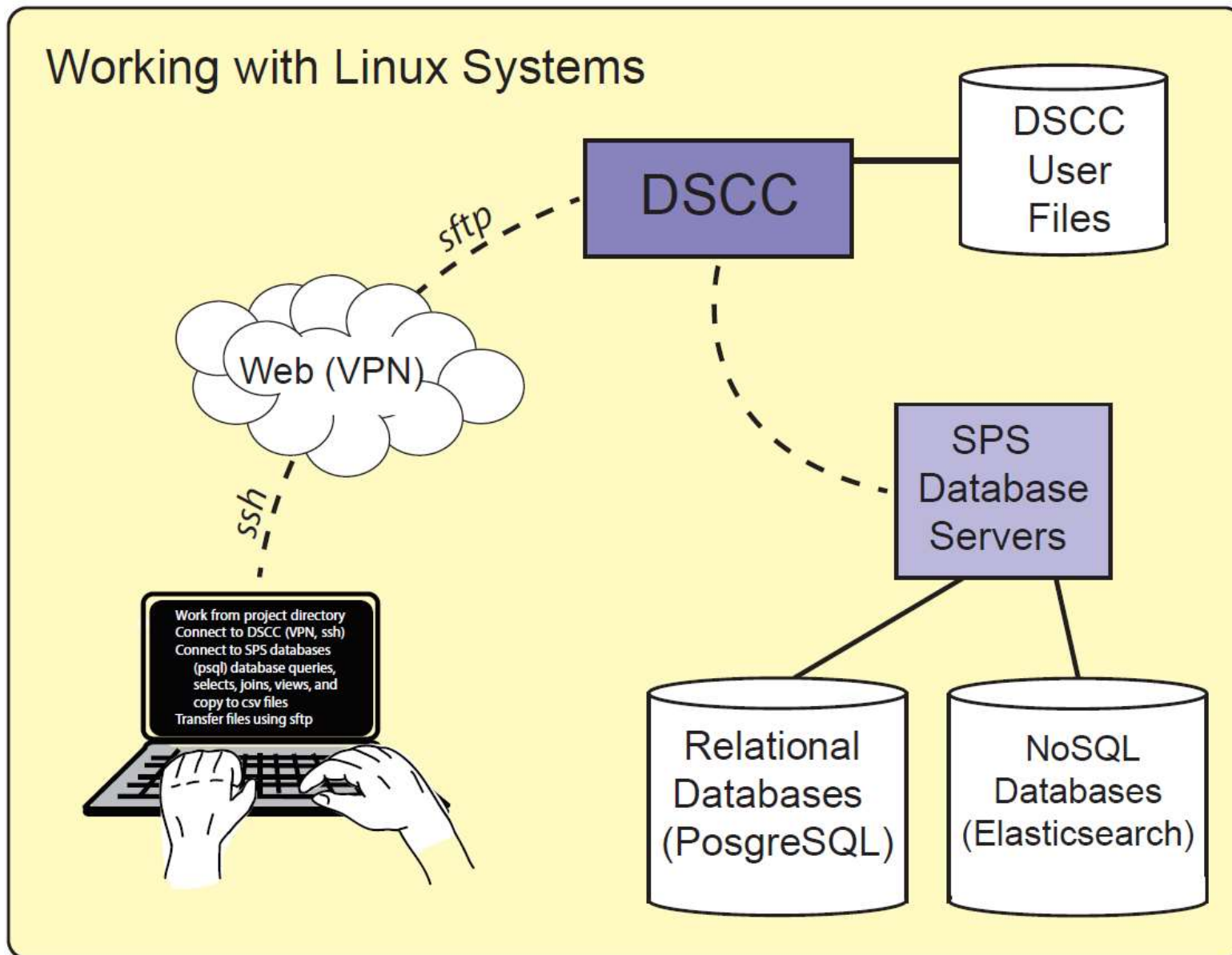

MSDS 420

Atef Bader, PhD

Agenda

- Assignment #4 Walkthrough and Deliverable
- Bonus Assignment #1 Walkthrough and Deliverable

Network elements/systems you need to know for Assignment #4?



