

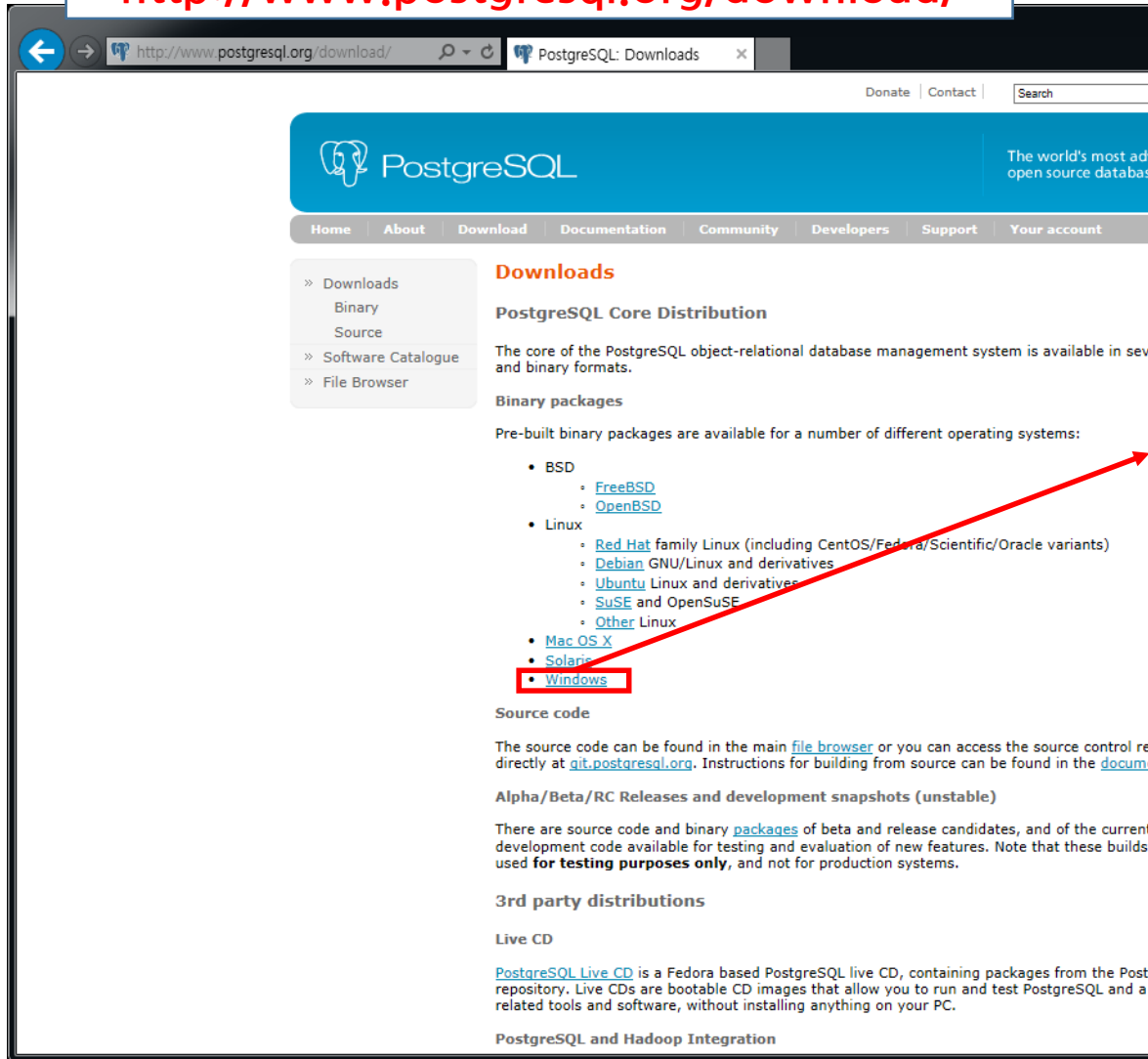
# SQL for PostgreSQL

황종필

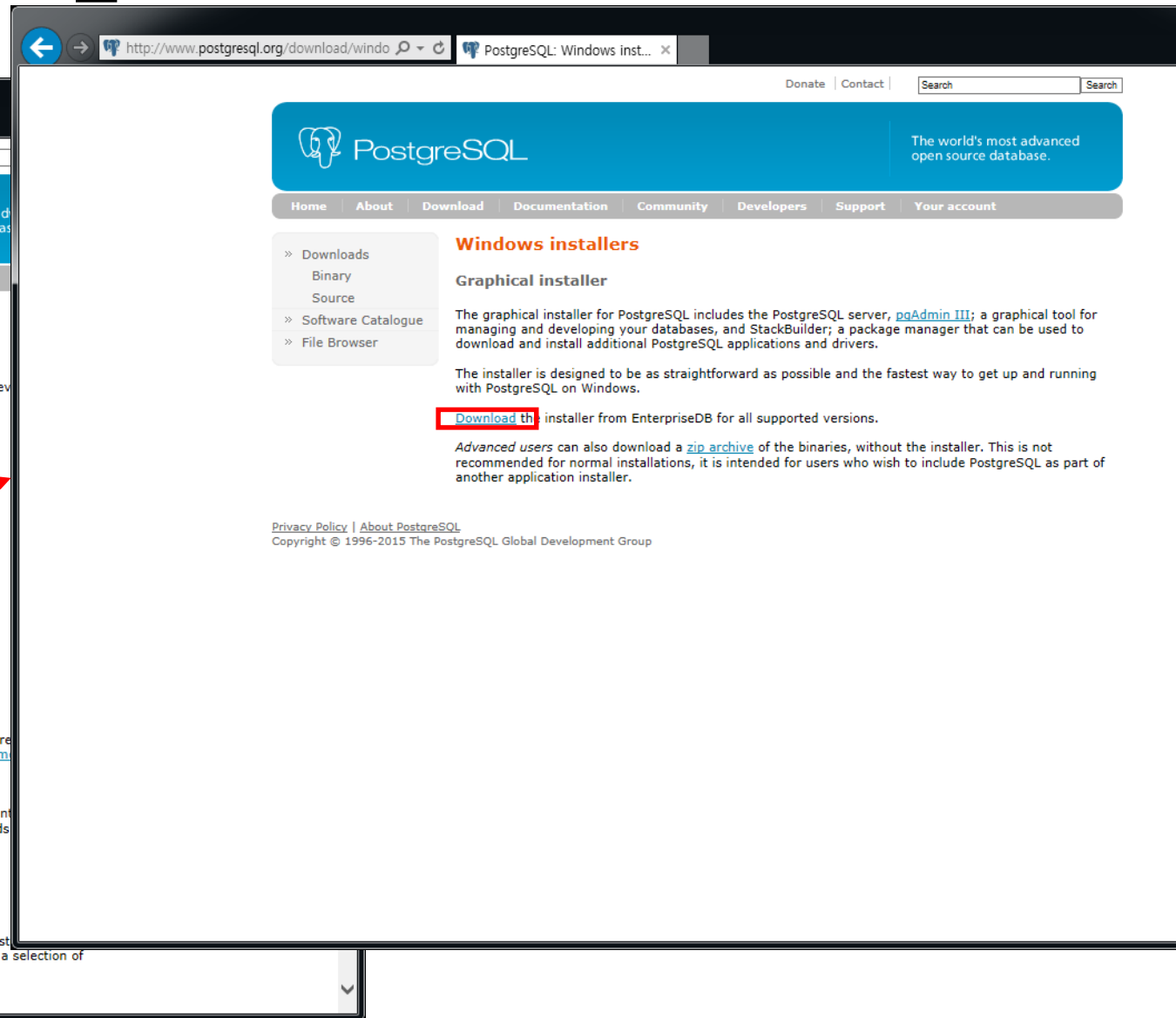
# PostgreSQL Setup

# PostgreSQL Setup - 1

<http://www.postgresql.org/download/>

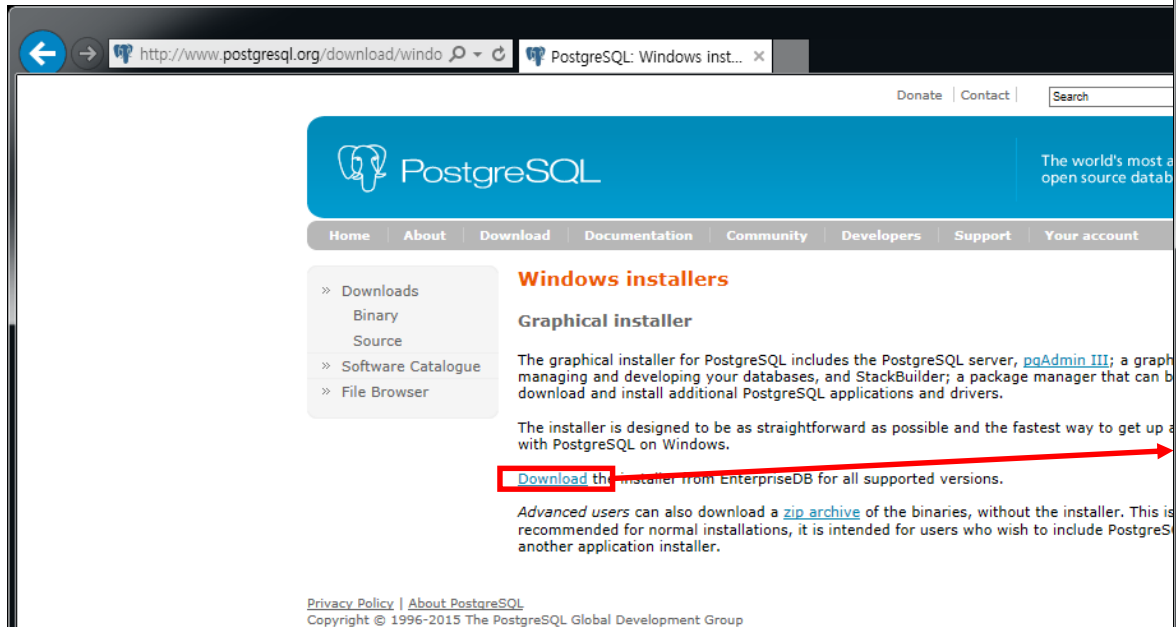


The screenshot shows the PostgreSQL Downloads page. The browser address bar displays <http://www.postgresql.org/download/>. The page features a blue header with the PostgreSQL logo and the tagline "The world's most advanced open source database". A navigation menu includes links for Home, About, Download, Documentation, Community, Developers, Support, and Your account. On the left, a sidebar lists "Downloads", "Binary", "Source", "Software Catalogue", and "File Browser". The main content area is titled "Downloads" and "PostgreSQL Core Distribution". It states that the core of the PostgreSQL object-relational database management system is available in several binary formats. Under "Binary packages", it lists pre-built binary packages for various operating systems: BSD (FreeBSD, OpenBSD), Linux (Red Hat family Linux, Debian GNU/Linux, Ubuntu Linux, SuSE and OpenSuSE, Other Linux), Mac OS X, Solaris, and Windows. The "Windows" link is highlighted with a red box. A red arrow points from this link to the right-hand screenshot. Below the binary packages, there is a section for "Source code" and "Alpha/Beta/RC Releases and development snapshots (unstable)".



The screenshot shows the PostgreSQL Windows installers page. The browser address bar displays <http://www.postgresql.org/download/windows>. The page features a blue header with the PostgreSQL logo and the tagline "The world's most advanced open source database". A navigation menu includes links for Home, About, Download, Documentation, Community, Developers, Support, and Your account. On the left, a sidebar lists "Downloads", "Binary", "Source", "Software Catalogue", and "File Browser". The main content area is titled "Windows installers" and "Graphical installer". It states that the graphical installer for PostgreSQL includes the PostgreSQL server, [pgAdmin III](#), a graphical tool for managing and developing your databases, and StackBuilder; a package manager that can be used to download and install additional PostgreSQL applications and drivers. It also mentions that the installer is designed to be as straightforward as possible and the fastest way to get up and running with PostgreSQL on Windows. A red box highlights the "Download the installer from EnterpriseDB for all supported versions." link. Below this, it states that advanced users can also download a [zip archive](#) of the binaries, without the installer. This is not recommended for normal installations, it is intended for users who wish to include PostgreSQL as part of another application installer. At the bottom, there is a footer with links for Privacy Policy and About PostgreSQL, and a copyright notice for 1996-2015 The PostgreSQL Global Development Group.

# PostgreSQL Setup - 2



The screenshot shows the PostgreSQL website's download page for Windows. The URL in the browser is <http://www.postgresql.org/download/windows>. The page features the PostgreSQL logo and navigation links. Under the 'Downloads' section, there is a 'Windows installers' subsection with a 'Graphical installer' link. A red box highlights the text 'Download the installer from EnterpriseDB for all supported versions.' with a red arrow pointing to the right.

PostgreSQL

The world's most advanced open source database

Home | About | Download | Documentation | Community | Developers | Support | Your account

Downloads

- Binary
- Source

Software Catalogue

File Browser

**Windows installers**

**Graphical installer**

The graphical installer for PostgreSQL includes the PostgreSQL server, [pgAdmin III](#), a graphical managing and developing your databases, and StackBuilder; a package manager that can download and install additional PostgreSQL applications and drivers.

