

# 데이터베이스 프로그래밍

Oracle의 설치

# Oracle의 Edition별 기능

- **Oracle Enterprise Edition(Oracle EE)**

- CPU의 개수 제한이 없이 지원
- 최고의 성능과 확정성, OTLP 상의 안정성, 의사 결정 지원 기능
- 최소 사용자 수 25명
- RAC 지원
- 운용하는 교무에 제한이 없음
- 오라클 데이터베이스의 모든 컴포넌트를 지니고 있음
- 옵션과 확정팩을 도입해 기능을 더욱 향상시킬 수 있음
- 압축 기능, 파티션 테이블 등의 기능 제공

- **Oracle Standard Edition(Oracle SE)**

- CPU를 4개까지 지원
- 최소 사용자 수는 5명
- RAC지원
- 일반적으로 1,000~2,000명 정도 규모의 조직에 적당
- 데이터베이스 크기는 GB 단위를 지원하는데 적당

- **Oracle Personal Edition(Oracle PE)**

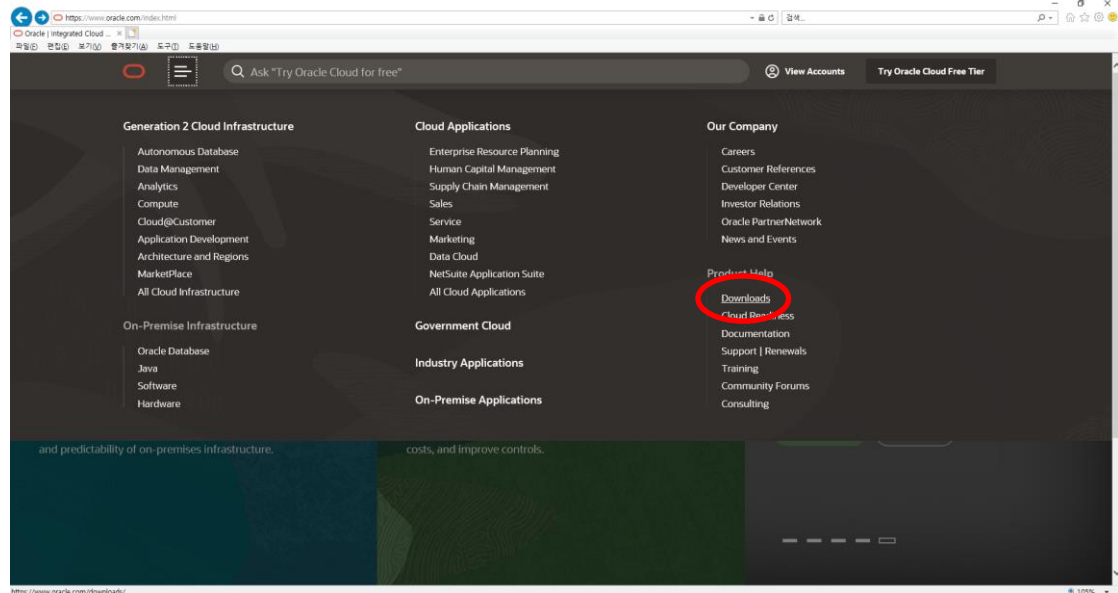
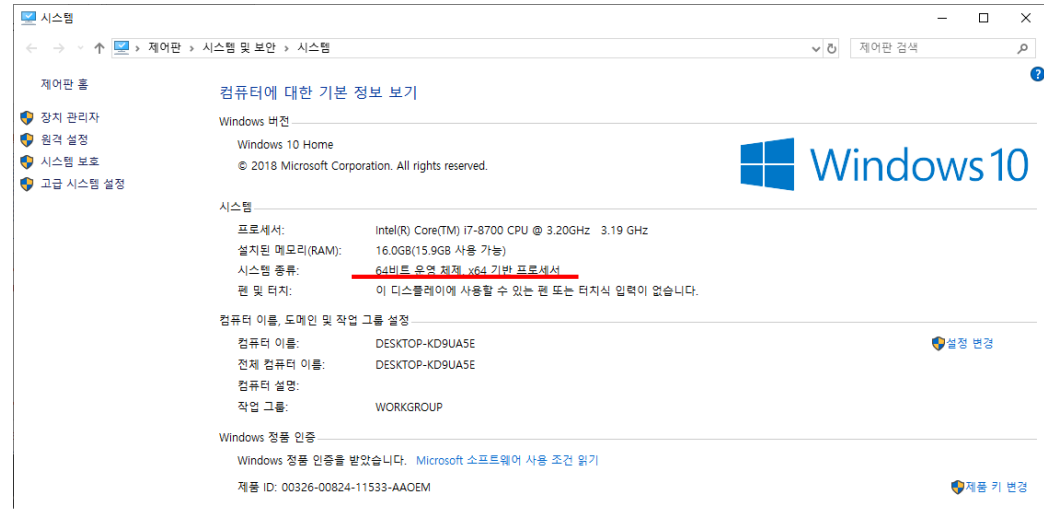
- CPU 개수와 상관없으며, 단일 사용자만 사용 가능
- 다른 모든 Oracle Database 제품군과 호환
- 다른 모든 Oracle Database 제품의 특징이 포함된 개인 사용자용 제품임
- 다른 사용 Oracle Database와 호환성을 요구하는 단일 사용자 개발 환경을 지원

- **Oracle Express Edition(Oracle XE)**

- 무료 버전이며 개발, 배포, 보급까지 무료
- 컴퓨터에 멀티 CPU가 장착되어 있어도 1개의 CPU만 사용
- 최대 11GB 사용자 데이터만 사용 가능하고, 최대 1GB의 메모리만 사용 가능
- 소규모 데이터베이스나 학습용 데이터베이스에 적합
- 시험 운영 후에 필요하다면 Enterprise 또는 Standard Edition으로 업그레이드가 가능

# Oracle 설치-Oracle XE 11g R2

- <https://www.oracle.com/>
- 다운로드
- 데이터베이스  
Database 11g  
Express Edition
- Accept
- 다운로드
- 로그인



Oracle Software Downloads

## Customer Downloads

If you already have a commercial license, you should download your software from the [Oracle Software Delivery Cloud](#), which is specifically designed for customer fulfillment.

For patches, see [My Oracle Support](#).

**Free Trial: Oracle Cloud**—Get up to 3,500 free hours.

[Try Oracle Cloud Free Tier](#) [FAQ: Oracle Cloud Free Tier](#)

## Developer Downloads

All software downloads are free, and most come with a [Developer License](#) that allows you to use full versions of the products at no charge while developing and prototyping your applications, or for strictly self-educational purposes. (Unless otherwise specified, our technical support organization will not provide technical support, phone support, or updates to you for the programs licensed under this agreement.) You can buy products with full-use licenses at any time from the [online Store](#) or from your [sales representative](#).