VPN - Northwestern

The screenshot shows a web browser window displaying the Northwestern University VPN page. The browser's address bar shows the URL <https://www.it.northwestern.edu/oncampus/vpn/>. The page title is "Linux". The main heading is "SSL VPN (Secure Sockets Layer Virtual Private Network)". Below the heading, the text reads: "SSL VPN allows access to administrative systems, critical system administrators. SSL VPN access can be granted to and other external collaborators. Please visit the SSL VPN". A callout box with a black border and a purple background points to the text "administrative systems, critical system administrators". The callout box contains the text "Call or Email Helpdesk for VPN support". Below the main text, it says "Last Updated: 5 March 2018". The footer of the page is purple and contains the Northwestern University logo, contact information for Information Technology, social media links, and a "GET HELP" button.

File Edit View History Bookmarks Tools Help

Use VPN for a Secure Connection X +

Northwestern University (US) <https://www.it.northwestern.edu/oncampus/vpn/> Search

Most Visited Getting Started

Linux

SSL VPN (Secure Sockets Layer Virtual Private Network)

SSL VPN allows access to administrative systems, critical system administrators. SSL VPN access can be granted to and other external collaborators. Please visit the SSL VPN

Last Updated: 5 March 2018

Call or Email Helpdesk for VPN support

Northwestern University

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Information Technology
1800 Sherman Ave
Evanston, IL 60208
847-491-4357 (1-HELP)
consultant@northwestern.edu
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GET HELP

DSCC - Helpdesk

□ Network Connection to DSCC

- After you establish VPN connection to Northwestern Network, use your NetID and Password to connect to DSCC server
- The DSCC serves as a research and training facility for graduate students in the Master of Science in Data Science program. User accounts are not associated with individual courses or instructors. They are for student and faculty use only and remain available as long as users maintain valid Northwestern NetIDs. Users should not share user account **NetIDs** and passwords with others. Each account is tied with its Northwestern University network identity.

□ Technical Support for DSCC:

- For DSCC technical support related to server connection/login issues, email or call : **sps-it@northwestern.edu** and phone number **312-503-3333**



Call or Email Helpdesk for VPN
support

Assignment #4

Assignment_4.pdf - Adobe Acrobat Reader DC

File Edit View Window Help

Home Tools Assignment_4.pdf x

153%

Share

Assignment #4

Assignment Deliverable:

Submit your assignment as a single PDF document on Canvas that has the answers for the requirements listed below.

Note: Execute the following commands to connect to SaleCO data warehouse:

1. Login to PostgreSQL server thru the NU VPN
 - `psql -h 129.105.208.229 -U YourNetID -d postgres`
2. Connect to SaleCO data warehouse
 - `\c saleco_dw`