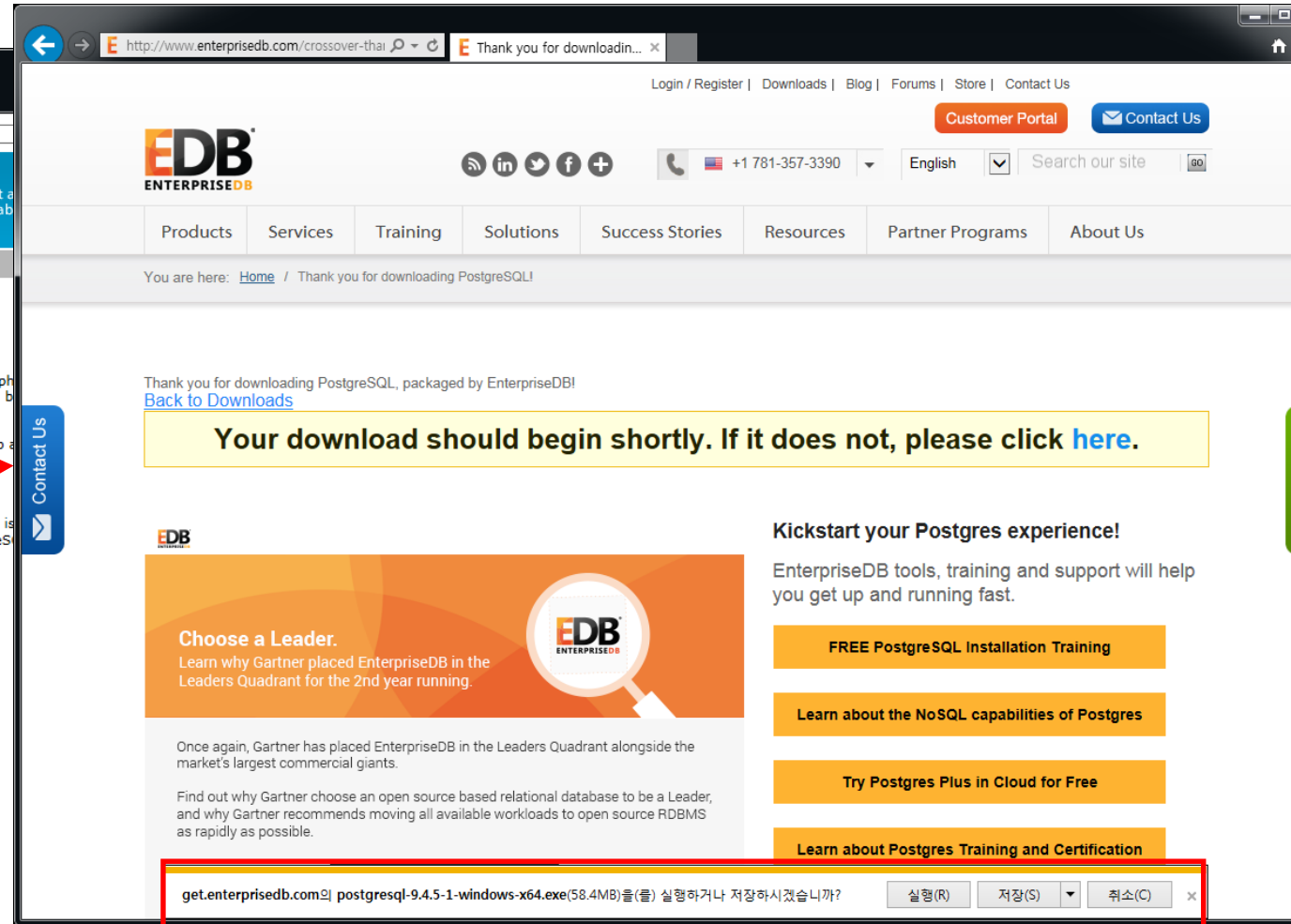
The installer is designed to be as straightforward as possible and the fastest way to get up and running with PostgreSQL on Windows.

**Download the installer from EnterpriseDB for all supported versions.**

Advanced users can also download a [zip archive](#) of the binaries, without the installer. This is recommended for normal installations, it is intended for users who wish to include PostgreSQL in another application installer.

[Privacy Policy](#) | [About PostgreSQL](#)

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The screenshot shows the EnterpriseDB website's download page. The URL in the browser is <http://www.enterprisedb.com/crossover-thai>. The page features the EnterpriseDB logo and navigation links. A yellow box contains the text 'Your download should begin shortly. If it does not, please click [here](#).' Below this, there is a section titled 'Choose a Leader.' with a magnifying glass icon. A red box highlights the download link 'get.enterprisedb.com의 postgresql-9.4.5-1-windows-x64.exe(58.4MB)를(를) 실행하거나 저장하시겠습니까?' with buttons for '실행(R)', '저장(S)', and '취소(C)'.

EnterpriseDB

ENTERPRISEDB

Products | Services | Training | Solutions | Success Stories | Resources | Partner Programs | About Us

You are here: [Home](#) / Thank you for downloading PostgreSQL!

Thank you for downloading PostgreSQL, packaged by EnterpriseDB!

[Back to Downloads](#)

**Your download should begin shortly. If it does not, please click [here](#).**

**Kickstart your Postgres experience!**

EnterpriseDB tools, training and support will help you get up and running fast.

**FREE PostgreSQL Installation Training**

**Learn about the NoSQL capabilities of Postgres**

**Try Postgres Plus in Cloud for Free**

**Learn about Postgres Training and Certification**

**Choose a Leader.**

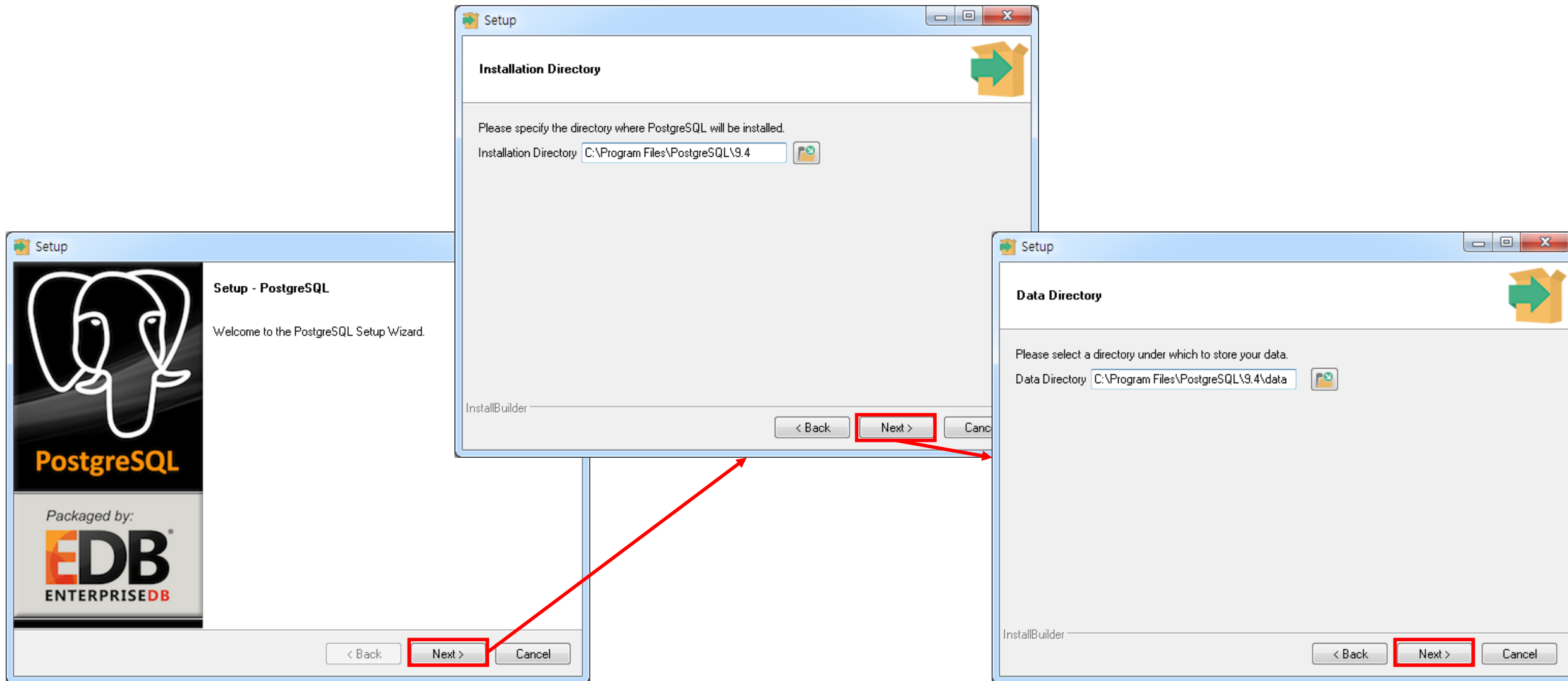
Learn why Gartner placed EnterpriseDB in the Leaders Quadrant for the 2nd year running.

Once again, Gartner has placed EnterpriseDB in the Leaders Quadrant alongside the market's largest commercial giants.

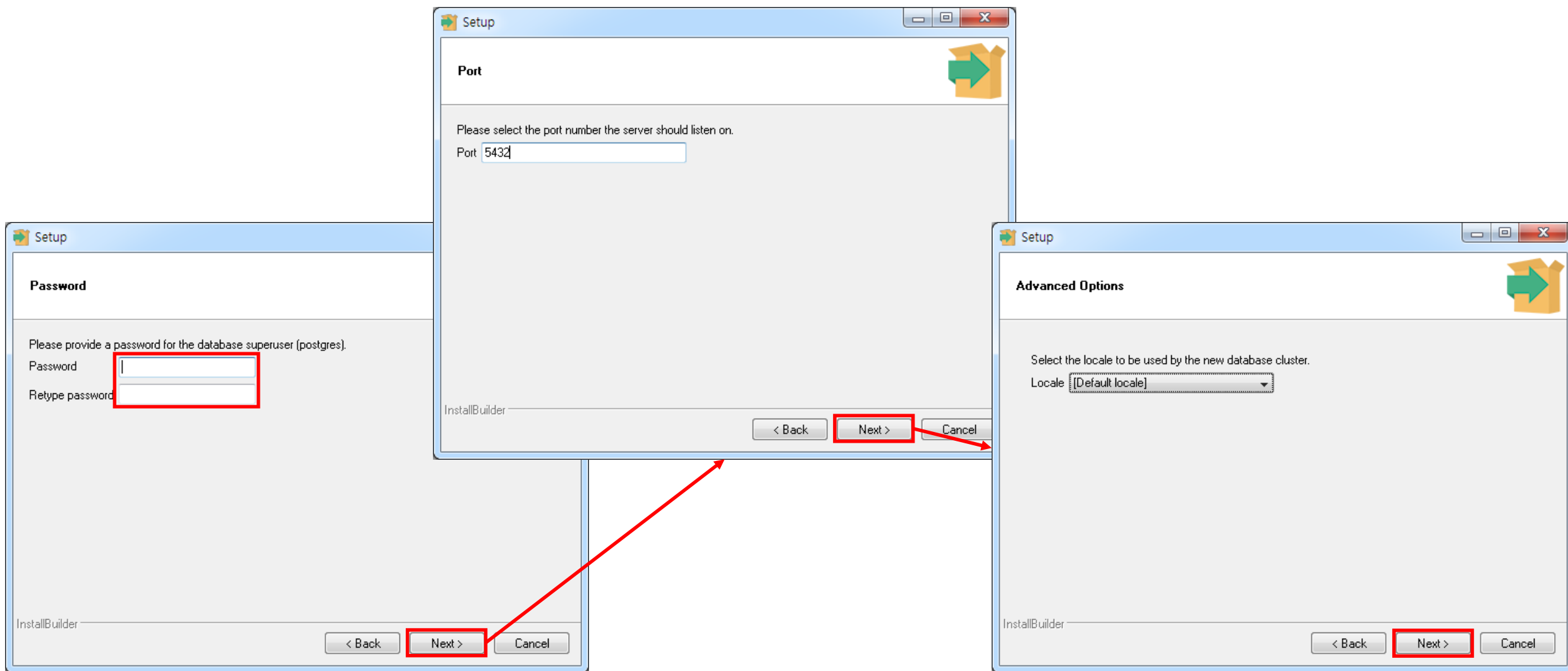
Find out why Gartner choose an open source based relational database to be a Leader, and why Gartner recommends moving all available workloads to open source RDBMS as rapidly as possible.

get.enterprisedb.com의 postgresql-9.4.5-1-windows-x64.exe(58.4MB)를(를) 실행하거나 저장하시겠습니까? 실행(R) 저장(S) 취소(C)

