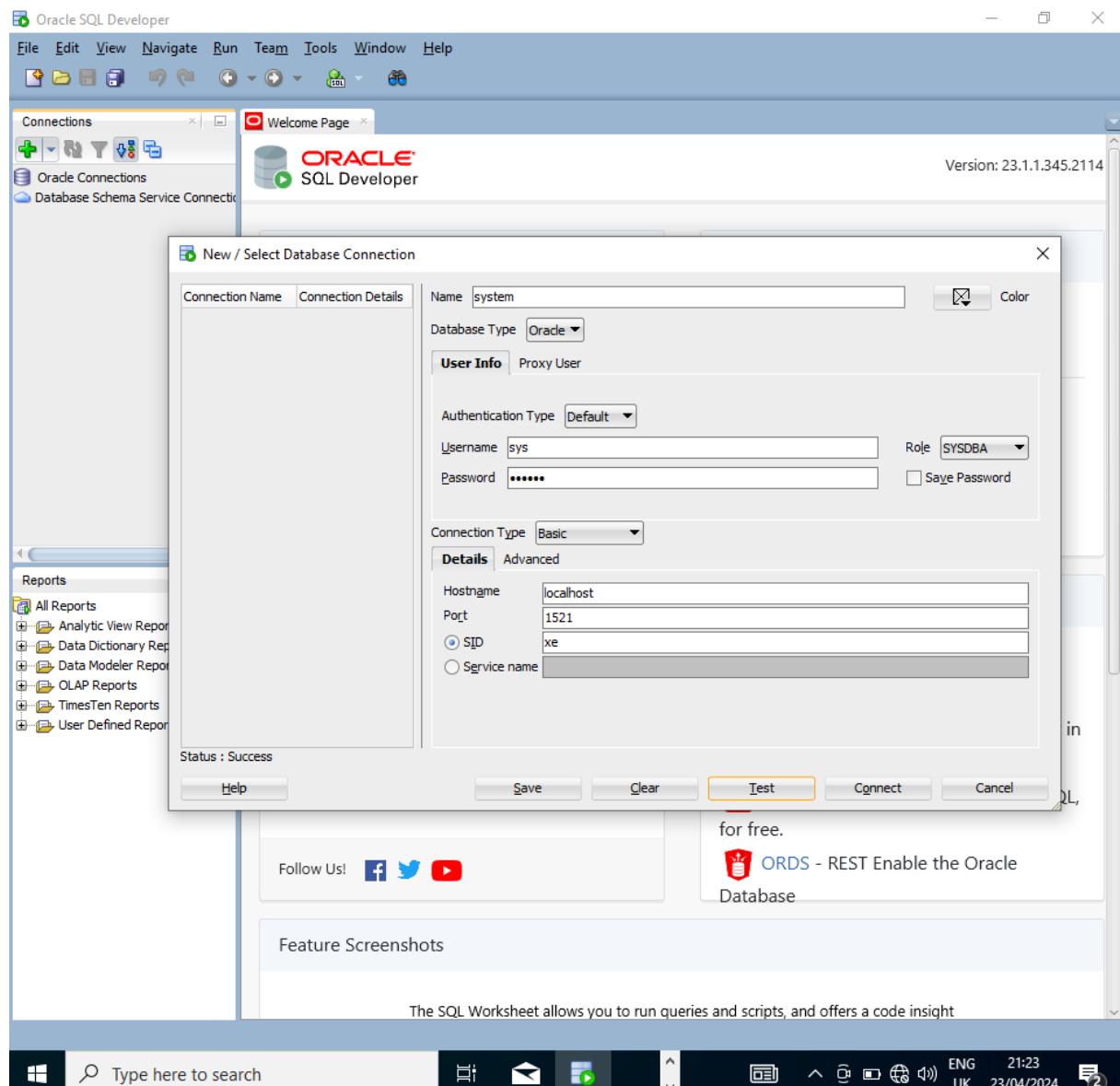
W celu stworzenia izolowanego środowiska do instalacji i konfiguracji systemu bazodanowego Oracle 21c XE, zdecydowałyśmy się na wykorzystanie maszyny wirtualnej przy użyciu oprogramowania Oracle VirtualBox. Przed rozpoczęciem instalacji systemu bazowego przystąpiłyśmy do utworzenia nowej maszyny wirtualnej zgodnie z wymaganiami technicznymi. Następnie przeprowadziliśmy instalację systemu operacyjnego, wybierając Windows 10 Professional jako platformę docelową.



## 2. Instalacja systemu bazodanowego.

Po pomyślnym utworzeniu maszyny wirtualnej oraz zakończeniu instalacji systemu operacyjnego, przystąpiliśmy do instalacji systemu bazodanowego Oracle 21c XE. Proces instalacji został przeprowadzony zgodnie z dokumentacją Oracle oraz uwzględniał wszystkie wymagane kroki konfiguracyjne. W celu zapewnienia bezpieczeństwa systemu bazodanowego, zostało dodane hasło dla użytkownika SYSTEM. Po instalacji systemu bazodanowego dokładnie sprawdziliśmy poprawność działania, upewniając się, że wszystkie komponenty zostały zainstalowane i skonfigurowane poprawnie.

Dodatkowo, w ramach procesu instalacji i konfiguracji, zainstalowaliśmy również narzędzie SQL Developer, które stanowi integralną część środowiska deweloperskiego dla obsługi i zarządzania bazą danych Oracle. Po zakończeniu instalacji systemu bazodanowego, dokładnie sprawdziliśmy konfigurację listenrów, zapewniając poprawne działanie usługi nasłuchującej oraz odpowiednie połączenie z bazą danych.



### 3. Stworzenie dwóch plików z parametrami.

#### 3.1 Parametry systemu bazodanowego

- Sprawdzenie lokalizacji pliku parametrów „spfile”.

The screenshot shows the Oracle SQL Developer interface. In the top-left pane, there is a SQL script editor window containing the command: `show parameter spfile;`. Below it, the 'Script Output' window displays the results of the query. The output shows a single row in a table format:

NAME	TYPE	VALUE
spfile	string	C:\APP\PATRYCJA\PRODUCT\21C\DATABASE\SPFILEXE.ORA

The status bar at the bottom of the 'Script Output' window indicates: 'Task completed in 0.115 seconds'.

- Utworzenie pliku „parametry\_bazodanowe.ora” we wcześniej stworzonym folderze „projekt\_173182\_173203” wykorzystując oryginalny plik parametrów.

The screenshot shows the Oracle SQL Developer interface. In the top-left pane, there is a SQL script editor window containing the command: `CREATE PFILE = 'C:\projekt_173182_173203\parametry_bazodanowe.ora'` followed by `FROM SPFILE;`. Below it, the 'Script Output' window displays the results of the query. The output shows the message: `Pfile = created.` The status bar at the bottom of the 'Script Output' window indicates: 'Task completed in 0.115 seconds'.

- Zawartość pliku „parametry\_bazodanowe.ora”.

```
PARAMETRY_BAZODANOWE - Notepad
File Edit Format View Help
xe._data_transfer_cache_size=0
xe._db_cache_size=838860800
xe._inmemory_ext_roarea=0
xe._inmemory_ext_rwarea=0
xe._java_pool_size=0
xe._large_pool_size=16777216
xe._oracle_base='C:\app\Patrycja\product\21c'#ORACLE_BASE set from environment
xe._pga_aggregate_target=436207616
xe._sga_target=1291845632
xe._shared_io_pool_size=67108864
xe._shared_pool_size=352321536
xe._streams_pool_size=0
xe._unified_pga_pool_size=0
*.audit_file_dest='C:\app\Patrycja\product\21c\admin\XE\adump'
*.audit_trail='db'
*.compatible='21.0.0'
*.control_files='C:\app\Patrycja\product\21c\oradata\XE\control01.ctl','C:\app\Patrycja\product\21c\oradata\XE\contr
*.db_block_size=8192
*.db_name='XE'
*.diagnostic_dest='C:\app\Patrycja\product\21c'
*.dispatchers='(PROTOCOL=TCP) (SERVICE=XEXDB)'
*.enable_pluggable_database=true
*.local_listener='LISTENER_XE'
*.nls_language='ENGLISH'
*.nls_territory='UNITED KINGDOM'
*.open_CURSORS=300
*.pga_aggregate_target=409m
*.processes=320
*.remote_login_passwordfile='EXCLUSIVE'
*.sga_target=1228m
*.undo_tablespace='UNDOTBS1'
```

- Sprawdzenie w widoku v\$parameter wartości parametrów, które będą modyfikowane.

The screenshot shows the Oracle SQL Developer interface. In the top-left pane, there is a code editor window containing the following SQL query:

```
SELECT name, value
FROM v$parameter
WHERE name IN ('data_transfer_cache_size', 'db_cache_size', 'java_pool_size', 'large_pool_size',
'pga_aggregate_target', 'sga_target', 'shared_pool_size', 'streams_pool_size',
'open_CURSORS', 'processes')
```

In the bottom-right pane, the "Query Result" tab is active, displaying the results of the query in a table:

NAME	VALUE
processes	320
shared_pool_size	0
large_pool_size	0
java_pool_size	0
streams_pool_size	0
sga_target	1291845632
db_cache_size	0
data_transfer_cache_size	0
open_CURSORS	300
pga_aggregate_target	428867584

- Edycja 10 zaznaczonych na zdjęciu wartości parametrów systemu bazodanowego.

```

PARAMETRY_BAZODANOWE - Notepad
File Edit Format View Help
xe._data_transfer_cache_size=77
xe._db_cache_size=700000000
xe._inmemory_ext_roarea=0
xe._inmemory_ext_rwarea=0
xe._java_pool_size=55
xe._large_pool_size=17000000
xe._oracle_base='C:\app\Patrycja\product\21c'#ORACLE_BASE set from environment
xe._pga_aggregate_target=370000000
xe._sga_target=1100000000
xe._shared_io_pool_size=67108864
xe._shared_pool_size=335555555
xe._streams_pool_size=3
xe._unified_pga_pool_size=0
*.audit_file_dest='C:\app\Patrycja\product\21c\admin\XE\adump'
*.audit_trail='db'
*.compatible='21.0.0'
*.control_files='C:\app\Patrycja\product\21c\oradata\XE\control01.ctl','C:\app\Patrycja\product\21c\oradata\XE\contr
*.db_block_size=8192
*.db_name='XE'
*.diagnostic_dest='C:\app\Patrycja\product\21c'
*.dispatchers='(PROTOCOL=TCP) (SERVICE=XEXDB)'
*.enable_pluggable_database=true
*.local_listener='LISTENER_XE'
*.nls_language='ENGLISH'
*.nls_territory='UNITED KINGDOM'
*.open_cursors=450
*.pga_aggregate_target=409m
*.processes=450
*.remote_login_passwordfile='EXCLUSIVE'
*.sga_target=1228m
*.undo_tablespace='UNDOTBS1'

```

- Wyłączenie bazy danych, a następnie uruchomienie jej ponownie z plikiem parametrów „parametry\_bazodanowe.ora”

```

SQL*Plus: Release 21.0.0.0.0 - Production on Mon Apr 22 23:01:48 2024
Version 21.3.0.0.0

Copyright (c) 1982, 2021, Oracle. All rights reserved.

Enter user-name: sys as SYSDBA
Enter password:

Connected to:
Oracle Database 21c Express Edition Release 21.0.0.0.0 - Production
Version 21.3.0.0.0

SQL> shutdown immediate
Database closed.
Database dismounted.
ORACLE instance shut down.
SQL> startup pfile = 'C:\projekt_173182_173203\PARAMETRY_BAZODANOWE.ora'
ORACLE instance started.

Total System Global Area 1291845136 bytes
Fixed Size          9854480 bytes
Variable Size       419430400 bytes
Database Buffers   855638016 bytes
Redo Buffers        6922240 bytes
Database mounted.
Database opened.
SQL>

```

- Wyświetlenie aktualnie używanych parametrów używanych w sesji.

```

SELECT name, value
FROM v$parameter
WHERE name IN ('data_transfer_cache_size','db_cache_size', 'java_pool_size', 'large_pool_size',
'pga_aggregate_target', 'sga_target', 'shared_pool_size', 'streams_pool_size',
'open_cursors', 'processes')

```

NAME	VALUE
1 processes	450
2 shared_pool_size	0
3 large_pool_size	0
4 java_pool_size	0
5 streams_pool_size	0
6 sga_target	1291845632
7 db_cache_size	0
8 data_transfer_cache_size	16777216
9 open_cursors	450
10 pga_aggregate_target	428867584

### 3.2 Parametry z grupy NLS

- Utworzenie pliku „parametry\_NLS.ora” we wcześniej stworzonym folderze „projekt\_173182\_173203” wykorzystując oryginalny plik parametrów.

The screenshot shows the Oracle SQL Developer interface. A SQL script window contains the command:

```
CREATE PFILE = 'C:\projekt_173182_173203\parametry_NLS.ora'  
FROM SPFILE;
```

Below the script window, the "Query Result" tab is active, showing the output:

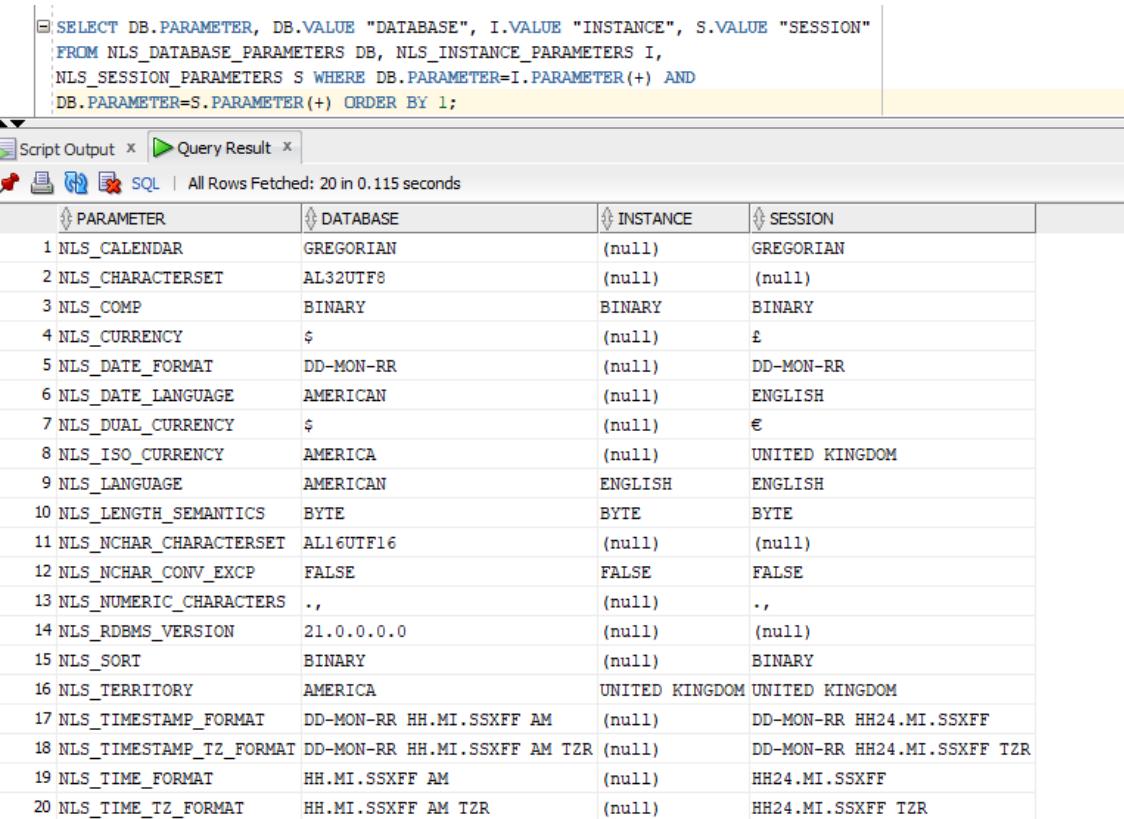
```
Pfile = created.
```

- Zawartość pliku „parametry\_NLS.ora”.

The screenshot shows a Notepad window titled "PARAMETRY\_NLS - Notepad". The content of the file is as follows:

```
File Edit Format View Help  
xe._data_transfer_cache_size=0  
xe._db_cache_size=838860800  
xe._inmemory_ext_roarea=0  
xe._inmemory_ext_rwarea=0  
xe._java_pool_size=0  
xe._large_pool_size=16777216  
xe._oracle_base='C:\app\Patrycja\product\21c'#ORACLE_BASE set from environment  
xe._pga_aggregate_target=436207616  
xe._sga_target=1291845632  
xe._shared_io_pool_size=67108864  
xe._shared_pool_size=352321536  
xe._streams_pool_size=0  
xe._unified_pga_pool_size=0  
*.audit_file_dest='C:\app\Patrycja\product\21c\admin\XE\adump'  
*.audit_trail='db'  
*.compatible='21.0.0'  
*.control_files='C:\app\Patrycja\product\21c\oradata\XE\control01.ctl','C:\app\Patrycja\product\21c\oradata\XE\control02.ctl'  
*.db_block_size=8192  
*.db_name='XE'  
*.diagnostic_dest='C:\app\Patrycja\product\21c'  
*.dispatchers='(PROTOCOL=TCP) (SERVICE=XEXDB)'  
*.enable_pluggable_database=true  
*.local_listener='LISTENER_XE'  
*.nls_language='ENGLISH'  
*.nls_territory='UNITED KINGDOM'  
*.open_cursors=300  
*.pga_aggregate_target=409m  
*.processes=320  
*.remote_login_passwordfile='EXCLUSIVE'  
*.sga_target=1228m  
*.undo_tablespace='UNDOTBS1'
```

- Sprawdzenie ustawień NLS dla tej instancji bazy danych.



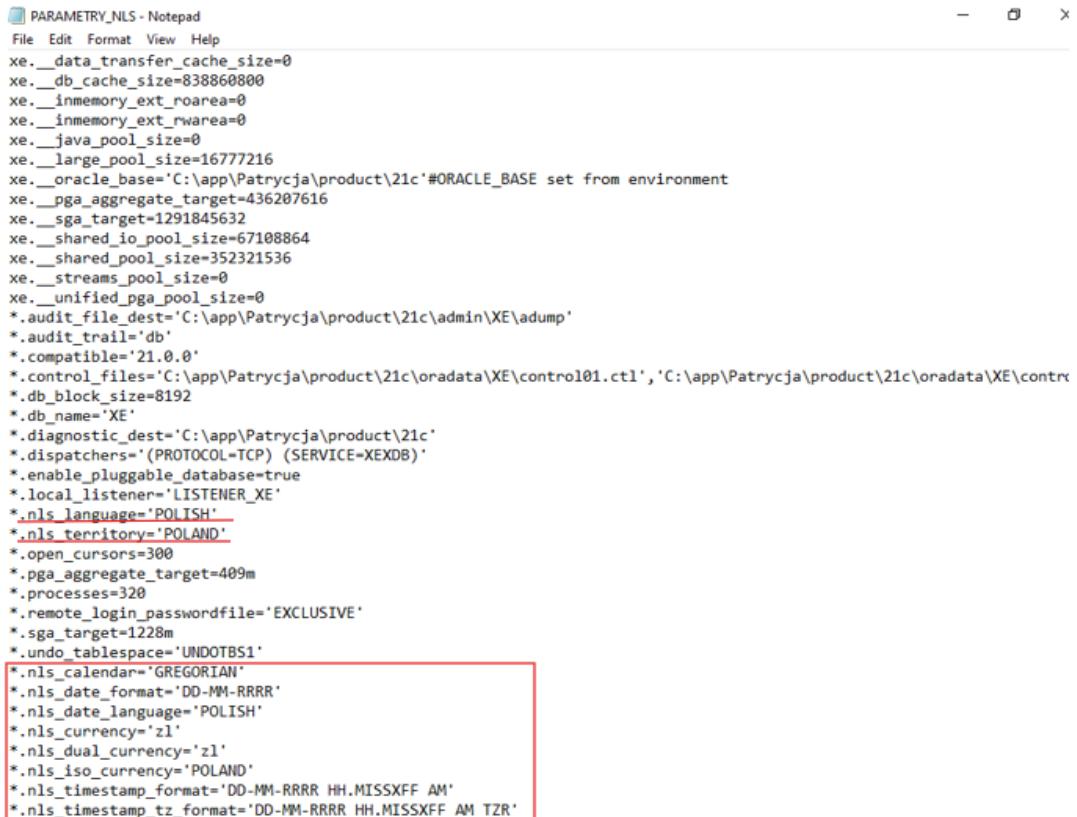
The screenshot shows the Oracle SQL Developer interface with a query result window. The query executed is:

```
SELECT DB.PARAMETER, DB.VALUE "DATABASE", I.VALUE "INSTANCE", S.VALUE "SESSION"
FROM NLS_DATABASE_PARAMETERS DB, NLS_INSTANCE_PARAMETERS I,
NLS_SESSION_PARAMETERS S WHERE DB.PARAMETER=I.PARAMETER(+) AND
DB.PARAMETER=S.PARAMETER(+) ORDER BY 1;
```

The results are displayed in a table:

PARAMETER	DATABASE	INSTANCE	SESSION
1 NLS_CALENDAR	GREGORIAN	(null)	GREGORIAN
2 NLS_CHARACTERSET	AL32UTF8	(null)	(null)
3 NLS_COMP	BINARY	BINARY	BINARY
4 NLS_CURRENCY	\$	(null)	£
5 NLS_DATE_FORMAT	DD-MON-RR	(null)	DD-MON-RR
6 NLS_DATE_LANGUAGE	AMERICAN	(null)	ENGLISH
7 NLS_DUAL_CURRENCY	\$	(null)	€
8 NLS_ISO_CURRENCY	AMERICA	(null)	UNITED KINGDOM
9 NLS_LANGUAGE	AMERICAN	ENGLISH	ENGLISH
10 NLS_LENGTH_SEMANTICS	BYTE	BYTE	BYTE
11 NLS_NCHAR_CHARACTERSET	AL16UTF16	(null)	(null)
12 NLS_NCHAR_CONV_EXCP	FALSE	FALSE	FALSE
13 NLS_NUMERIC_CHARACTERS	.,,	(null)	.,,
14 NLS_RDBMS_VERSION	21.0.0.0.0	(null)	(null)
15 NLS_SORT	BINARY	(null)	BINARY
16 NLS_TERRITORY	AMERICA	UNITED KINGDOM	UNITED KINGDOM
17 NLS_TIMESTAMP_FORMAT	DD-MON-RR HH.MI.SSXFF AM	(null)	DD-MON-RR HH24.MI.SSXFF
18 NLS_TIMESTAMP_TZ_FORMAT	DD-MON-RR HH.MI.SSXFF AM TZR	(null)	DD-MON-RR HH24.MI.SSXFF TZR
19 NLS_TIME_FORMAT	HH.MI.SSXFF AM	(null)	HH24.MI.SSXFF
20 NLS_TIME_TZ_FORMAT	HH.MI.SSXFF AM TZR	(null)	HH24.MI.SSXFF TZR

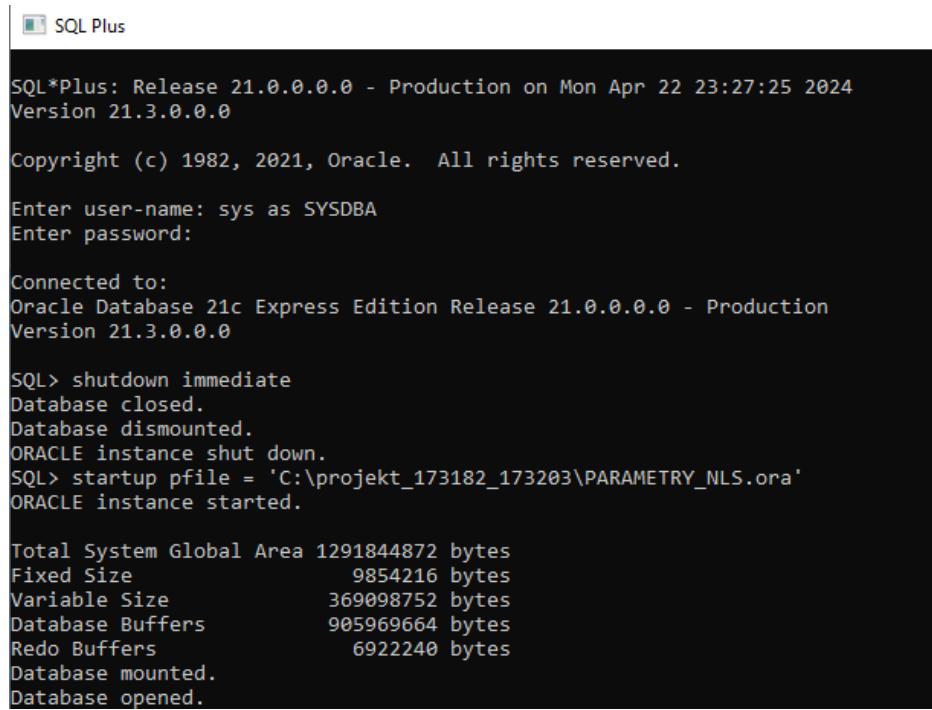
- Edycja 10 zaznaczonych na zdjęciu wartości parametrów NLS.