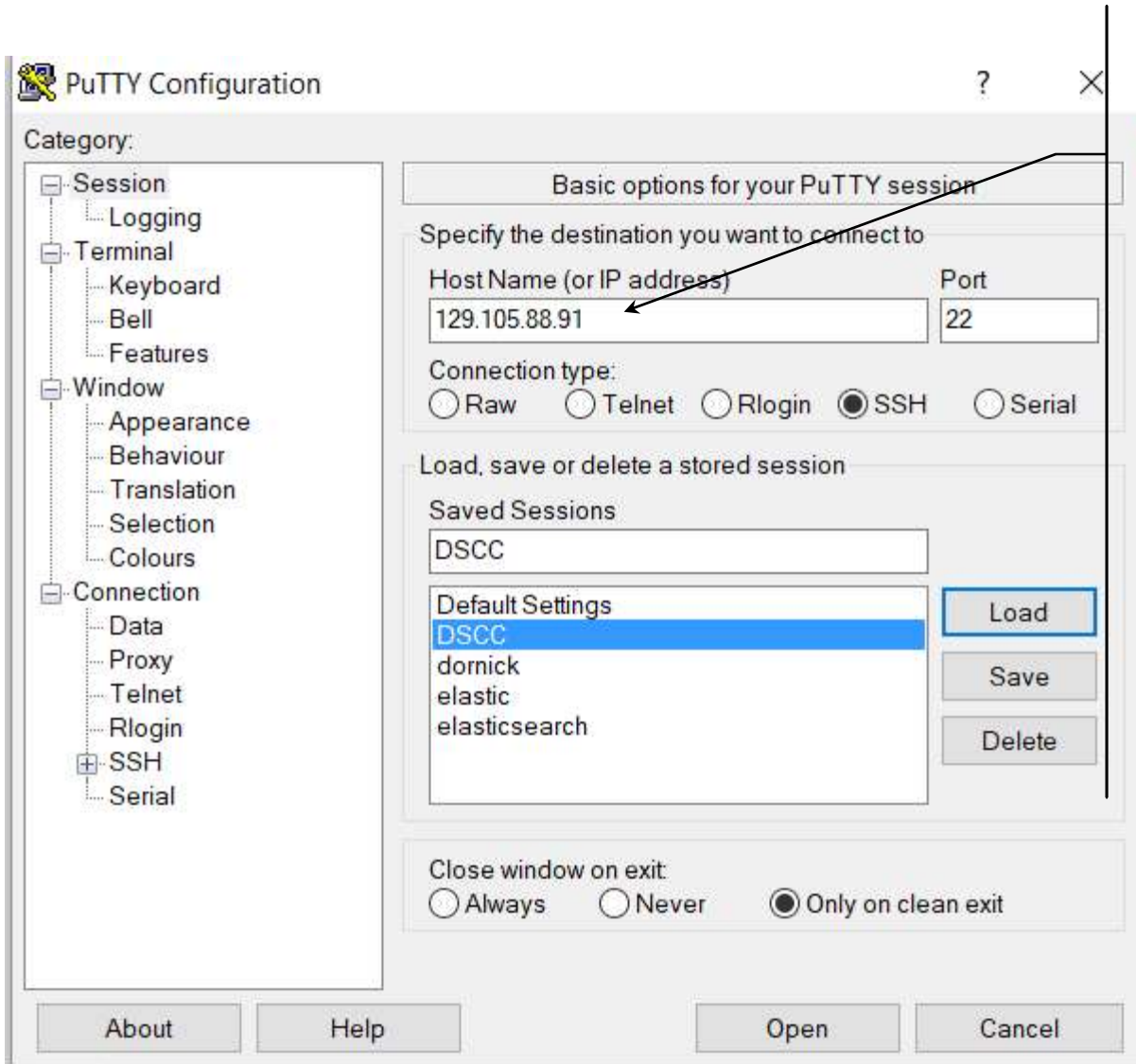
Assignment #4 - Walkthrough

- You need to do the following :
 1. Use NU VPN to connect to DSCC server
 2. Connect to PostgreSQL server
 3. Connect to Saleco_dw database
 4. Study and the tables (Fact and Dimensions) that are in this database and see how they are correlated to each other
 5. Execute SQL statements and produce output for the different requirements listed in the assignment document