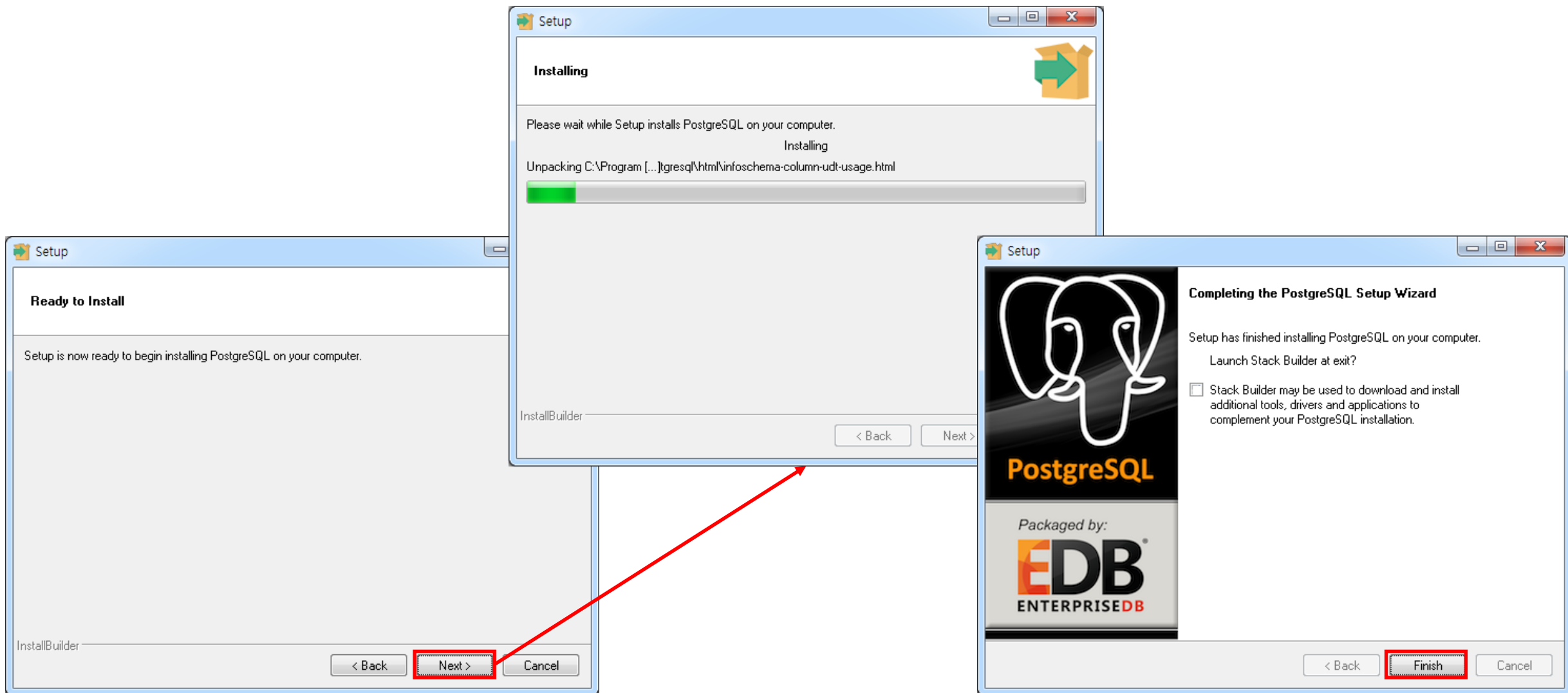
# PostgreSQL Setup - 3



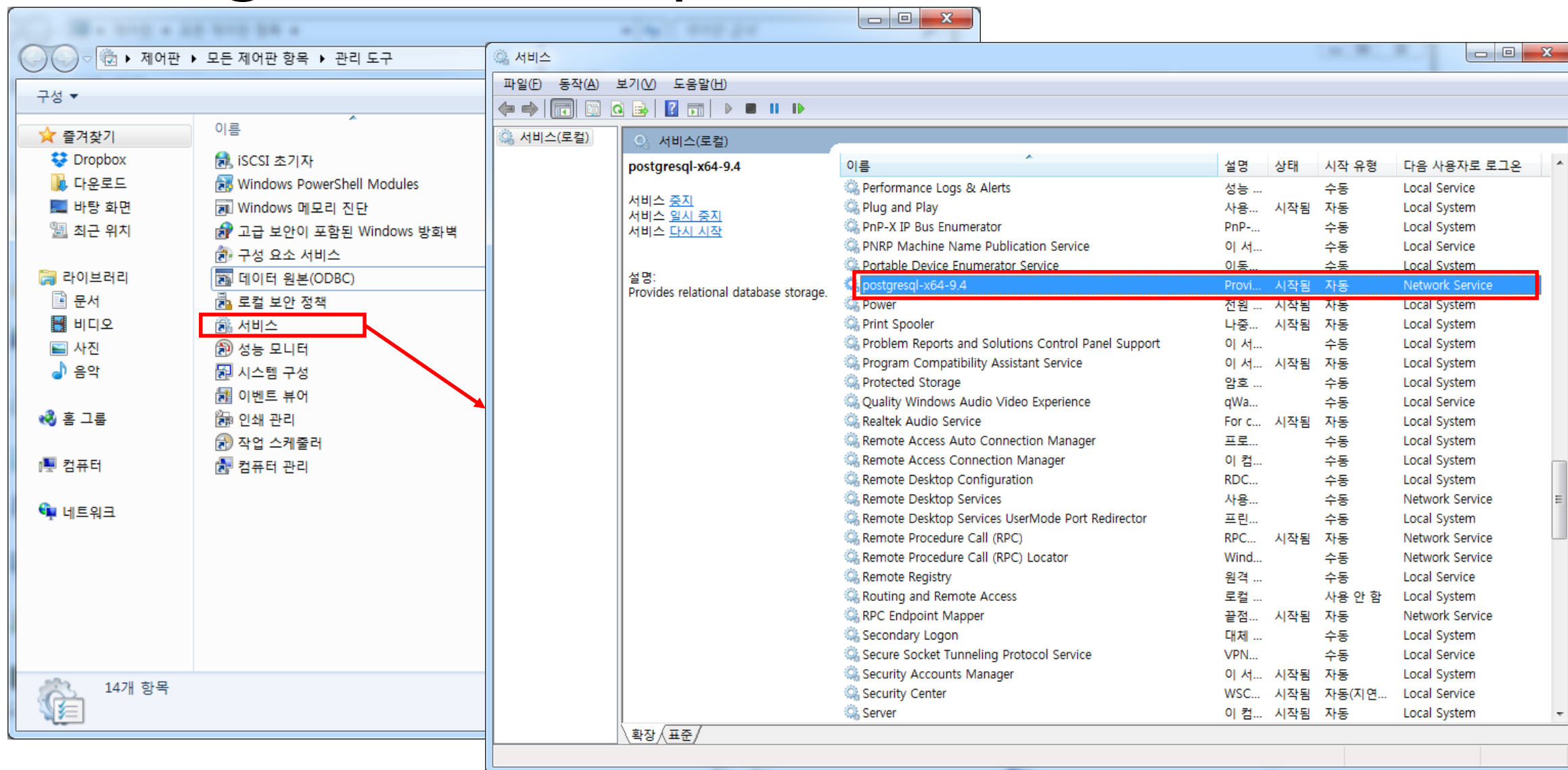
# PostgreSQL Setup - 4



# PostgreSQL Setup - 5



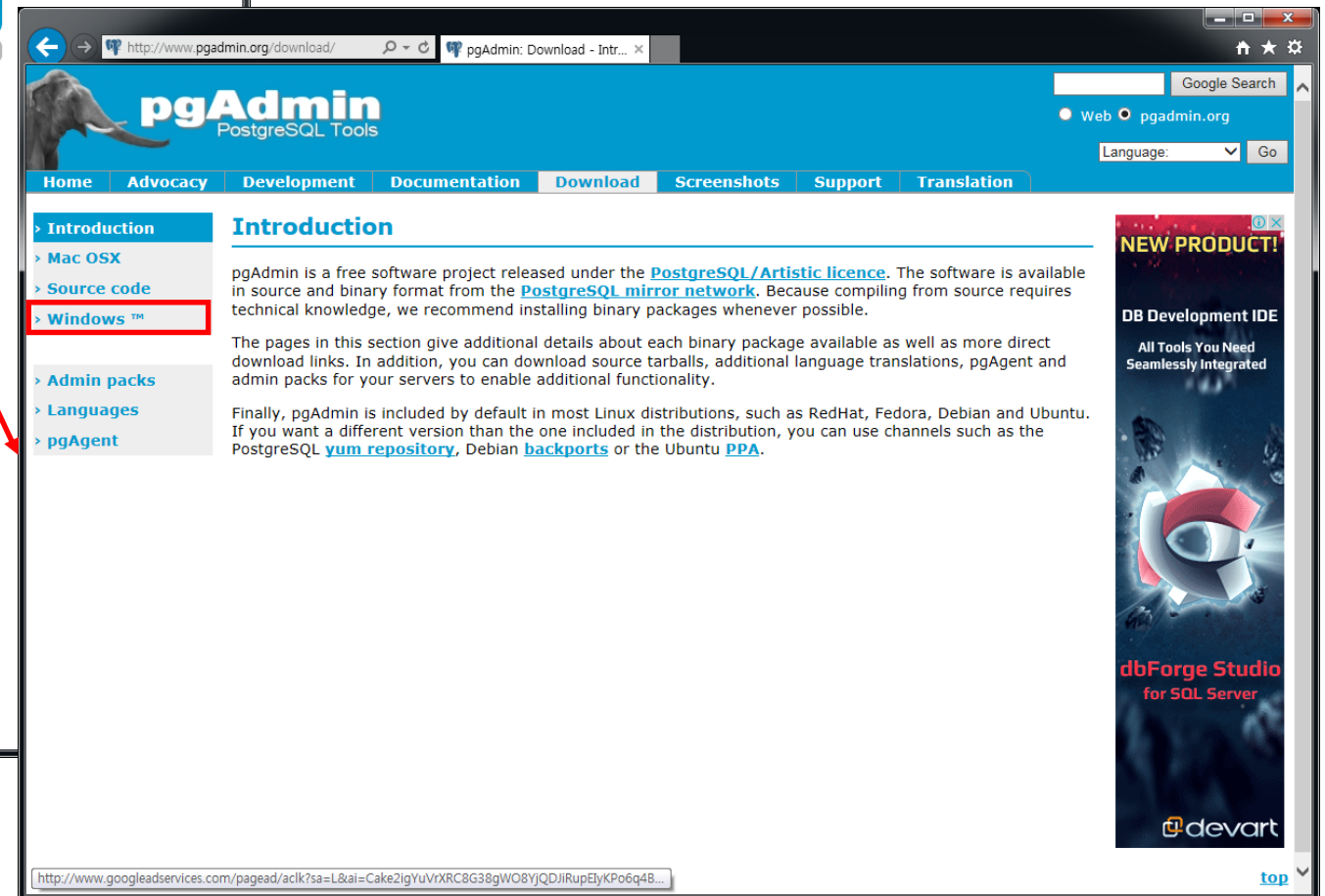
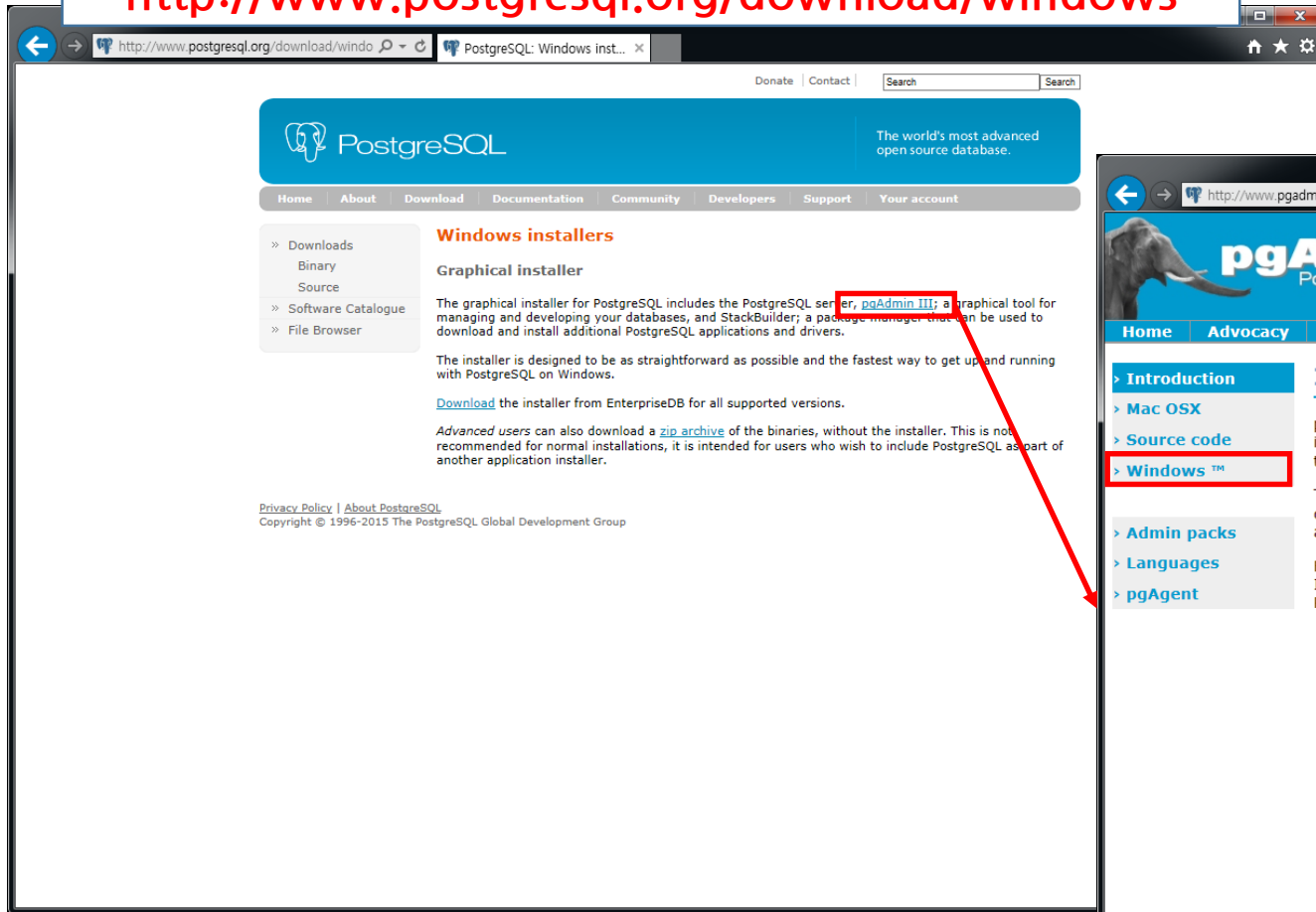
# PostgreSQL Setup - 6





# PG Admin Setup - 1

<http://www.postgresql.org/download/windows>



# PG Admin Setup - 2

The image consists of two browser screenshots. The left screenshot shows the pgAdmin website (http://www.pgadmin.org/download/windows) with a red box around the link 'pgAdmin v1.20.0' in the list of versions. A red arrow points from this link to the right screenshot. The right screenshot shows the PostgreSQL File Browser (http://www.postgresql.org/ftp/pgadmin3/release) with a red box around the file 'pgadmin3-1.20.0.zip' in the 'Files' section.

**Left Screenshot: pgAdmin Download Page**

URL: <http://www.pgadmin.org/download/windows>

pgAdmin PostgreSQL Tools

Home Advocacy Development Documentation **Download** Screenshots Support Translate

Introduction  
Mac OSX  
Source code  
**Windows™**

Admin packs  
Languages  
pgAgent

**Windows™**

Maintainer: Dave Page

pgAdmin is available for Windows™ 2000 and above, up to version 1.14.3. From v1.16.0, Windows Vista/2008 is required, and from 1.20.0, Windows Vista/2008 is required.

Note that the **EnterpriseDB** distribution of PostgreSQL for Windows includes a bundled copy of pgAdmin.

**pgAdmin v1.20.0**

- [pgAdmin v1.18.1](#)
- [pgAdmin v1.16.1](#)
- [pgAdmin v1.14.3](#)
- [pgAdmin v1.12.3](#)
- [pgAdmin v1.10.5](#)
- [pgAdmin v1.8.4](#)
- [pgAdmin v1.6.3](#)
- [pgAdmin v1.4.3](#)
- [pgAdmin v1.2.2](#)

To install these packages, unzip the downloaded file, double-click the pgadmin3.msi installer file and follow the on-screen instructions. Minor upgrades (e.g. from 1.4.0 to 1.4.1) can be performed using the `upgr` script. Differing major releases, e.g. 1.2.2 and 1.4.1, can be installed on the same machine at the same time.