The screenshot shows a Notepad window with a configuration file for an Oracle database instance. The file contains various parameters, with several NLS-related parameters highlighted in red:

```
xe._data_transfer_cache_size=0
xe._db_cache_size=838860800
xe._inmemory_ext_roarea=0
xe._inmemory_ext_rwarea=0
xe._java_pool_size=0
xe._large_pool_size=16777216
xe._oracle_base='C:\app\Patrycja\product\21c'#ORACLE_BASE set from environment
xe._pga_aggregate_target=436207616
xe._sga_target=1291845632
xe._shared_io_pool_size=67108864
xe._shared_pool_size=352321536
xe._streams_pool_size=0
xe._unified_pga_pool_size=0
*.audit_file_dest='C:\app\Patrycja\product\21c\admin\XE\adump'
*.audit_trail='db'
*.compatible='21.0.0'
*.control_files='C:\app\Patrycja\product\21c\oradata\XE\control01.ctl','C:\app\Patrycja\product\21c\oradata\XE\contr
*.db_block_size=8192
*.db_name='XE'
*.diagnostic_dest='C:\app\Patrycja\product\21c'
*.dispatchers='(PROTOCOL=TCP) (SERVICE=XEXDB)'
*.enable_pluggable_database=true
*.local_listener='LISTENER_XE'
*.nls_language='POLISH'
*.nls_territory='POLAND'
*.open_cursors=300
*.pga_aggregate_target=409m
*.processes=320
*.remote_login_passwordfile='EXCLUSIVE'
*.sga_target=1228m
*.undo_tablespace='UNDOTBS1'
*.nls_calendar='GREGORIAN'
*.nls_date_format='DD-MM-RRRR'
*.nls_date_language='POLISH'
*.nls_currency='zl'
*.nls_dual_currency='zl'
*.nls_iso_currency='POLAND'
*.nls_timestamp_format='DD-MM-RRRR HH.MISSXFF AM'
*.nls_timestamp_tz_format='DD-MM-RRRR HH.MISSXFF AM TZR'
```

- Wyłączenie bazy danych, a następnie uruchomienie jej ponownie z plikiem parametrów „parametry\_NLS.ora”



```

SQL*Plus: Release 21.0.0.0.0 - Production on Mon Apr 22 23:27:25 2024
Version 21.3.0.0.0

Copyright (c) 1982, 2021, Oracle. All rights reserved.

Enter user-name: sys as SYSDBA
Enter password:

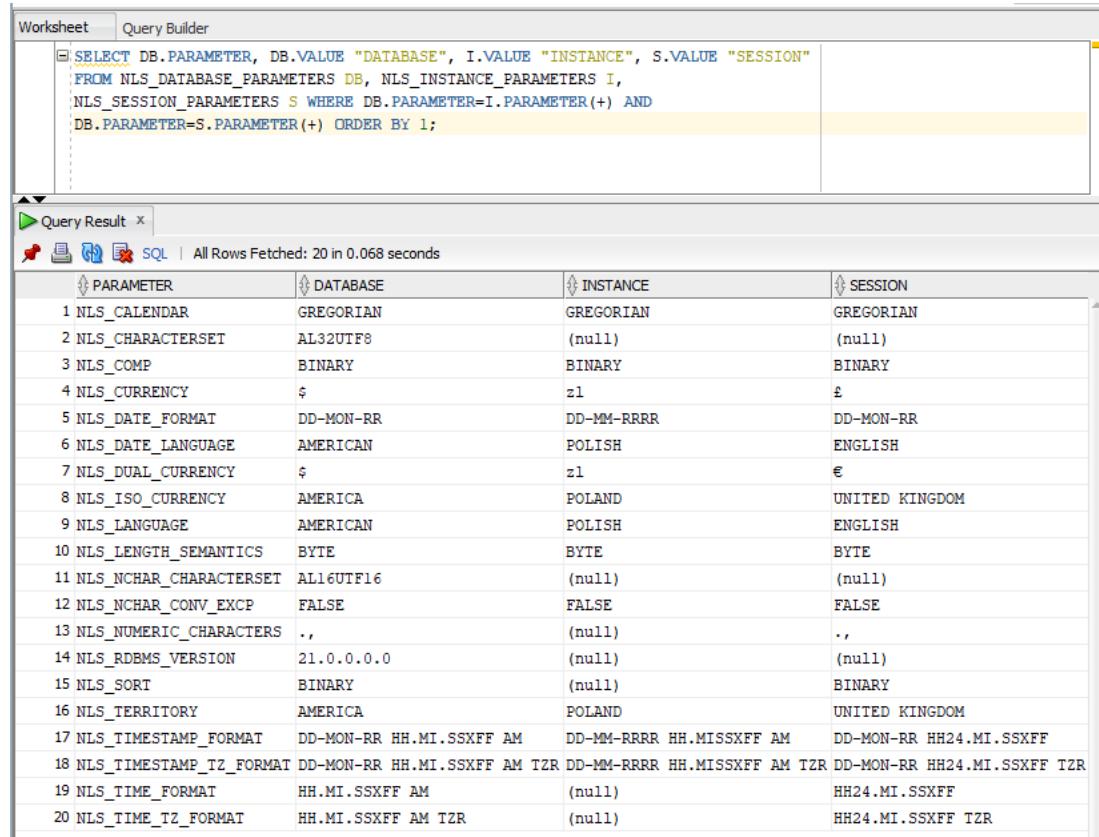
Connected to:
Oracle Database 21c Express Edition Release 21.0.0.0.0 - Production
Version 21.3.0.0.0

SQL> shutdown immediate
Database closed.
Database dismounted.
ORACLE instance shut down.
SQL> startup pfile = 'C:\projekt_173182_173203\PARAMETRY_NLS.ora'
ORACLE instance started.

Total System Global Area 1291844872 bytes
Fixed Size          9854216 bytes
Variable Size       369098752 bytes
Database Buffers   905969664 bytes
Redo Buffers        6922240 bytes
Database mounted.
Database opened.

```

- Wyświetlenie aktualnie używanych parametrów używanych w sesji.



Worksheet Query Builder

```

SELECT DB.PARAMETER, DB.VALUE "DATABASE", I.VALUE "INSTANCE", S.VALUE "SESSION"
FROM NLS_DATABASE_PARAMETERS DB, NLS_INSTANCE_PARAMETERS I,
NLS_SESSION_PARAMETERS S WHERE DB.PARAMETER=I.PARAMETER(+) AND
DB.PARAMETER=S.PARAMETER(+) ORDER BY 1;

```

Query Result

PARAMETER	DATABASE	INSTANCE	SESSION
1 NLS_CALENDAR	GREGORIAN	GREGORIAN	GREGORIAN
2 NLS_CHARACTERSET	AL32UTF8	(null)	(null)
3 NLS_COMP	BINARY	BINARY	BINARY
4 NLS_CURRENCY	\$	zl	£
5 NLS_DATE_FORMAT	DD-MON-RR	DD-MM-RRRR	DD-MON-RR
6 NLS_DATE_LANGUAGE	AMERICAN	POLISH	ENGLISH
7 NLS_DUAL_CURRENCY	\$	zl	€
8 NLS_ISO_CURRENCY	AMERICA	POLAND	UNITED KINGDOM
9 NLS_LANGUAGE	AMERICAN	POLISH	ENGLISH
10 NLS_LENGTH_SEMANTICS	BYTE	BYTE	BYTE
11 NLS_NCHAR_CHARACTERSET	AL16UTF16	(null)	(null)
12 NLS_NCHAR_CONV_EXCP	FALSE	FALSE	FALSE
13 NLS_NUMERIC_CHARACTERS	.,	(null)	..
14 NLS_RDBMS_VERSION	21.0.0.0.0	(null)	(null)
15 NLS_SORT	BINARY	(null)	BINARY
16 NLS_TERRITORY	AMERICA	POLAND	UNITED KINGDOM
17 NLS_TIMESTAMP_FORMAT	DD-MON-RR HH.MI.SSXFF AM	DD-MM-RRRR HH.MISSXFF AM	DD-MON-RR HH24.MI.SSXFF
18 NLS_TIMESTAMP_TZ_FORMAT	DD-MON-RR HH.MI.SSXFF AM TZR	DD-MM-RRRR HH.MISSXFF AM TZR	DD-MON-RR HH24.MI.SSXFF TZR
19 NLS_TIME_FORMAT	HH.MI.SSXFF AM	(null)	HH24.MI.SSXFF
20 NLS_TIME_TZ_FORMAT	HH.MI.SSXFF AM TZR	(null)	HH24.MI.SSXFF TZR

## 4. Modyfikacja plików listener.ora oraz tnames.ora.

### 4.1 Listener.ora

- Stworzenie 3 własnych listenerów na portach odpowiednio: 1522, 1544 oraz 1588.

```
listener - Notepad
File Edit Format View Help

SID_LIST_LISTENER =
(SID_LIST =
(SID_DESC =
(SID_NAME = CLRExtProc)
(ORACLE_HOME = C:\app\Gosia\product\21c\dbhomeXE)
(PROGRAM = extproc)
(ENVS = "EXTPROC_DLLS=ONLY:C:\app\Gosia\product\21c\dbhomeXE\bin\oraclr.dll")
)
)

SID_LIST_LISTENER_1_173182_173203 =
(SID_LIST =
(SID_DESC =
(GLOBAL_DNAME = XE)
(SID_NAME = XE)
)
)

SID_LIST_LISTENER_2_173182_173203 =
(SID_LIST =
(SID_DESC =
(GLOBAL_DNAME = XE)
(SID_NAME = XE)
)
)

SID_LIST_LISTENER_3_173182_173203 =
(SID_LIST =
(SID_DESC =
(GLOBAL_DNAME = XE)
(SID_NAME = XE)
)
)

listener - Notepad
File Edit Format View Help
)

LISTENER =
(DESCRIPTION_LIST =
(DESCRIPTION =
(ADDRESS = (PROTOCOL = TCP)(HOST = DESKTOP-U2MDDDK)(PORT = 1521))
(ADDRESS = (PROTOCOL = IPC)(KEY = EXTPROC1521))
)
)

LISTENER_1_173182_173203 =
(DESCRIPTION_LIST =
(DESCRIPTION =
(ADDRESS = (PROTOCOL = TCP)(HOST = DESKTOP-U2MDDDK)(PORT = 1522))
(ADDRESS = (PROTOCOL = IPC)(KEY = EXTPROC1521))
)
)

LISTENER_2_173182_173203 =
(DESCRIPTION_LIST =
(DESCRIPTION =
(ADDRESS = (PROTOCOL = TCP)(HOST = DESKTOP-U2MDDDK)(PORT = 1544))
(ADDRESS = (PROTOCOL = IPC)(KEY = EXTPROC1521))
)
)

LISTENER_3_173182_173203 =
(DESCRIPTION_LIST =
(DESCRIPTION =
(ADDRESS = (PROTOCOL = TCP)(HOST = DESKTOP-U2MDDDK)(PORT = 1588))
(ADDRESS = (PROTOCOL = IPC)(KEY = EXTPROC1521))
)
)
```

- Testowanie uruchamiania utworzonych listenerów.

```
Administrator: Command Prompt
C:\Windows\system32>lsnrctl start listener_1_173182_173203

LSNRCTL for 64-bit Windows: Version 21.0.0.0.0 - Production on 11-APR-2024 03:33:39
Copyright (c) 1991, 2021, Oracle. All rights reserved.

Starting tnslsnr: please wait...

TNSLSNR for 64-bit Windows: Version 21.0.0.0.0 - Production
System parameter file is C:\app\Gosia\product\21c\homes\OraDB21Home1\network\admin\listener.ora
Log messages written to C:\app\Gosia\product\21c\diag\tnslsnr\DESKTOP-U2MDDDK\listener_1_173182_173203\alert\log.xml
Listening on: (DESCRIPTION=(ADDRESS=(PROTOCOL=tcp)(HOST=DESKTOP-U2MDDDK)(PORT=1522)))
Listening on: (DESCRIPTION=(ADDRESS=(PROTOCOL=ipc)(PIPENAME=\.\pipe\EXTPROC1521ipc))

Connecting to (DESCRIPTION=(ADDRESS=(PROTOCOL=TCP)(HOST=DESKTOP-U2MDDDK)(PORT=1522)))
STATUS of the LISTENER
-----
Alias         (listener_1_173182_173203
Version        TNSLSNR for 64-bit Windows: Version 21.0.0.0.0 - Production
Start Date    11-APR-2024 03:33:46
Uptime         0 days 0 hr. 0 min. 8 sec
Trace Level   off
Security       ON: Local OS Authentication
SNMP           OFF
Listener Parameter File  C:\app\Gosia\product\21c\homes\OraDB21Home1\network\admin\listener.ora
Listener Log File   C:\app\Gosia\product\21c\diag\tnslsnr\DESKTOP-U2MDDDK\listener_1_173182_173203\alert\log.xml
Listening Endpoints Summary...
  (DESCRIPTION=(ADDRESS=(PROTOCOL=tcp)(HOST=DESKTOP-U2MDDDK)(PORT=1522)))
  (DESCRIPTION=(ADDRESS=(PROTOCOL=ipc)(PIPENAME=\.\pipe\EXTPROC1521ipc)))
Services Summary...
Service "XE" has 1 instance(s).
  Instance "XE", status UNKNOWN, has 1 handler(s) for this service...
The command completed successfully
```

```
Administrator: Command Prompt
C:\Windows\system32>lsnrctl start listener_2_173182_173203

LSNRCTL for 64-bit Windows: Version 21.0.0.0.0 - Production on 11-APR-2024 03:35:09
Copyright (c) 1991, 2021, Oracle. All rights reserved.

Starting tnslsnr: please wait...

TNSLSNR for 64-bit Windows: Version 21.0.0.0.0 - Production
System parameter file is C:\app\Gosia\product\21c\homes\OraDB21Home1\network\admin\listener.ora
Log messages written to C:\app\Gosia\product\21c\diag\tnslsnr\DESKTOP-U2MDDDK\listener_2_173182_173203\alert\log.xml
Listening on: (DESCRIPTION=(ADDRESS=(PROTOCOL=tcp)(HOST=DESKTOP-U2MDDDK)(PORT=1544)))
Listening on: (DESCRIPTION=(ADDRESS=(PROTOCOL=ipc)(PIPENAME=\.\pipe\EXTPROC1521ipc))

Connecting to (DESCRIPTION=(ADDRESS=(PROTOCOL=TCP)(HOST=DESKTOP-U2MDDDK)(PORT=1544)))
STATUS of the LISTENER
-----
Alias         (listener_2_173182_173203
Version        TNSLSNR for 64-bit Windows: Version 21.0.0.0.0 - Production
Start Date    11-APR-2024 03:35:11
Uptime         0 days 0 hr. 0 min. 4 sec
Trace Level   off
Security       ON: Local OS Authentication
SNMP           OFF
Listener Parameter File  C:\app\Gosia\product\21c\homes\OraDB21Home1\network\admin\listener.ora
Listener Log File   C:\app\Gosia\product\21c\diag\tnslsnr\DESKTOP-U2MDDDK\listener_2_173182_173203\alert\log.xml
Listening Endpoints Summary...
  (DESCRIPTION=(ADDRESS=(PROTOCOL=tcp)(HOST=DESKTOP-U2MDDDK)(PORT=1544)))
  (DESCRIPTION=(ADDRESS=(PROTOCOL=ipc)(PIPENAME=\.\pipe\EXTPROC1521ipc)))
Services Summary...
Service "XE" has 1 instance(s).
  Instance "XE", status UNKNOWN, has 1 handler(s) for this service...
The command completed successfully
```

```

Administrator: Command Prompt
C:\Windows\system32>lsnrctl start listener_3_173182_173203
LSNRCTL for 64-bit Windows: Version 21.0.0.0.0 - Production on 11-APR-2024 03:36:04
Copyright (c) 1991, 2021, Oracle. All rights reserved.

Starting tnslsnr: please wait...

TNSLSNR for 64-bit Windows: Version 21.0.0.0.0 - Production
System parameter file is C:\app\Gosia\product\21c\homes\OraDB21Home1\network\admin\listener.ora
Log messages written to C:\app\Gosia\product\21c\diag\tnslsnr\DESKTOP-U2MDDDK\listener_3_173182_173203\alert\log.xml
Listening on: (DESCRIPTION=(ADDRESS=(PROTOCOL=tcp)(HOST=DESKTOP-U2MDDDK)(PORT=1588)))
Listening on: (DESCRIPTION=(ADDRESS=(PROTOCOL=ipc)(PIPENAME=\\.\\pipe\\EXTPROC1521ipc)))

Connecting to (DESCRIPTION=(ADDRESS=(PROTOCOL=TCP)(HOST=DESKTOP-U2MDDDK)(PORT=1588)))
STATUS of the LISTENER
-----
Alias         (listener_3_173182_173203
Version        TNSLSNR for 64-bit Windows: Version 21.0.0.0.0 - Production
Start Date    11-APR-2024 03:36:10
Uptime         0 days 0 hr. 0 min. 8 sec
Trace Level   off
Security       ON: Local OS Authentication
SNMP           OFF
Listener Parameter File  C:\app\Gosia\product\21c\homes\OraDB21Home1\network\admin\listener.ora
Listener Log File   C:\app\Gosia\product\21c\diag\tnslsnr\DESKTOP-U2MDDDK\listener_3_173182_173203\alert\log.xml
Listening Endpoints Summary...
  (DESCRIPTION=(ADDRESS=(PROTOCOL=tcp)(HOST=DESKTOP-U2MDDDK)(PORT=1588))
  (DESCRIPTION=(ADDRESS=(PROTOCOL=ipc)(PIPENAME=\\.\\pipe\\EXTPROC1521ipc)))
Services Summary...
Service "XE" has 1 instance(s).
  Instance "XE", status UNKNOWN, has 1 handler(s) for this service...
The command completed successfully

```

- Nawiązanie nowych połączeń na kolejne porty wcześniej utworzonych listenerów.

```

SQL Plus
SQL*Plus: Release 21.0.0.0.0 - Production on Tue Apr 23 19:45:55 2024
Version 21.3.0.0.0

Copyright (c) 1982, 2021, Oracle. All rights reserved.

Enter user-name: system
Enter password:
Last Successful login time: Tue Apr 23 2024 19:40:56 +02:00

Connected to:
Oracle Database 21c Express Edition Release 21.0.0.0.0 - Production
Version 21.3.0.0.0

SQL> Connect system/system@(description=(address=(host= DESKTOP-U2MDDDK)(protocol=tcp)(port=1522)) (connect_data=(SERVICE_NAME=XE)))
Connected.
SQL> -

```

```

SQL Plus
SQL*Plus: Release 21.0.0.0.0 - Production on Tue Apr 23 19:48:03 2024
Version 21.3.0.0.0

Copyright (c) 1982, 2021, Oracle. All rights reserved.

Enter user-name: system
Enter password:
Last Successful login time: Tue Apr 23 2024 19:46:34 +02:00

Connected to:
Oracle Database 21c Express Edition Release 21.0.0.0.0 - Production
Version 21.3.0.0.0

SQL> Connect system/system@(description=(address=(host= DESKTOP-U2MDDDK)(protocol=tcp)(port=1544)) (connect_data=(SERVICE_NAME=XE)))
Connected.
SQL> -

```

```

SQL Plus
SQL*Plus: Release 21.0.0.0.0 - Production on Tue Apr 23 19:49:08 2024
Version 21.3.0.0.0

Copyright (c) 1982, 2021, Oracle. All rights reserved.

Enter user-name: system
Enter password:
Last Successful login time: Tue Apr 23 2024 19:48:09 +02:00

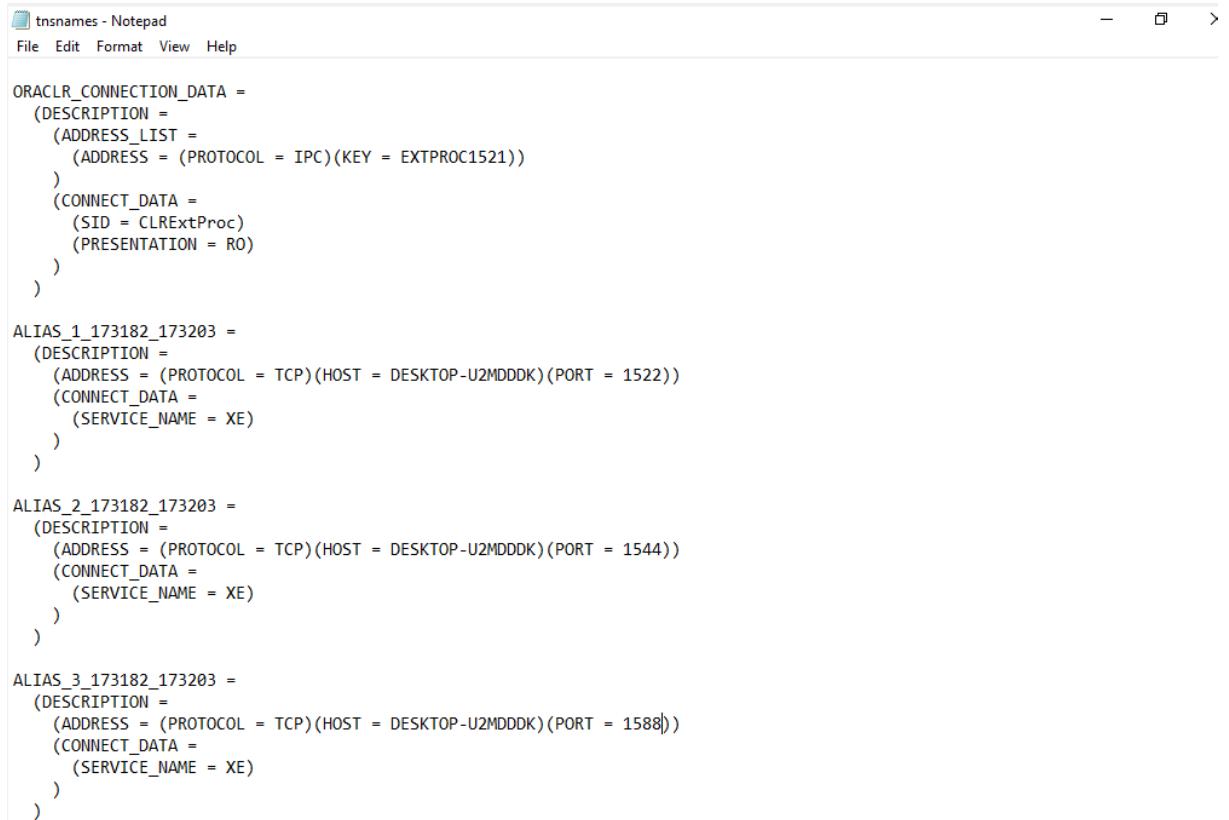
Connected to:
Oracle Database 21c Express Edition Release 21.0.0.0.0 - Production
Version 21.3.0.0.0

SQL> Connect system/system@(description=(address=(host= DESKTOP-U2MDDDK)(protocol=tcp)(port=1588)) (connect_data=(SERVICE_NAME=XE)))
Connected.
SQL> -