Assignment #4 vs Assignment #3

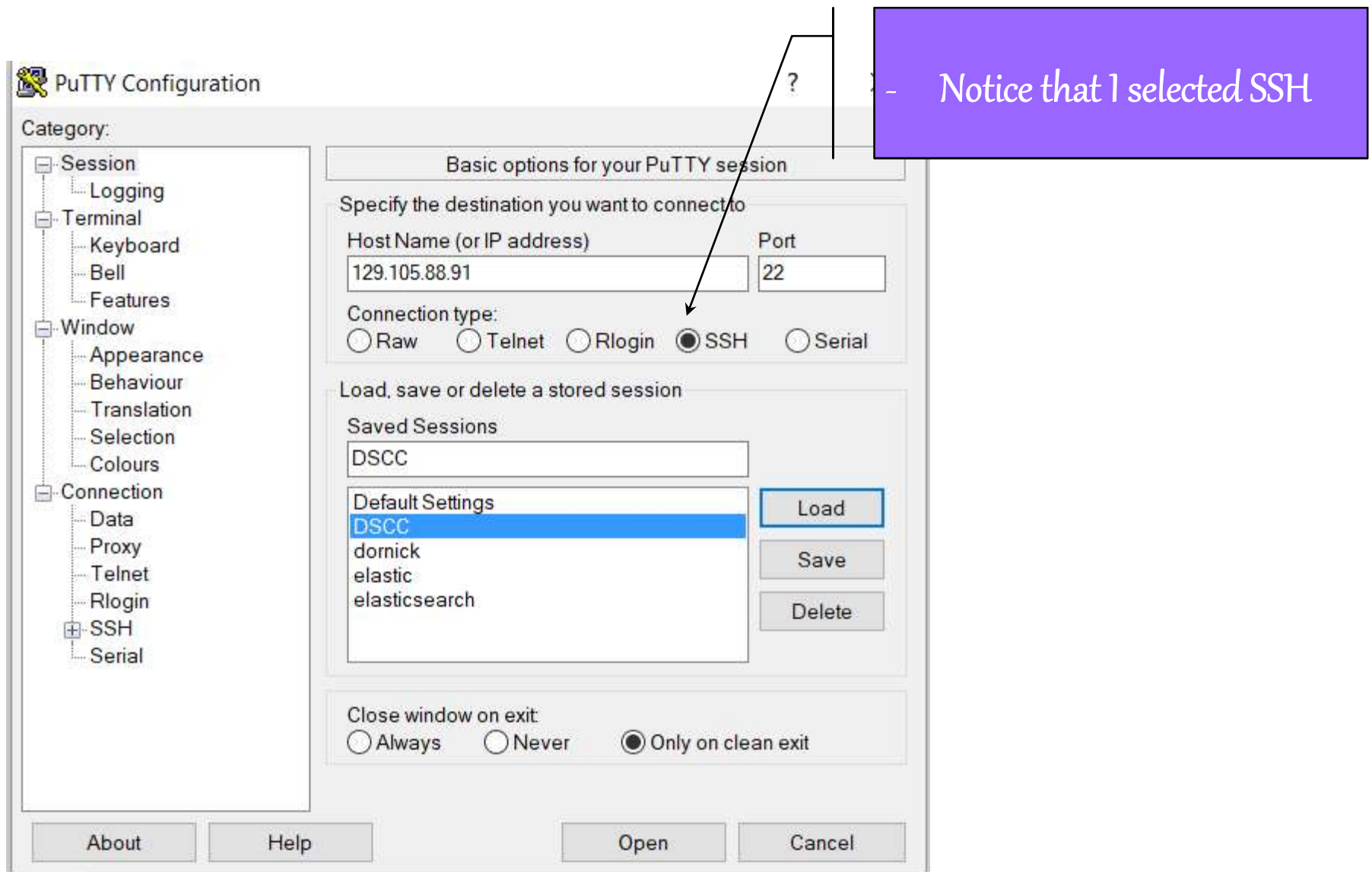
- Assignment #4 is **similar** to Assignment #3 in that it uses a database hosted on PostgreSQL
- Assignment #4 is **different** from Assignment #3 in that you will execute your SQL statements from PostgreSQL shell after you login to the server on DSCC

Assignment #4 - Walkthrough



- Connect to DSCC Server
- Make a note of the IP address
- Use your NetID and password to connect to DSCC server
- I use PuTTY tool (SSH) to connect over NU VPN to DSCC server ; you could use your favorite SSH tool

Assignment #4 - Walkthrough



Assignment #4 - Walkthrough

ajb254@spselastic1:~

```
[ajb254@spselastic1 ~]$  
[ajb254@spselastic1 ~]$  
[ajb254@spselastic1 ~]$
```

- Once connected you will get similar prompt with your NetID

Assignment #4 - Walkthrough

- Use the `psql` command with your NetID to connect to PostgreSQL server

```
ajb254@spselastic1:~  
login as: ajb254  
ajb254@129.105.88.91's password:  
Last login: Mon Nov 12 07:51:14 2018 from vpn-165-124-164-17.vpn.northwestern.ed  
u  
[ajb254@spselastic1 ~]$  
[ajb254@spselastic1 ~]$ psql -h 129.105.208.229 -U ajb254 -d postgres  
psql (8.4.20, server 10.5)  
WARNING: psql version 8.4, server version 10.5.  
         Some psql features might not work.  
Type "help" for help.  
  
postgres=#
```