**Right Screenshot: PostgreSQL File Browser**

URL: <http://www.postgresql.org/ftp/pgadmin3/release>

PostgreSQL The world's most advanced open source database.

Home About Download Documentation Community Developers Support Your account

**File Browser**

Top → [pgadmin3](#) → [release](#) → [v1.20.0](#) → [win32](#)

Directories

- [\[Parent Directory\]](#)

Files

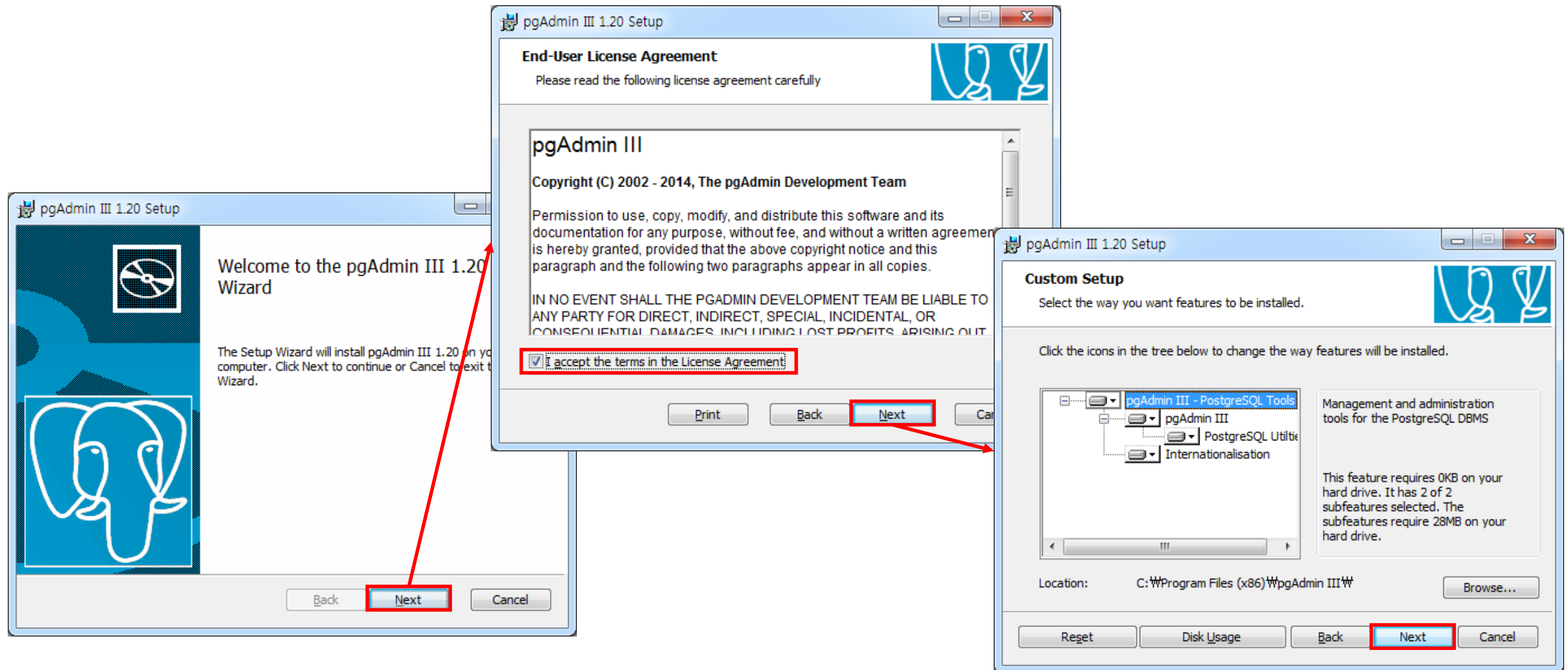
File Name	Date	Size
<a href="#">CURRENT_MAINTAINER</a>	Dec 15, 2014, 3:30 p.m.	31 bytes
<a href="#">pgadmin3-1.20.0.zip</a>	Dec 19, 2014, 11:52 a.m.	12.0 MB
<a href="#">pgadmin3-1.20.0.zip.sig</a>	Dec 19, 2014, 11:52 a.m.	543 bytes

Current Maintainer

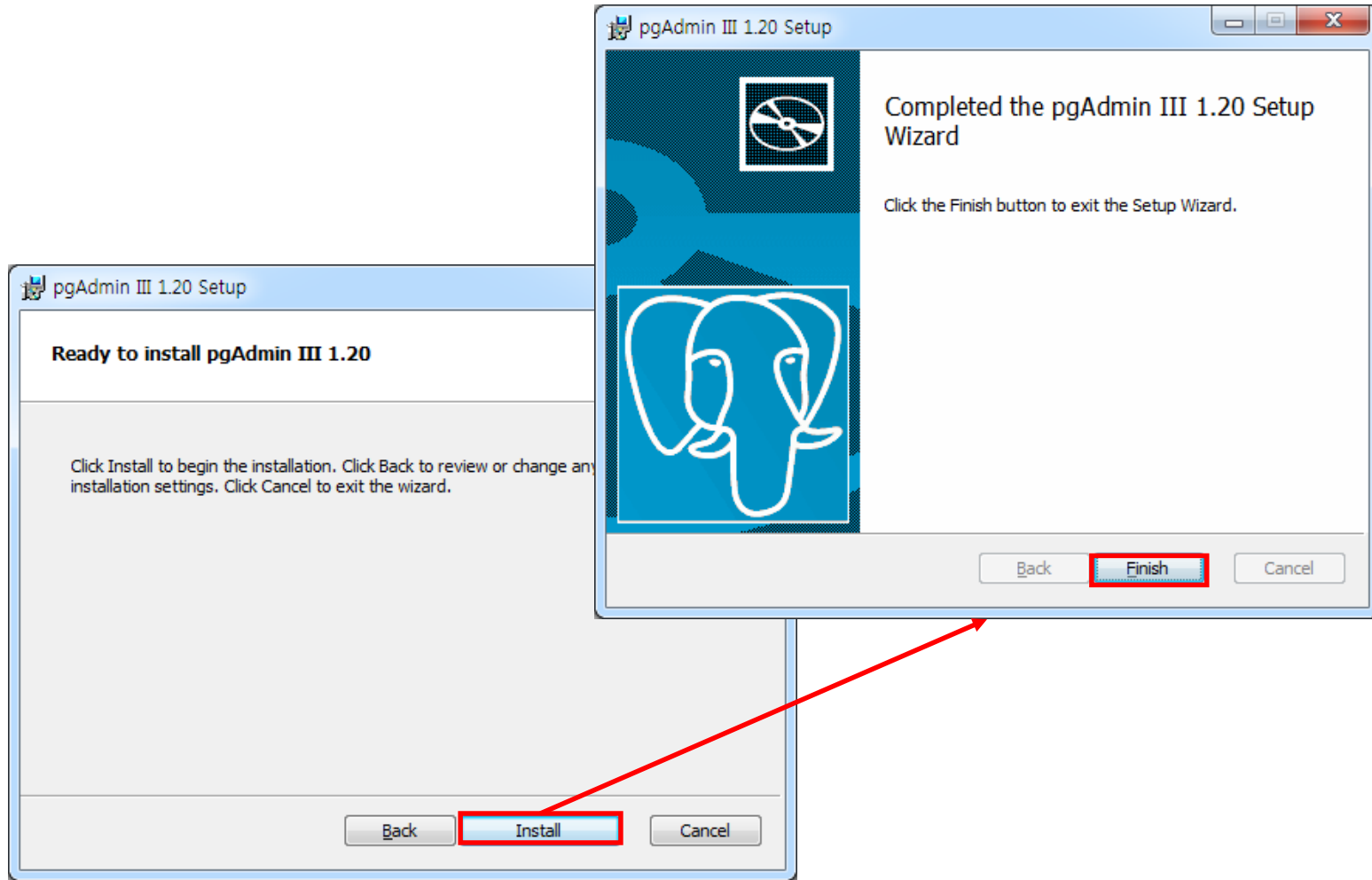
Dave Page  
dpape@postgresql.org

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Copyright © 1996-2015 The PostgreSQL Global Development Group

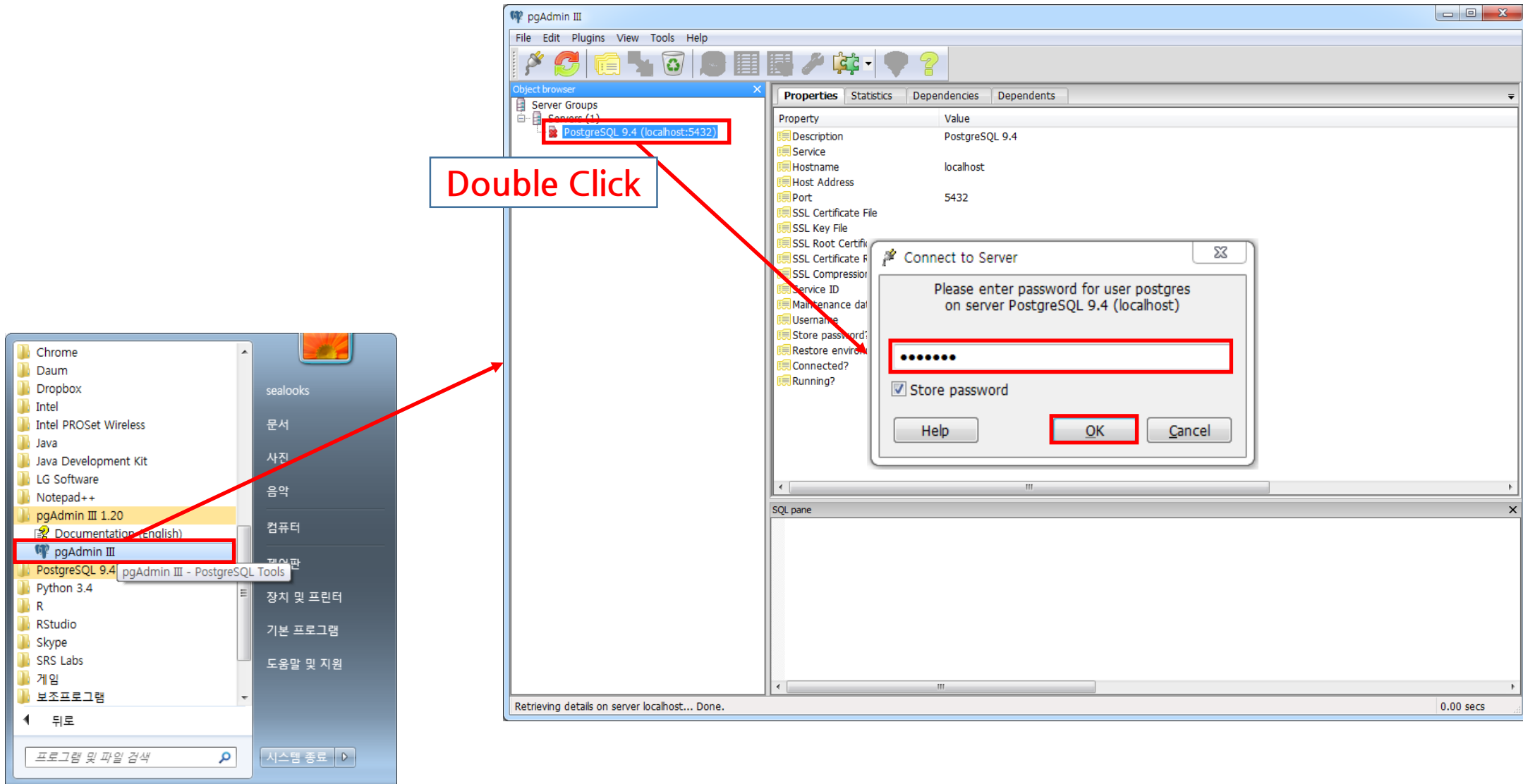
# PG Admin Setup - 3



# PG Admin Setup - 4



# PG Admin Setup - 5



# PG Admin Setup - 6

The screenshot displays the pgAdmin III interface. In the left-hand 'Object browser' pane, the 'postgres' database is highlighted with a red box. A red arrow points from this box to the 'SQL Editor' window on the right. The 'SQL Editor' window shows a query: `select current_date`. Below the editor, the 'Output pane' displays the results of the query in a table format.