```

## 4.2 Tsnames.ora

- Utworzenie osobnych aliasów dla kolejnych portów.



```
tnsnames - Notepad
File Edit Format View Help

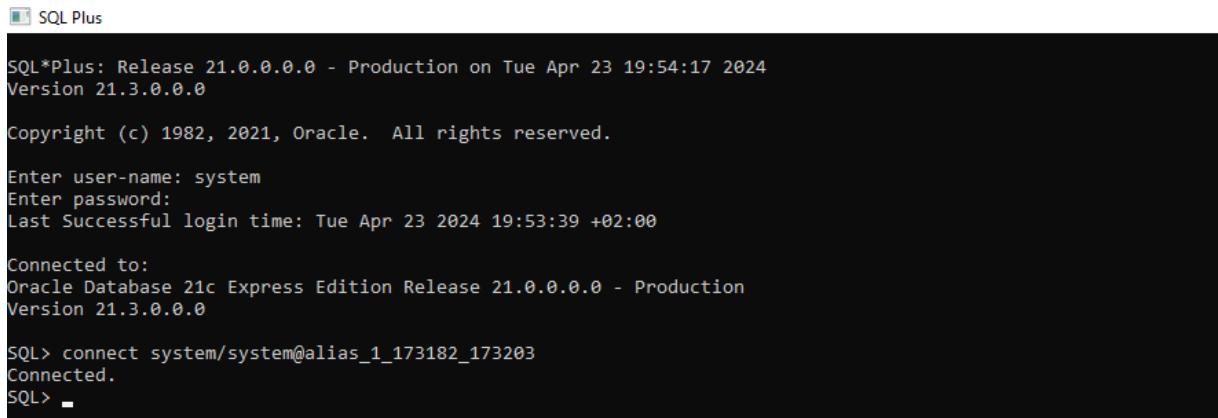
ORACLR_CONNECTION_DATA =
(DESCRIPTION =
  (ADDRESS_LIST =
    (ADDRESS = (PROTOCOL = IPC)(KEY = EXTPROC1521))
  )
  (CONNECT_DATA =
    (SID = CLRExtProc)
    (PRESENTATION = RO)
  )
)

ALIAS_1_173182_173203 =
(DESCRIPTION =
  (ADDRESS = (PROTOCOL = TCP)(HOST = DESKTOP-U2MDDDK)(PORT = 1522))
  (CONNECT_DATA =
    (SERVICE_NAME = XE)
  )
)

ALIAS_2_173182_173203 =
(DESCRIPTION =
  (ADDRESS = (PROTOCOL = TCP)(HOST = DESKTOP-U2MDDDK)(PORT = 1544))
  (CONNECT_DATA =
    (SERVICE_NAME = XE)
  )
)

ALIAS_3_173182_173203 =
(DESCRIPTION =
  (ADDRESS = (PROTOCOL = TCP)(HOST = DESKTOP-U2MDDDK)(PORT = 1588))
  (CONNECT_DATA =
    (SERVICE_NAME = XE)
  )
)
```

- Utworzenie nowych połączeń na kolejne porty.



```
SQL*Plus: Release 21.0.0.0.0 - Production on Tue Apr 23 19:54:17 2024
Version 21.3.0.0.0

Copyright (c) 1982, 2021, Oracle. All rights reserved.

Enter user-name: system
Enter password:
Last Successful login time: Tue Apr 23 2024 19:53:39 +02:00

Connected to:
Oracle Database 21c Express Edition Release 21.0.0.0.0 - Production
Version 21.3.0.0.0

SQL> connect system/system@alias_1_173182_173203
Connected.
SQL>
```

```
SQL*Plus: Release 21.0.0.0.0 - Production on Tue Apr 23 19:55:50 2024
Version 21.3.0.0.0

Copyright (c) 1982, 2021, Oracle. All rights reserved.

Enter user-name: system
Enter password:
Last Successful login time: Tue Apr 23 2024 19:54:48 +02:00

Connected to:
Oracle Database 21c Express Edition Release 21.0.0.0.0 - Production
Version 21.3.0.0.0

SQL> connect system/system@alias_2_173182_173203
Connected.
SQL>
```

```
SQL*Plus: Release 21.0.0.0.0 - Production on Tue Apr 23 19:52:33 2024
Version 21.3.0.0.0

Copyright (c) 1982, 2021, Oracle. All rights reserved.

Enter user-name: system
Enter password:
Last Successful login time: Tue Apr 23 2024 19:51:38 +02:00

Connected to:
Oracle Database 21c Express Edition Release 21.0.0.0.0 - Production
Version 21.3.0.0.0

SQL> Connect system/system@alias_3_173182_173203
Connected.
SQL> -
```

## 5. Stworzenie kontenerów

- Utworzenie trzech kontenerów z oddzielnymi administratorami i maksymalnym rozmiarem pamięci 3GB.

The screenshot shows the Oracle SQL Developer interface. In the top-left pane, there is a script editor containing three SQL commands to create pluggable databases:

```
CREATE PLUGGABLE DATABASE PDB_Milo_Radomska_1
ADMIN USER admin1 IDENTIFIED BY admin1
ROLES = (DBA)
STORAGE (MAXSIZE 3G)
FILE_NAME_CONVERT = ('C:\app\Patrycja\product\21c\oradata\XE\pdbseed', 'C:\projekt_173182_173203\PDB1');

CREATE PLUGGABLE DATABASE PDB_Milo_Radomska_2
ADMIN USER admin2 IDENTIFIED BY admin2
ROLES = (DBA)
STORAGE (MAXSIZE 3G)
FILE_NAME_CONVERT = ('C:\app\Patrycja\product\21c\oradata\XE\pdbseed', 'C:\projekt_173182_173203\PDB2');

CREATE PLUGGABLE DATABASE PDB_Milo_Radomska_3
ADMIN USER admin3 IDENTIFIED BY admin3
ROLES = (DBA)
STORAGE (MAXSIZE 3G)
FILE_NAME_CONVERT = ('C:\app\Patrycja\product\21c\oradata\XE\pdbseed', 'C:\projekt_173182_173203\PDB3');
```

In the bottom-right pane, the "Script Output" window shows the results of the execution:

```
Pluggable database PDB_MILO_RADOMSKA_1 created.

Pluggable database PDB_MILO_RADOMSKA_2 created.

Pluggable database PDB_MILO_RADOMSKA_3 created.
```

- Otwarcie wszystkich kontenerów.

The screenshot shows the Oracle SQL Developer interface. In the top-left pane, there is a script editor containing three SQL commands to open the pluggable databases:

```
ALTER PLUGGABLE DATABASE PDB_Milo_Radomska_1 OPEN;
ALTER PLUGGABLE DATABASE PDB_Milo_Radomska_2 OPEN;
ALTER PLUGGABLE DATABASE PDB_Milo_Radomska_3 OPEN;
```

In the bottom-right pane, the "Script Output" window shows the results of the execution:

```
Pluggable database PDB_MILO_RADOMSKA_1 altered.

Pluggable database PDB_MILO_RADOMSKA_2 altered.

Pluggable database PDB_MILO_RADOMSKA_3 altered.
```

- Wyświetlenie wszystkich kontenerów.

The screenshot shows the Oracle SQL Developer interface with the SQL worksheet tab selected. The command `Show pdbs;` is entered in the worksheet. The results are displayed in a table titled "Script Output" with the following data:

CON_ID	CON_NAME	OPEN MODE	RESTRICTED
2	PDB\$SEED	READ ONLY	NO
3	XEPDB1	MOUNTED	
4	PDB1	MOUNTED	
5	PDB_MILO_RADOMSKA_1	READ WRITE	NO
6	PDB_MILO_RADOMSKA_2	READ WRITE	NO
7	PDB_MILO_RADOMSKA_3	READ WRITE	NO

- Zamknięcie kontenerów oraz utworzenie plików manifestu dla nich.

The screenshot shows the Oracle SQL Developer interface with the SQL worksheet tab selected. The following commands are entered and executed:

```

ALTER PLUGGABLE DATABASE PDB_Milo_Radomska_1 CLOSE IMMEDIATE;
ALTER PLUGGABLE DATABASE PDB_Milo_Radomska_1 UNPLUG INTO 'C:\projekt_173182_173203\PDB1\PDB_Milo_Radomska_1.XML';

ALTER PLUGGABLE DATABASE PDB_Milo_Radomska_2 CLOSE IMMEDIATE;
ALTER PLUGGABLE DATABASE PDB_Milo_Radomska_2 UNPLUG INTO 'C:\projekt_173182_173203\PDB2\PDB_Milo_Radomska_2.XML';

ALTER PLUGGABLE DATABASE PDB_Milo_Radomska_3 CLOSE IMMEDIATE;
ALTER PLUGGABLE DATABASE PDB_Milo_Radomska_3 UNPLUG INTO 'C:\projekt_173182_173203\PDB3\PDB_Milo_Radomska_3.XML';

```

The execution results are shown in the "Script Output" window:

```

Pluggable database PDB_MILO_RADOMSKA_1 altered.
Pluggable database PDB_MILO_RADOMSKA_1 altered.

Pluggable database PDB_MILO_RADOMSKA_2 altered.

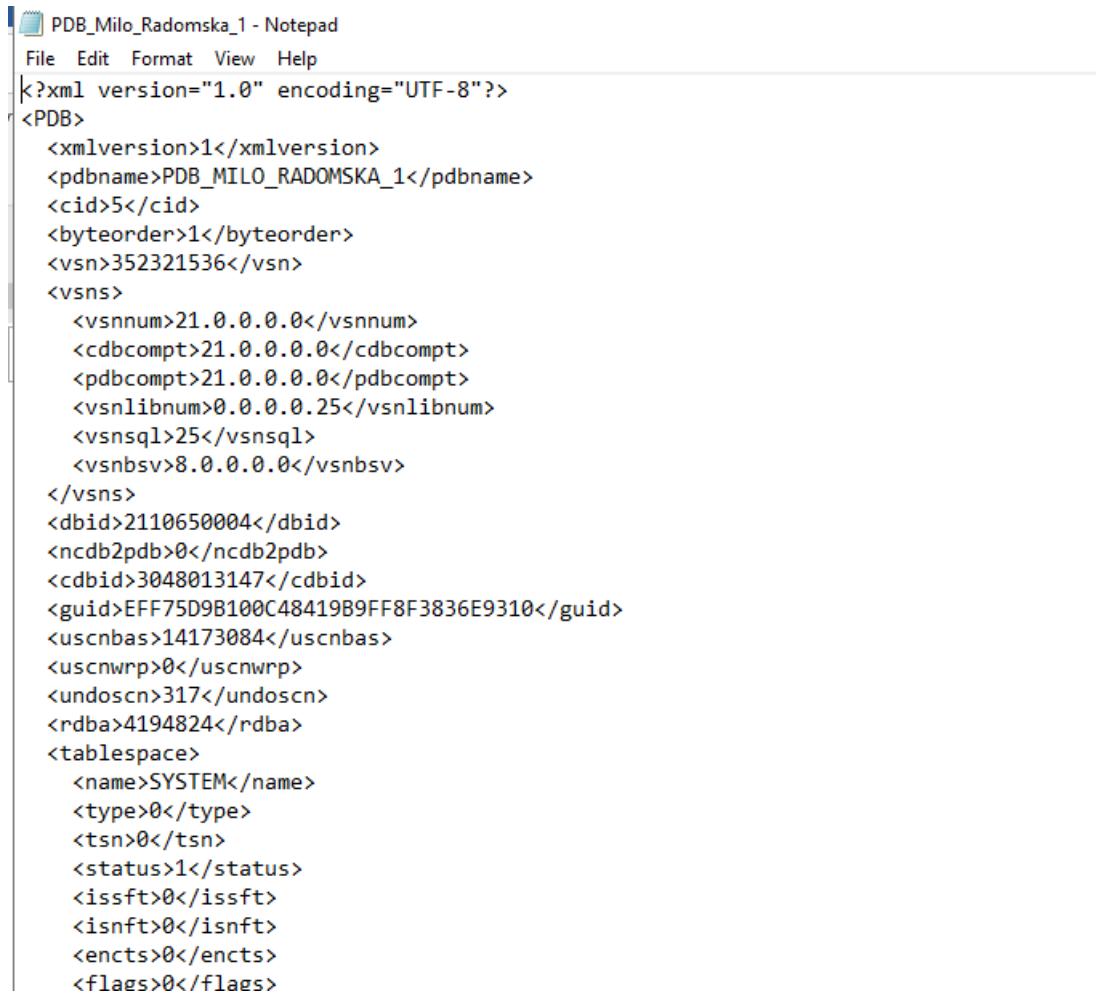
Pluggable database PDB_MILO_RADOMSKA_2 altered.

Pluggable database PDB_MILO_RADOMSKA_3 altered.

Pluggable database PDB_MILO_RADOMSKA_3 altered.

```

- Wyświetlenie przykładowego pliku manifestu dla kontenera PDB\_Milo\_Radomska\_1



```

PDB_Milo_Radomska_1 - Notepad
File Edit Format View Help
<?xml version="1.0" encoding="UTF-8"?>
<PDB>
  <xmlversion>1</xmlversion>
  <pdbname>PDB_MILO_RADOMSKA_1</pdbname>
  <cid>5</cid>
  <byteorder>1</byteorder>
  <vsn>352321536</vsn>
  <vsns>
    <vsnnum>21.0.0.0.0</vsnnum>
    <cdbcompt>21.0.0.0.0</cdbcompt>
    <pcbcompt>21.0.0.0.0</pcbcompt>
    <vsnlibnum>0.0.0.0.25</vsnlibnum>
    <vsnsq>25</vsnsq>
    <vsnbsv>8.0.0.0.0</vsnbsv>
  </vsns>
  <dbid>2110650004</dbid>
  <ncdb2pdb>0</ncdb2pdb>
  <cbid>3048013147</cbid>
  <guid>EFF75D9B100C48419B9FF8F3836E9310</guid>
  <uscnbas>14173084</uscnbas>
  <uscnwarp>0</uscnwarp>
  <undoscn>317</undoscn>
  <rdba>4194824</rdba>
  <tablespace>
    <name>SYSTEM</name>
    <type>0</type>
    <tsn>0</tsn>
    <status>1</status>
    <issft>0</issft>
    <isnft>0</isnft>
    <encts>0</encts>
    <flags>0</flags>
  </tablespace>
</PDB>

```

- Zmiana parametru „territory” dla trzech kontenerów przez plik manifestu kolejno na Polskę, Wielką Brytanie i Stany Zjednoczone

```

<parameters>
  <parameter>processes=300</parameter>
  <parameter>nls_language='POLISH'</parameter>
  <parameter>nls_territory='POLAND'</parameter>
  <parameter>nls_date_language='POLISH'</parameter>

<parameters>
  <parameter>processes=300</parameter>
  <parameter>nls_language='POLISH'</parameter>
  <parameter>nls_territory='UNITED KINGDOM'</parameter>
  <parameter>nls_date_language='POLISH'</parameter>

<parameters>
  <parameter>processes=300</parameter>
  <parameter>nls_language='POLISH'</parameter>
  <parameter>nls_territory='USA'</parameter>
  <parameter>nls_date_language='POLISH'</parameter>

```

- Usunięcie kontenerów z zachowaniem plików.

The screenshot shows the Oracle SQL Developer interface. In the top pane, there is a script editor window containing the following SQL code:

```
DROP PLUGGABLE DATABASE PDB_Milo_Radomska_1 KEEP DATAFILES;
DROP PLUGGABLE DATABASE PDB_Milo_Radomska_2 KEEP DATAFILES;
DROP PLUGGABLE DATABASE PDB_Milo_Radomska_3 KEEP DATAFILES;
```

Below the script editor is a "Script Output" window. It displays the results of the execution:

```
Pluggable database PDB_MILO_RADOMSKA_1 dropped.

Pluggable database PDB_MILO_RADOMSKA_2 dropped.

Pluggable database PDB_MILO_RADOMSKA_3 dropped.
```

- Ponowne utworzenie kontenerów z plików manifestu ze zmienionymi parametrami.

The screenshot shows the Oracle SQL Developer interface. In the top pane, there is a script editor window containing the following SQL code:

```
CREATE PLUGGABLE DATABASE PDB_Milo_Radomska_1 USING 'C:\projekt_173182_173203\PDB1\PDB_Milo_Radomska_1.XML' NOCOPY;
CREATE PLUGGABLE DATABASE PDB_Milo_Radomska_2 USING 'C:\projekt_173182_173203\PDB2\PDB_Milo_Radomska_2.XML' NOCOPY;
CREATE PLUGGABLE DATABASE PDB_Milo_Radomska_3 USING 'C:\projekt_173182_173203\PDB3\PDB_Milo_Radomska_3.XML' NOCOPY;
```

Below the script editor is a "Script Output" window. It displays the results of the execution:

```
Pluggable database PDB_MILO_RADOMSKA_1 created.

Pluggable database PDB_MILO_RADOMSKA_2 created.

Pluggable database PDB_MILO_RADOMSKA_3 created.
```

- Otworzenie wszystkich kontenerów w trybie zapisu.

The screenshot shows the Oracle SQL Developer interface. The top window is a 'Worksheet' pane containing the following SQL code:

```
ALTER PLUGGABLE DATABASE PDB_Milo_Radomska_1 OPEN READ WRITE;
ALTER PLUGGABLE DATABASE PDB_Milo_Radomska_2 OPEN READ WRITE;
ALTER PLUGGABLE DATABASE PDB_Milo_Radomska_3 OPEN READ WRITE;
```

The bottom window is a 'Script Output' pane displaying the results of the execution:

```
Pluggable database PDB_MILO_RADOMSKA_1 altered.

Pluggable database PDB_MILO_RADOMSKA_2 altered.

Pluggable database PDB_MILO_RADOMSKA_3 altered.
```

A message at the top of the output pane states: 'Task completed in 5.911 seconds'.

## 6. Stworzenie przestrzeni tabel

- Utworzenie przestrzeni tabel PT\_1 na kontenerze PDB\_Milo\_Radomska\_1.

The screenshot shows the Oracle SQL Developer interface. The top menu bar has tabs for 'Welcome Page', 'SYS', 'PDB1' (which is selected), 'PDB2', and 'PDB3'. Below the menu is a toolbar with various icons. The main workspace is titled 'Worksheet' and contains the following SQL code:

```
CREATE TABLESPACE PT_1
DATAFILE 'C:\projekt_173182_173203\PDB1\PT_1.dbf' size 500M
AUTOEXTEND ON;
```

Below the worksheet is a 'Script Output' window which displays the result of the command:

```
TABLESPACE PT_1 created.
```

- Utworzenie przestrzeni tabel PT\_2 na kontenerze PDB\_Milo\_Radomska\_2.

The screenshot shows the Oracle SQL Developer interface. The top navigation bar has tabs for PDB2, PDB1, sys, and PDB3. The main window is titled 'Worksheet' and contains the following SQL code:

```
CREATE TABLESPACE PT_2
DATAFILE 'C:\projekt_173182_173203\PDB2\PT_2.dbf' size 500M
AUTOEXTEND ON;
```

The bottom panel is titled 'Script Output' and displays the result of the execution:

```
TABLESPACE PT_2 created.
```

Task completed in 1.972 seconds

- Utworzenie przestrzeni tabel PT\_3 na kontenerze PDB\_Milo\_Radomska\_3.

The screenshot shows the Oracle SQL Developer interface. At the top, there are four tabs: PDB2, PDB1, sys, and PDB3, with PDB3 selected. Below the tabs is a toolbar with various icons. The main area has two tabs: Worksheet (selected) and Query Builder. In the Worksheet tab, the following SQL code is entered:

```
CREATE TABLESPACE PT_3
DATAFILE 'C:\projekt_173182_173203\PDB3\PT_3.dbf' size 500M
AUTOEXTEND ON;
```

At the bottom of the interface, there is a Script Output window. It shows the command entered and the result: "TABLESPACE PT\_3 created." followed by a note: "Task completed in 2.096 seconds".

## 7. Stworzenie użytkowników lokalnych

- Utworzenie użytkownika user\_1\_173182\_173203

The screenshot shows the Oracle SQL Developer interface. The top navigation bar has tabs for PDB2, PDB1 (selected), SYS, and PDB3. Below the tabs is a toolbar with various icons. The main area is titled "Worksheet" and contains the following SQL code:

```
CREATE USER user_1_173182_173203 IDENTIFIED BY user1;
GRANT CREATE SESSION , CREATE ANY TABLE TO user_1_173182_173203;
```

Below the worksheet is a "Script Output" window showing the results of the execution:

```
User USER_1_173182_173203 created.

Grant succeeded.
```

The "Task completed in 0.057 seconds" message is also visible in the output window.

- Utworzenie użytkownika user\_2\_173182\_173203

The screenshot shows the Oracle SQL Developer interface. At the top, there are tabs for PDB2, PDB1 (selected), sys, and PDB3. Below the tabs is a toolbar with various icons. The main area is titled "Worksheet" and contains the following SQL code:

```
CREATE USER user_2_173182_173203 IDENTIFIED BY user2;
GRANT CREATE SESSION , CREATE ANY TABLE TO user_2_173182_173203;
```

Below the worksheet is a "Script Output" window. It shows the results of the executed command:

```
User USER_2_173182_173203 created.  
Grant succeeded.
```

The "Task completed in 0.025 seconds" message is also visible in the output window.

- Utworzenie użytkownika user\_3\_173182\_173203

The screenshot shows the Oracle SQL Developer interface. At the top, there are four tabs: PDB2, PDB1, SYS, and PDB3 (which is selected). Below the tabs is a toolbar with various icons. The main area is titled "Worksheet" and contains the following SQL code:

```
CREATE USER user_3_173182_173203 IDENTIFIED BY user3;  
GRANT CREATE SESSION , CREATE ANY TABLE TO user_3_173182_173203;
```

Below the worksheet is a "Script Output" window. It shows the results of the executed SQL statements:

```
Task completed in 0.033 seconds  
User USER_3_173182_173203 created.  
Grant succeeded.
```

## 8. Stworzenie użytkowników wspólnych

- Utworzenie użytkowników wspólnych takich jak: c##wspolny\_1\_183182\_173203 oraz c##wspolny\_2\_183182\_173203. Nadanie im praw do logowania i tworzenia tabel.

The screenshot shows the Oracle SQL Developer interface. In the top window (Worksheet), the following SQL script is being run:

```
ALTER SESSION SET "_ORACLE_SCRIPT" = false;

CREATE USER c##wspolny_1_173182_173203 IDENTIFIED BY password ACCOUNT UNLOCK;
GRANT CREATE SESSION , CREATE ANY TABLE TO c##wspolny_1_173182_173203 CONTAINER =
ALL;

CREATE USER c##wspolny_2_173182_173203 IDENTIFIED BY password ACCOUNT UNLOCK;
GRANT CREATE SESSION , CREATE ANY TABLE TO c##wspolny_2_173182_173203 CONTAINER =
ALL;
```

In the bottom window (Script Output), the results of the execution are displayed:

```
Session altered.

User C##WSPOLNY_1_173182_173203 created.

Grant succeeded.

User C##WSPOLNY_2_173182_173203 created.

Grant succeeded.
```

## 9. Przydzielenie oddzielnych aliasów/listenerów dla każdego kontenera

- Konfiguracja nowej sieci dla listenera na hoście DESKTOP-IHV4F8H na porcie 1522 oraz rejestracja instancji bazy danych u listenera.