**Database** Middleware Applications IT Infrastructure

Java Developer Tools Drivers and Utilities Open Source

## Database

- Database 19c Enterprise/Standard Editions
- Database 18c Enterprise/Standard Editions
- Database 12c Enterprise/Standard Editions
- Database 11g Enterprise/Standard Editions**
- Autonomous Database
- Berkeley DB
- Big Data Connectors
- Cluster Verification Utility
- Database Mobile Server

## Middleware

- Application Testing Suite
- Business Transaction Management
- Big Data Discovery
- Business Activity Monitoring
- Business Intelligence Suite EE
- Business Intelligence Applications
- Business Intelligence Mobile Security Toolkit
- Business Intelligence Publisher
- Business Process Management
- Coherence

- Grid Infrastructure
- Instant Client
- MySQL
- NoSQL Database
- Oracle Blockchain Platform Enterprise Edition
- Rdb Products
- R Distribution
- Secure Backup
- Secure Backup Cloud Module for Amazon S3
- TimesTen In-Memory Database

## Oracle Database XE Downloads

### Oracle Database Express Edition (XE) Release 18.4.0.0.0 (18c)

Download	Description
Oracle Database 18c Express Edition for Linux x64	(2,521,766,408 bytes - February 20, 2020) [Sha256sum: 4d0318d72a0b977f5468b36919a23ec075335897b534843108e037656dd50c8]
Oracle Database 18c Express Edition for Windows x64	(2,054,264,100 bytes - February 20, 2019) [Sha256sum: 7C1A85D05F6FC5BCE70E7BA407BEEC70C8D095E68503695B8486C40C114F1A]

RPM for RHEL and CentOS

Getting Started:  
[Quick Start](#)  
[Frequently Asked Questions](#)  
[Community Support Forum](#)

18c XE Documentation:  
[Installation Guide for Linux](#)  
[Installation Guide for Windows](#)  
[Licensing Information](#)

[Learn More](#) [Prior Release Archive](#) [Learn More](#)

## Oracle Database XE Prior Release Archive

### Oracle Database Express Edition (XE) Prior Release Archive

You must accept the [Oracle License Agreement](#) to download this software.

☒ I have reviewed and accept the Oracle License Agreement

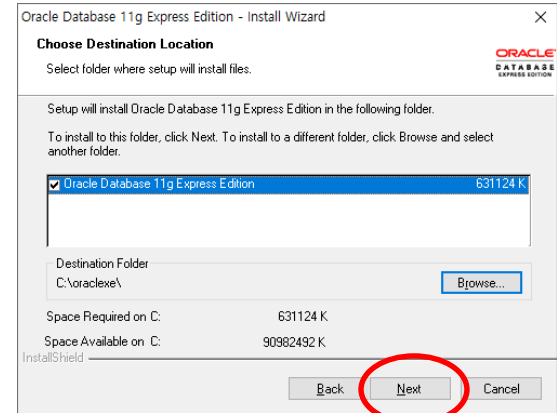
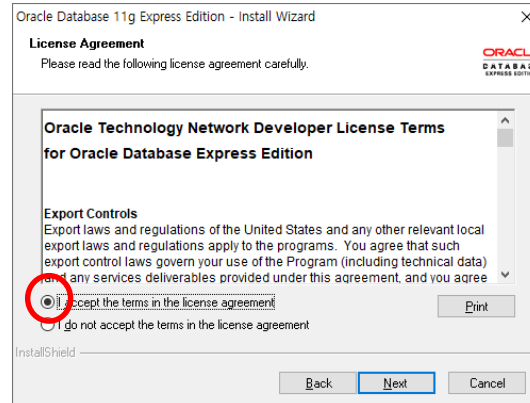
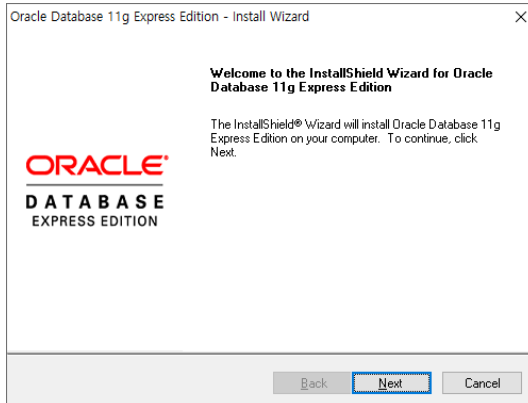
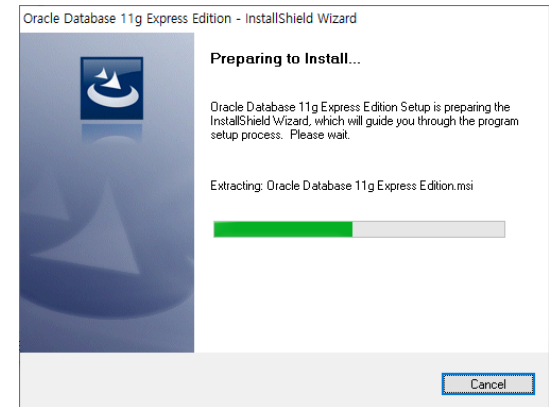
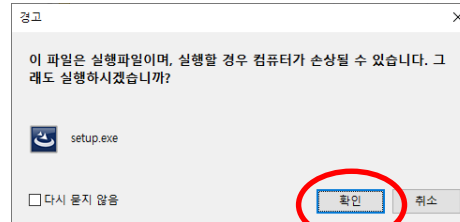
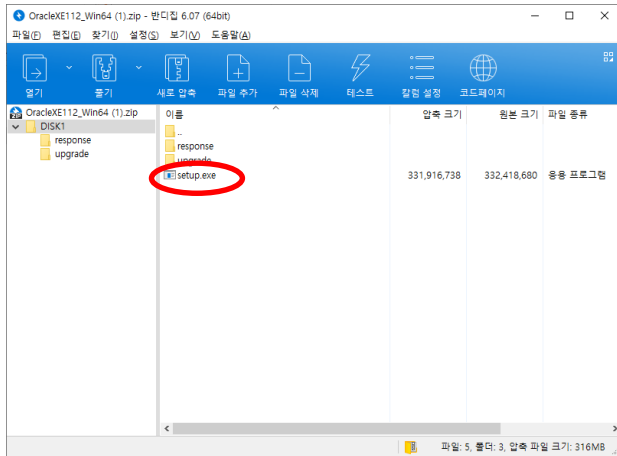
You will be redirected to the login screen in order to download the file.