**Object browser (Left Pane):**

- Server Groups
  - Servers (1)
    - PostgreSQL 9.4 (localhost:5432)
      - Databases (1)
        - postgres**
      - Tablespaces (2)
      - Group Roles (0)
      - Login Roles (1)

**Property View (Middle Pane):**

Property	Value
Name	postgres
OID	12135
Owner	postgres
ACL	
Tablespace	pg_default
Default tablespace	pg_default
Encoding	UTF8
Collation	Korean_Korea.949
Character type	Korean_Korea.949
Default schema	public
Default table ACL	
Default sequence ACL	
Default function ACL	
Default type ACL	
Allow connections?	Yes
Connected?	Yes
Connection limit	-1
System database?	No
Comment	default administrative connection d

**SQL Editor (Right Pane):**

Query: `select current_date`

**Output pane (Bottom Right):**

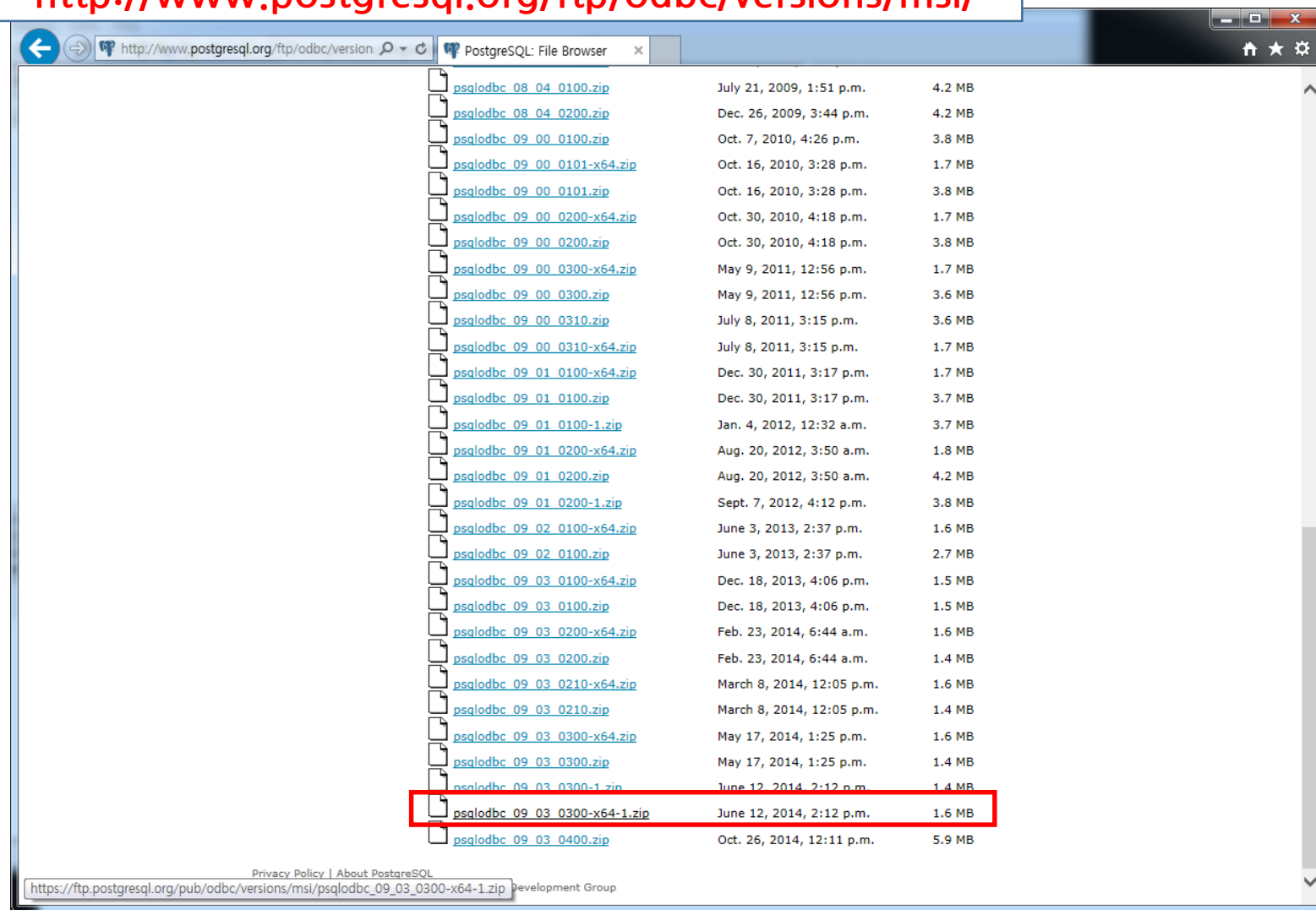
	date
1	2015-10-26

Retrieving details on database postgres... Done.

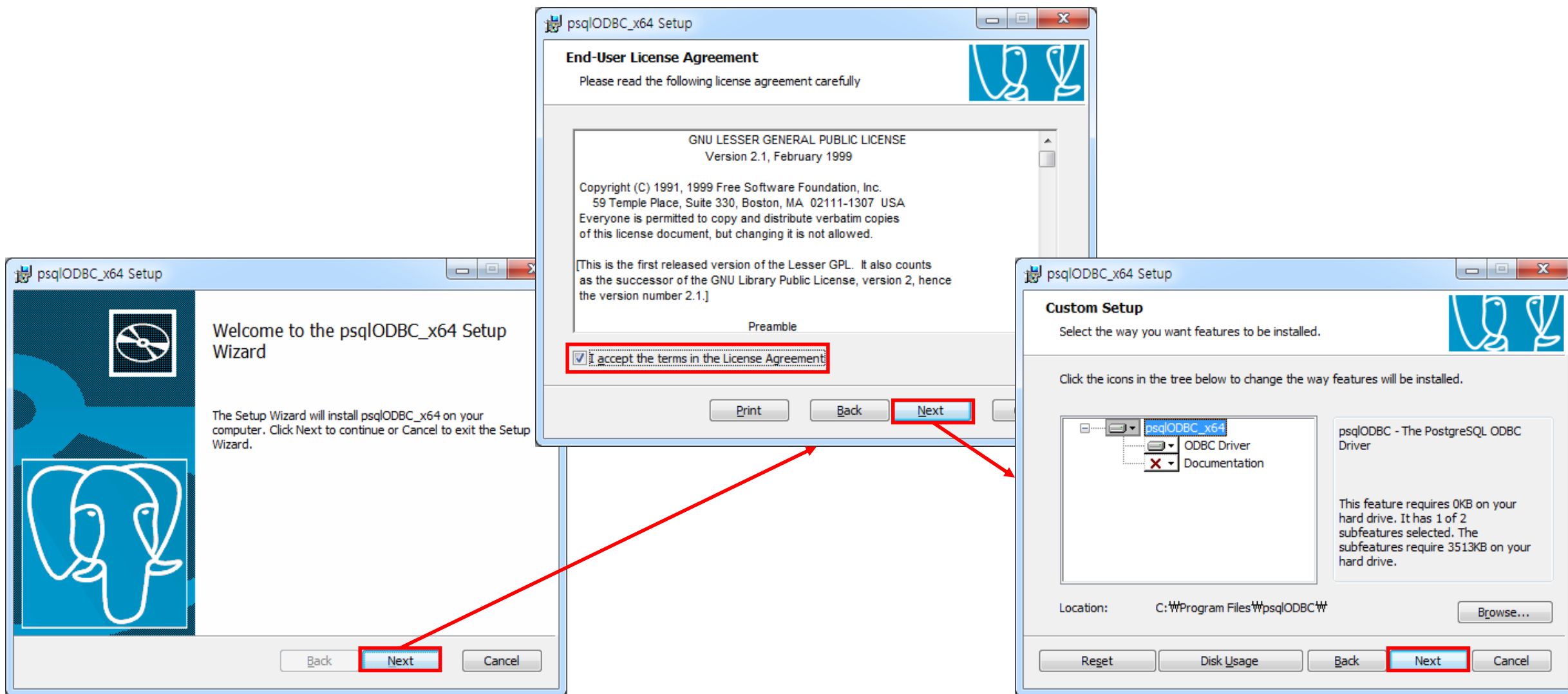
OK. Unix Ln 1, Col 21, Ch 21 1 row. 15 ms