Assignment #4 - Walkthrough

- Use this command to see available databases on the server

```
ajb254@spselastic1:~  
login as: ajb254  
ajb254@129.105.88.91's password:  
Last login: Mon Nov 12 07:51:14 2018 from vpn-165-124-164-17.vpn.northwestern.ed  
u  
[ajb254@spselastic1 ~]$  
[ajb254@spselastic1 ~]$ psql -h 129.105.208.229 -U ajb254 -d postgres  
psql (8.4.20, server 10.5)  
WARNING: psql version 8.4, server version 10.5.  
        Some psql features might not work.  
Type "help" for help.  
  
postgres=# \l  
               List of databases  
  Name          | Owner   | Encoding | Collation |  Ctype  | Access privileges  
-----+-----+-----+-----+-----+-----  
chicago_crimes | ajb254  | UTF8     | en_US.UTF-8 | en_US.UTF-8 |  
postgres        | postgres | UTF8     | en_US.UTF-8 | en_US.UTF-8 |  
saleco_dw       | ajb254  | UTF8     | en_US.UTF-8 | en_US.UTF-8 |  
template0       | postgres | UTF8     | en_US.UTF-8 | en_US.UTF-8 | =c/postgres  
                |         |          |             |             | : postgres=CTc/postgres  
template1       | postgres | UTF8     | en_US.UTF-8 | en_US.UTF-8 | =c/postgres  
                |         |          |             |             | : postgres=CTc/postgres  
walmart        | ajb254  | UTF8     | en_US.UTF-8 | en_US.UTF-8 |  
(6 rows)  
  
postgres=#
```

Assignment #4 - Walkthrough

```
ajb254@spselastic1:~  
login as: ajb254  
ajb254@129.105.88.91's password:  
Last login: Mon Nov 12 07:51:14 2018 from vpn-165-124-164-17.vpn.northwestern.edu  
u  
[ajb254@spselastic1 ~]$  
[ajb254@spselastic1 ~]$ psql -h 129.105.208.229 -U ajb254 -d postgres  
psql (8.4.20, server 10.5)  
WARNING: psql version 8.4, server version 10.5.  
Some psql features might not work.  
Type "help" for help.  
  
postgres=# \l  
  
          List of databases  
Name      | Owner  | Encoding | Collation | Ctype  | Access privileges  
-----+-----+-----+-----+-----+-----  
chicago_crimes | ajb254 | UTF8     | en_US.UTF-8 | en_US.UTF-8 |  
postgres       | postgres | UTF8     | en_US.UTF-8 | en_US.UTF-8 |  
saleco_dw      | ajb254 | UTF8     | en_US.UTF-8 | en_US.UTF-8 |  
template0      | postgres | UTF8     | en_US.UTF-8 | en_US.UTF-8 | =c/postgres  
              |         |          |             |             | : postgres=Ctc/postgres  
template1      | postgres | UTF8     | en_US.UTF-8 | en_US.UTF-8 | =c/postgres  
              |         |          |             |             | : postgres=Ctc/postgres  
walmart       | ajb254 | UTF8     | en_US.UTF-8 | en_US.UTF-8 |  
(6 rows)  
  
postgres=# \c saleco_dw  
psql (8.4.20, server 10.5)  
WARNING: psql version 8.4, server version 10.5.  
Some psql features might not work.  
You are now connected to database "saleco_dw".  
saleco_dw=#
```