[Download OracleXE11g2\\_Win64.zip](#)

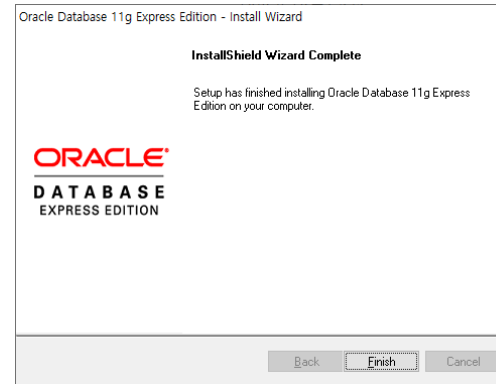
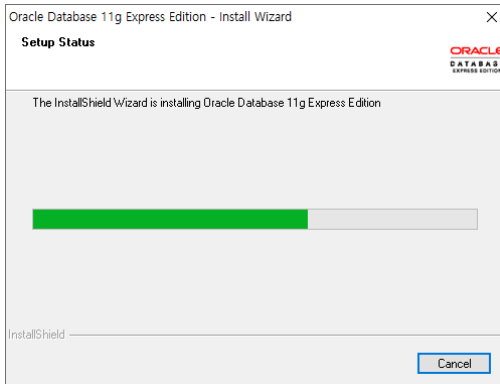
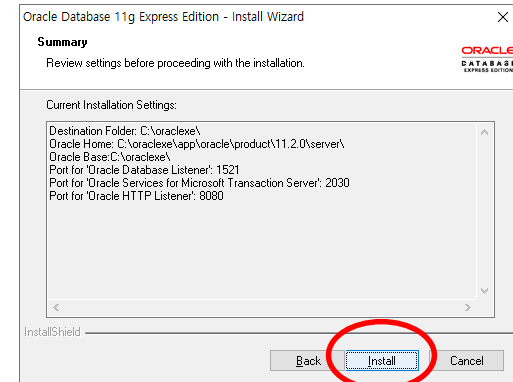
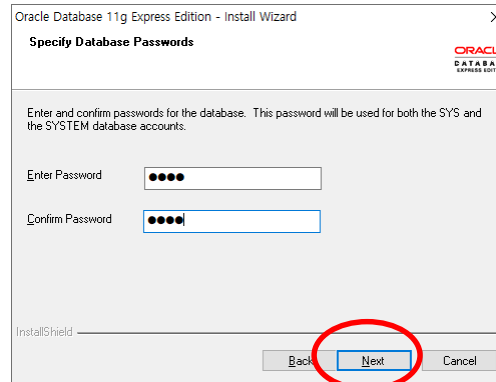
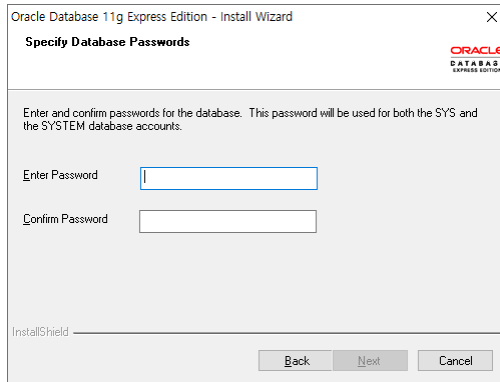
[Download OracleXE11g2\\_Linux64.rpm](#)

[Get started](#) [11gR2 XE Documentation](#) [Community Support Forum](#) [18c XE Downloads](#)

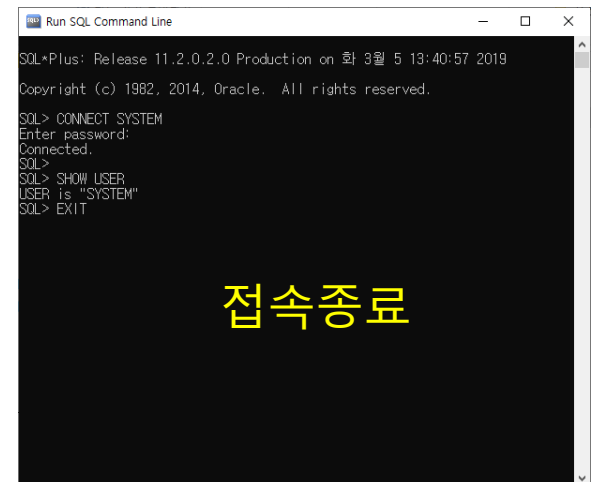
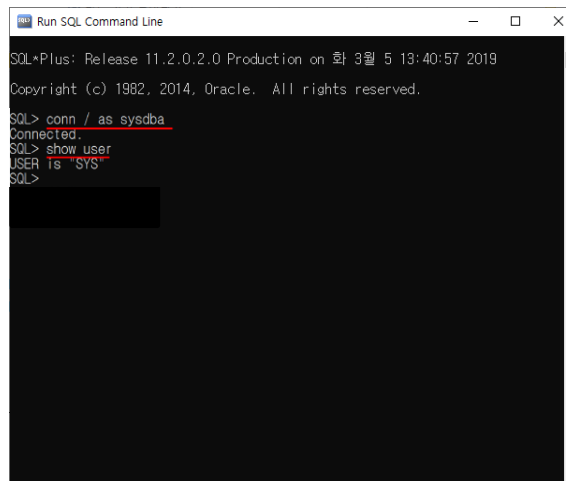
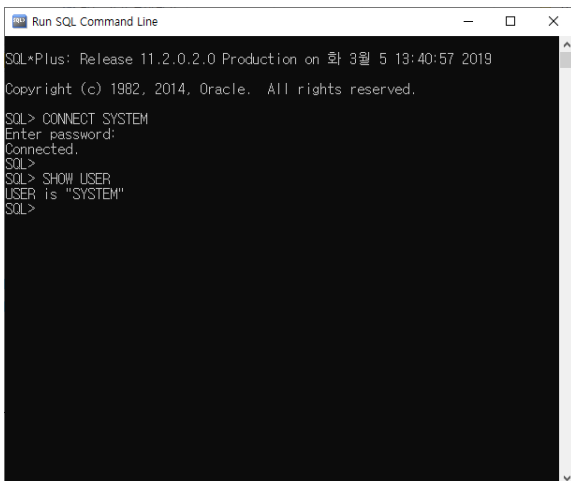
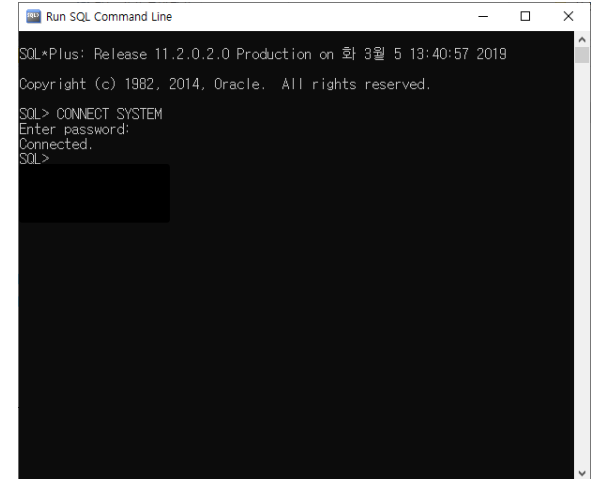
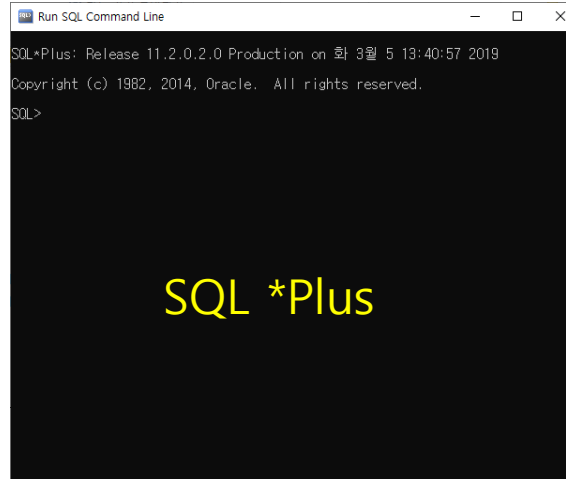
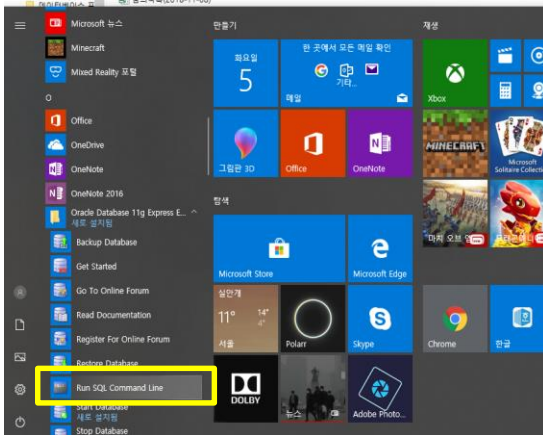
# Oracle 설치-Oracle XE 11g R2