The screenshot shows the Oracle SQL Developer interface. The top navigation bar has tabs for 'Welcome Page', 'sys', 'PDB1' (which is selected), 'PDB2', and 'PDB3'. Below the tabs is a toolbar with various icons. The main area is divided into two panes: 'Worksheet' on the left and 'Query Builder' on the right. In the Worksheet pane, there is a single line of PL/SQL code:

```
ALTER SYSTEM SET LISTENER_NETWORKS='((NAME=network1)
|(LOCAL_LISTENER=(DESCRIPTION=(ADDRESS=(PROTOCOL=TCP)
(HOST=DESKTOP-IHV4F8H) (PORT=1522))))' SCOPE=BOTH;
ALTER SYSTEM REGISTER;
```

The 'Script Output' tab at the bottom shows the results of the execution:

```
System SET altered.

System REGISTER altered.
```

Below the output, status information is displayed: 'Task completed in 0.138 seconds', 'Line 7 Column 1', 'Insert', 'Modified', and 'Windows: C:\'.

- Konfiguracja nowej sieci dla listenera na hoście DESKTOP-IHV4F8H na porcie 1544 oraz rejestracja instancji bazy danych u listenera.

The screenshot shows the Oracle SQL Developer interface. The top navigation bar has tabs for Welcome Page, sys, PDB1, PDB2 (which is selected), and PDB3. Below the tabs is a toolbar with various icons. The main area is titled 'Worksheet' and contains a 'Query Builder' tab. The query editor displays the following PL/SQL code:

```
ALTER SYSTEM SET LISTENER_NETWORKS='((NAME=network2)
(LOCAL_LISTENER=(DESCRIPTION=(ADDRESS=(PROTOCOL=TCP)
(HOST=DESKTOP-IHV4F8H) (PORT=1544))))' SCOPE=BOTH;
ALTER SYSTEM REGISTER;
```

The line containing the listener configuration is highlighted with a yellow background. Below the worksheet is a 'Script Output' window. It shows the results of the execution:

```
System SET altered.

System REGISTER altered.
```

At the bottom of the output window, there are status indicators: Line 0 Column 1, 1 Traceback, 1 Modified, 1 Windows, and 1 Chunks.

- Konfiguracja nowej sieci dla listenera na hoście DESKTOP-IHV4F8H na porcie 1588 oraz rejestracja instancji bazy danych u listenera.

The screenshot shows the Oracle SQL Developer interface. The top navigation bar has tabs for 'Welcome Page', 'sys', 'PDB1', 'PDB2', and 'PDB3'. The 'PDB3' tab is active. Below the tabs is a toolbar with various icons. The main area is titled 'Worksheet' and contains the following SQL code:

```
ALTER SYSTEM SET LISTENER_NETWORKS='((NAME=network3)
(LOCAL_LISTENER=(DESCRIPTION=(ADDRESS=(PROTOCOL=TCP)
(HOST=DESKTOP-IHV4F8H) (PORT=1588))))' SCOPE=BOTH;
ALTER SYSTEM REGISTER;
```

Below the worksheet is a 'Script Output' window. It shows the results of the executed commands:

```
System SET altered.

System REGISTER altered.
```

A status message at the top of the output window says 'Task completed in 0.09 seconds'.

- Zmiana sid\_name na nazwę kontenera.

```

listener - Notepad
File Edit Format View Help
# listener.ora Network Configuration File: C:\app\Gosia\product\21c\homes\OraDB21Home1\NETWORK\ADMIN\listener.ora
# Generated by Oracle configuration tools.

DEFAULT_SERVICE_LISTENER = XE

SID_LIST_LISTENER =
(SID_LIST =
(SID_DESC =
(SID_NAME = CLRExtProc)
(ORACLE_HOME = C:\app\Patrycja\product\21c\dbhomeXE)
(PROGRAM = extproc)
(ENVS = "EXTPROC_DLLS=ONLY:C:\app\Patrycja\product\21c\dbhomeXE\bin\oraclr.dll")
)
)

SID_LIST_LISTENER_1_173182_173203 =
(SID_LIST =
(SID_DESC =
(GLOBAL_DNAME = XE)
(SID_NAME = PDB_Milo_Radomska_1)
)
)

SID_LIST_LISTENER_2_173182_173203 =
(SID_LIST =
(SID_DESC =
(GLOBAL_DNAME = XE)
(SID_NAME = PDB_Milo_Radomska_2)
)
)

SID_LIST_LISTENER_3_173182_173203 =
(SID_LIST =
(SID_DESC =
(GLOBAL_DNAME = XE)
(SID_NAME = PDB_Milo_Radomska_3)
)
)

LISTENER =
(DESCRIPTION_LIST =
(DESCRIPTION =
(ADDRESS = (PROTOCOL = TCP)(HOST = DESKTOP-IHV4F8H)(PORT = 1521))
(ADDRESS = (PROTOCOL = IPC)(KEY = EXTPROC1521))
)
)

LISTENER_1_173182_173203 =
(DESCRIPTION_LIST =
(DESCRIPTION =
(ADDRESS = (PROTOCOL = TCP)(HOST = DESKTOP-IHV4F8H)(PORT = 1522))
(ADDRESS = (PROTOCOL = IPC)(KEY = EXTPROC1522))
)
)

LISTENER_2_173182_173203 =
(DESCRIPTION_LIST =
(DESCRIPTION =
(ADDRESS = (PROTOCOL = TCP)(HOST = DESKTOP-IHV4F8H)(PORT = 1544))
(ADDRESS = (PROTOCOL = IPC)(KEY = EXTPROC1544))
)
)

LISTENER_3_173182_173203 =
(DESCRIPTION_LIST =
(DESCRIPTION =
(ADDRESS = (PROTOCOL = TCP)(HOST = DESKTOP-IHV4F8H)(PORT = 1588))
(ADDRESS = (PROTOCOL = IPC)(KEY = EXTPROC1588))
)
)

```

- Zmiana service\_name na nazwę kontenera.

```

tnsnames - Notepad
File Edit Format View Help
# tnsnames.ora Network Configuration File: C:\app\Patrycja\product\21c\homes\OraDB21Home1\NETWORK\ADMIN\tnsnames.ora
# Generated by Oracle configuration tools.

XE =
(DESCRIPTION =
  (ADDRESS = (PROTOCOL = TCP)(HOST = DESKTOP-IHV4F8H)(PORT = 1521))
  (CONNECT_DATA =
    (SERVER = DEDICATED)
    (SERVICE_NAME = XE)
  )
)

LISTENER_XE =
(ADDRESS = (PROTOCOL = TCP)(HOST = DESKTOP-IHV4F8H)(PORT = 1521))

ORACLE_CONNECTION_DATA =
(DESCRIPTION =
  (ADDRESS_LIST =
    (ADDRESS = (PROTOCOL = IPC)(KEY = EXTPROC1521))
  )
  (CONNECT_DATA =
    (SID = CLRExtProc)
    (PRESENTATION = RO)
  )
)

ALIAS_1_173182_173203 =
(DESCRIPTION =
  (ADDRESS = (PROTOCOL = TCP)(HOST = DESKTOP-IHV4F8H)(PORT = 1522))
  (CONNECT_DATA =
    (SERVER = DEDICATED)
    (SERVICE_NAME = PDB_Milo_Radomska_1)
  )
)

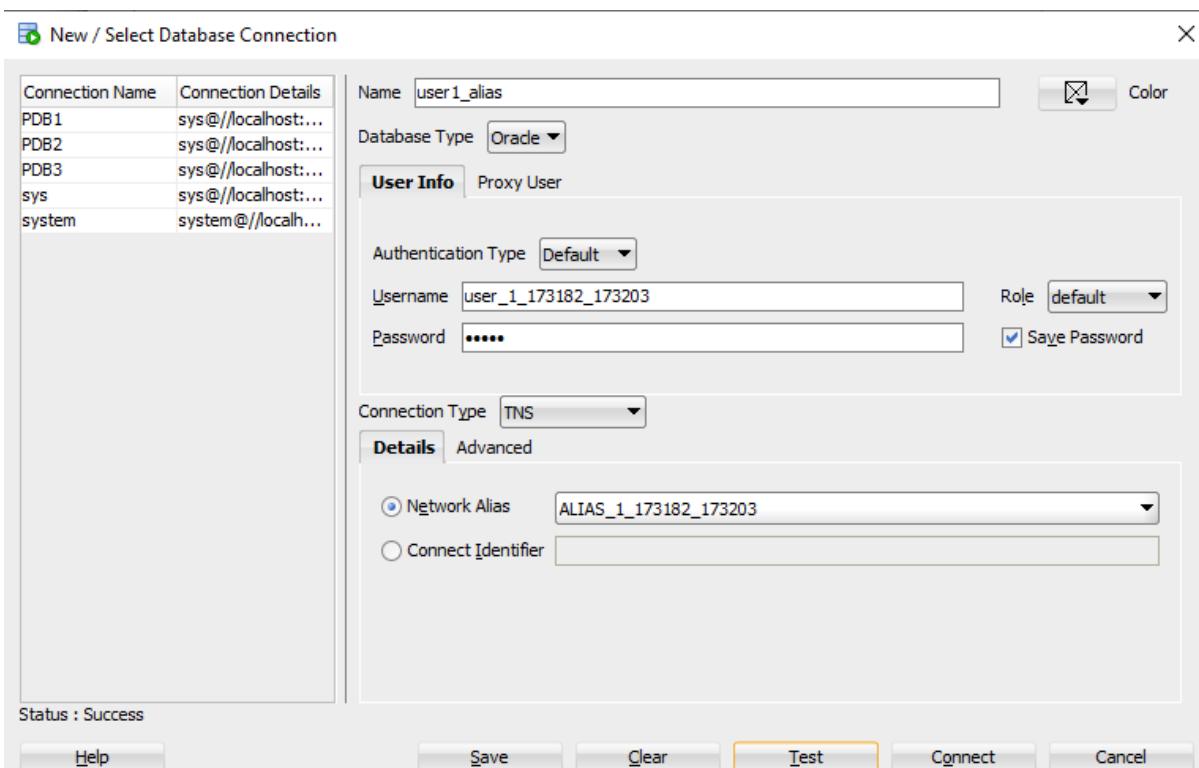
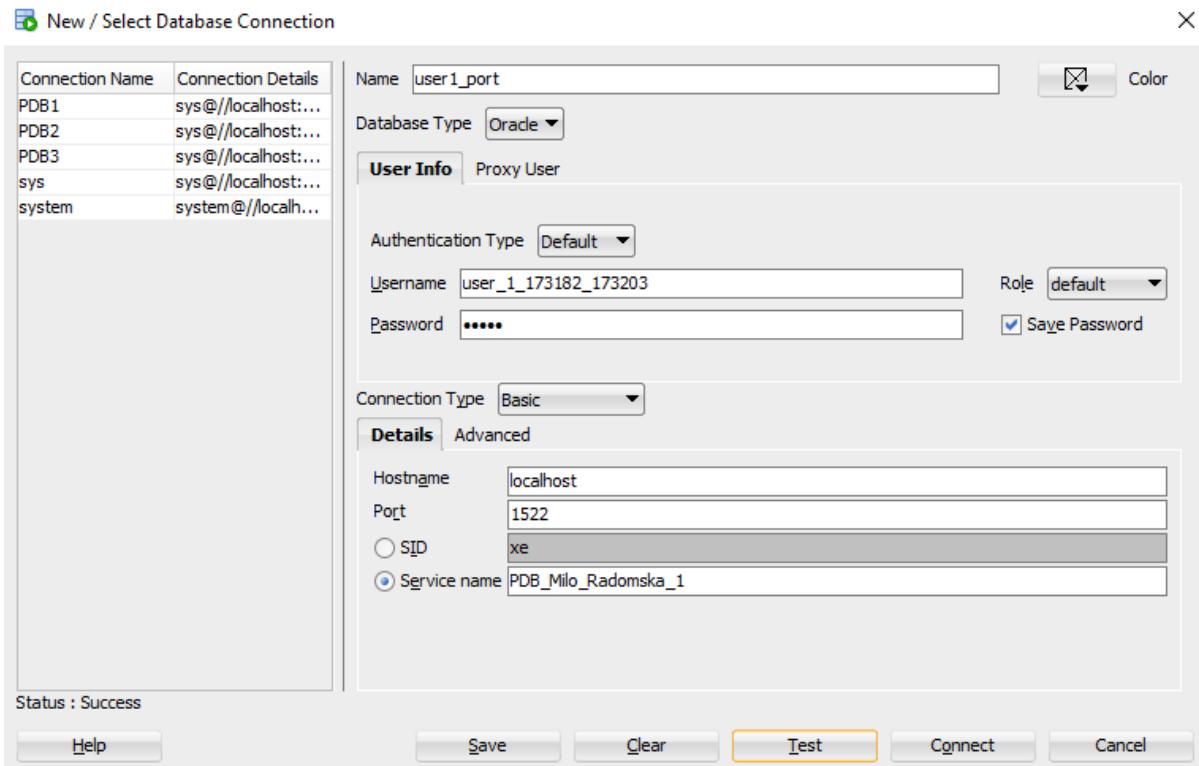
ALIAS_2_173182_173203 =
(DESCRIPTION =
  (ADDRESS = (PROTOCOL = TCP)(HOST = DESKTOP-IHV4F8H)(PORT = 1544))
  (CONNECT_DATA =
    (SERVER = DEDICATED)
    (SERVICE_NAME = PDB_Milo_Radomska_2)
  )
)

ALIAS_3_173182_173203 =
(DESCRIPTION =
  (ADDRESS = (PROTOCOL = TCP)(HOST = DESKTOP-IHV4F8H)(PORT = 1588))
  (CONNECT_DATA =
    (SERVER = DEDICATED)
    (SERVICE_NAME = PDB_Milo_Radomska_3)
  )
)

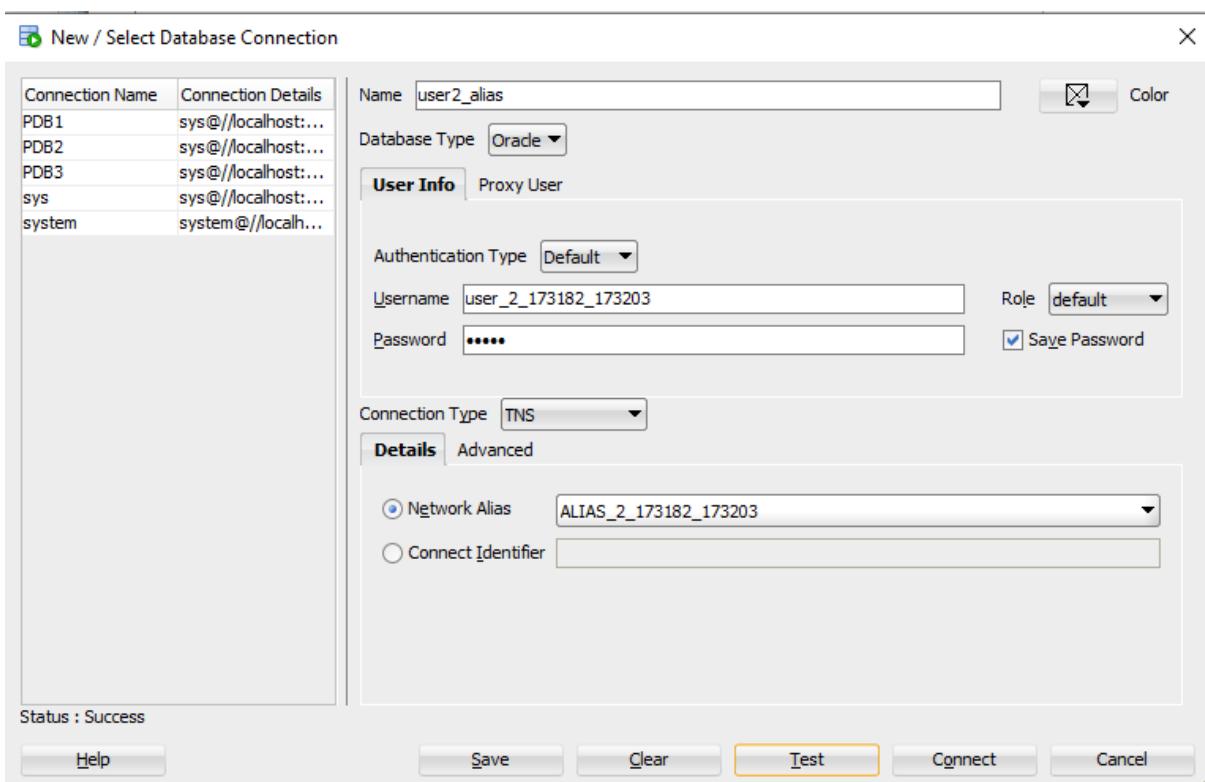
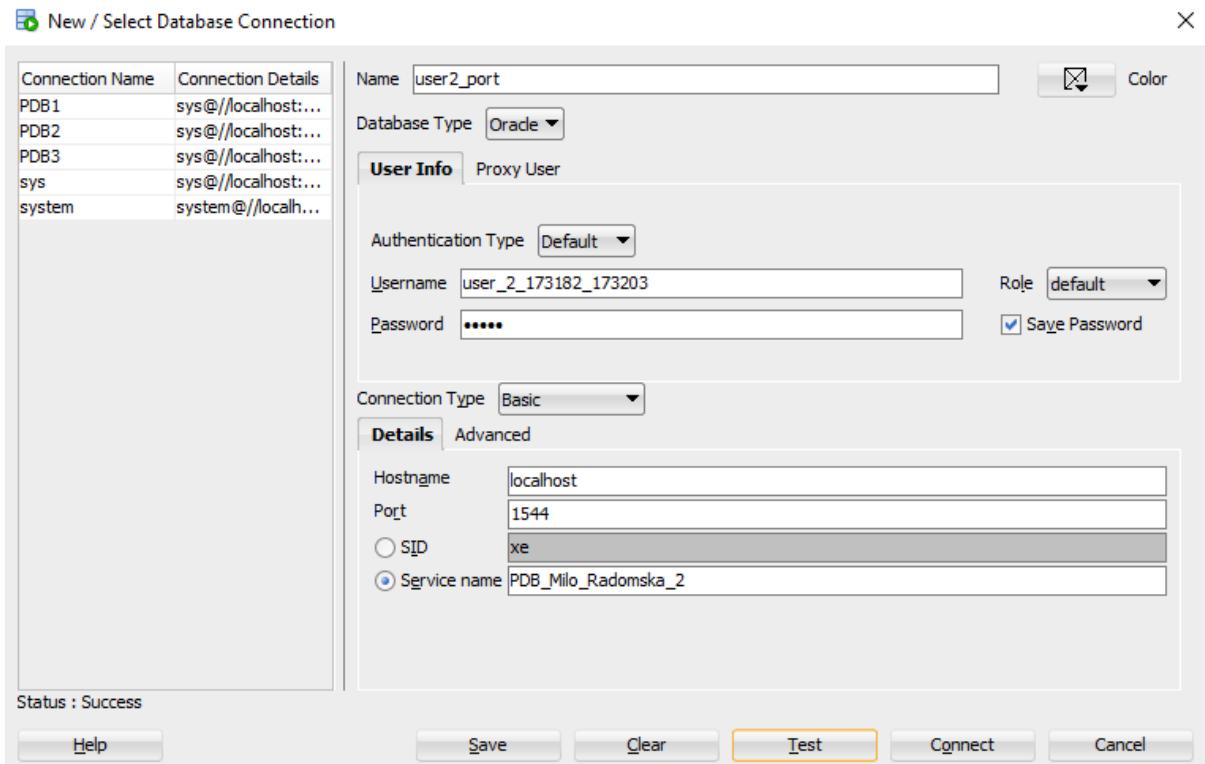
```

## 10. Tworzenie i testowanie połączeń dla każdego użytkownika i kontenera, z użyciem różnych Listenerów i Aliasów

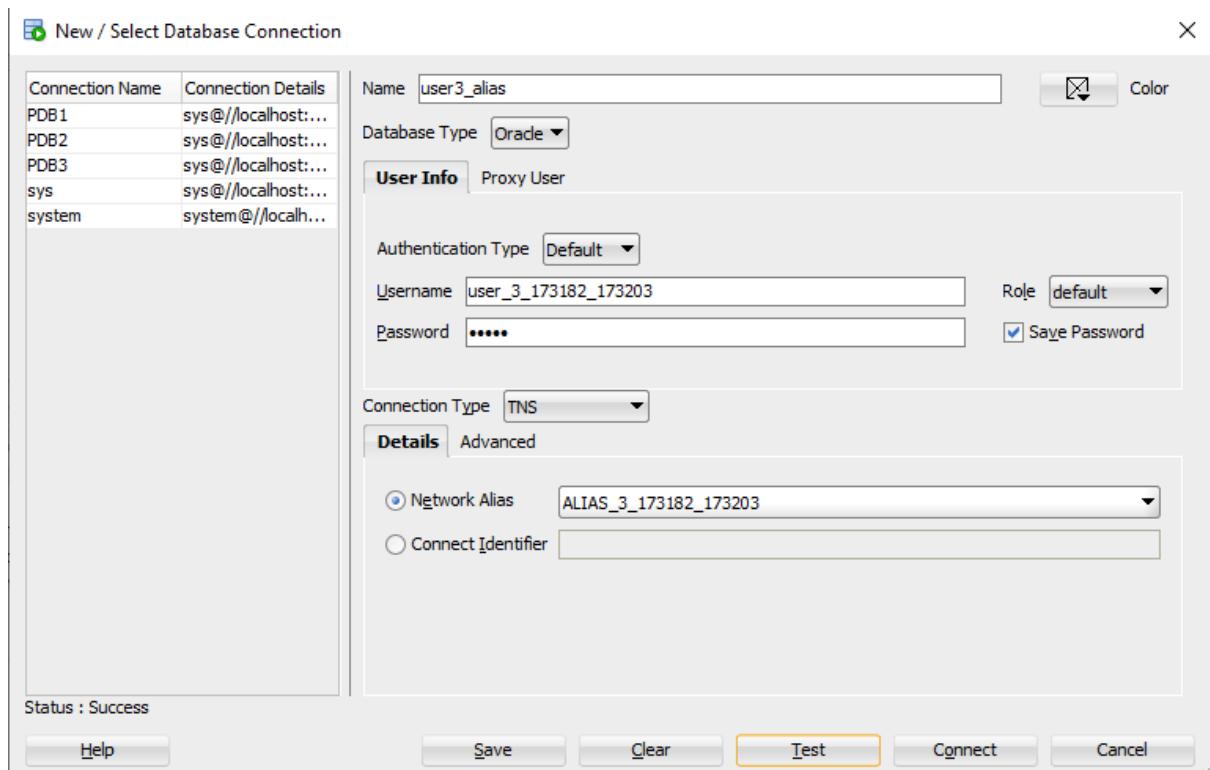
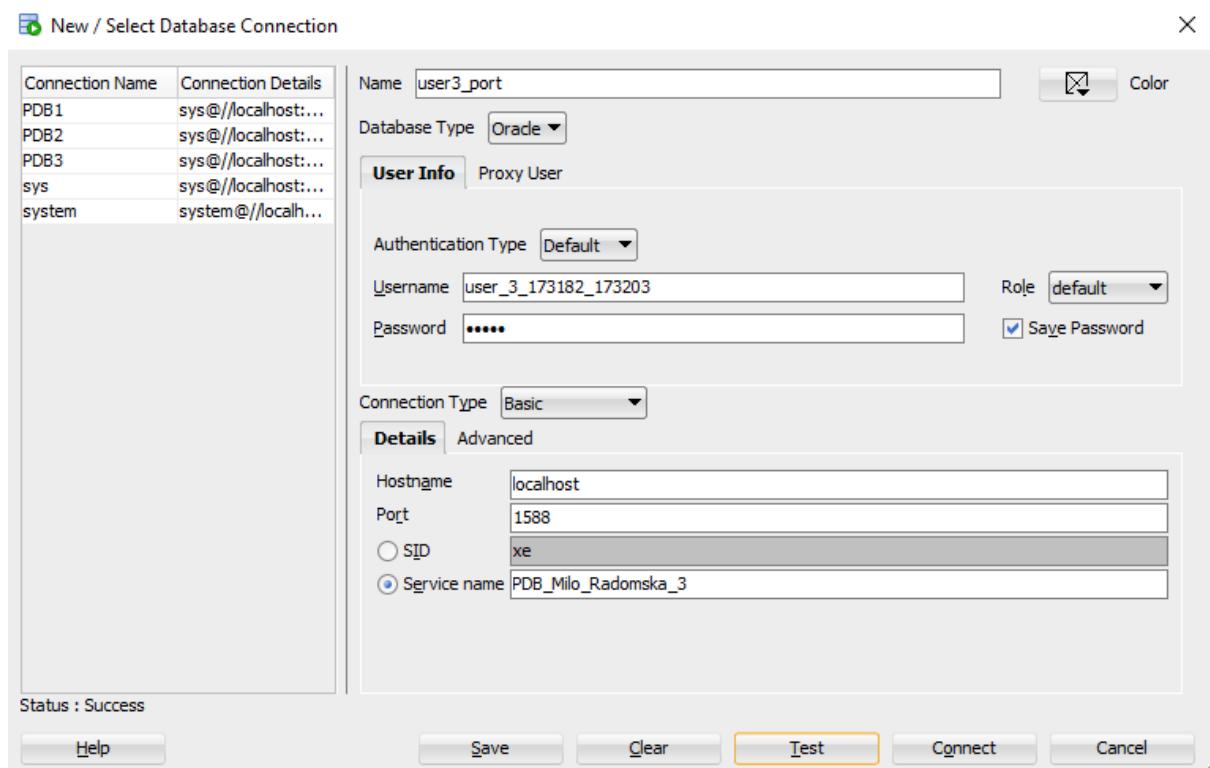
- Testowanie połączenia dla użytkownika lokalnego user\_1\_173182\_173203 zarówno za pomocą aliasu jak i podając port i nazwę kontenera.