# PostgreSQL ODBC Driver Setup - 1

<http://www.postgresql.org/ftp/odbc/versions/msi/>

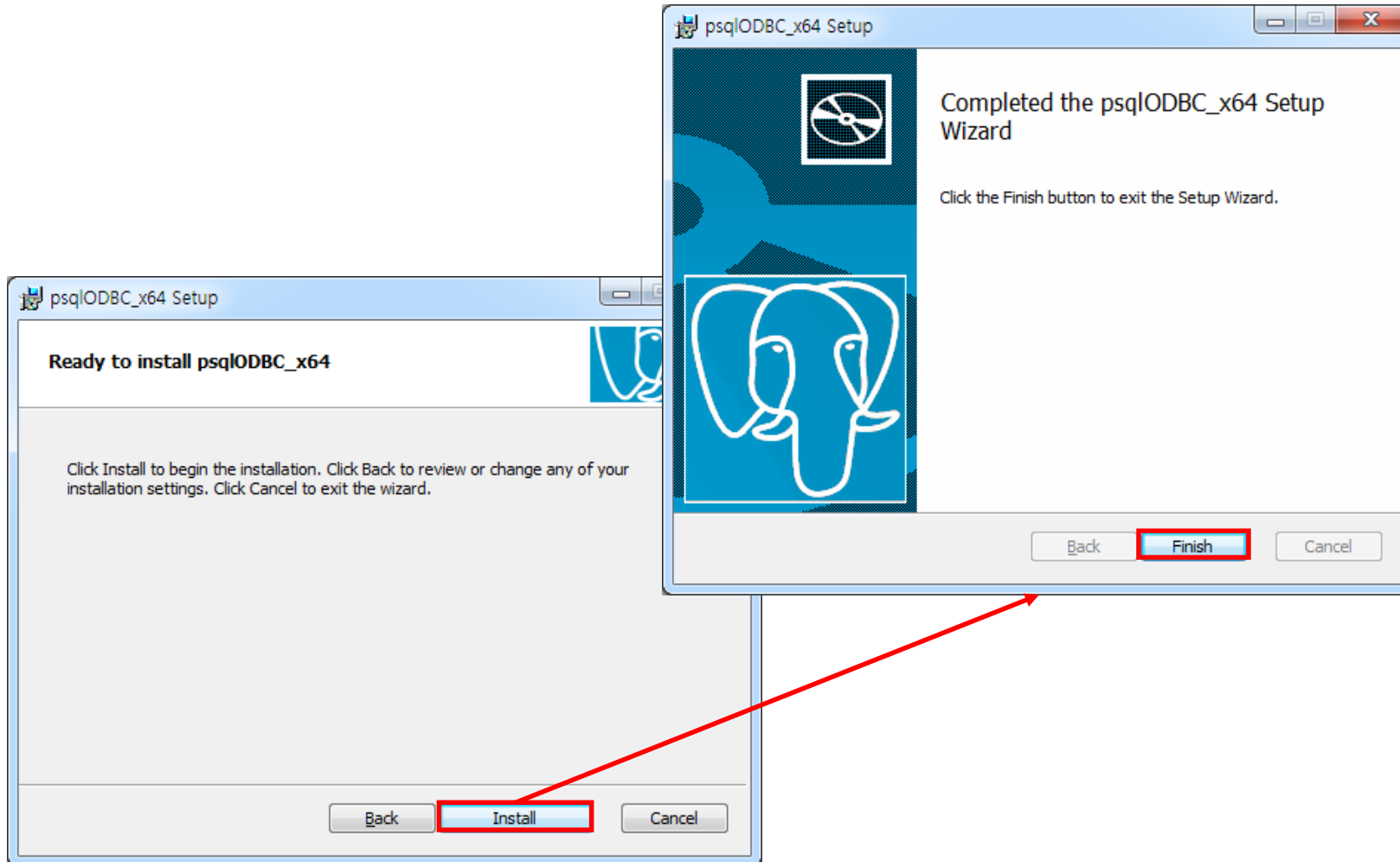


# PostgreSQL ODBC Driver Setup - 2

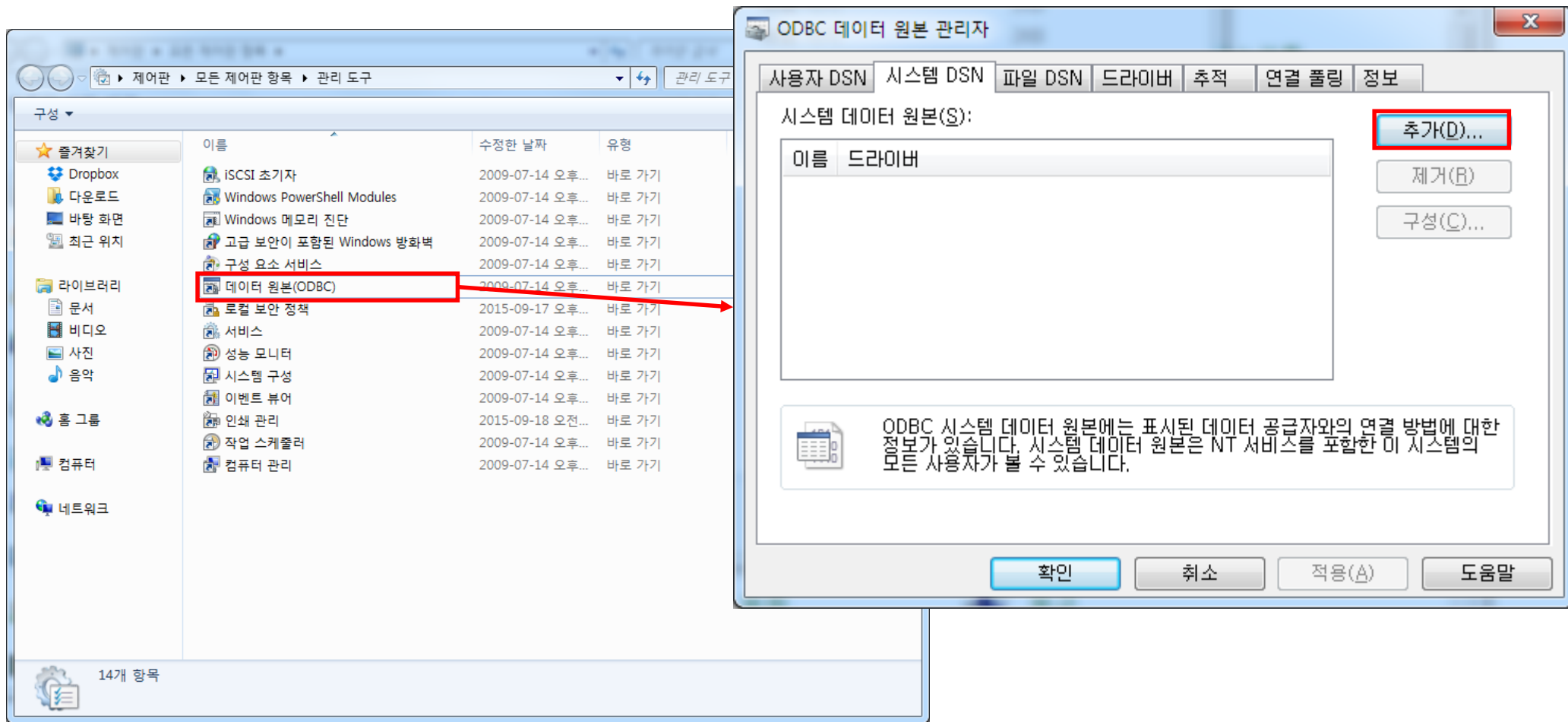




# PostgreSQL ODBC Driver Setup - 3



# PostgreSQL ODBC Driver Setup - 4



# PostgreSQL ODBC Driver Setup - 5

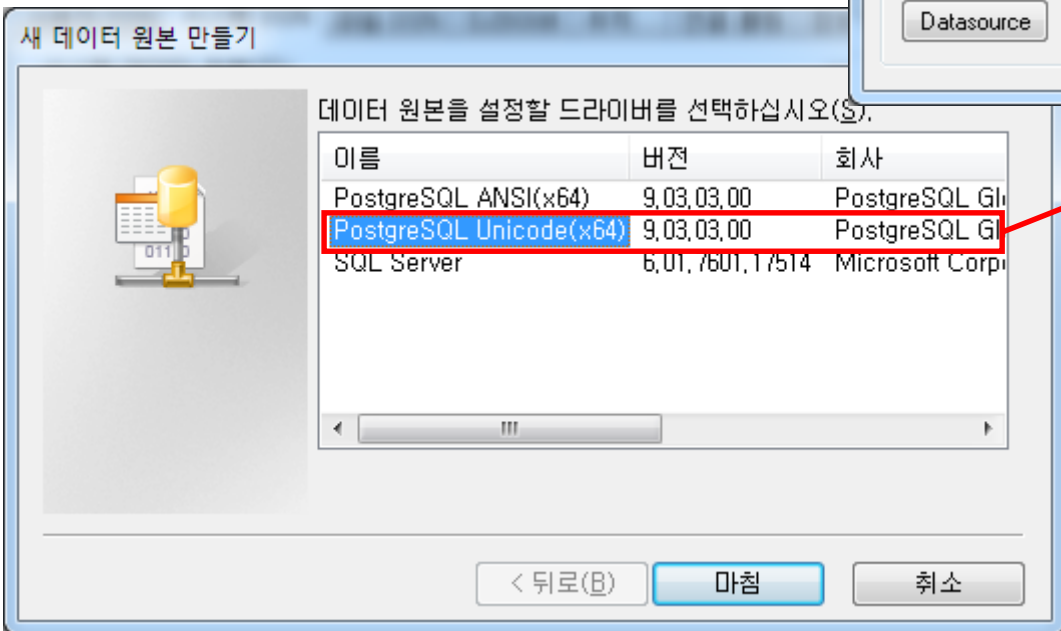
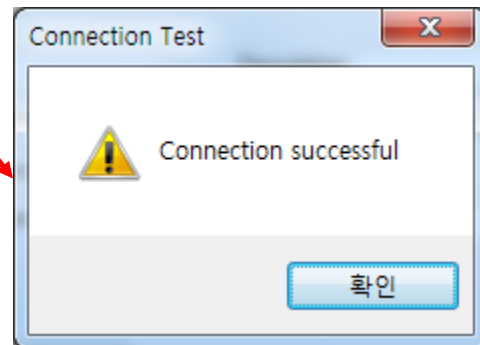
PostgreSQL Unicode ODBC Driver (psqlODBC) Setup

Data Source	Test	Description	
Database	postgres	SSL Mode	disable
Server	localhost	Port	5432
User Name	postgres	Password	.....

Options

Datasource Global

Test Save Cancel



SQL

# 왜 SQL인가?

- 2차원의 정형데이터를 다루는 가장 효율적인 언어.  
(Data를 사용하는 거의 모든 프로그램에서 SQL을 사용 하지 않고 효율적인 개발 불가)[DBMS, Hive, Spark, R(sqldf), ...]
- Data의 처리 과정을 기술하는 방법이 아닌 원하는 Data 의 요건을 기술하는 방식.[SQL = Data 요건정의서]  
(단순성, 높은 생산성)
- Data의 요건이 기술된 요건 정의서 형태이므로 요건의 변경 시 적은 수정으로 요건을 반영할 수 있음.  
(효율적인 유지보수)

# SQL 구문의 분류

- DDL(Data Definition Language : 데이터 정의 언어)
  - CREATE
  - DROP
  - ALTER
- DML(Data Manipulation Language : 데이터 조작 언어)
  - INSERT
  - UPDATE
  - DELETE
  - SELECT
- DCL(Data Control Language : 데이터 제어 언어)
  - GRANT
  - REVOKE
- ...

# 기본 문법(SELECT)

- SELECT ... 선택하고자 하는 속성목록을 기술.
- FROM ... Source Data Set을 기술.
- [WHERE] ... 선택하고자 하는 행의 조건의 목록을 기술.
- [GROUP BY] ... 집계하고자 하는 기준속성목록을 기술.
- [HAVING]] ... 집계된 행을 기준으로 선택하고자 하는 행의 조건목록을 기술함. (GROUP BY가 선행조건)
- [ORDER BY] ... 정렬의 기준이 되는 속성목록과 각 속성 목록의 정렬방식(오림차순, 내림차순)를 기술.
- [LIMIT] ... 순서대로 반환되는 전체의 행 중 선택할 행의 수를 기술.

# 예시 데이터(테이블)

Table : Order				
USREID	ORDER_DATE	METHOD	AMOUNT	DISCOUNT
INTEGER	VARCHAR(10)	VARCHAR(10)	INTEGER	NUMERIC
1	2015-08-01	CALL	10,000	-998.7
1	2015-08-03	TOUCH	10,000	
1	2015-08-10	TOUCH	10,000	-950.4
1	2015-08-14	CALL	10,000	-1,000.0
1	2015-08-25	TOUCH	10,000	
2	2015-08-03	TOUCH	5,000	-500.0
2	2015-08-11	TOUCH	5,000	-300.0
2	2015-08-12	TOUCH	5,000	-700.0
2	2015-08-22	TOUCH	5,000	-1,000.0
2	2015-08-28	TOUCH	5,000	-600.0
3	2015-08-07	CALL	10,000	-1,000.0
3	2015-08-19	TOUCH	10,000	-1,000.0
3	2015-08-30	CALL	10,000	-1,000.0
4	2015-08-05	CALL	20,000	-3,000.0
4	2015-08-18	TOUCH	30,000	-5,000.0
5	2015-08-15	CALL	10,000	-1,000.0
5	2015-08-17	CALL	10,000	
5	2015-08-21	CALL	10,000	-1,000.0
5	2015-08-23	CALL	10,000	-1,000.0
5	2015-08-29	CALL	10,000	-1,000.0



Data Script



# 예시 데이터(테이블)

```
create table "order" (  
    userid      integer      not null,  
    order_date  varchar(10)  not null,  
    method      varchar(10)  not null,  
    amount      integer      not null,  
    discount    numeric       null  
);  
  
insert into "order" values(1, '2015-08-01', 'CALL' , 10000, -998.7);  
insert into "order" values(1, '2015-08-03', 'TOUCH', 10000, null);  
insert into "order" values(1, '2015-08-10', 'TOUCH', 10000, -950.4);  
insert into "order" values(1, '2015-08-14', 'CALL' , 10000, -1000);  
insert into "order" values(1, '2015-08-25', 'TOUCH', 10000, null);  
insert into "order" values(2, '2015-08-03', 'TOUCH', 5000, -500 );  
insert into "order" values(2, '2015-08-11', 'TOUCH', 5000, -300 );  
insert into "order" values(2, '2015-08-12', 'TOUCH', 5000, -700 );  
insert into "order" values(2, '2015-08-22', 'TOUCH', 5000, -1000);  
insert into "order" values(2, '2015-08-28', 'TOUCH', 5000, -600 );  
insert into "order" values(3, '2015-08-07', 'CALL' , 10000, -1000);  
insert into "order" values(3, '2015-08-19', 'TOUCH', 10000, -1000);  
insert into "order" values(3, '2015-08-30', 'CALL' , 10000, -1000);  
insert into "order" values(4, '2015-08-05', 'CALL' , 20000, -3000);  
insert into "order" values(4, '2015-08-18', 'TOUCH', 30000, -5000);  
insert into "order" values(5, '2015-08-15', 'CALL' , 10000, -1000);  
insert into "order" values(5, '2015-08-17', 'CALL' , 10000, null);  
insert into "order" values(5, '2015-08-21', 'CALL' , 10000, -1000);  
insert into "order" values(5, '2015-08-23', 'CALL' , 10000, -1000);  
insert into "order" values(5, '2015-08-29', 'CALL' , 10000, -1000);
```

# FROM 절 - 출처는 어디야?

Database.xlsx - Excel

파일 홈 삽입 페이지 레이아웃 수식 데이터 검토 보기 Tableau Foxit Reader PDF 로그인

클립보드 글꼴 맞춤 표시 형식 스타일 셀 편집

P23 : X ✓ fx

Table Name  
Item  
Customer  
**Order**

Excel의 Sheet 지정과 비슷함.

select \*  
from "order"

Table List Item Customer **Order**

준비

Table : Order

USREID	ORDER_DATE	METHOD	AMOUNT	DISCOUNT
INTEGER	VARCHAR(10)	VARCHAR(10)	INTEGER	NUMERIC
1	2015-08-01	CALL	10,000	-998.7
1	2015-08-03	TOUCH	10,000	
1	2015-08-10	TOUCH	10,000	-950.4
1	2015-08-14	CALL	10,000	-1,000.0
1	2015-08-25	TOUCH	10,000	
2	2015-08-03	TOUCH	5,000	-500.0
2	2015-08-11	TOUCH	5,000	-300.0
2	2015-08-12	TOUCH	5,000	-700.0
2	2015-08-22	TOUCH	5,000	-1,000.0
2	2015-08-28	TOUCH	5,000	-600.0
3	2015-08-07	CALL	10,000	-1,000.0
3	2015-08-19	TOUCH	10,000	-1,000.0
3	2015-08-30	CALL	10,000	-1,000.0
4	2015-08-05	CALL	20,000	-3,000.0
4	2015-08-18	TOUCH	30,000	-5,000.0
5	2015-08-15	CALL	10,000	-1,000.0
5	2015-08-17	CALL	10,000	
5	2015-08-21	CALL	10,000	-1,000.0
5	2015-08-23	CALL	10,000	-1,000.0
5	2015-08-29	CALL	10,000	-1,000.0

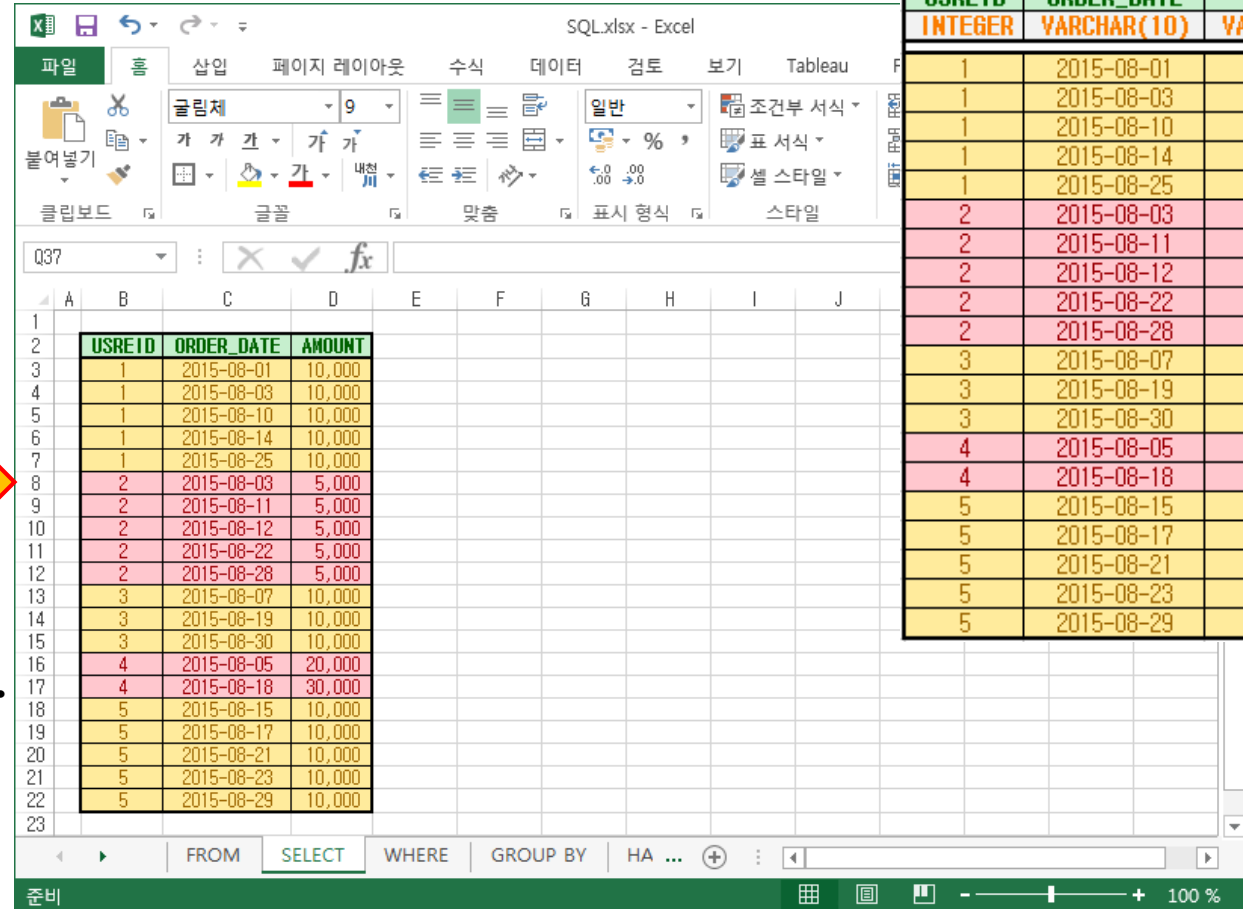
FROM SELECT WHERE GROUP BY HA ...

준비

# SELECT 절 – 어떤 열을 볼까?

```
select userid  
      , order_date  
      , amount  
from "order"
```

Excel의 숨기기 기능과 비슷함.