# Oracle 설치-Oracle XE 11g R2



# Oracle 접속



접속종료

## 2. ORACLE사용자의 생성과 권한의 설정

### 2.1. 오라클을 설치하면 기본적으로 생성되는 유저

#### 오라클을 설치하면 기본적으로 생성되는 유저들

◆ 오라클을 설치하면 아래의 유저를 포함한 여러 유저들이 기본적으로 생성이 됩니다.

유저명	비밀번호
SYS	설치시 설정
SYSTEM	MANAGER
SCOTT	TIGER

#### ◆ SYS

- 데이터베이스의 모든 기본 테이블과 뷰는 SYS스키마에 저장 됩니다.
- 기본테이블과 뷰는 oracle을 운영하는데 꼭 필요 합니다.
- SYS스키마의 테이블은 data dictionary의 무결성 유지관리를 위해 oracle에 의해 처리됩니다.
- 대부분의 database사용자는 SYS계정으로 접속하지 말아야 합니다.

#### ◆ SYSTEM

- 관리정보를 화면으로 보여주는 추가 테이블과 뷰, 오라클 도구가 사용하는 내부테이블과 뷰를 만들 수 있습니다.
- SYSTEM유저는 모든 시스템 권한을 가지고 있습니다.

#### ☞ 참 고

- SYS와 SYSTEM은 사용자를 만들거나 데이터베이스를 관리 할 수 있는 권한(DBA)을 가지고 있습니다.  
막강한 어드민 유저라고 생각 하시면 됩니다.
- SYS나 SYSTEM유저에 테이블을 생성하거나, 일반 데이터들을 Insert하는 방법은 아주 좋지 않은 방법 입니다.  
SYS나 SYSTEM유저는 데이터베이스를 관리하기 위해서만 사용되어야 합니다.

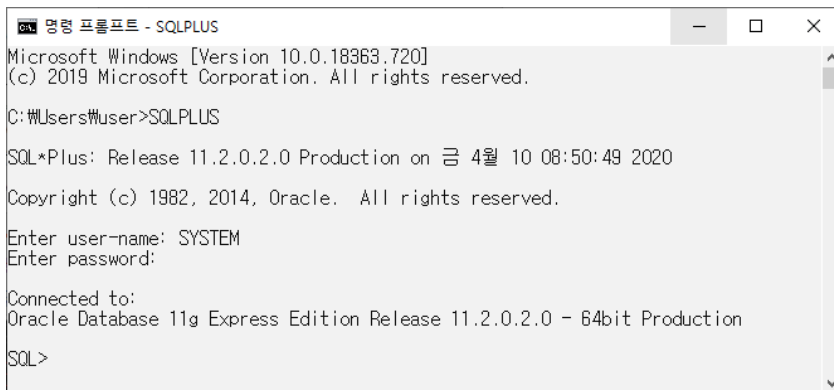
#### ◆ SCOTT

- SCOTT유저는 일반 사용자로 오라클의 기본적인 SQL문을 테스트를 하기 위한 테이블과 데이터들이 있습니다.



# SQLPLUS 접속 방법

- cmd 이용



```
Microsoft Windows [Version 10.0.18363.720]
(c) 2019 Microsoft Corporation. All rights reserved.

C:\Users\User>SQLPLUS

SQL*Plus: Release 11.2.0.2.0 Production on 금 4월 10 08:50:49 2020

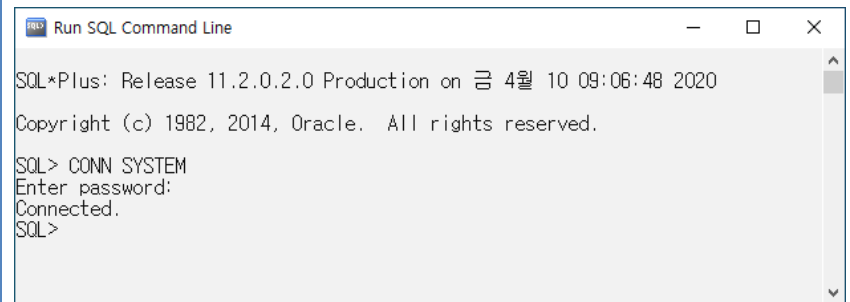
Copyright (c) 1982, 2014, Oracle. All rights reserved.

Enter user-name: SYSTEM
Enter password:

Connected to:
Oracle Database 11g Express Edition Release 11.2.0.2.0 - 64bit Production

SQL>
```