- Testowanie połączenia dla użytkownika lokalnego user\_2\_173182\_173203 zarówno za pomocą aliasu jak i podając port i nazwę kontenera.



- Testowanie połączenia dla użytkownika lokalnego user\_3\_173182\_173203 zarówno za pomocą aliasu jak i podając port i nazwę kontenera.



## 11. Instalacja schematów bazy+import danych:

### 11.1 Baza z poprzedniego semestru dla user\_1\_173182\_173203

- Utworzenie oraz wyświetlenie bazy danych Klub Fitness

```
CREATE TABLE adres (
    id_adresu          INTEGER NOT NULL,
    ulica              VARCHAR2(50 CHAR) NOT NULL,
    nr_domu            VARCHAR2(10 CHAR) NOT NULL,
    nr_mieszkania      INTEGER,
    kod_pocztowy_kod_poczty VARCHAR2(10 CHAR) NOT NULL
);

ALTER TABLE adres ADD CONSTRAINT adres_pk PRIMARY KEY ( id_adresu );

CREATE TABLE certyfikat (
    nr_certyfikatu    INTEGER NOT NULL,
    data_uzykania     DATE NOT NULL,
    instruktor_id_instruktora INTEGER NOT NULL,
    specjalizacja_id_specjalizacji INTEGER NOT NULL
);

ALTER TABLE certyfikat
```

Script Output | Task completed in 1.857 seconds

```
1 row inserted.

1 row inserted.

1 row inserted.

1 row inserted.
```

Connections

user1

Tables (Filtered)

- ADRES
- CERTYFIKAT
- GRUPA\_ZAJECIO
- INSTRUKTOR
- KARNET
- Klient
- KOD\_POCZTOWY
- REZERWACJA
- SALA
- SPECJALIZACJA
- ZAJECIA
- ZAMOWIENIA

Worksheet | Query Builder

```
SELECT * FROM ADRES;
```

Script Output | All Rows Fetched: 17 in 0.027 seconds

ID_ADRESU	ULICA	NR_DOMU	NR_MIESZKANIA	KOD_POCZTOWY_KOD_POCZTY
1	1 ul. Mickiewicza	10		3 35-001
2	2 ul. Piłsudskiego	22	(null)	35-002
3	3 ul. Krakowska	5A		7 35-003
4	4 ul. Dąbrowskiego	8	(null)	35-004
5	5 ul. Hetmańska	12		15 35-005

- Udokumentowanie, że baza znajduje się w odpowiednim kontenerze oraz przestrzeni tabel.

The screenshot shows the Oracle SQL Developer interface. The top window is a Worksheet tab with the Query Builder tool selected. A single line of SQL code, "show con\_name;", is entered. The bottom window is a Script Output tab, which displays the result of the query: "CON\_NAME" followed by a dashed line and "PDB\_MILO\_RADOMSKA\_1". The status bar at the bottom indicates "Task completed in 0.194 seconds".

```
show con_name;
```

CON_NAME
PDB_MILO_RADOMSKA_1

Script Output | Query Result | Task completed in 0.194 seconds

Screenshot of Oracle SQL Developer showing a query execution.

The top window is titled "Worksheet" and contains the following SQL code:

```
SELECT table_name, owner, tablespace_name
FROM dba_tables
WHERE tablespace_name = 'PT_1';
```

The bottom window is titled "Query Result" and displays the results of the query:

TABLE_NAME	OWNER	TABLESPACE_NAME
1 ADRES	USER_1_173182_173203	PT_1
2 CERTYFIKAT	USER_1_173182_173203	PT_1
3 GRUPA_ZAJĘCIOWA	USER_1_173182_173203	PT_1
4 INSTRUKTOR	USER_1_173182_173203	PT_1
5 KARNET	USER_1_173182_173203	PT_1
6 Klient	USER_1_173182_173203	PT_1
7 KOD_POCZTOWY	USER_1_173182_173203	PT_1
8 REZERWACJA	USER_1_173182_173203	PT_1
9 SALA	USER_1_173182_173203	PT_1
10 SPECJALIZACJA	USER_1_173182_173203	PT_1
11 ZAJĘCIA	USER_1_173182_173203	PT_1
12 ZAMÓWIENIA	USER_1_173182_173203	PT_1

SQL tab is selected in the bottom window.

## 11.2 Baza sales history dla user\_2\_173182\_173203

- Wyświetlenie wszystkich pobranych folderów, gdzie znajduje się sales\_history.

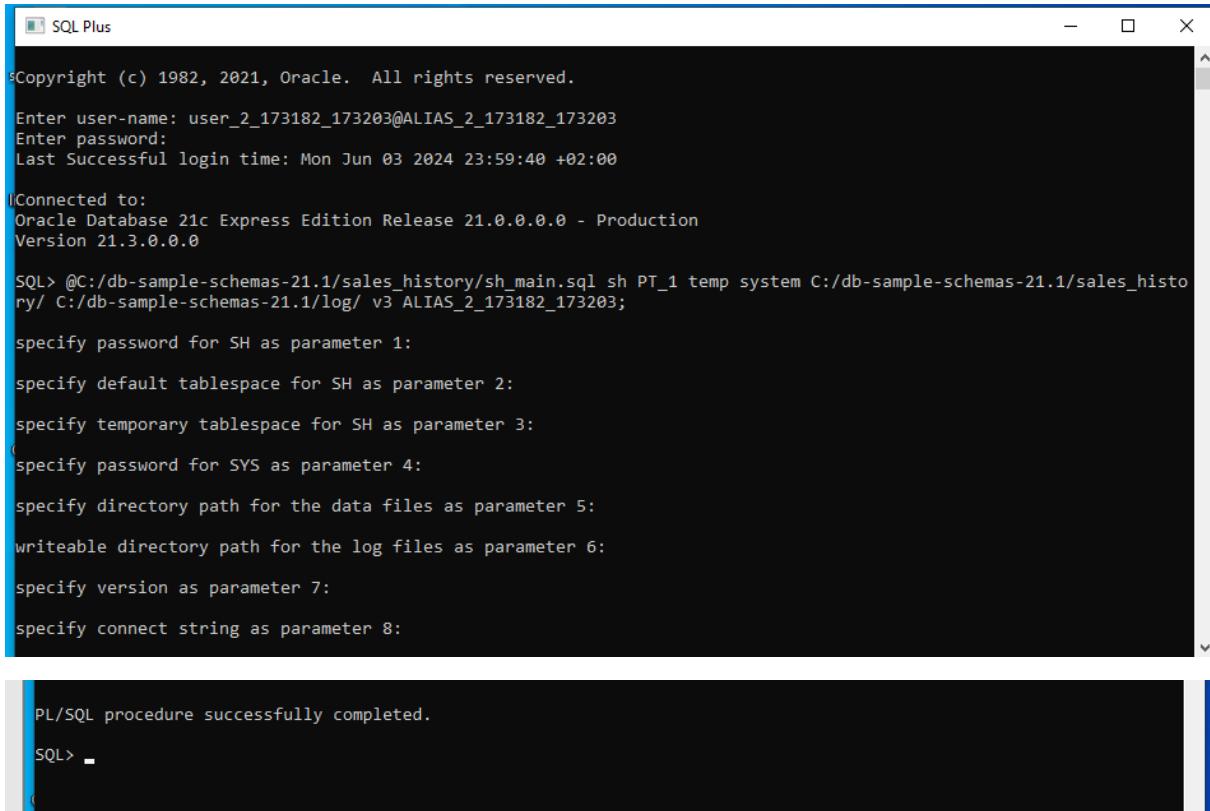
Name	Date modified	Type	Size
bus_intelligence	04/06/2024 00:15	File folder	
customer_orders	04/06/2024 00:15	File folder	
human_resources	04/06/2024 00:15	File folder	
info_exchange	04/06/2024 00:15	File folder	
order_entry	04/06/2024 00:15	File folder	
product_media	04/06/2024 00:15	File folder	
sales_history	04/06/2024 00:16	File folder	
shipping	04/06/2024 00:16	File folder	
CONTRIBUTING.md	04/06/2024 00:15	MD File	1 KB
drop_sch.sql	04/06/2024 00:15	SQL File	4 KB
LICENSE.md	04/06/2024 00:15	MD File	2 KB
mk_dir.sql	04/06/2024 00:15	SQL File	3 KB
mkplug.sql	04/06/2024 00:15	SQL File	28 KB
mksample.sql	04/06/2024 00:15	SQL File	7 KB
mkunplug.sql	04/06/2024 00:15	SQL File	7 KB
mkverify.sql	04/06/2024 00:15	SQL File	6 KB
README.md	04/06/2024 00:15	MD File	6 KB
README	04/06/2024 00:15	Text Document	6 KB

- Zmiana w pliku sh\_main na odpowiednią ścieżkę.

```
*sh_main - Notepad
File Edit Format View Help
REM =====
REM CONNECT sh/&pass reconnecting undoes the prior NLS settings
DEFINE vscript = C:/db-sample-schemas-21.1/sales history/csh &vrs
@&vscript
REM =====
REM Populate tables
REM =====
DEFINE vscript = C:/db-sample-schemas-21.1/sales history/lsh &vrs
@&vscript &pass &data_dir &log_dir &vrs &connect_string
REM =====
REM Post load operations
REM =====
DEFINE vscript = C:/db-sample-schemas-21.1/sales history/psh &vrs
@&vscript

spool off
```

- Uruchamianie skryptu sh\_main.sql w celu skonfigurowania przykładowych schematów bazy danych



The screenshot shows a Windows application window titled "SQL Plus". Inside the window, the Oracle Database 21c Express Edition is connected. The command entered is:

```
SQL> @C:/db-sample-schemas-21.1/sales_history/sh_main.sql sh PT_1 temp system C:/db-sample-schemas-21.1/sales_history/ C:/db-sample-schemas-21.1/log/ v3 ALIAS_2_173182_173203;
```

Following this, a series of prompts appear asking for parameters:

- specify password for SH as parameter 1:
- specify default tablespace for SH as parameter 2:
- specify temporary tablespace for SH as parameter 3:
- (specify password for SYS as parameter 4:
- specify directory path for the data files as parameter 5:
- writeable directory path for the log files as parameter 6:
- specify version as parameter 7:
- specify connect string as parameter 8:

At the bottom of the window, the message "PL/SQL procedure successfully completed." is displayed.

- Utworzenie katalogu o nazwie „DATA\_PUMP\_DIR” i przypisanie do ścieżki w celu operacji importu bazy sh.

The screenshot shows the Oracle SQL Developer interface. In the top navigation bar, several tabs are open: Welcome Page, sys, PDB1, PDB2, PDB3, user1, user2, and user3. The current tab is 'Worksheet'. Below the tabs is a toolbar with various icons. The main workspace contains the following SQL command:

```
CREATE OR REPLACE DIRECTORY DATA_PUMP_DIR AS 'C:\projekt_173182_173203';
```

In the bottom right corner of the workspace, there is a small yellow rectangular highlight. At the bottom of the screen, there is a 'Script Output' window. It shows the message "Task completed in 0.317 seconds" and the result of the directory creation: "Directory DATA\_PUMP\_DIR created."

- Nadanie uprawnień odczytu i zapisu na katalogu „DATA\_PUMP\_DIR” użytkownikom sh oraz user\_2\_173182\_173203.

The screenshot shows the Oracle SQL Developer interface. In the top navigation bar, several tabs are open: Welcome Page, sys, PDB1, PDB2 (which is the active tab), PDB3, user1, user2, and user3. Below the tabs is a toolbar with various icons. The main workspace is titled "Worksheet" and contains the following SQL code:

```
GRANT READ, WRITE ON DIRECTORY DATA_PUMP_DIR TO sh;
GRANT READ, WRITE ON DIRECTORY DATA_PUMP_DIR TO user_2_173182_173203;
```

At the bottom of the interface, there is a "Script Output" tab which displays the results of the grant execution:

```
Grant succeeded.
```

Below the script output, a status message indicates:

```
Task completed in 0.035 seconds
```

- Użycie narzędzia eksportu danych, aby wyeksportować schemat sh do pliku „sh.dmp”.

```
C:\Windows\system32>expdp sh@ALIAS_2_173182_173203/sh schemas=sh directory=DATA_PUMP_DIR dumpfile=sh.dmp logfile=sh_exp.log

Export: Release 21.0.0.0.0 - Production on Mon Jun 3 08:46:10 2024
Version 21.3.0.0.0

Copyright (c) 1982, 2021, Oracle and/or its affiliates. All rights reserved.

Connected to: Oracle Database 21c Express Edition Release 21.0.0.0.0 - Production
Starting "SH"."SYS_EXPORT_SCHEMA_01": sh/********@ALIAS_2_173182_173203 schemas=sh directory=DATA_PUMP_DIR dumpfile=sh.dmp logfile=sh_exp.log
Processing object type SCHEMA_EXPORT/TABLE/TABLE_DATA
Processing object type SCHEMA_EXPORT/TABLE/INDEX/STATISTICS/INDEX_STATISTICS
Processing object type SCHEMA_EXPORT/TABLE/INDEX/STATISTICS/BITMAP_INDEX/INDEX_STATISTICS
Processing object type SCHEMA_EXPORT/TABLE/STATISTICS/TABLE_STATISTICS
Processing object type SCHEMA_EXPORT/STATISTICS/MARKER
Processing object type SCHEMA_EXPORT/PRE_SCHEMA/PROCACT_SCHEMA
Processing object type SCHEMA_EXPORT/TABLE/COMMENT
Processing object type SCHEMA_EXPORT/TABLE/VIEW
Processing object type SCHEMA_EXPORT/VIEW/VIEW
Processing object type SCHEMA_EXPORT/TABLE/INDEX/INDEX
Processing object type SCHEMA_EXPORT/TABLE/CONSTRAINT/CONSTRAINT
Processing object type SCHEMA_EXPORT/TABLE/CONSTRAINT/REF_CONSTRAINT
Processing object type SCHEMA_EXPORT/TABLE/INDEX/BITMAP_INDEX/INDEX
Processing object type SCHEMA_EXPORT/TABLE/INDEX/DOMAIN_INDEX/INDEX
Processing object type SCHEMA_EXPORT/MATERIALIZED_VIEW
Processing object type SCHEMA_EXPORT/DIMENSION
. . exported "SH"."CUSTOMERS"                      10.27 MB  55500 rows
. . exported "SH"."SALES":"SALES_Q4_2001"          2.257 MB  69749 rows
. . exported "SH"."SALES":"SALES_Q3_1999"          2.166 MB  67138 rows
. . exported "SH"."SALES":"SALES_Q3_2001"          2.130 MB  65769 rows
. . exported "SH"."SALES":"SALES_Q2_2001"          2.051 MB  63292 rows
. . exported "SH"."SALES":"SALES_Q1_1999"          2.071 MB  64186 rows
. . exported "SH"."SALES":"SALES_Q1_2001"          1.965 MB  60608 rows
```

- Użycie narzędzia importu danych, aby zaimportować dane z pliku „sh.dmp” do użytkownika user\_2\_173182\_173203.

```
C:\Windows\system32>impdp user_2_173182_173203@ALIAS_2_173182_173203/user2 schemas=sh remap_schema=sh:user_2_173182_173203 directory=DATA_PUMP_DIR dumpfile=sh.dmp logfile=sh_imp.log

Import: Release 21.0.0.0.0 - Production on Mon Jun 3 08:49:22 2024
Version 21.3.0.0.0

Copyright (c) 1982, 2021, Oracle and/or its affiliates. All rights reserved.

Connected to: Oracle Database 21c Express Edition Release 21.0.0.0.0 - Production
Master table "USER_2_173182_173203"."SYS_IMPORT_SCHEMA_01" successfully loaded/unloaded
Starting "USER_2_173182_173203"."SYS_IMPORT_SCHEMA_01": user_2_173182_173203/********@ALIAS_2_173182_173203 schemas=sh remap_schema=sh:user_2_173182_173203 directory=DATA_PUMP_DIR dumpfile=sh.dmp logfile=sh_imp.log
Processing object type SCHEMA_EXPORT/PRE_SCHEMA/PROCACT_SCHEMA
Processing object type SCHEMA_EXPORT/TABLE/COMMENT
Processing object type SCHEMA_EXPORT/TABLE/TABLE_DATA
. . imported "USER_2_173182_173203"."CUSTOMERS"      10.27 MB  55500 rows
. . imported "USER_2_173182_173203"."SALES":"SALES_Q4_2001"  2.257 MB  69749 rows
. . imported "USER_2_173182_173203"."SALES":"SALES_Q3_1999"  2.166 MB  67138 rows
. . imported "USER_2_173182_173203"."SALES":"SALES_Q3_2001"  2.130 MB  65769 rows
. . imported "USER_2_173182_173203"."SALES":"SALES_Q2_2001"  2.051 MB  63292 rows
. . imported "USER_2_173182_173203"."SALES":"SALES_Q1_1999"  2.071 MB  64186 rows
. . imported "USER_2_173182_173203"."SALES":"SALES_Q1_2001"  1.965 MB  60608 rows
. . imported "USER_2_173182_173203"."SALES":"SALES_Q4_1999"  2.014 MB  62388 rows
. . imported "USER_2_173182_173203"."SALES":"SALES_Q1_2000"  2.012 MB  62197 rows
. . imported "USER_2_173182_173203"."SALES":"SALES_Q3_2000"  1.910 MB  58950 rows
. . imported "USER_2_173182_173203"."SALES":"SALES_Q4_2000"  1.814 MB  55984 rows
. . imported "USER_2_173182_173203"."SALES":"SALES_Q2_2000"  1.802 MB  55515 rows
. . imported "USER_2_173182_173203"."SALES":"SALES_Q2_1999"  1.754 MB  54233 rows
. . imported "USER_2_173182_173203"."SALES":"SALES_Q3_1998"  1.634 MB  50515 rows
. . imported "USER_2_173182_173203"."SALES":"SALES_Q4_1998"  1.581 MB  48874 rows
. . imported "USER_2_173182_173203"."SALES":"SALES_Q1_1998"  1.413 MB  43687 rows
. . imported "USER_2_173182_173203"."SALES":"SALES_Q2_1998"  1.160 MB  35758 rows
. . imported "USER_2_173182_173203"."SUPPLEMENTARY_DEMOGRAPHICS" 697.6 KB   4500 rows
. . imported "USER_2_173182_173203"."TIMES"            381.7 KB   1826 rows
```

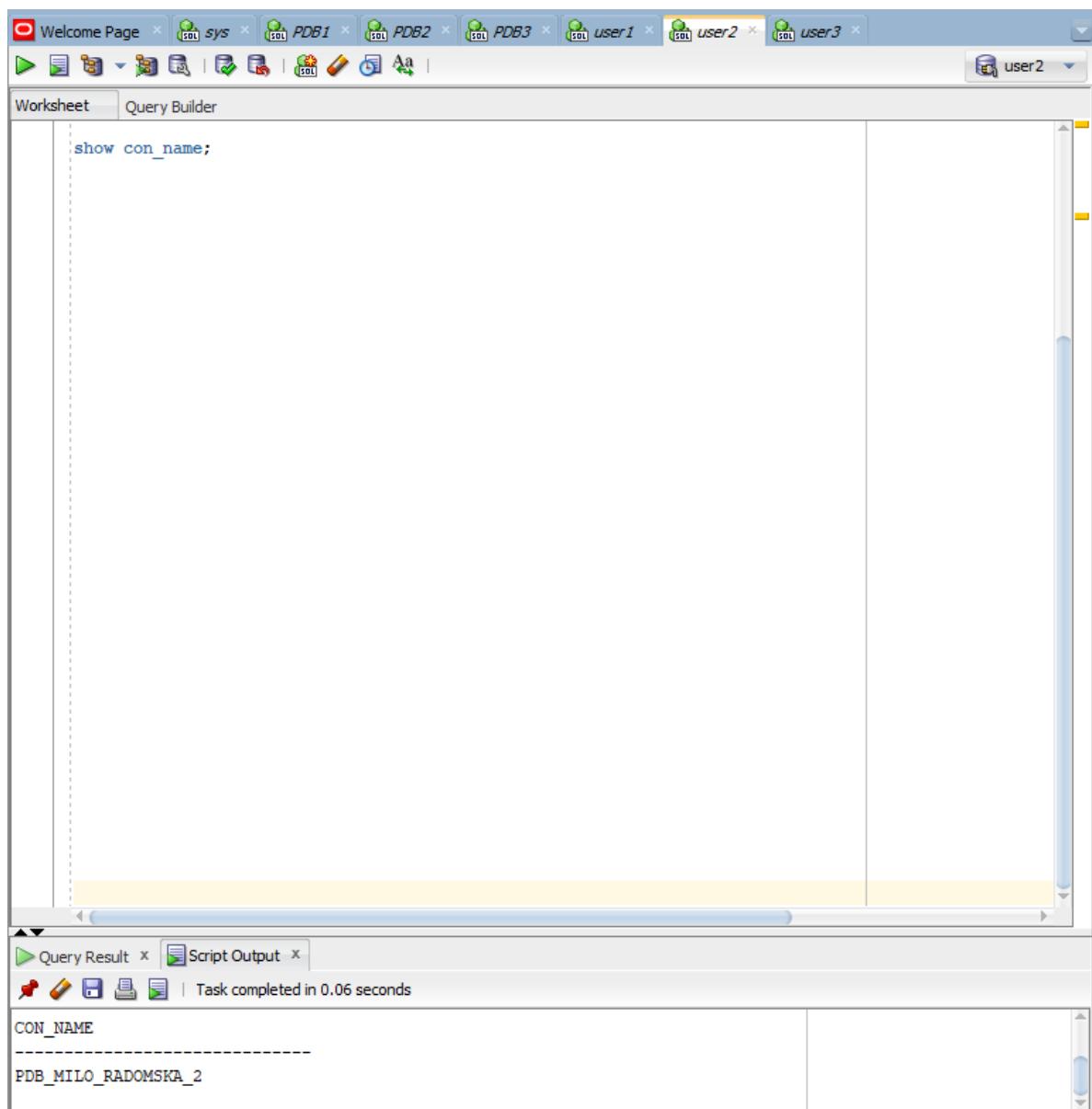
- Potwierdzenie udanego importu danych

The screenshot shows the Oracle SQL Developer interface. On the left, the Connections tree displays several Oracle connections, including PDB1, PDB2, PDB3, sys, system, user1, and user2. The user2 connection is expanded to show its schema objects, including Tables (Filtered), Views, Indexes, and Packages. The Tables section lists various tables such as CAL\_MONTH\_SAL, CHANNELS, COSTS, COUNTRIES, CUSTOMERS, DR\$SUP\_TEXT\_ID, and FWEEK\_PSCAT\_S. In the center, the Worksheet tab contains the SQL query: `select * from countries;`. Below the worksheet is the Query Result tab, which displays the results of the query. The results are as follows:

COUNTRY_ID	COUNTRY_ISO_CODE	COUNTRY_NAME	COUNTRY_SUBREGION	COUNTRY_SUBREGION_ID	COUN
1	52790 US	United States of America	Northern America	52797 Americ	America
2	52776 DE	Germany	Western Europe	52799 Europe	Europe
3	52789 GB	United Kingdom	Western Europe	52799 Europe	Europe
4	52784 NL	The Netherlands	Western Europe	52799 Europe	Europe
5	52780 IE	Ireland	Western Europe	52799 Europe	Europe
6	52777 DK	Denmark	Western Europe	52799 Europe	Europe

The results show 23 rows fetched in 0.009 seconds.