- Use this command to connect to `saleco_dw`

Assignment #4 - Walkthrough

- Use this command to see tables in `saleco_dw`

```
ajb254@spselastic1:~  
login as: ajb254  
ajb254@129.105.88.91's password:  
Last login: Mon Nov 12 07:51:14 2018 from vpn-165-124-164-17.vpn.northwestern.edu  
[ajb254@spselastic1 ~]$  
[ajb254@spselastic1 ~]$ psql -h 129.105.208.229 -U ajb254 -d postgres  
psql (8.4.20, server 10.5)  
WARNING: psql version 8.4, server version 10.5.  
Some psql features might not work.  
Type "help" for help.  
  
postgres=# \l  
               List of databases  
+-----+-----+-----+-----+-----+-----+  
Name      | Owner  | Encoding | Collation | Ctype  | Access privileges  
+-----+-----+-----+-----+-----+-----+  
chicago_crimes | ajb254 | UTF8     | en_US.UTF-8 | en_US.UTF-8 |  
postgres       | postgres | UTF8     | en_US.UTF-8 | en_US.UTF-8 |  
saleco_dw      | ajb254 | UTF8     | en_US.UTF-8 | en_US.UTF-8 |  
template0      | postgres | UTF8     | en_US.UTF-8 | en_US.UTF-8 | =c/postgres  
               : postgres=CTc/postgres  
template1      | postgres | UTF8     | en_US.UTF-8 | en_US.UTF-8 | =c/postgres  
               : postgres=CTc/postgres  
walmart       | ajb254 | UTF8     | en_US.UTF-8 | en_US.UTF-8 |  
(6 rows)  
  
postgres=# \c saleco_dw  
psql (8.4.20, server 10.5)  
WARNING: psql version 8.4, server version 10.5.  
Some psql features might not work.  
You are now connected to database "saleco_dw".  
saleco_dw=#  
saleco_dw=# \dt  
               List of relations  
+-----+-----+-----+-----+  
Schema | Name          | Type  | Owner  
+-----+-----+-----+-----+  
public | dwcustomer    | table | ajb254  
public | dwdaysalesfact | table | ajb254  
public | dwproduct     | table | ajb254  
public | dwregion      | table | ajb254  
public | dwtime        | table | ajb254  
public | dwvendor      | table | ajb254  
(6 rows)  
  
saleco_dw=#
```

Assignment #4 - Walkthrough

- Use this command to describe a table such as a column, type, etc

```
ajb254@spselastic1:~  
WARNING: psql version 8.4, server version 10.5.  
Some psql features might not work.  
Type "help" for help.  
  
postgres=# \l  
  
List of databases  
Name | Owner | Encoding | Collation | Ctype | Access privileges  
-----+-----+-----+-----+-----+-----  
chicago_crimes | ajb254 | UTF8 | en_US.UTF-8 | en_US.UTF-8 |  
postgres | postgres | UTF8 | en_US.UTF-8 | en_US.UTF-8 |  
saleco_dw | ajb254 | UTF8 | en_US.UTF-8 | en_US.UTF-8 |  
template0 | postgres | UTF8 | en_US.UTF-8 | en_US.UTF-8 | =c/postgres  
 | | | | | : postgres=CTc/postgres  
template1 | postgres | UTF8 | en_US.UTF-8 | en_US.UTF-8 | =c/postgres  
 | | | | | : postgres=CTc/postgres  
walmart | ajb254 | UTF8 | en_US.UTF-8 | en_US.UTF-8 |  
(6 rows)  
  
postgres=# \c saleco_dw  
psql (8.4.20, server 10.5)  
WARNING: psql version 8.4, server version 10.5.  
Some psql features might not work.  
You are now connected to database "saleco_dw".  
saleco_dw=#  
saleco_dw=# \dt  
  
List of relations  
Schema | Name | Type | Owner  
-----+-----+-----+-----  
public | dwcustomer | table | ajb254  
public | dwdaysalesfact | table | ajb254  
public | dwproduct | table | ajb254  
public | dwregion | table | ajb254  
public | dwtime | table | ajb254  
public | dwvendor | table | ajb254  
(6 rows)  
  
saleco_dw=# \d dwcustomer  
  
Table "public.dwcustomer"  
Column | Type | Modifiers  
-----+-----+-----  
cus_code | integer | not null  
cus_lname | character varying(15) |  
cus_fname | character varying(15) |  
cus_initial | character(1) |  
cus_state | character(2) |  
reg_id | integer |  
Indexes:  
"dwcustomer_pkey" PRIMARY KEY, btree (cus_code)  
Foreign-key constraints:  
"dwcustomer_reg_id_fkey" FOREIGN KEY (reg_id) REFERENCES dwregion(reg_id)  
  
saleco_dw=#
```