- SQLPLUS 직접 접속



```
Run SQL Command Line

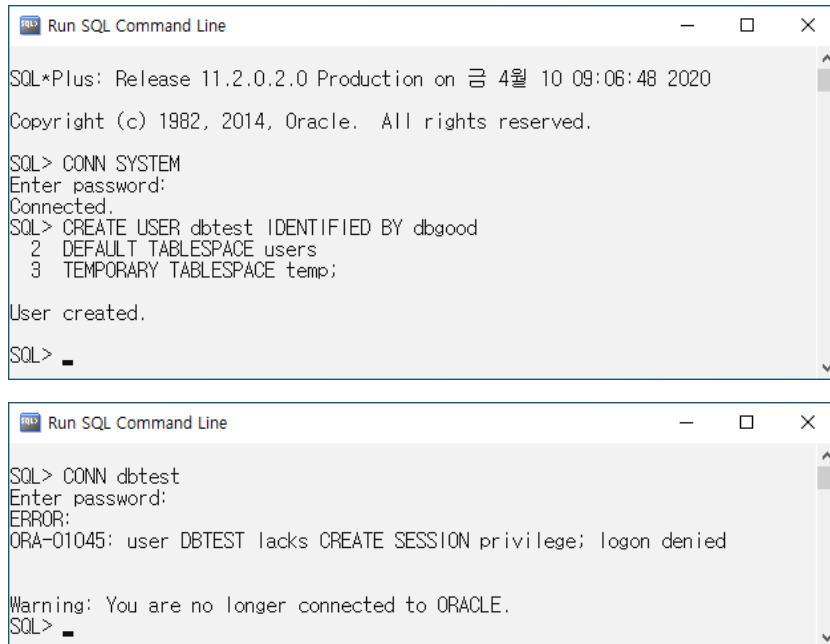
SQL*Plus: Release 11.2.0.2.0 Production on 금 4월 10 09:06:48 2020

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

SQL> CONN SYSTEM
Enter password:
Connected.
SQL>
```

# SQLPLUS

- 사용자 생성



```
Run SQL Command Line
SQL*Plus: Release 11.2.0.2.0 Production on 금 4월 10 09:06:48 2020
Copyright (c) 1982, 2014, Oracle. All rights reserved.

SQL> CONN SYSTEM
Enter password:
Connected.
SQL> CREATE USER dbtest IDENTIFIED BY dbgood
 2  DEFAULT TABLESPACE users
 3  TEMPORARY TABLESPACE temp;

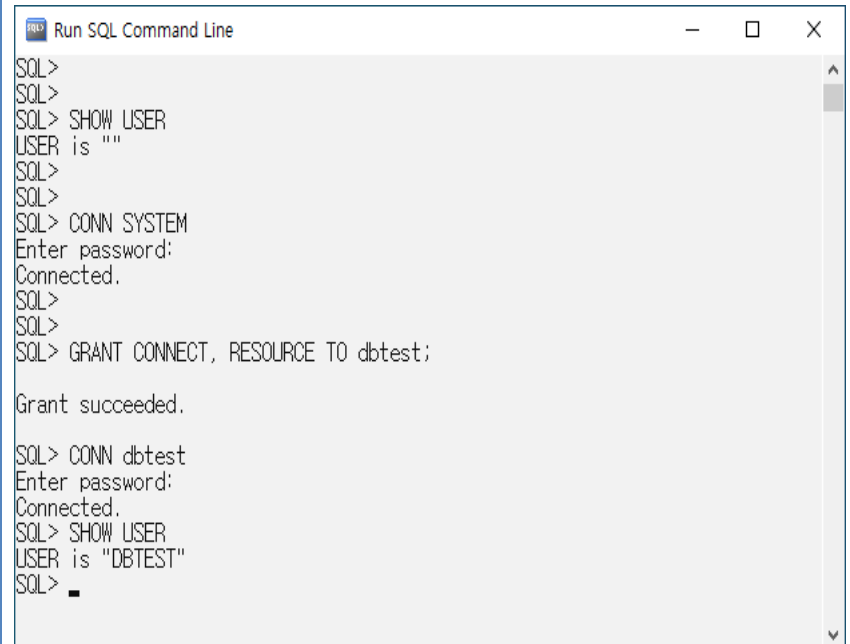
User created.

SQL> _
```

```
Run SQL Command Line
SQL> CONN dbtest
Enter password:
ERROR:
ORA-01045: user DBTEST lacks CREATE SESSION privilege; logon denied

Warning: You are no longer connected to ORACLE.
SQL> _
```

- 사용자 권한 설정



```
Run SQL Command Line
SQL>
SQL>
SQL> SHOW USER
USER is ""
SQL>
SQL>
SQL> CONN SYSTEM
Enter password:
Connected.
SQL>
SQL>
SQL> GRANT CONNECT, RESOURCE TO dbtest;

Grant succeeded.

SQL> CONN dbtest
Enter password:
Connected.
SQL> SHOW USER
USER is "DBTEST"
SQL> _
```

# SQLPLUS

- 사용자 접속

```
Run SQL Command Line
SQL> CONN dbtest
Enter password:
Connected.
SQL> SHOW USER
USER is "DBTEST"
SQL>
```

```
Run SQL Command Line
SQL*Plus: Release 11.2.0.2.0 Production on 금 4월 10 09:21:01 2020
Copyright (c) 1982, 2014, Oracle. All rights reserved.

SQL> CONN dbtest/dbgood
Connected.
SQL> SHOW USER
USER is "DBTEST"
SQL>
```

- 테이블 생성, 데이터 입력

```
Run SQL Command Line
SQL> CREATE TABLE carTable(id INT, data VARCHAR2(20));
Table created.
SQL>
```

```
Run SQL Command Line
SQL>
SQL> SELECT * FROM USER_TABLES;

TABLE_NAME
-----
TABLESPACE_NAME
```

```
선택 Run SQL Command Line
SQL>
SQL> INSERT INTO carTable VALUES(1000, 'SM6');
1 row created.
SQL>
```