- Udokumentowanie, że baza znajduje się w odpowiednim kontenerze oraz przestrzeni tabel.



The screenshot shows the Oracle SQL Developer interface. The top navigation bar has tabs for 'Welcome Page', 'sys', 'PDB1', 'PDB2', 'PDB3', 'user1', 'user2' (which is selected), and 'user3'. Below the toolbar, there are tabs for 'Worksheet' and 'Query Builder'. In the main workspace, the query 'show con\_name;' is entered. The bottom pane shows the results of the query:

CON_NAME
PDB_MILO_RADOMSKA_2

Below the table, it says 'Task completed in 0.06 seconds'.

Screenshot of Oracle SQL Developer showing a query execution.

The top window is a Worksheet titled "Query Builder". It contains the following SQL code:

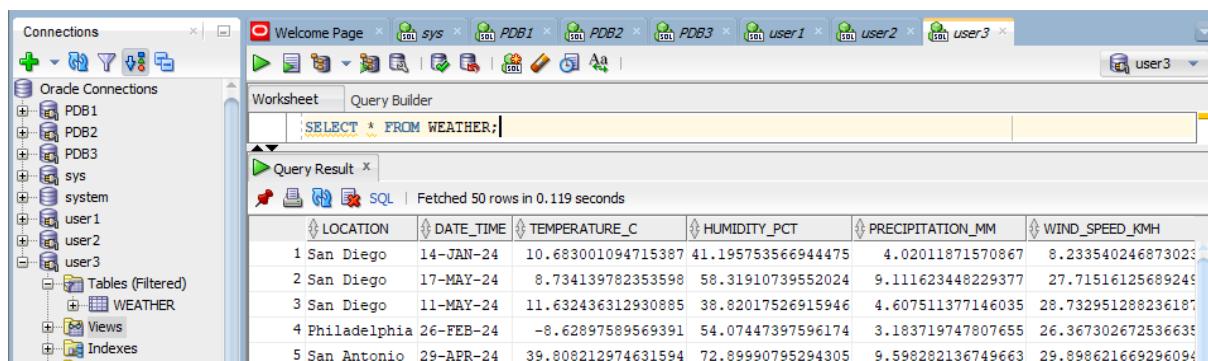
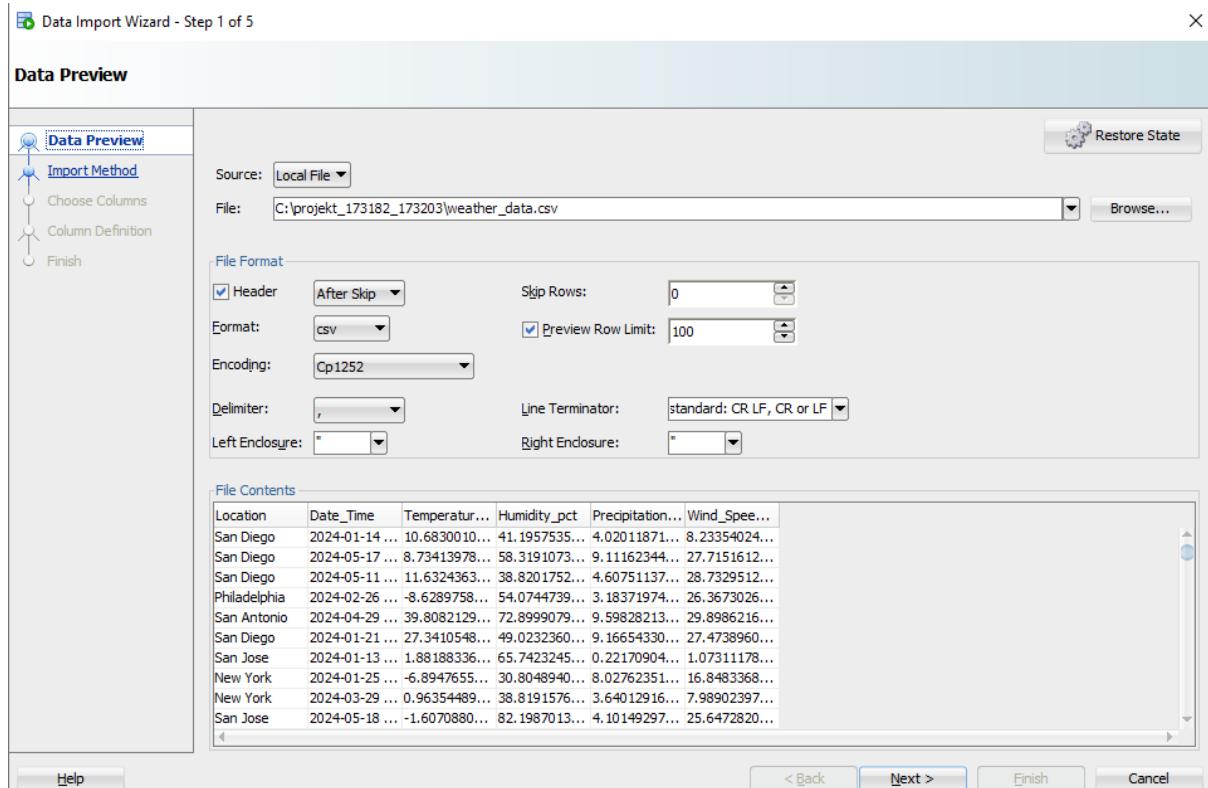
```
SELECT table_name, owner, tablespace_name
FROM dba_tables
WHERE tablespace_name = 'PT_2';
```

The bottom window is a "Query Result" tab showing the results of the executed query. The results are presented in a table with three columns: TABLE\_NAME, OWNER, and TABLESPACE\_NAME. The data is as follows:

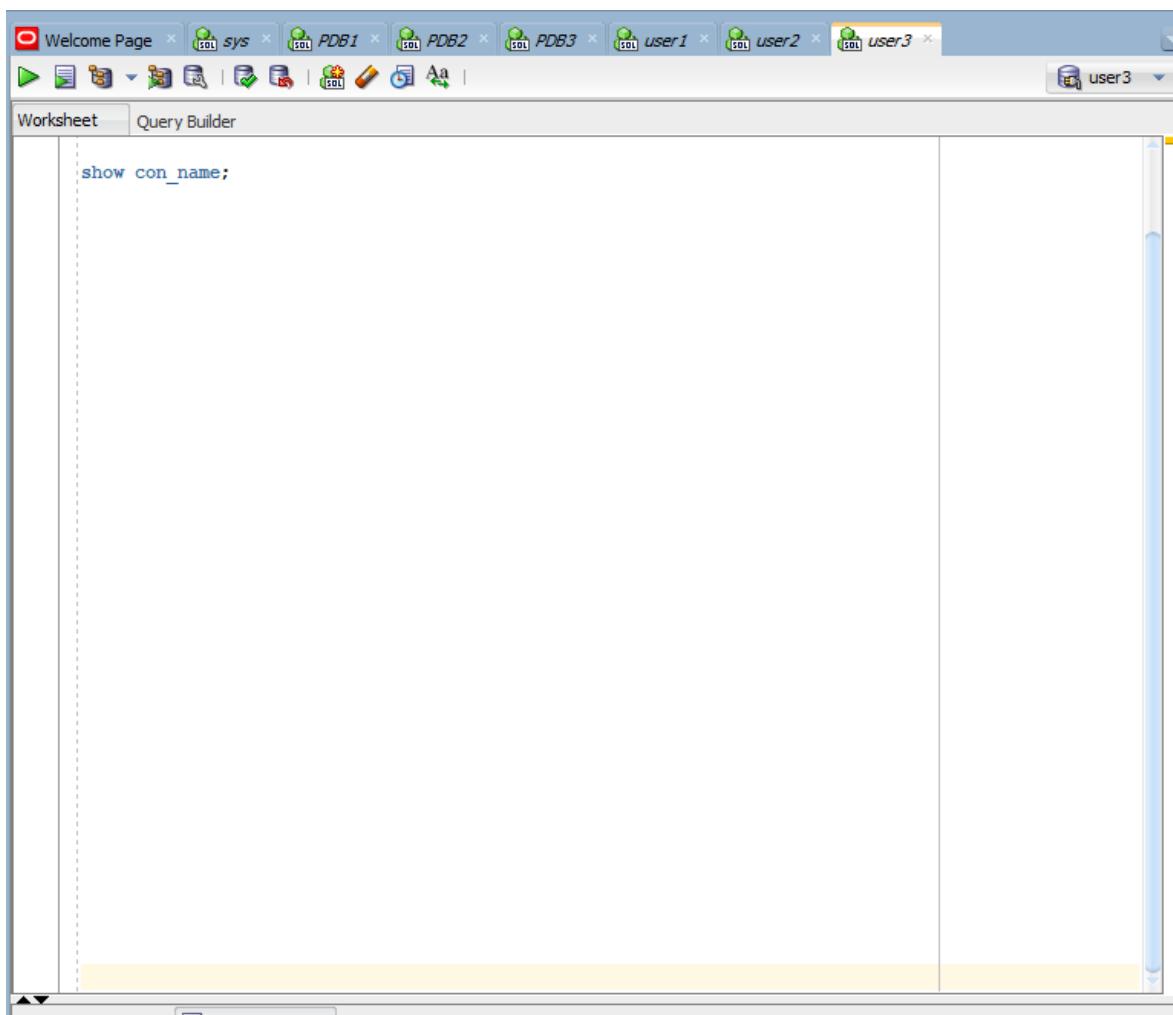
	TABLE_NAME	OWNER	TABLESPACE_NAME
1	COUNTRIES	USER_2_173182_173203	PT_2
2	CHANNELS	USER_2_173182_173203	PT_2
3	FWEEK_PSCAT_SALES_MV	USER_2_173182_173203	PT_2
4	CAL_MONTH_SALES_MV	USER_2_173182_173203	PT_2
5	DR\$SUP_TEXT_IDX\$I	USER_2_173182_173203	PT_2
6	DR\$SUP_TEXT_IDX\$K	USER_2_173182_173203	PT_2
7	DR\$SUP_TEXT_IDX\$U	USER_2_173182_173203	PT_2
8	DR\$SUP_TEXT_IDX\$Q	USER_2_173182_173203	PT_2
9	DR\$SUP_TEXT_IDX\$C	USER_2_173182_173203	PT_2
10	DR\$SUP_TEXT_IDX\$B	USER_2_173182_173203	PT_2
11	CUSTOMERS	USER_2_173182_173203	PT_2
12	TIMES	USER_2_173182_173203	PT_2
13	PRODUCTS	USER_2_173182_173203	PT_2
14	PROMOTIONS	USER_2_173182_173203	PT_2
15	SUPPLEMENTARY_DEMOGRAPHICS	USER_2_173182_173203	PT_2

## 11.3 Baza open data – „weather” dla user\_3\_173182\_173203

- Zimportowanie bazy danych z pliku csv za pomocą Data Import Wizard oraz wyświetlenie danych



- Udokumentowanie, że baza znajduje się w odpowiednim kontenerze oraz przestrzeni tabel.



The screenshot shows the Oracle SQL Developer interface. In the top navigation bar, there are tabs for 'Welcome Page', 'sys', 'PDB1', 'PDB2', 'PDB3', 'user1', 'user2', and 'user3'. The current tab is 'user3'. Below the tabs is a toolbar with various icons. The main area is titled 'Worksheet' and contains the SQL command:

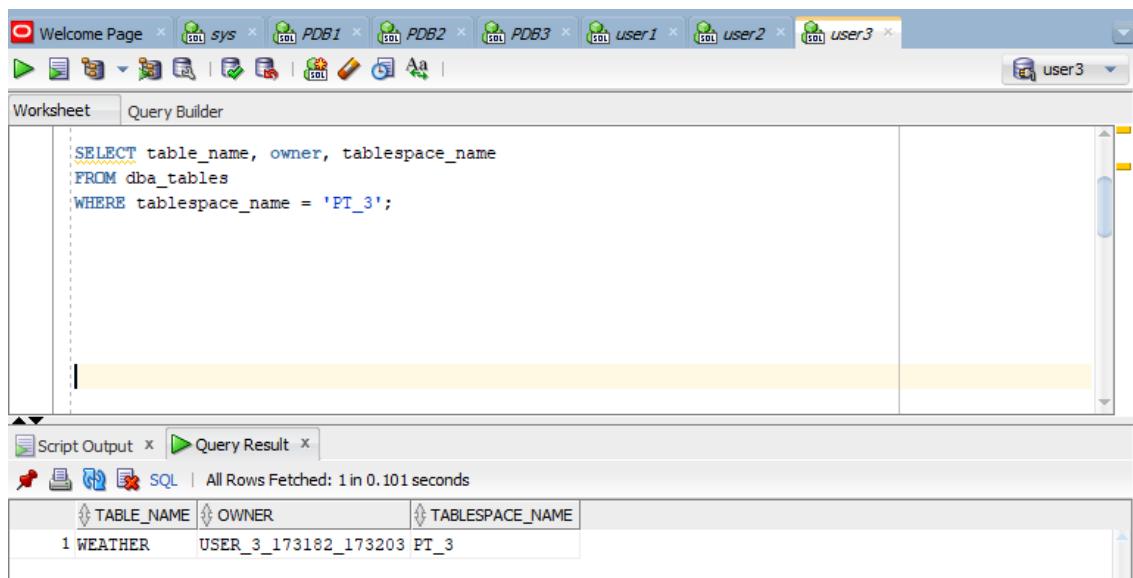
```
show con_name;
```



The results pane shows the output of the query:

CON_NAME
PDB_MILO_RADOMSKA_3

Below the results, a message indicates the task completed in 0.044 seconds.



The screenshot shows the Oracle SQL Developer interface. The top navigation bar and toolbar are identical to the previous screenshot. The 'Worksheet' tab is active, containing the following SQL query:

```
SELECT table_name, owner, tablespace_name
FROM dba_tables
WHERE tablespace_name = 'PT_3';
```

The results pane shows the output of the query:

TABLE_NAME	OWNER	TABLESPACE_NAME
WEATHER	USER_3_173182_173203	PT_3

Below the results, a message indicates all rows were fetched in 0.101 seconds.

## 12. Nadanie praw użytkownikom wspólnym

- Nadanie użytkownikom wspólnym uprawnienia do kontenera PDB\_Milo\_Radomska\_1 i baz tam umieszczonych.

The screenshot shows the Oracle SQL Developer interface. The top menu bar has tabs for Welcome Page, sys, PDB1, PDB2, PDB3, user1, user2, and user3. The PDB1 tab is selected. Below the menu is a toolbar with various icons. The main workspace is titled 'Worksheet' and contains two PL/SQL blocks. The first block grants SELECT privileges on tables from the 'USER\_1...' schema to the 'C##WSPOLNY\_1...' user. The second block does the same for the 'USER\_2...' schema. Both blocks use DBMS\_OUTPUT.PUT\_LINE to print a message to the script output. The bottom panel is titled 'Script Output' and shows the message 'Task completed in 0.086 seconds' followed by two lines of text: 'PL/SQL procedure successfully completed.' for each block.

```
DECLARE
    v_schema VARCHAR2(100) := 'USER_1_173182_173203';
    v_user VARCHAR2(100) := 'C##WSPOLNY_1_173182_173203';
BEGIN
    FOR tab IN (SELECT table_name FROM all_tables WHERE owner = v_schema) LOOP
        EXECUTE IMMEDIATE 'GRANT SELECT ON ' || v_schema || '.' || tab.table_name || ' TO ' || v_user;
        DBMS_OUTPUT.PUT_LINE('Przyznano uprawnienia SELECT na tabelę ' || v_schema || '.' || tab.table_name);
    END LOOP;
END;
/

DECLARE
    v_schema VARCHAR2(100) := 'USER_1_173182_173203';
    v_user VARCHAR2(100) := 'C##WSPOLNY_2_173182_173203';
BEGIN
    FOR tab IN (SELECT table_name FROM all_tables WHERE owner = v_schema) LOOP
        EXECUTE IMMEDIATE 'GRANT SELECT ON ' || v_schema || '.' || tab.table_name || ' TO ' || v_user;
        DBMS_OUTPUT.PUT_LINE('Przyznano uprawnienia SELECT na tabelę ' || v_schema || '.' || tab.table_name);
    END LOOP;
END;
/
```

Script Output

Task completed in 0.086 seconds

PL/SQL procedure successfully completed.

PL/SQL procedure successfully completed.

- Połączenie się z użytkownikiem wspólnym c##wspolny\_1\_173182\_173203 na kontener PDB\_Milo\_Radomska\_1 oraz wyświetlenie, że użytkownik ten ma dostęp do udostępnionych danych.

New / Select Database Connection

Connection Name	Connection Details
PDB1	sys@//localhost:... PDB2
PDB3	sys@//localhost:... sys
system	system@//localhost:... user1
user1	user_1_173182_... user2
user2	user_2_173182_... user3
user3	user_3_173182_... wsp1_pdb2
wsp1_pdb2	C##WSPOLNY_1... wsp2_pdb2
wsp2_pdb2	C##WSPOLNY_2...

Name: wsp1\_pdb1      Database Type: Oracle

User Info: Proxy User

Authentication Type: Default

Username: C##WSPOLNY\_1\_173182\_173203      Role: default

Password: .....      Save Password:

Connection Type: TNS

Details: Advanced

Network Alias: ALIAS\_1\_173182\_173203  
 Connect Identifier: \_\_\_\_\_

Status: Success

Help      Save      Clear      Test      Connect      Cancel

...B2 PDB3 x user1 x user2 x user3 x wsp1\_pdb2 x wsp2\_pdb2 x wsp1\_pdb1 x

Worksheet      Query Builder

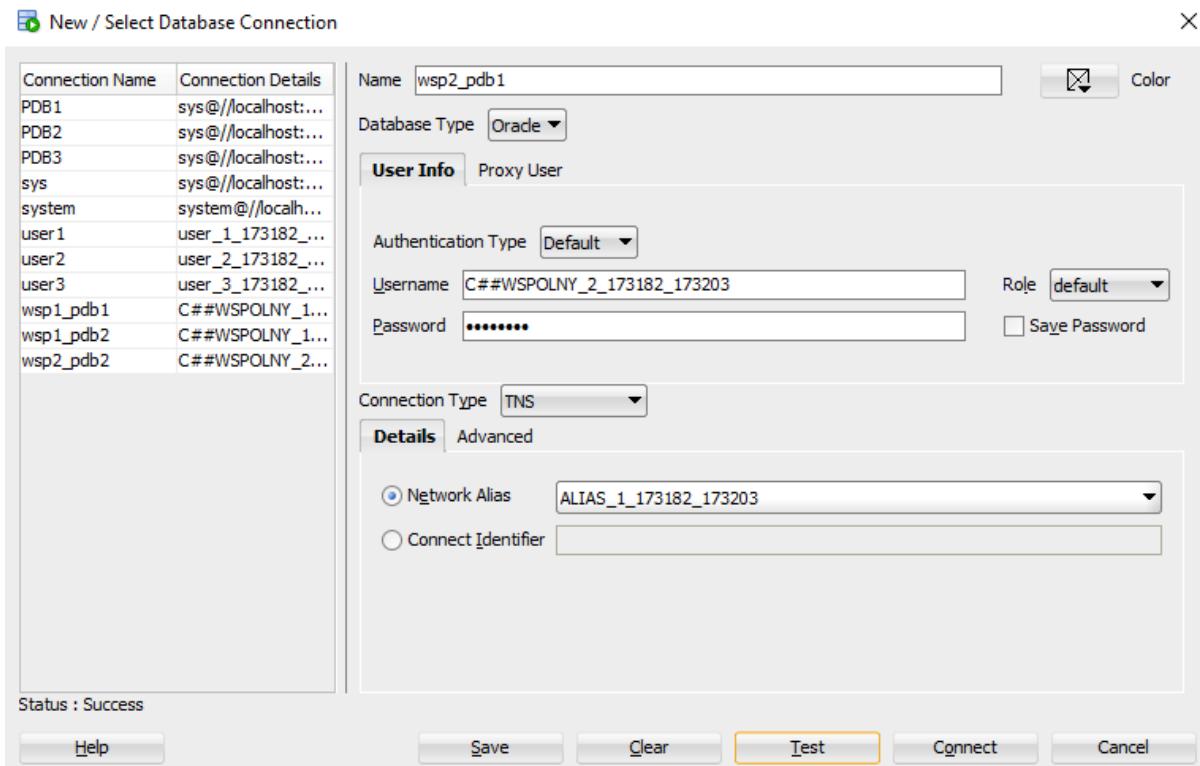
```
SELECT * FROM USER_1_173182_173203.ADRES;
```

Query Result x

All Rows Fetched: 17 in 0.017 seconds

ID_ADRESU	ULICA	NR_DOMU	NR_MIESZKANIA	KOD_POCZTOWY_KOD_POCZTOWY
1	1 ul. Mickiewicza	10		3 35-001
2	2 ul. Piłsudskiego	22	(null)	35-002
3	3 ul. Krakowska	5A		7 35-003
4	4 ul. Dąbrowskiego	8	(null)	35-004
5	5 ul. Hetmańska	12		15 35-005

- Połączenie się z użytkownikiem wspólnym c##wspolny\_2\_173182\_173203 na kontener PDB\_Milo\_Radomska\_1 oraz wyświetlenie, że użytkownik ten ma dostęp do udostępnionych danych.