USREID	ORDER_DATE	AMOUNT
1	2015-08-01	10,000
1	2015-08-03	10,000
1	2015-08-10	10,000
1	2015-08-14	10,000
1	2015-08-25	10,000
2	2015-08-03	5,000
2	2015-08-11	5,000
2	2015-08-12	5,000
2	2015-08-22	5,000
2	2015-08-28	5,000
3	2015-08-07	10,000
3	2015-08-19	10,000
3	2015-08-30	10,000
4	2015-08-05	20,000
4	2015-08-18	30,000
5	2015-08-15	10,000
5	2015-08-17	10,000
5	2015-08-21	10,000
5	2015-08-23	10,000
5	2015-08-29	10,000

Table : Order				
USREID	ORDER_DATE	METHOD	AMOUNT	DISCOUNT
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1	2015-08-14	CALL	10,000	-1,000.0
1	2015-08-25	TOUCH	10,000	
2	2015-08-03	TOUCH	5,000	-500.0
2	2015-08-11	TOUCH	5,000	-300.0
2	2015-08-12	TOUCH	5,000	-700.0
2	2015-08-22	TOUCH	5,000	-1,000.0
2	2015-08-28	TOUCH	5,000	-600.0
3	2015-08-07	CALL	10,000	-1,000.0
3	2015-08-19	TOUCH	10,000	-1,000.0
3	2015-08-30	CALL	10,000	-1,000.0
4	2015-08-05	CALL	20,000	-3,000.0
4	2015-08-18	TOUCH	30,000	-5,000.0
5	2015-08-15	CALL	10,000	-1,000.0
5	2015-08-17	CALL	10,000	
5	2015-08-21	CALL	10,000	-1,000.0
5	2015-08-23	CALL	10,000	-1,000.0
5	2015-08-29	CALL	10,000	-1,000.0

# WHERE 조건절 - 어떤 행을 볼까?

```
select *  
from "order"  
where userid = 2
```

Excel의 필터 기능과 비슷함.

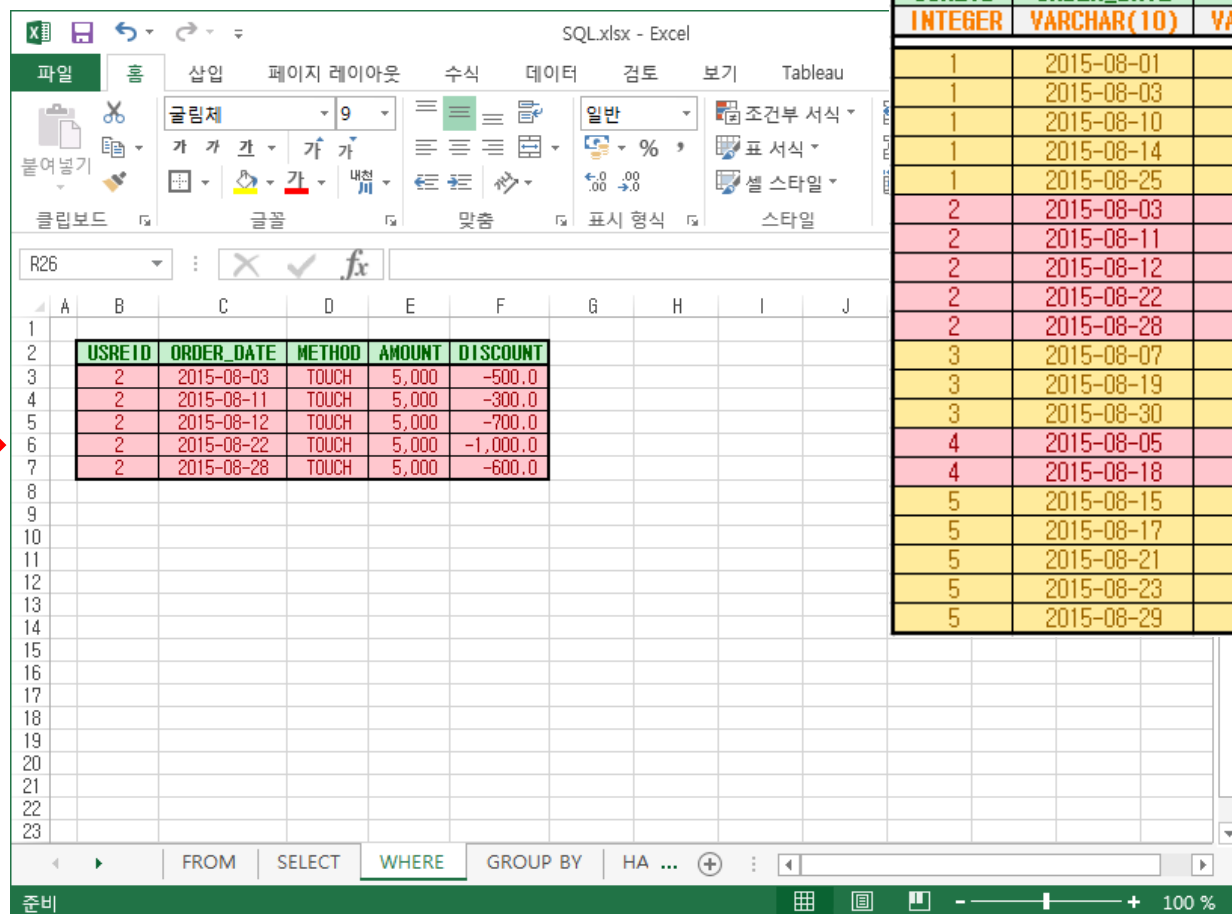
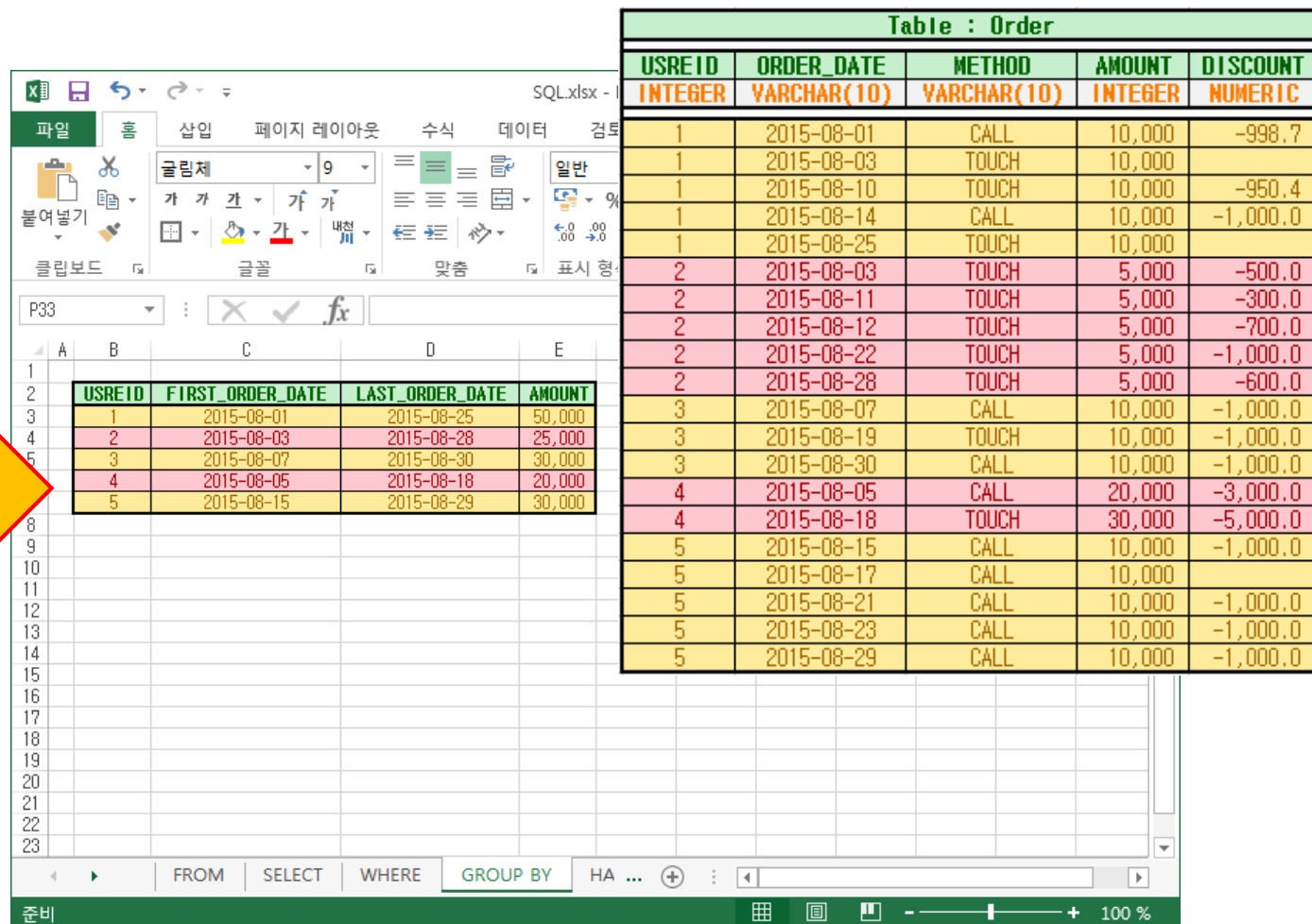


Table : Order				
USREID	ORDER_DATE	METHOD	AMOUNT	DISCOUNT
INTEGER	VARCHAR(10)	VARCHAR(10)	INTEGER	NUMERIC
1	2015-08-01	CALL	10,000	-998.7
1	2015-08-03	TOUCH	10,000	
1	2015-08-10	TOUCH	10,000	-950.4
1	2015-08-14	CALL	10,000	-1,000.0
1	2015-08-25	TOUCH	10,000	
2	2015-08-03	TOUCH	5,000	-500.0
2	2015-08-11	TOUCH	5,000	-300.0
2	2015-08-12	TOUCH	5,000	-700.0
2	2015-08-22	TOUCH	5,000	-1,000.0
2	2015-08-28	TOUCH	5,000	-600.0
3	2015-08-07	CALL	10,000	-1,000.0
3	2015-08-19	TOUCH	10,000	-1,000.0
3	2015-08-30	CALL	10,000	-1,000.0
4	2015-08-05	CALL	20,000	-3,000.0
4	2015-08-18	TOUCH	30,000	-5,000.0
5	2015-08-15	CALL	10,000	-1,000.0
5	2015-08-17	CALL	10,000	
5	2015-08-21	CALL	10,000	-1,000.0
5	2015-08-23	CALL	10,000	-1,000.0
5	2015-08-29	CALL	10,000	-1,000.0

# GROUP BY 절 – 어떤 기준으로 집계할까?

```
select userid  
  , min(order_date) as first_order_date  
  , max(order_date) as last_order_date  
  , sum(amount)      as amount  
from "order"  
group by userid
```

Excel의 피벗 테이블 기능과 비슷함.



USREID	ORDER_DATE	METHOD	AMOUNT	DISCOUNT
INTEGER	VARCHAR(10)	VARCHAR(10)	INTEGER	NUMERIC
1	2015-08-01	CALL	10,000	-998.7
1	2015-08-03	TOUCH	10,000	
1	2015-08-10	TOUCH	10,000	-950.4
1	2015-08-14	CALL	10,000	-1,000.0
1	2015-08-25	TOUCH	10,000	
2	2015-08-03	TOUCH	5,000	-500.0
2	2015-08-11	TOUCH	5,000	-300.0
2	2015-08-12	TOUCH	5,000	-700.0
2	2015-08-22	TOUCH	5,000	-1,000.0
2	2015-08-28	TOUCH	5,000	-600.0
3	2015-08-07	CALL	10,000	-1,000.0
3	2015-08-19	TOUCH	10,000	-1,000.0
3	2015-08-30	CALL	10,000	-1,000.0
4	2015-08-05	CALL	20,000	-3,000.0
4	2015-08-18	TOUCH	30,000	-5,000.0
5	2015-08-15	CALL	10,000	-1,000.0
5	2015-08-17	CALL	10,000	
5	2015-08-21	CALL	10,000	-1,000.0
5	2015-08-23	CALL	10,000	-1,000.0
5	2015-08-29	CALL	10,000	-1,000.0

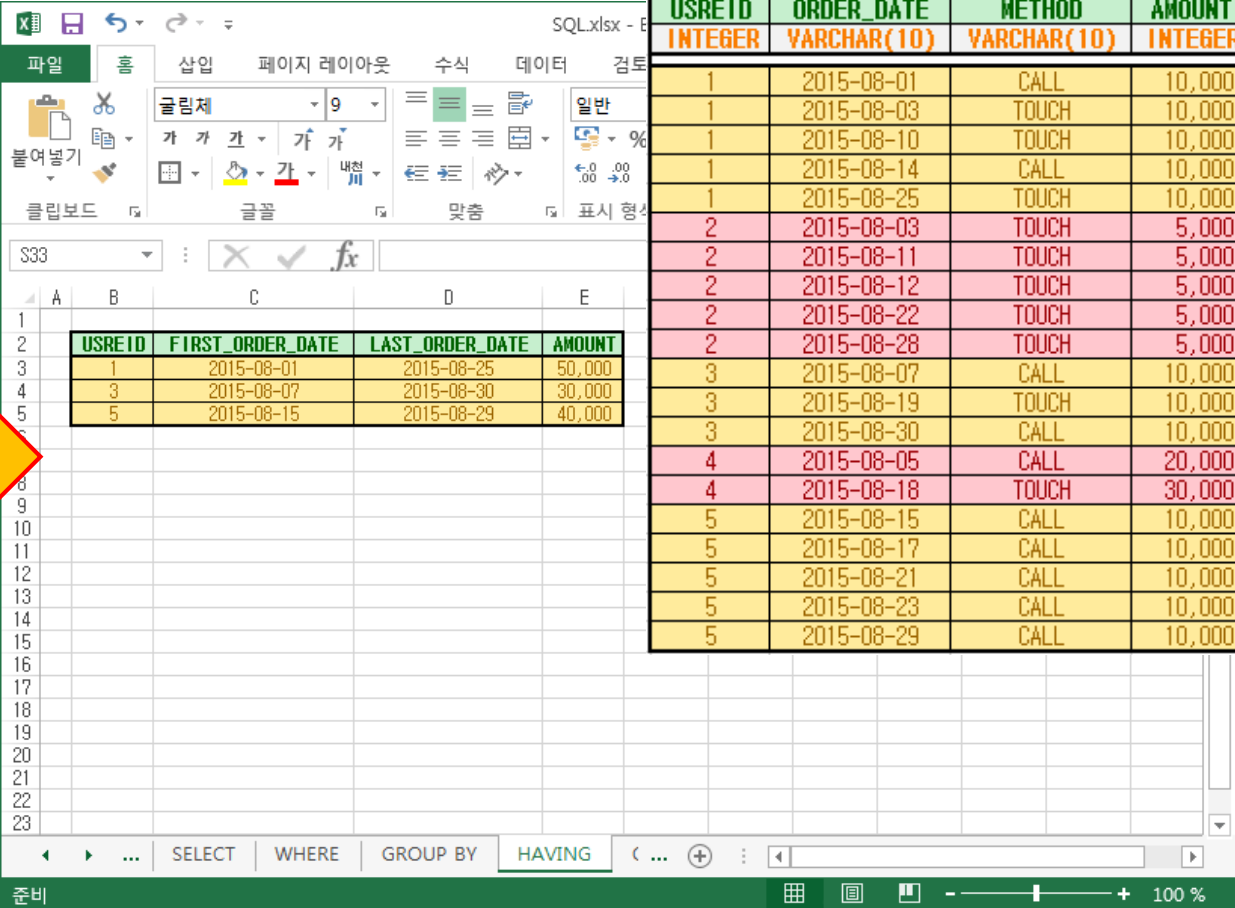
  

USREID	FIRST_ORDER_DATE	LAST_ORDER_DATE	AMOUNT
1	2015-08-01	2015-08-25	50,000
2	2015-08-03	2015-08-28	25,000
3	2015-08-07	2015-08-30	30,000
4	2015-08-05	2015-08-18	20,000
5	2015-08-15	2015-08-29	30,000

# HAVING - 집계 후 어떤 행을 볼까?

```
select userid  
      , min(order_date) as first_order_date  
      , max(order_date) as last_order_date  
      , sum(amount)      as amount  
from "order"  
group by userid  
having sum(amount) >= 30000
```

Excel의 피벗 테이블 + 필터 기능과 비슷함.