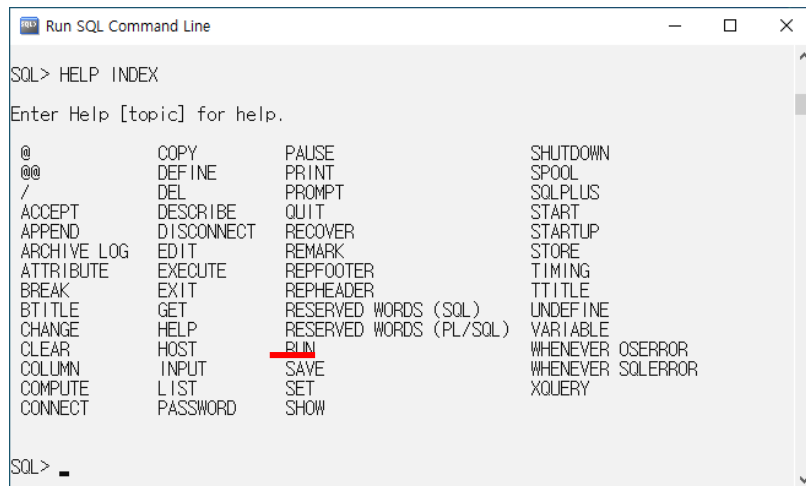
```
Run SQL Command Line
SQL> INSERT INTO carTable VALUES(2000, 'K5');
1 row created.
SQL> INSERT INTO carTable VALUES(3000, 'GRANDEUR');
1 row created.
SQL>
```

```
Run SQL Command Line
SQL> SELECT * FROM carTable;

ID DATA
-----
1000 SM6
2000 K5
3000 GRANDEUR
SQL>
```

# SQLPLUS 전용 명령어

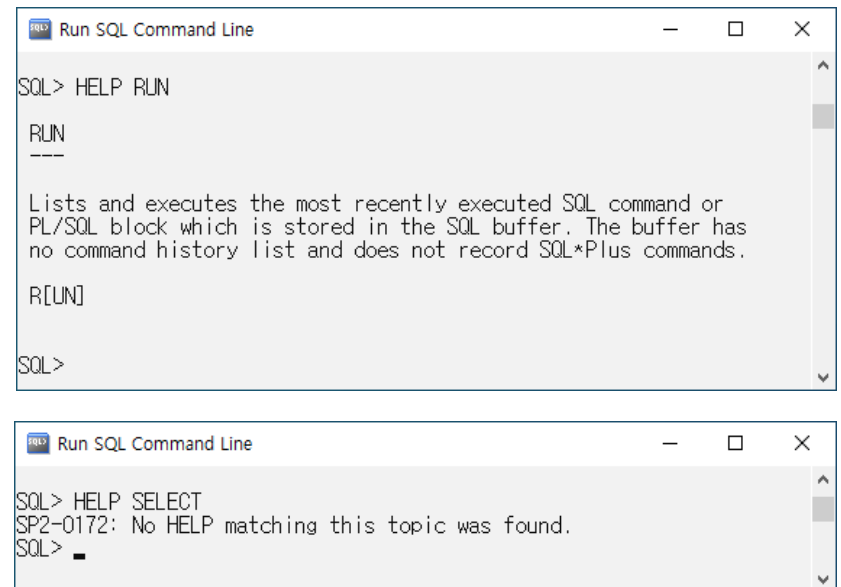
- 전용 명령어 보기



```
Run SQL Command Line
SQL> HELP INDEX
Enter Help [topic] for help.

@          COPY          PAUSE          SHUTDOWN
@@         DEFINE        PRINT         SPOOL
/          DEL           PROMPT        SQLPLUS
ACCEPT     DESCRIBE      QUIT         START
APPEND     DISCONNECT  RECOVER      STARTUP
ARCHIVE LOG EDIT         REMARK       STORE
ATTRIBUTE EXECUTE      REPFOOTER    TIMING
BREAK      EXIT        REPHEADER    TTITLE
BTITLE     GET          RESERVED WORDS (SQL) UNDEFINE
CHANGE     HELP        RESERVED WORDS (PL/SQL) VARIABLE
CLEAR      HOST         RUN          WHENEVER OSERROR
COLUMN     INPUT       SAVE         WHENEVER SQLERROR
COMPUTE    LIST        SET          XQUERY
CONNECT    PASSWORD    SHOW
```

- 명령어 확인



```
Run SQL Command Line
SQL> HELP RUN

RUN
---
Lists and executes the most recently executed SQL command or
PL/SQL block which is stored in the SQL buffer. The buffer has
no command history list and does not record SQL*Plus commands.

R[UN]

SQL>

Run SQL Command Line
SQL> HELP SELECT
SP2-0172: No HELP matching this topic was found.
SQL>
```

# SQLPLUS 전용 명령어

- **DESCRIBE**

```
SQL> DESCRIBE carTable
```

Name	Null?	Type
ID		NUMBER(38)
DATA		VARCHAR2(20)

```
SQL> DESCRIBE carTable;
```

Name	Null?	Type
ID		NUMBER(38)
DATA		VARCHAR2(20)

- **LIST**

```
SQL> LIST
```

```
1* SELECT * FROM carTable
```

```
SQL> L
```

```
1* SELECT * FROM carTable
```

- **RUN**

```
SQL> RUN
```

```
1* SELECT * FROM carTable
```

ID	DATA
1000	SM6
1000	K5
1000	GRANDEUR

```
SQL> /
```

ID	DATA
1000	SM6
1000	K5
1000	GRANDEUR

- **APPEND**

```
SQL> APPEND✓✓ORDER BY data
```

```
1* SELECT * FROM carTable ORDER BY data
```

```
SQL> LIST
```

```
1* SELECT * FROM carTable ORDER BY data
```

```
SQL> RUN
```

```
1* SELECT * FROM carTable ORDER BY data
```