The screenshot shows the Oracle SQL Worksheet interface. The top navigation bar has tabs for 'Worksheet' and 'Query Builder', with 'Worksheet' currently active. Below the toolbar, a query is written in the worksheet area: 'SELECT \* FROM USER\_1\_173182\_173203.ADRES;'. The results are displayed in a 'Query Result' grid. The grid has columns labeled 'ID\_ADRESU', 'ULICA', 'NR\_DOMU', 'NR\_MIESZKANIA', and 'KOD\_POCZTOWY\_KOD\_POCZTOWY'. The data is as follows:

ID_ADRESU	ULICA	NR_DOMU	NR_MIESZKANIA	KOD_POCZTOWY_KOD_POCZTOWY
1	1 ul. Mickiewicza	10		3 35-001
2	2 ul. Piłsudskiego	22	(null)	35-002
3	3 ul. Krakowska	5A		7 35-003
4	4 ul. Dąbrowskiego	8	(null)	35-004
5	5 ul. Hetmańska	12		15 35-005

Below the grid, a message indicates 'All Rows Fetched: 17 in 0.005 seconds'.

- Nadanie użytkownikom wspólnym uprawnień do kontenera PDB\_Milo\_Radomska\_2 i baz tam umieszczonych.

The screenshot shows the Oracle SQL Developer interface. The top part is the Worksheet tab where PL/SQL code is written. The bottom part is the Script Output tab showing the results of the execution.

```

DECLARE
  v_schema VARCHAR2(100) := 'USER_2_173182_173203';
  v_user VARCHAR2(100) := 'C##WSPOLNY_1_173182_173203';
BEGIN
  FOR tab IN (SELECT table_name FROM all_tables WHERE owner = v_schema) LOOP
    EXECUTE IMMEDIATE 'GRANT SELECT ON ' || v_schema || '.' || tab.table_name || ' TO ' || v_user;
    DBMS_OUTPUT.PUT_LINE('Przyznano uprawnienia SELECT na tabelę ' || v_schema || '.' || tab.table_name);
  END LOOP;
END;
/

```

```

DECLARE
  v_schema VARCHAR2(100) := 'USER_2_173182_173203';
  v_user VARCHAR2(100) := 'C##WSPOLNY_2_173182_173203';
BEGIN
  FOR tab IN (SELECT table_name FROM all_tables WHERE owner = v_schema) LOOP
    EXECUTE IMMEDIATE 'GRANT SELECT ON ' || v_schema || '.' || tab.table_name || ' TO ' || v_user;
    DBMS_OUTPUT.PUT_LINE('Przyznano uprawnienia SELECT na tabelę ' || v_schema || '.' || tab.table_name);
  END LOOP;
END;
/

```

Script Output tab:

```

PL/SQL procedure successfully completed.

PL/SQL procedure successfully completed.

```

- Połączenie się z użytkownikiem wspólnym c##wspolny\_1\_173182\_173203 na kontener PDB\_Milo\_Radomska\_1 oraz wyświetlenie, że użytkownik ten ma dostęp do udostępnionych danych.

New / Select Database Connection

Connection Name	Connection Details
PDB1	sys@//localhost:... .../PDB1
PDB2	sys@//localhost:... .../PDB2
PDB3	sys@//localhost:... .../PDB3
sys	sys@//localhost:... .../sys
system	system@//localhost:... .../system
user1	user_1_173182_... .../user1
user2	user_2_173182_... .../user2
user3	user_3_173182_... .../user3
wsp1_pdb1	C##WSPOLNY_1... .../wsp1_pdb1
wsp1_pdb2	C##WSPOLNY_1... .../wsp1_pdb2
wsp2_pdb1	C##WSPOLNY_2... .../wsp2_pdb1
wsp2_pdb2	C##WSPOLNY_2... .../wsp2_pdb2

Name: wsp1\_pdb2      Database Type: Oracle

User Info: Proxy User

Authentication Type: Default

Username: C##WSPOLNY\_1\_173182\_173203      Role: default

Password: \*\*\*\*\*       Save Password

Connection Type: TNS

Details Advanced

Network Alias: ALIAS\_2\_173182\_173203

Connect Identifier: (SERVER = DEDICATED) (SERVICE\_NAME = PDB\_Milo\_Radomska\_2) )

Status: Success

Help Save Clear Test Connect Cancel

Worksheet Query Builder

```
SELECT * FROM USER_2_173182_173203.COUNTRIES;
```

Query Result

All Rows Fetched: 23 in 0.004 seconds

COUNTRY_ID	COUNTRY_ISO_CODE	COUNTRY_NAME	COUNTRY_SUBREGION_ID	COUN
1	52790 US	United States of America	Northern America	52797 Americ
2	52776 DE	Germany	Western Europe	52799 Europe
3	52789 GB	United Kingdom	Western Europe	52799 Europe
4	52784 NL	The Netherlands	Western Europe	52799 Europe
5	52780 IE	Ireland	Western Europe	52799 Europe

- Połączenie się z użytkownikiem wspólnym c##wspolny\_2\_173182\_173203 na kontener PDB\_Milo\_Radomska\_2 oraz wyświetlenie, że użytkownik ten ma dostęp do udostępnionych danych.

**New / Select Database Connection**

Connection Name	Connection Details
PDB1	sys@//localhost:... PDB2
PDB3	sys@//localhost:... sys
system	system@//localhost:... user1
user2	user_1_173182_... user3
wsp1_pdb1	C##WSPOLNY_1... wsp1_pdb2
wsp2_pdb1	C##WSPOLNY_2... wsp2_pdb2

Name: wsp2\_pdb2      Database Type: Oracle

**User Info**: Proxy User

Authentication Type: Default

Username: C##WSPOLNY\_2\_173182\_173203      Role: default

Password: .....       Save Password

Connection Type: TNS

**Details**: Advanced

Network Alias: ALIAS\_2\_173182\_173203  
 Connect Identifier: (SERVER = DEDICATED) (SERVICE\_NAME = PDB\_Milo\_Radomska\_2 )

Status : Success

Help      Save      Clear      **Test**      Connect      Cancel

...ys PDB1 PDB2 PDB3 user1 user2 user3 wsp1\_pdb1 wsp2\_pdb2

Worksheet      Query Builder

```
SELECT * FROM USER_2_173182_173203.COUNTRIES;
```

Query Result      All Rows Fetched: 23 in 0.002 seconds

COUNTRY_ID	COUNTRY_ISO_CODE	COUNTRY_NAME	COUNTRY_SUBREGION	COUNTRY_SUBREGION_ID	COUN
1	52790 US	United States of America	Northern America	52797 Americ	
2	52776 DE	Germany	Western Europe	52799 Europe	
3	52789 GB	United Kingdom	Western Europe	52799 Europe	
4	52784 NL	The Netherlands	Western Europe	52799 Europe	
5	52780 IE	Ireland	Western Europe	52799 Europe	

- Nadanie użytkownikom wspólnym uprawnień do kontenera PDB\_Milo\_Radomska\_3 i baz tam umieszczonych.

The screenshot shows the Oracle SQL Developer interface. The top part is the 'Worksheet' tab where a SQL script is being run:

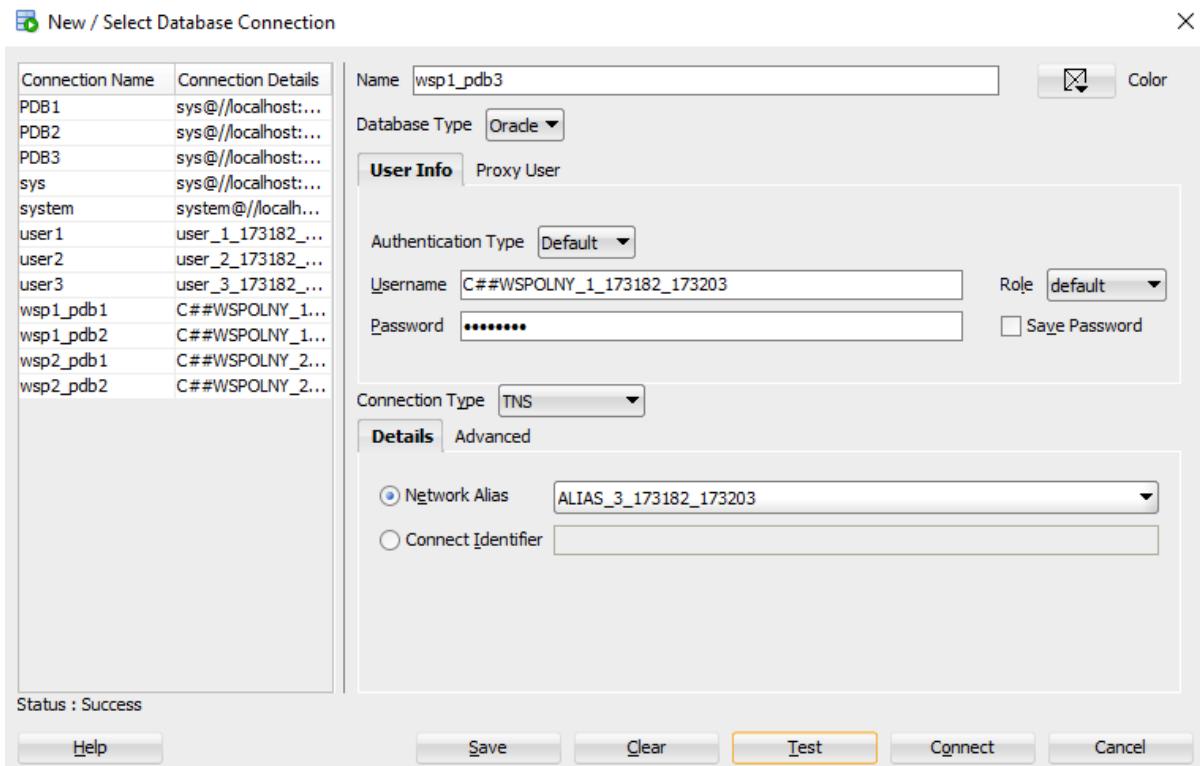
```
GRANT SELECT ON USER_3_173182_173203.WEATHER TO C##WSPOLNY_1_173182_173203;
GRANT SELECT ON USER_3_173182_173203.WEATHER TO C##WSPOLNY_2_173182_173203;
```

The bottom part is the 'Script Output' tab, which displays the results of the grant command:

```
Grant succeeded.

Grant succeeded.
```

- Połączenie się z użytkownikiem wspólnym c##wspolny\_1\_173182\_173203 na kontener PDB\_Milo\_Radomska\_3 oraz wyświetlenie, że użytkownik ten ma dostęp do udostępnionych danych.



Worksheet Query Builder

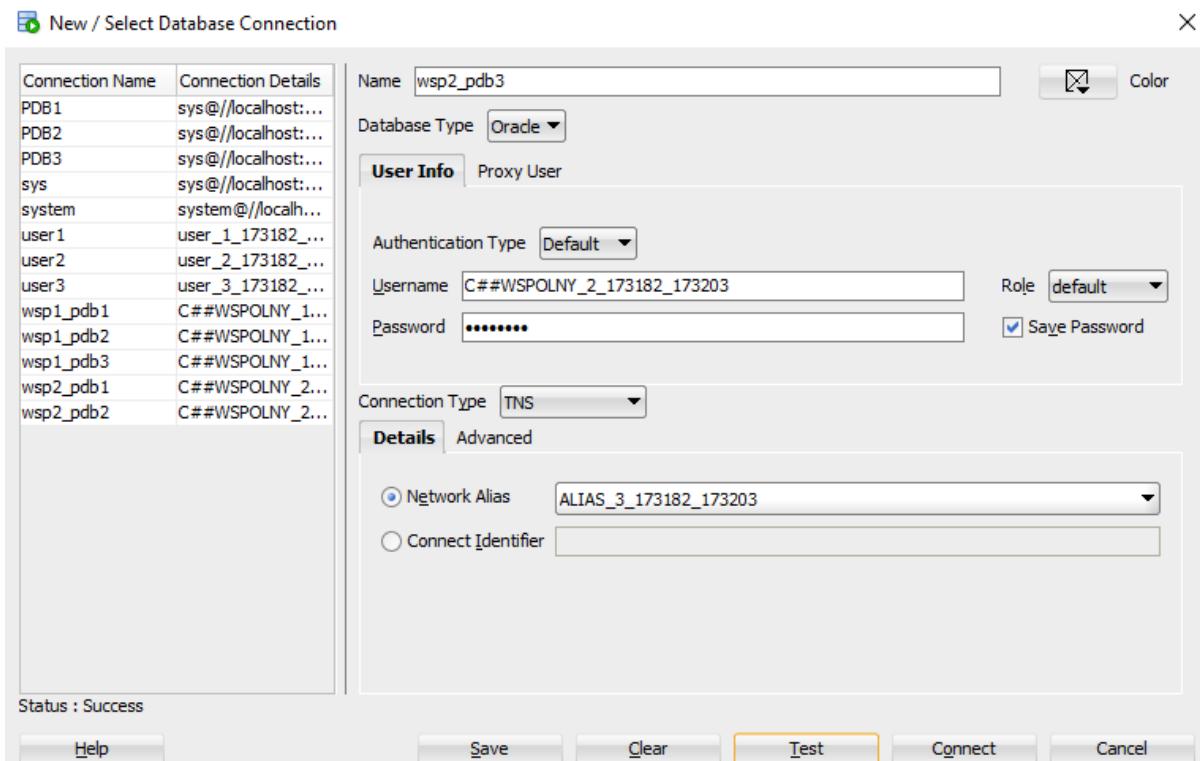
```
SELECT * FROM USER_3_173182_173203.WEATHER;
```

Query Result

Fetched 50 rows in 0.014 seconds

LOCATION	DATE_TIME	TEMPERATURE_C	HUMIDITY_PCT	PRECIPITATION_MM	WIND_SPEED_KMH
1 San Diego	14-JAN-24	10.683001094715387	41.195753566944475	4.02011871570867	8.233540246873023
2 San Diego	17-MAY-24	8.734139782353598	58.31910739552024	9.111623448229377	27.71516125689249
3 San Diego	11-MAY-24	11.632436312930885	38.82017526915946	4.607511377146035	28.732951288236187
4 Philadelphia	26-FEB-24	-8.62897589569391	54.07447397596174	3.183719747807655	26.367302672536635
5 San Antonio	29-APR-24	39.808212974631594	72.89990795294305	9.598282136749663	29.898621669296094

- Połączenie się z użytkownikiem wspólnym c##wspolny\_2\_173182\_173203 na kontener PDB\_Milo\_Radomska\_3 oraz wyświetlenie, że użytkownik ten ma dostęp do udostępnionych danych.



...r3 wsp1\_pdb2 wsp2\_pdb2 wsp1\_pdb1 wsp2\_pdb1 wsp1\_pdb3 wsp2\_pdb3

Worksheet Query Builder

```
SELECT * FROM USER_3_173182_173203.WEATHER;
```

Query Result | Fetched 50 rows in 0.006 seconds

LOCATION	DATE_TIME	TEMPERATURE_C	HUMIDITY_PCT	PRECIPITATION_MM	WIND_SPEED_KMH
1 San Diego	14-JAN-24	10.683001094715387	41.195753566944475	4.02011871570867	8.233540246873023
2 San Diego	17-MAY-24	8.734139782353598	58.31910739552024	9.111623448229377	27.71516125689249
3 San Diego	11-MAY-24	11.632436312930885	38.82017526915946	4.607511377146035	28.732951288236181
4 Philadelphia	26-FEB-24	-8.62897589569391	54.07447397596174	3.183719747807655	26.367302672536635
5 San Antonio	29-APR-24	39.808212974631594	72.89990795294305	9.598282136749663	29.898621669296094

### 13. Kopiowanie kontenera PDB\_Milo\_Radomska\_3 z macierzystego systemu bazodanowego na nowo powstałą maszynę wirtualną.

- Zamykamy kontener PDB\_Milo\_Radomska\_3 oraz tworzymy dla niego plik manifestu.

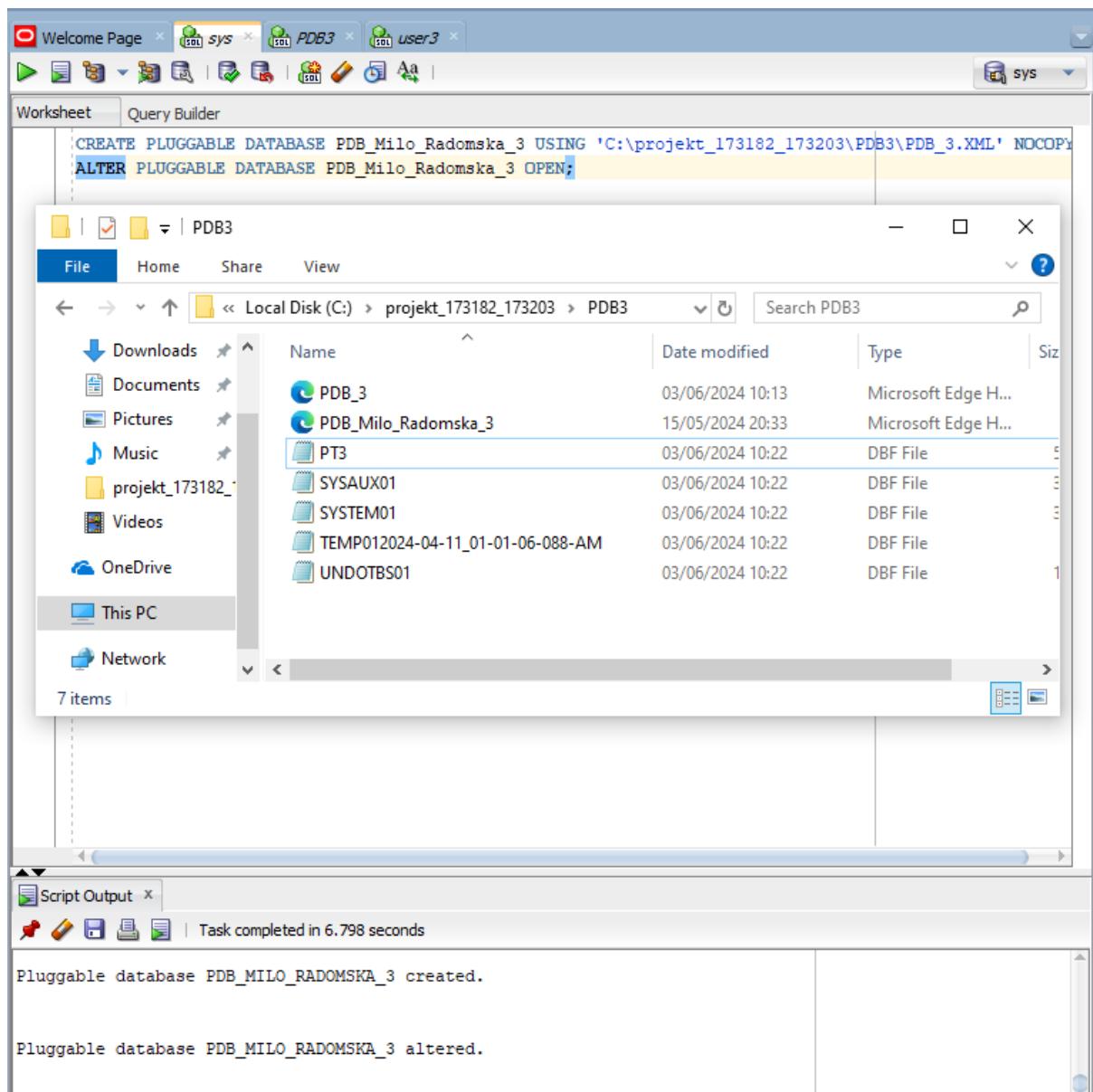
The screenshot shows the Oracle SQL Developer interface. The top navigation bar has tabs for 'Welcome Page', 'SYS', 'PDB1', 'PDB2', 'PDB3', 'user1', 'user2', and 'user3'. The main workspace is titled 'Worksheet' and contains the following SQL code:

```
ALTER PLUGGABLE DATABASE PDB_Milo_Radomska_3 CLOSE IMMEDIATE;
ALTER PLUGGABLE DATABASE PDB_Milo_Radomska_3 UNPLUG INTO 'C:\projekt_173182_173203\PDB3\PDB_3.XML';
```

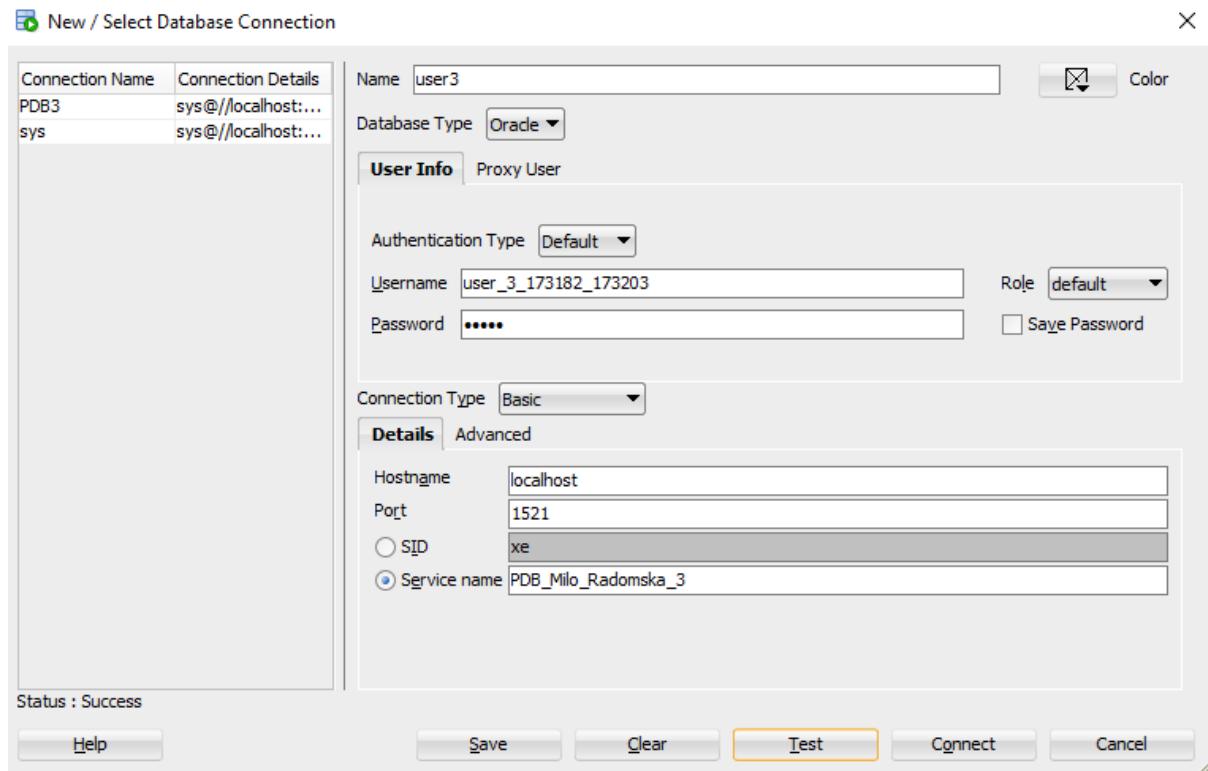
The bottom pane, titled 'Script Output', shows the results of the execution:

```
| Task completed in 6.33 seconds |
| Pluggable database PDB_MILO_RADOMSKA_3 altered. |
| Pluggable database PDB_MILO_RADOMSKA_3 altered. |
```

- Na nowo utworzoną maszynę został przeniesiony folder PDB3, w którym znajdują się pliki z całego kontenera oraz wygenerowany wcześniej plik manifestu. Został także utworzony kontener z tego pliku, a następnie otworzony.



- Zalogowanie się na użytkownika lokalnego user\_3\_173182\_173203 na kontenerze PDB\_Milo\_Radomska\_3 na nowej maszynie



- Wyświetlenie bazy danych weather na użytkowniku lokalnym na nowej maszynie.