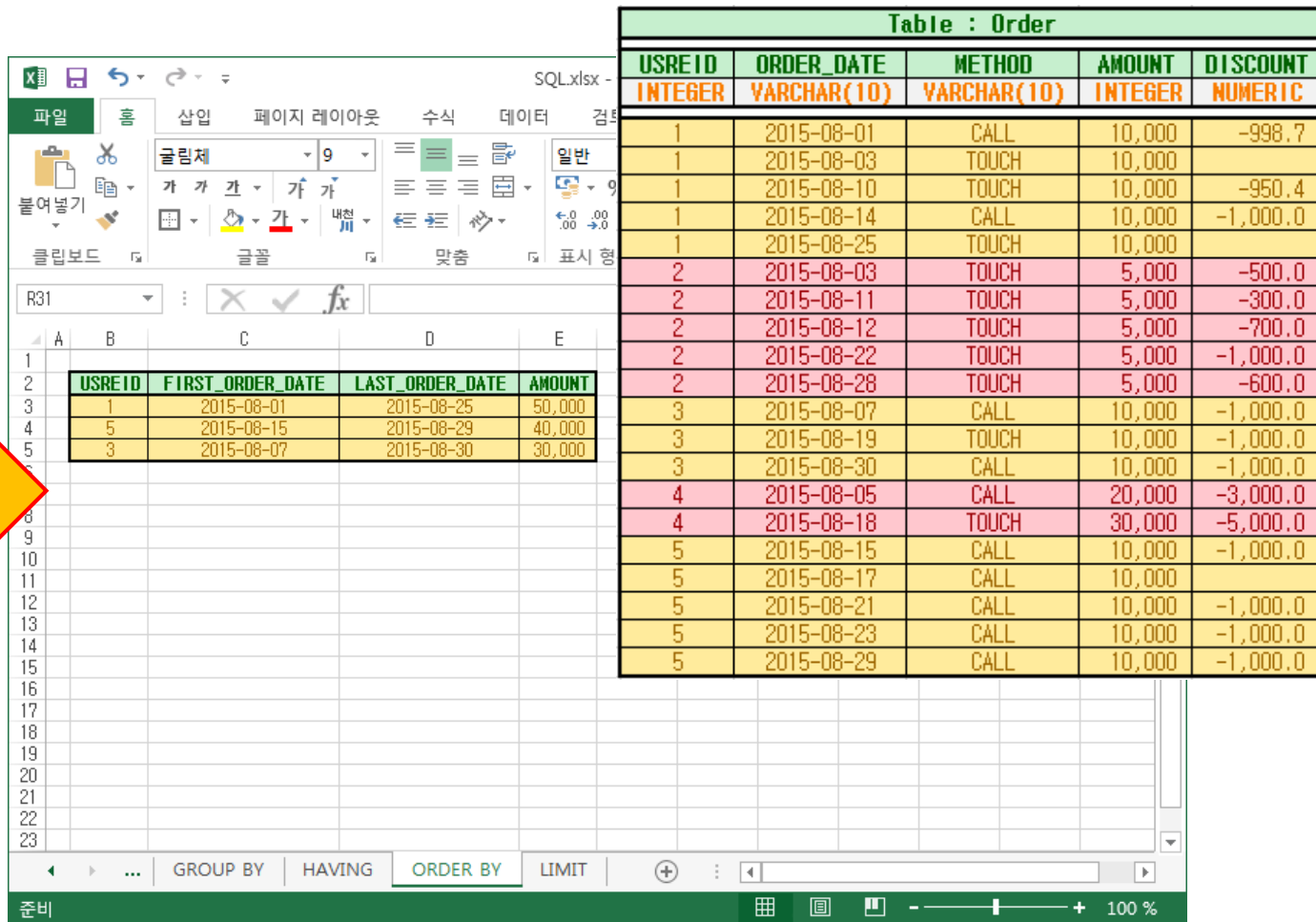


USREID	ORDER_DATE	METHOD	AMOUNT	DISCOUNT
INTEGER	VARCHAR(10)	VARCHAR(10)	INTEGER	NUMERIC
1	2015-08-01	CALL	10,000	-998.7
1	2015-08-03	TOUCH	10,000	
1	2015-08-10	TOUCH	10,000	-950.4
1	2015-08-14	CALL	10,000	-1,000.0
1	2015-08-25	TOUCH	10,000	
2	2015-08-03	TOUCH	5,000	-500.0
2	2015-08-11	TOUCH	5,000	-300.0
2	2015-08-12	TOUCH	5,000	-700.0
2	2015-08-22	TOUCH	5,000	-1,000.0
2	2015-08-28	TOUCH	5,000	-600.0
3	2015-08-07	CALL	10,000	-1,000.0
3	2015-08-19	TOUCH	10,000	-1,000.0
3	2015-08-30	CALL	10,000	-1,000.0
4	2015-08-05	CALL	20,000	-3,000.0
4	2015-08-18	TOUCH	30,000	-5,000.0
5	2015-08-15	CALL	10,000	-1,000.0
5	2015-08-17	CALL	10,000	
5	2015-08-21	CALL	10,000	-1,000.0
5	2015-08-23	CALL	10,000	-1,000.0
5	2015-08-29	CALL	10,000	-1,000.0

# ORDER BY – 순서대로 볼까?

```
select userid  
  , min(order_date) as first_order_date  
  , max(order_date) as last_order_date  
  , sum(amount)      as amount  
from "order"  
group by userid  
having sum(amount) >= 30000  
order by amount desc
```

Excel의 피벗 테이블 + 정렬 기능과 비슷함.

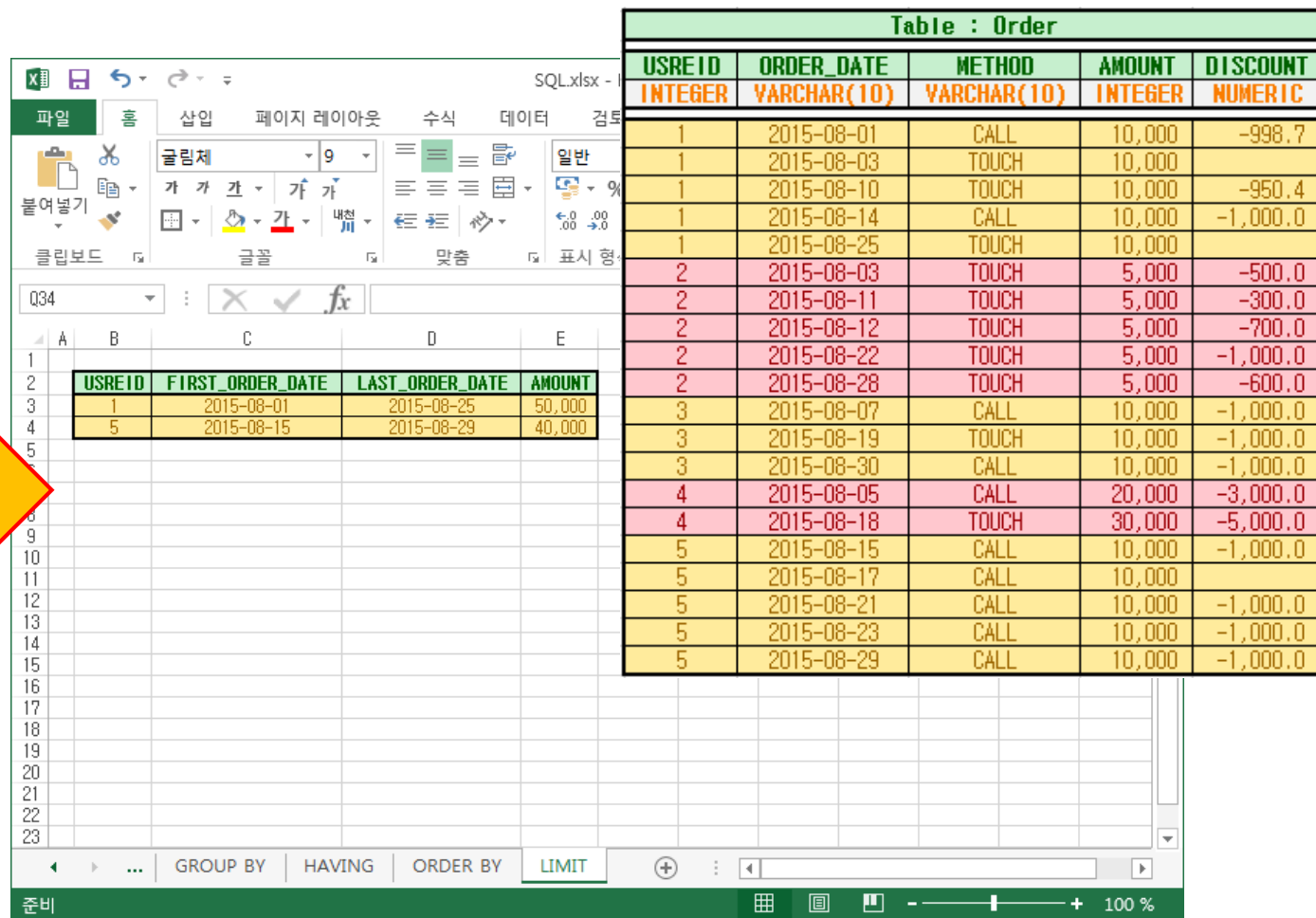


USREID	ORDER_DATE	METHOD	AMOUNT	DISCOUNT
INTEGER	VARCHAR(10)	VARCHAR(10)	INTEGER	NUMERIC
1	2015-08-01	CALL	10,000	-998.7
1	2015-08-03	TOUCH	10,000	
1	2015-08-10	TOUCH	10,000	-950.4
1	2015-08-14	CALL	10,000	-1,000.0
1	2015-08-25	TOUCH	10,000	
2	2015-08-03	TOUCH	5,000	-500.0
2	2015-08-11	TOUCH	5,000	-300.0
2	2015-08-12	TOUCH	5,000	-700.0
2	2015-08-22	TOUCH	5,000	-1,000.0
2	2015-08-28	TOUCH	5,000	-600.0
3	2015-08-07	CALL	10,000	-1,000.0
3	2015-08-19	TOUCH	10,000	-1,000.0
3	2015-08-30	CALL	10,000	-1,000.0
4	2015-08-05	CALL	20,000	-3,000.0
4	2015-08-18	TOUCH	30,000	-5,000.0
5	2015-08-15	CALL	10,000	-1,000.0
5	2015-08-17	CALL	10,000	
5	2015-08-21	CALL	10,000	-1,000.0
5	2015-08-23	CALL	10,000	-1,000.0
5	2015-08-29	CALL	10,000	-1,000.0

# LIMIT – 몇 개 데이터만 볼까?

```
select userid
      , min(order_date) as first_order_date
      , max(order_date) as last_order_date
      , sum(amount)      as amount
from "order"
group by userid
Having sum(amount) >= 30000
order by amount desc
limit 2
```

Excel의 피벗 테이블 + 정렬 + 필터 기능과 비슷함.



USREID	ORDER_DATE	METHOD	AMOUNT	DISCOUNT
INTEGER	VARCHAR(10)	VARCHAR(10)	INTEGER	NUMERIC
1	2015-08-01	CALL	10,000	-998.7
1	2015-08-03	TOUCH	10,000	
1	2015-08-10	TOUCH	10,000	-950.4
1	2015-08-14	CALL	10,000	-1,000.0
1	2015-08-25	TOUCH	10,000	
2	2015-08-03	TOUCH	5,000	-500.0
2	2015-08-11	TOUCH	5,000	-300.0
2	2015-08-12	TOUCH	5,000	-700.0
2	2015-08-22	TOUCH	5,000	-1,000.0
2	2015-08-28	TOUCH	5,000	-600.0
3	2015-08-07	CALL	10,000	-1,000.0
3	2015-08-19	TOUCH	10,000	-1,000.0
3	2015-08-30	CALL	10,000	-1,000.0
4	2015-08-05	CALL	20,000	-3,000.0
4	2015-08-18	TOUCH	30,000	-5,000.0
5	2015-08-15	CALL	10,000	-1,000.0
5	2015-08-17	CALL	10,000	
5	2015-08-21	CALL	10,000	-1,000.0
5	2015-08-23	CALL	10,000	-1,000.0
5	2015-08-29	CALL	10,000	-1,000.0