ID	DATA
1000	GRANDEUR
1000	K5
1000	SM6

- **DEL**

```
SQL> DEL
```

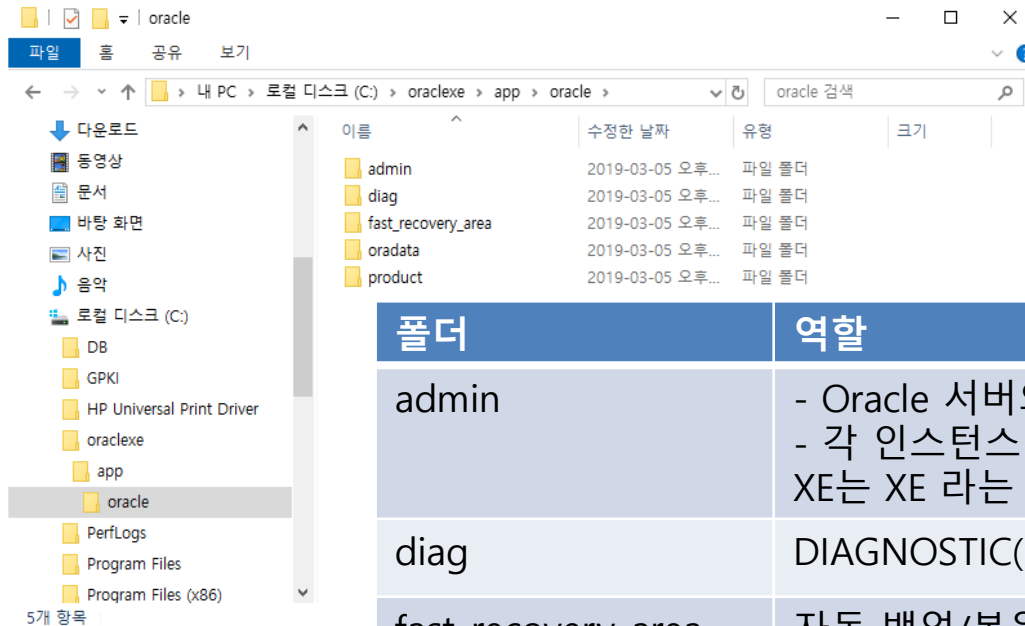
```
SQL> LIST
```

```
SP2-0223: No lines in SQL buffer.
```

```
SQL>
```

# Oracle 설치 후 확인사항

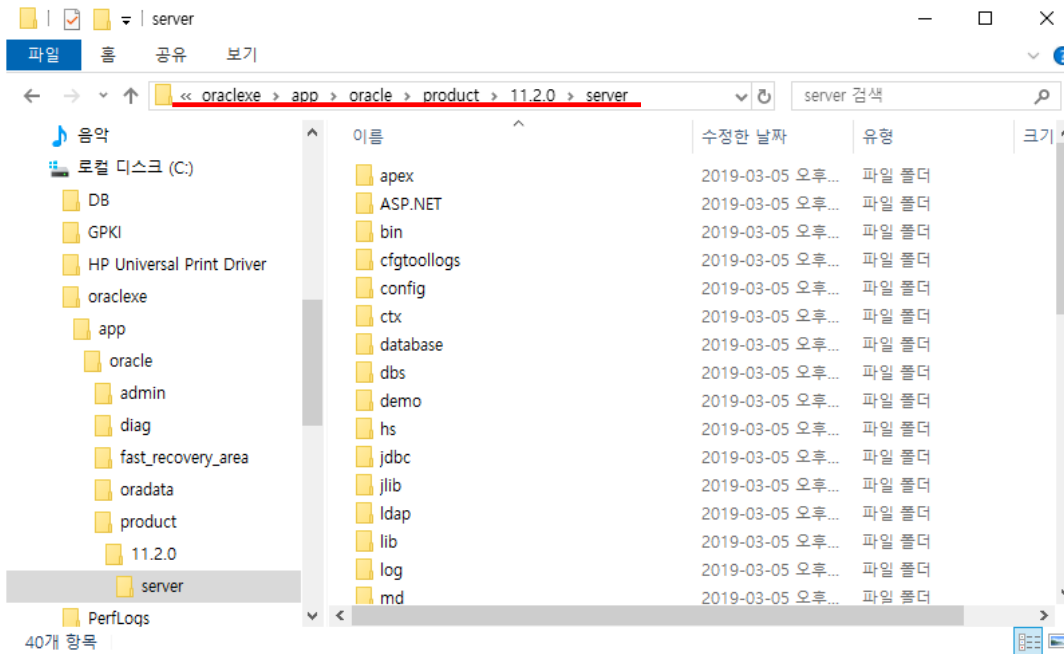
- 설치 폴더 확인



폴더	역할
admin	- Oracle 서버의 관리자 관련 폴더 및 파일 - 각 인스턴스 이름별로 구분되어 있으며 Oracle XE는 XE 라는 이름으로 되어 있음
diag	DIAGNOSTIC(진단) 관련 폴더 및 파일
fast_recovery_area	자동 백업/복원과 관련된 폴더 및 파일
oradata	데이터베이스의 물리적인 파일(*.DBF)
product	Oracle 각 제품이 폴더별로 분리되어 저장됨

# Oracle 설치 후 확인사항

- product 폴더



# Oracle을 명령어 mode로 설치하기

- OracleXE112\_Win64.zip
- DISK1/response/OracleXE-install.iss 파일 열기
- 저장 후
- setup.exe 파일 있는 경로로 이동

```
명령 프롬프트
Microsoft Windows [Version 10.0.17763.316]
(c) 2018 Microsoft Corporation. All rights reserved.

C:\Users\User>cd
C:\>cd DISK1
C:\DISK1>dir
C 드라이브의 볼륨에는 이름이 없습니다.
볼륨 일련 번호: B0CD-CCE1

C:\DISK1 디렉터리

2019-03-11 오전 10:16 <DIR> .
2019-03-11 오전 10:16 <DIR> ..
2019-03-11 오전 10:16 <DIR> response
2014-05-30 오전 01:39 332,418,680 setup.exe
2019-03-11 오전 10:16 <DIR> upgrade
                1개 파일      332,418,680 바이트
                4개 디렉터리 85,255,299,072 바이트 남음

C:\DISK1>setup.exe /s /f1"c:\DISK1\response\OracleXE-Install.iss" /f2"c:\DISK1\setup.log"
```

```
OracleXE-install - 메모장
파일(F) 편집(E) 서식(O) 보기(V) 도움말
Dlg4={05A7B662-80A3-4EB9-AE1D-89A62449431C}-AskSYSPassword-13011
Dlg5={05A7B662-80A3-4EB9-AE1D-89A62449431C}-SdStartCopy-0
Dlg6={05A7B662-80A3-4EB9-AE1D-89A62449431C}-SdFinish-0
[{05A7B662-80A3-4EB9-AE1D-89A62449431C}-SdWelcome-0]
Result=1
[{05A7B662-80A3-4EB9-AE1D-89A62449431C}-SdLicense2Rtf-0]
Result=1
[{05A7B662-80A3-4EB9-AE1D-89A62449431C}-SdComponentDialog-0]
szDir=C:\OracleXE\
Component-type=string
Component-count=1
Component-0=DefaultFeature
Result=1
[{05A7B662-80A3-4EB9-AE1D-89A62449431C}-AskPort-13013]
TNSPort=1521
MTSPort=2031
HTTPPort=8080
Result=1
[{05A7B662-80A3-4EB9-AE1D-89A62449431C}-AskSYSPassword-13011]
SVSPassword=oraclexe
Result=1
[{05A7B662-80A3-4EB9-AE1D-89A62449431C}-SdStartCopy-0]
Result=1
[{05A7B662-80A3-4EB9-AE1D-89A62449431C}-SdFinish-0]
Result=1
bOpt1=0
bOpt2=0
```