	LOCATION	DATE_TIME	TEMPERATURE_C	HUMIDITY_PCT	PRECIPITATION_MM	WIND_SPEED_KMH
1	San Diego	14-JAN-24	10.683001094715387	41.195753566944475	4.02011871570867	8.23354024687301
2	San Diego	17-MAY-24	8.734139782353598	58.31910739552024	9.111623448229377	27.715161256892
3	San Diego	11-MAY-24	11.632436312930885	38.82017526915946	4.607511377146035	28.73295128823618
4	Philadelphia	26-FEB-24	-8.62897589569391	54.07447397596174	3.183719747807655	26.3673026725366
5	San Antonio	29-APR-24	39.808212974631594	72.89990795294305	9.598282136749663	29.89862166929609
6	San Diego	21-JAN-24	27.341054869123994	49.02323606834762	9.166543302732745	27.4738960845158
7	San Jose	13-JAN-24	1.881883367968177	65.74232453691016	0.2217090431972102	1.073111781122859
8	New York	25-JAN-24	-6.894765540954558	30.80489400823282	8.027623514181629	16.8483368651639

- Ponowne utworzenie kontenera PDB\_Milo\_Radomska\_3 na macierzystym systemie bazodanowym.

The screenshot shows the Oracle SQL Developer interface. The top navigation bar has tabs for 'Welcome Page', 'SYS', 'PDB1', 'PDB2', 'PDB3', 'user1', 'user2', and 'user3'. The 'SYS' tab is selected. Below the navigation bar is a toolbar with various icons. The main area is divided into two panes: 'Worksheet' and 'Script Output'. The 'Worksheet' pane contains the following SQL script:

```
DROP PLUGGABLE DATABASE PDB_Milo_Radomska_3 KEEP DATAFILES;
CREATE PLUGGABLE DATABASE PDB_Milo_Radomska_3 USING 'C:\projekt_173182_173203\PDB3\PDB_3.XML' NOCOPY;
ALTER PLUGGABLE DATABASE PDB_Milo_Radomska_3 OPEN READ WRITE;
```

The 'Script Output' pane shows the results of the execution:

```
Pluggable database PDB_MILO_RADOMSKA_3 dropped.

Pluggable database PDB_MILO_RADOMSKA_3 created.

Pluggable database PDB_MILO_RADOMSKA_3 altered.
```

A progress bar at the bottom of the 'Script Output' pane indicates the task completed in 9.135 seconds.

## 14. Backup kontenera wewnątrz kontenera PDB\_Milo\_Radomska\_3.

- Zostało wykonane zamknięcie bazy, montowanie, przełączanie na tryb archiwalny, otwarcie bazy oraz otwarcie kontenera PDB\_Milo\_Radomska\_3, aby móc później wykonać pełną kopię zapasową za pomocą RMAN.

```
SQL*Plus
Enter user-name: sys as sysdba
Enter password:

Connected to:
Oracle Database 21c Express Edition Release 21.0.0.0.0 - Production
Version 21.3.0.0.0

SQL> shutdown immediate
Database closed.
Database dismounted.
ORACLE instance shut down.
SQL> startup mount
ORACLE instance started.

Total System Global Area 1291844872 bytes
Fixed Size          9854216 bytes
Variable Size      503316480 bytes
Database Buffers   771751936 bytes
Redo Buffers        6922240 bytes
Database mounted.
SQL> alter database archivelog;

Database altered.

SQL> alter database open;

Database altered.

SQL> alter pluggable database PDB_Milo_Radomska_3 OPEN;
Pluggable database altered.
```

- Logowanie do kontenera PDB\_Milo\_Radomska\_3 w sesji RMAN, a następnie utworzenie kopii zapasowej przestrzeni tabel PT\_3 oraz kontenera PDB\_Milo\_Radomska\_3.

```
C:\ Administrator: Command Prompt - RMAN TARGET sys@ALIAS_3_173182_173203/system
Microsoft Windows [Version 10.0.19045.3803]
(c) Microsoft Corporation. All rights reserved.

C:\Windows\system32>RMAN TARGET sys@ALIAS_3_173182_173203/system

Recovery Manager: Release 21.0.0.0.0 - Production on Tue Jun 4 23:00:40 2024
Version 21.3.0.0.0

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connected to target database: XE:PDB_MILO_RADOMSKA_3 (DBID=1775777990)

RMAN> BACKUP TABLESPACE PT_3;

Starting backup at 04-JUN-24
using target database control file instead of recovery catalog
allocated channel: ORA_DISK_1
channel ORA_DISK_1: SID=401 device type=DISK
channel ORA_DISK_1: starting full datafile backup set
channel ORA_DISK_1: specifying datafile(s) in backup set
input datafile file number=00046 name=C:\PROJEKT_173182_173203\PDB3\PT3.DBF
channel ORA_DISK_1: starting piece 1 at 04-JUN-24
channel ORA_DISK_1: finished piece 1 at 04-JUN-24
piece handle=C:\APP\GOSIA\PRODUCT\21C\DBHOMEXE\DATABASE\012SI25U_1_1 tag=TAG20240604T230118 comment=NONE
channel ORA_DISK_1: backup set complete, elapsed time: 00:00:01
Finished backup at 04-JUN-24

RMAN> BACKUP PLUGGABLE DATABASE PDB_Milo_Radomska_3
2> ;

Starting backup at 04-JUN-24
using channel ORA_DISK_1
channel ORA_DISK_1: starting full datafile backup set
channel ORA_DISK_1: specifying datafile(s) in backup set
input datafile file number=00046 name=C:\PROJEKT_173182_173203\PDB3\PT3.DBF
input datafile file number=00044 name=C:\PROJEKT_173182_173203\PDB3\SYSAUX01.DBF
input datafile file number=00043 name=C:\PROJEKT_173182_173203\PDB3\SYSTEM01.DBF
input datafile file number=00045 name=C:\PROJEKT_173182_173203\PDB3\UNDOTBS01.DBF
channel ORA_DISK_1: starting piece 1 at 04-JUN-24
channel ORA_DISK_1: finished piece 1 at 04-JUN-24
piece handle=C:\APP\GOSIA\PRODUCT\21C\DBHOMEXE\DATABASE\022SI26V_2_1 tag=TAG20240604T230151 comment=NONE
channel ORA_DISK_1: backup set complete, elapsed time: 00:00:05
Finished backup at 04-JUN-24
```

- Utworzenie kopii zapasowej kontenera PDB\_Milo\_Radomska\_3 wraz z archiwalnymi dziennikami.

```
RMAN> BACKUP PLUGGABLE DATABASE PDB_Milo_Radomska_3 PLUS ARCHIVELOG;

Starting backup at 04-JUN-24
using channel ORA_DISK_1
skipping archived logs when connected to a PDB
backup cancelled because there are no files to backup
Finished backup at 04-JUN-24

Starting backup at 04-JUN-24
using channel ORA_DISK_1
channel ORA_DISK_1: starting full datafile backup set
channel ORA_DISK_1: specifying datafile(s) in backup set
input datafile file number=00046 name=C:\PROJEKT_173182_173203\PDB3\PT3.DBF
input datafile file number=00044 name=C:\PROJEKT_173182_173203\PDB3\SYSAUX01.DBF
input datafile file number=00043 name=C:\PROJEKT_173182_173203\PDB3\SYSTEM01.DBF
input datafile file number=00045 name=C:\PROJEKT_173182_173203\PDB3\UNDOTBS01.DBF
channel ORA_DISK_1: starting piece 1 at 04-JUN-24
channel ORA_DISK_1: finished piece 1 at 04-JUN-24
piece handle=C:\APP\GOSIA\PRODUCT\21C\DBHOMEXE\DATABASE\032SI2AA_3_1 tag=TAG20240604T230338 comment=NONE
channel ORA_DISK_1: backup set complete, elapsed time: 00:00:06
Finished backup at 04-JUN-24

Starting backup at 04-JUN-24
using channel ORA_DISK_1
skipping archived logs when connected to a PDB
backup cancelled because there are no files to backup
Finished backup at 04-JUN-24
```

- Przełączanie się na kontener PDB\_Milo\_Radomska\_3 i zasymulowanie usunięcie danych.

```
SQL> alter session set container = PDB_Milo_Radomska_3
  2 ;
Session altered.

SQL> show con_name;

CON_NAME
-----
PDB_MILO_RADOMSKA_3

SQL> drop table user_3_173182_173203.weather;

Table dropped.

SQL> SELECT * FROM USER_3_173182_173203.WEATHER;
SELECT * FROM USER_3_173182_173203.WEATHER
*
ERROR at line 1:
ORA-00942: table or view does not exist
```

- W RMANIE kontener PDB\_Milo\_Radomska\_3 został zamknięty, a następnie została przywrócona migawka z utworzonego wcześniej backupu.

```
C:\Windows\system32>RMAN TARGET =/

Recovery Manager: Release 21.0.0.0.0 - Production on Wed Jun 5 14:25:12 2024
Version 21.3.0.0.0

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connected to target database: XE (DBID=3051748949)

RMAN> RUN {
  2> ALTER PLUGGABLE DATABASE PDB_Milo_Radomska_3 CLOSE;
  3> SET UNTIL TIME "TO_DATE('04-JUN-2024 23:58:00', 'DD-MON-YYYY HH24:MI:SS')";
  4> RESTORE PLUGGABLE DATABASE PDB_Milo_Radomska_3;
  5> RECOVER PLUGGABLE DATABASE PDB_Milo_Radomska_3;
  6> ALTER PLUGGABLE DATABASE PDB_Milo_Radomska_3 OPEN RESETLOGS;
  7> }

Statement processed

executing command: SET until clause

Starting restore at 05-JUN-24
using target database control file instead of recovery catalog
allocated channel: ORA_DISK_1
channel ORA_DISK_1: SID=268 device type=DISK
```

```
channel ORA_DISK_1: starting datafile backup set restore
channel ORA_DISK_1: specifying datafile(s) to restore from backup set
channel ORA_DISK_1: restoring datafile 00043 to C:\PROJEKT_173182_173203\pdb3\SYSTEM01.DBF
channel ORA_DISK_1: restoring datafile 00044 to C:\PROJEKT_173182_173203\pdb3\SYSAUX01.DBF
channel ORA_DISK_1: restoring datafile 00045 to C:\PROJEKT_173182_173203\pdb3\UNDOTBS01.DBF
channel ORA_DISK_1: restoring datafile 00046 to C:\PROJEKT_173182_173203\pdb3\PT3.DBF
channel ORA_DISK_1: reading from backup piece C:\APP\GOSIA\PRODUCT\21C\DBHOMEXE\DATABASE\032SI2AA_3_1_1
channel ORA_DISK_1: piece handle=C:\APP\GOSIA\PRODUCT\21C\DBHOMEXE\DATABASE\032SI2AA_3_1_1
channel ORA_DISK_1: restored backup piece 1
channel ORA_DISK_1: restore complete, elapsed time: 00:00:30
Finished restore at 05-JUN-24
Starting recover at 05-JUN-24 current log archived using channel ORA_DISK_1
starting media recovery
media recovery complete, elapsed time: 00:00:00
Finished recover at 05-JUN-24
Statement processed
RMAN>
```

- Wyświetlenie danych po przywróceniu backupu z kontenera PDB\_Milo\_Radomska\_3.

```
SQL> SELECT COUNT(*) FROM user_3_173182_173203.weather;
-----+
COUNT(*)
-----+
1000000

SQL> show con_name;
-----+
CON_NAME
-----+
PDB_MILO_RADOMSKA_3
```

## 15. Zaszyfrowanie przestrzeni tabel PT3 używając Oracle Wallet.

- Utworzono i otwarto portfel z zabezpieczeniem hasłem, a następnie sprawdzono jego status i lokalizację.

The screenshot shows the Oracle SQL Developer interface. In the top navigation bar, tabs for 'Welcome Page', 'PDB3', 'sys', and 'user3' are visible. The main area is a 'Worksheet' tab where SQL commands are entered:

```
ADMINISTER KEY MANAGEMENT CREATE KEYSTORE  
'C:\app\gosia\product\21c\admin\XE\WALLET' IDENTIFIED BY password;  
  
ADMINISTER KEY MANAGEMENT CREATE AUTO_LOGIN KEYSTORE FROM KEYSTORE  
'C:\app\gosia\product\21c\admin\XE\WALLET' IDENTIFIED BY password;  
  
ADMINISTER KEY MANAGEMENT SET KEYSTORE OPEN IDENTIFIED BY password;  
  
select STATUS, WRL_PARAMETER WALLET_DIR, WALLET_TYPE from  
V$ENCRYPTION_WALLET;
```

The 'Query Result' tab at the bottom displays the output of the last command:

```
Key MANAGEMENT succeeded.  
  
Key MANAGEMENT succeeded.  
  
Key MANAGEMENT succeeded.  
  
STATUS  
-----  
WALLET_DIR  
-----  
WALLET_TYPE  
-----  
OPEN_NO_MASTER_KEY  
C:\APP\GOSIA\PRODUCT\21C\ADMIN\XE\WALLET  
PASSWORD
```

- Zamknięto i otworzono kontener PDB\_Milo\_Radomska\_3 w trybie zapisu, a następnie ustalono portfel z backupem.

The screenshot shows the Oracle SQL Developer interface. At the top, there are tabs for 'Welcome Page', 'PDB3', 'SYS', and 'user3'. Below the tabs is a toolbar with various icons. The main area is divided into two panes: 'Worksheet' and 'Query Builder'. In the Worksheet pane, a script is being run:

```

ADMINISTER KEY MANAGEMENT CREATE AUTO_LOGIN KEYSTORE FROM KEYSTORE
'C:\app\gosia\product\21c\admin\XE\WALLET' IDENTIFIED BY password;

ADMINISTER KEY MANAGEMENT SET KEYSTORE OPEN IDENTIFIED BY password;

select STATUS, WRL_PARAMETER WALLET_DIR, WALLET_TYPE from
V$ENCRYPTION_WALLET;

ALTER PLUGGABLE DATABASE PDB_Milo_Radomska_3 CLOSE IMMEDIATE;

ALTER PLUGGABLE DATABASE PDB_Milo_Radomska_3 OPEN READ WRITE;

ADMINISTER KEY MANAGEMENT SET KEY IDENTIFIED BY "password" WITH BACKUP using "password";
  
```

The last line of the script is highlighted in yellow. Below the Worksheet pane, there is a 'Script Output' tab which displays the results of the executed commands:

```

Pluggable database PDB_MILO_RADOMSKA_3 altered.

Pluggable database PDB_MILO_RADOMSKA_3 altered.

Key MANAGEMENT succeeded.
  
```

A status message at the bottom of the output pane says 'Task completed in 1.011 seconds'.

- Po przelogowaniu się na kontener PDB\_Milo\_Radomska\_3 otworzono portfel, ustawiono klucz z backupem oraz zaszyfrowano przestrzeń tabel PT\_3 przy użyciu algorytmu AES256.

The screenshot shows the Oracle SQL Developer interface. The top part is a query editor window titled 'Worksheet' containing the following PL/SQL code:

```

show con_name;

ADMINISTER KEY MANAGEMENT SET KEYSTORE OPEN IDENTIFIED BY password;

ADMINISTER KEY MANAGEMENT SET KEY IDENTIFIED BY "password" WITH BACKUP using "password";

ALTER TABLESPACE PT_3 ENCRYPTION ONLINE USING 'AES256' ENCRYPT;

```

The bottom part is a 'Script Output' window showing the results of the execution:

```

CON_NAME
-----
PDB_MILO_RADOMSKA_3

Key MANAGEMENT succeeded.

Key MANAGEMENT succeeded.

TABLESPACE PT_3 altered.

```

The 'Script Output' window also displays a message: 'Task completed in 9.507 seconds'.

- Pokazanie, że przestrzeń table PT\_3 jest zaszyfrowana

The screenshot shows the Oracle SQL Developer interface. In the top navigation bar, the tabs are Welcome Page, PDB3, sys, user3, and PDB\_3. The PDB\_3 tab is active. Below the tabs is a toolbar with various icons. The main area has two tabs: Worksheet and Query Builder. The Worksheet tab is selected. A SQL query is entered in the worksheet:

```
SELECT tablespace_name, encrypted FROM dba_tablespaces WHERE encrypted = 'YES';
```

Below the worksheet, there are two tabs: Script Output and Query Result. The Query Result tab is selected. It displays the results of the query:

TABLESPACE_NAME	ENCRYPTED
PT_3	YES

Below the table, a message says "All Rows Fetched: 1 in 0.032 seconds".

- Wyświetlenie ścieżki, gdzie znajduje się zaszyfrowany plik przestrzeni tabel PT\_3.
- Wyświetlenie statusu portfela, który wskazuje na to, że jest otwarty.

The screenshot shows the Oracle SQL Developer interface. The top navigation bar has tabs for Welcome Page, PDB3, sys, user3, and PDB\_3. The main area has tabs for Worksheet and Query Builder, with Worksheet selected. The Worksheet tab contains the following SQL code:

```

SELECT FILE_NAME FROM DBA_DATA_FILES WHERE TABLESPACE_NAME = 'PT_3';
select STATUS, WRL_PARAMETER WALLET_DIR, WALLET_TYPE from
V$ENCRYPTION_WALLET;

```

The Query Result tab shows the execution results:

FILE_NAME
C:\PROJEKT_173102_173203\PDB3\PT3.DBF

STATUS
-----

WALLET_DIR
-----

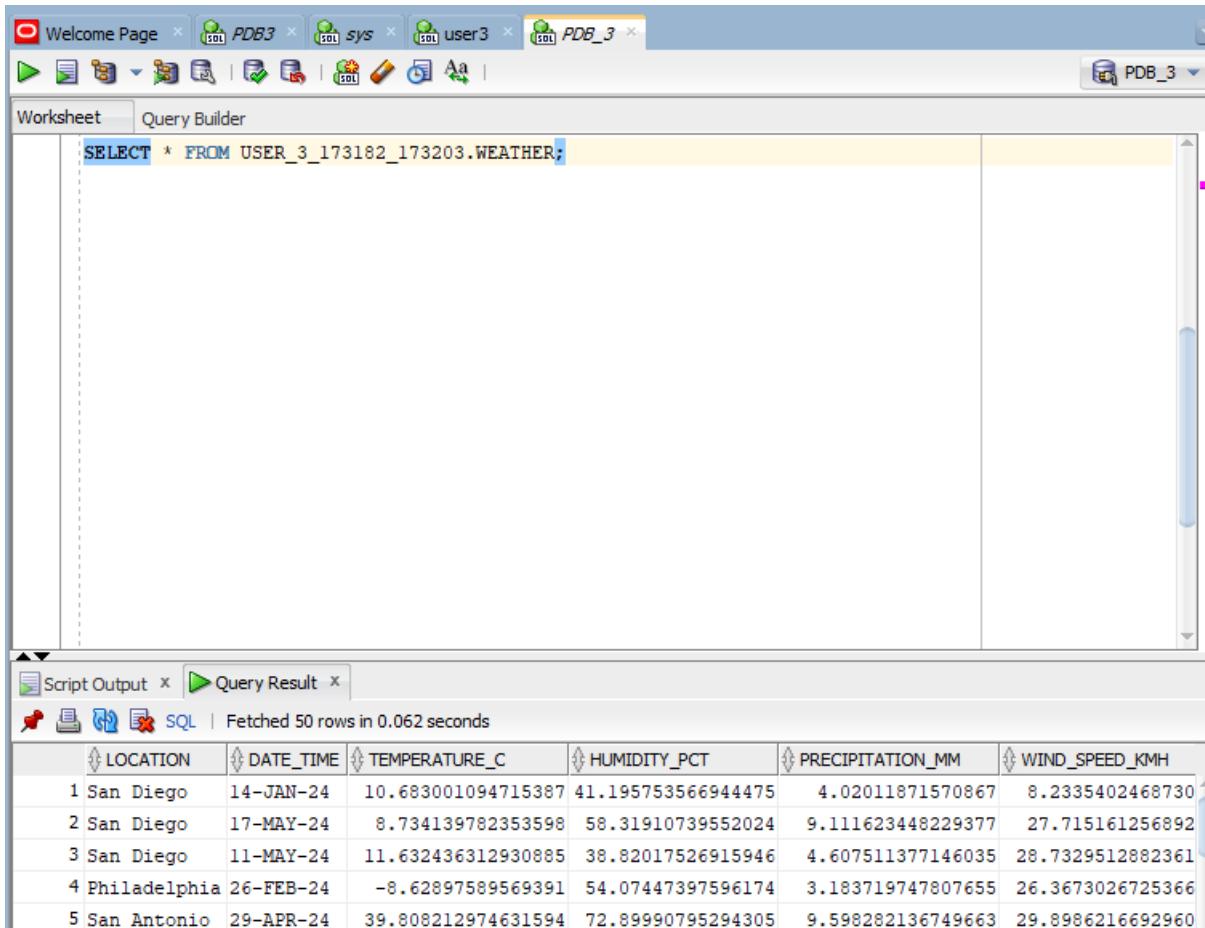
WALLET_TYPE
-----

OPEN
PASSWORD

Below the results, a message indicates "Task completed in 0.07 seconds".

- Pokazanie możliwości wyświetlenia danych z tabeli, ponieważ status potfela to „open”.



The screenshot shows the Oracle SQL Developer interface. In the top navigation bar, there are tabs for 'Welcome Page', 'PDB3', 'SYS', 'user3', and 'PDB\_3'. Below the tabs is a toolbar with various icons. The main area has two tabs: 'Worksheet' and 'Query Builder', with 'Worksheet' selected. The worksheet contains the following SQL query:

```
SELECT * FROM USER_3_173182_173203.WEATHER;
```

Below the worksheet is a 'Script Output' tab which displays the results of the query. The results are presented in a table with the following columns:

	LOCATION	DATE_TIME	TEMPERATURE_C	HUMIDITY_PCT	PRECIPITATION_MM	WIND_SPEED_KMH
1	San Diego	14-JAN-24	10.683001094715387	41.195753566944475	4.02011871570867	8.2335402468730
2	San Diego	17-MAY-24	8.734139782353598	58.31910739552024	9.111623448229377	27.715161256892
3	San Diego	11-MAY-24	11.632436312930885	38.82017526915946	4.607511377146035	28.7329512882361
4	Philadelphia	26-FEB-24	-8.62897589569391	54.07447397596174	3.183719747807655	26.3673026725366
5	San Antonio	29-APR-24	39.808212974631594	72.89990795294305	9.598282136749663	29.8986216692960

The output also includes a note: 'Fetched 50 rows in 0.062 seconds'.

- Zamknięcie portfela oraz wyświetlenie statusu portfela po zamknięciu – „closed”.

The screenshot shows the Oracle SQL Developer interface. The top window is a Worksheet tab containing the following PL/SQL code:

```

ADMINISTER KEY MANAGEMENT SET KEYSTORE CLOSE IDENTIFIED BY password;
select STATUS, WRL_PARAMETER WALLET_DIR, WALLET_TYPE from
V$ENCRYPTION_WALLET;

```

The bottom window is a Script Output tab showing the results of the execution:

```

Key MANAGEMENT succeeded.

STATUS
-----
WALLET_DIR
-----
WALLET_TYPE
-----
CLOSED
UNKNOWN

```

- Błąd przy próbie wyświetlenia danych, ponieważ portfel jest zamknięty.

The screenshot shows the Oracle SQL Developer interface. The top window is a Worksheet tab containing the following SQL code:

```

ADMINISTER KEY MANAGEMENT SET KEYSTORE CLOSE IDENTIFIED BY password;

select STATUS, WRL_PARAMETER WALLET_DIR, WALLET_TYPE from
V$ENCRYPTION_WALLET;

SELECT * FROM USER_3_173182_173203.WEATHER;

```

The bottom window is a Script Output tab showing the execution results:

```

Script Output x Query Result x
SQL | Executing:SELECT * FROM USER_3_173182_173203.WEATHER in 0 seconds

ORA-28365: wallet is not open
28365. 0000 - "wallet is not open"
*Cause: The security module wallet was not opened.
*Action: Open the wallet. In and Oracle RAC enviroment, open the wallet on
all instances for the container.
Error at Line: 17 Column: 36

```