Assignment #4 - Walkthrough

- Now you can execute any SQL statement on the database

ajb254@spselastic1:~

```
saleco_dw=#
saleco_dw=# \dt
List of relations
 Schema |      Name      | Type | Owner
-----+-----+-----+-----
 public | dwcustomer     | table | ajb254
 public | dwdaysalesfact | table | ajb254
 public | dwproduct      | table | ajb254
 public | dwregion       | table | ajb254
 public | dwtime         | table | ajb254
 public | dwvendor       | table | ajb254
(6 rows)

saleco_dw=# \d dwcustomer
Table "public.dwcustomer"
 Column |      Type      | Modifiers
-----+-----+-----
 cus_code | integer        | not null
 cus_lname | character varying(15) |
 cus_fname | character varying(15) |
 cus_initial | character(1)    |
 cus_state | character(2)    |
 reg_id | integer        |
Indexes:
 "dwcustomer_pkey" PRIMARY KEY, btree (cus_code)
Foreign-key constraints:
 "dwcustomer_reg_id_fkey" FOREIGN KEY (reg_id) REFERENCES dwregion(reg_id)

saleco_dw=#
saleco_dw=#
saleco_dw=#
saleco_dw=#
saleco_dw=# SELECT REG_ID, S.CUS_CODE, SUM(SALE_UNITS*SALE_PRICE) AS TOTSALES
saleco_dw=# FROM DWDALESFACT S JOIN DWCUSTOMER C ON S.CUS_CODE = C.CUS_CODE
saleco_dw=# GROUP BY REG_ID, S.CUS_CODE
saleco_dw=# ORDER BY REG_ID, S.CUS_CODE;
 reg_id | cus_code | totsales
-----+-----+-----
 1 | 10012 | 287.91
 1 | 10013 | 64.32
 2 | 10014 | 494.71
 2 | 10019 | 39.95
 3 | 10010 | 180.26
 3 | 10011 | 130.89
 3 | 10015 | 325.82
 3 | 10016 | 179.22
 4 | 10017 | 419.66
 4 | 10018 | 129.32
(10 rows)

saleco_dw=#
```

Assignment #4 - Walkthrough

ajb254@spselastic1:~

```
cus_fname | character varying(15) |
cus_initial | character(1) |
cus_state | character(2) |
reg_id | integer |
Indexes:
    "dwcustomer_pkey" PRIMARY KEY, btree (cus_code)
Foreign-key constraints:
    "dwcustomer_reg_id_fkey" FOREIGN KEY (reg_id) REFERENCES dwregion(reg_id)

saleco_dw=#
saleco_dw=#
saleco_dw=#
saleco_dw=#
saleco_dw=#
saleco_dw=#
saleco_dw=#
saleco_dw=#
saleco_dw=#
saleco_dw=#
saleco_dw=#
saleco_dw=#
saleco_dw=#
saleco_dw=#
saleco_dw=# SELECT REG_ID, S.CUS_CODE, SUM(SALE_UNITS*SALE_PRICE) AS TOTSALES
saleco_dw=# FROM DWDAWSALESFACT S JOIN DWCUSTOMER C ON S.CUS_CODE = C.CUS_CODE
saleco_dw=# GROUP BY REG_ID, S.CUS_CODE
saleco_dw=# ORDER BY REG_ID, S.CUS_CODE;
 reg_id | cus_code | totsales
-----+-----+-----
      1 |    10012 |    287.91
      1 |    10013 |     64.32
      2 |    10014 |    494.71
      2 |    10019 |     39.95
      3 |    10010 |    180.26
      3 |    10011 |    130.89
      3 |    10015 |    325.82
      3 |    10016 |    179.22
      4 |    10017 |    419.66
      4 |    10018 |    129.32
(10 rows)

saleco_dw=# \q
[ajb254@spselastic1 ~]$
[ajb254@spselastic1 ~]$
[ajb254@spselastic1 ~]$
[ajb254@spselastic1 ~]$
[ajb254@spselastic1 ~]$
```

- Execute this command to disconnect from the database server

Assignment #4 - Deliverables

- Submit your Assignment as a single PDF document
- There are 7 requirements in the assignment
- Capture the screen-shot of ever SQL statement and its output and paste it below every requirement
- You can use your favorite editor (MS-WORD/Text document) to save your work and then generate your PDF document for the word document