# 샘플 데이터의 설치(HR 계정)

- HR 사용자 계정 및 관련 샘플 데이터
- 보안상의 이유로 HR계정은 잠금되어 있음

```
Run SQL Command Line

SQL*Plus: Release 11.2.0.2.0 Production on 수 3월 6 13:58:07 2019
Copyright (c) 1982, 2014, Oracle. All rights reserved.

SQL> CONNECT SYSTEM
Enter password:
Connected.
SQL> SHOW USER
USER is "SYSTEM"
SQL> CONNECT HR/1234
ERROR:
ORA-28000: the account is locked

Warning: You are no longer connected to ORACLE.
SQL>
```

```
선택 Run SQL Command Line

SQL> CONNECT HR/1234
ERROR:
ORA-28000: the account is locked

SQL> ALTER USER HR ACCOUNT UNLOCK IDENTIFIED BY 1234;
SP2-0640: Not connected
SQL> ALTER USER HR ACCOUNT UNLOCK IDENTIFIED BY 1234;
SP2-0640: Not connected
SQL> ALTER USER HR ACCOUNT UNLOCK IDENTIFIED BY 1234;
SP2-0640: Not connected
SQL> ALTER USER HR ACCOUNT UNLOCK IDENTIFIED BY 1234;
SP2-0640: Not connected
SQL> SHOW USER
USER is ""
SQL> CONNECT SYSTEM
Enter password:
Connected.
SQL> ALTER USER HR ACCOUNT UNLOCK IDENTIFIED BY 1234;
User altered.

SQL> CONN HR/1234
Connected.
SQL> SELECT * FROM tab;
```

TNAME	TABTYPE
CLUSTERID	
COUNTRIES	TABLE
DEPARTMENTS	TABLE
EMPLOYEES	TABLE

TNAME	TABTYPE
CLUSTERID	
EMP_DETAILS_VIEW	VIEW
JOBS	TABLE
JOB_HISTORY	TABLE

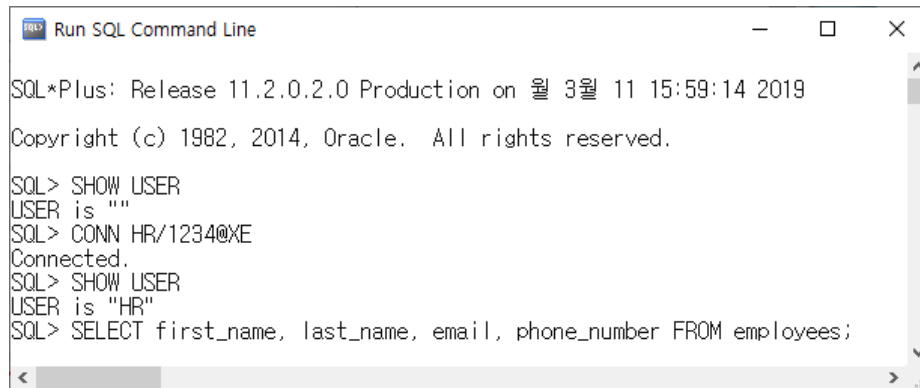
TNAME	TABTYPE
CLUSTERID	
LOCATIONS	TABLE
REGIONS	TABLE

8 rows selected.

잠금 해제

# 샘플 데이터 TEST

- 데이터 조회



```
Run SQL Command Line
SQL*Plus: Release 11.2.0.2.0 Production on 월 3월 11 15:59:14 2019
Copyright (c) 1982, 2014, Oracle. All rights reserved.

SQL> SHOW USER
USER is ""
SQL> CONN HR/1234@XE
Connected.
SQL> SHOW USER
USER is "HR"
SQL> SELECT first_name, last_name, email, phone_number FROM employees;
```

- 조회 데이터 column 변경

```
SQL> COLUMN first_name HEDING "이름" FORMAT A15
SP2-0158: unknown COLUMN option "HEDING"
SQL> COLUMN first_name HEADING "이름" FORMAT A15
SQL> COLUMN last_name HEADING "성" FORMAT A20
SQL> COLUMN email HEADING "이메일" FORMAT A20
SQL> COLUMN phone_nrmbber HEADING "휴대폰" FORMAT A20
SQL> SELECT first_name, last_name, email, phone_number FROM employees;
```

# SQL 저장

- SQL buffer 문장 파일에 저장

```
Run SQL Command Line
SQL> SAVE C:\TEMP\sqlfile.sql
Created file C:\TEMP\sqlfile.sql
SQL>
SQL> HOST
Microsoft Windows [Version 10.0.17763.316]
(c) 2018 Microsoft Corporation. All rights reserved.

C:\oraclexe\app\oracle\product\11.2.0\server\BIN>CD\

C:\>CD TEMP

C:\Temp>DIR *.sql
C 드라이브의 볼륨에는 이름이 없습니다.
볼륨 일련 번호: BCCD-CCE1

C:\Temp 디렉터리

2019-03-12 오전 08:56                28 sqlfile.sql
                1개 파일                28 바이트
                0개 디렉터리  85,045,612,544 바이트 남음

C:\Temp>TYPE sqlfile.sql
SELECT * FROM employees
/

C:\Temp>EXIT

SQL>
```

- SQL PLUS 화면 전체를 캡처하여 파일에 저장

```
Run SQL Command Line
SQL> SPOOL C:\TEMP\sqlspool
SQL> SELECT * FROM REGIONS;

REGION_ID REGION_NAME
-----
1 Europe
2 Americas
3 Asia
4 Middle East and Africa

SQL> SELECT COUNT(*) FROM LOCATIONS;

COUNT(*)
-----
23

SQL> SPOOL OFF
SQL> HOST
Microsoft Windows [Version 10.0.17763.316]
(c) 2018 Microsoft Corporation. All rights reserved.

C:\oraclexe\app\oracle\product\11.2.0\server\BIN>CD\

C:\>NOTEPAD C:\TEMP\sqlspool.lst

C:\>EXIT

SQL> _
```

sqlspool.LST - 메모장

파일(F) 편집(E) 서식(O) 보기(V) 도움말

SQL> SELECT \* FROM REGIONS;

REGION_ID	REGION_NAME
1	Europe
2	Americas
3	Asia
4	Middle East and Africa

SQL> SELECT COUNT(\*) FROM LOCATIONS;

COUNT(*)
23

SQL> SPOOL OFF

Window Ln 1, C 100%