Advanced Scripting   
PowerShell for Microsoft SQL Server

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Document Prepared for: CYBER360 Student

# Name Click here to enter name ID Click here to enter id

# Instructions

Answer all questions directly in this document. You will save and upload this completed document as your homework submission.

# Overview

It’s easy to use a Microsoft SQL Server using PowerShell. For this exercise you will connect to the lab network and access an MS SQL server there. You will need an SSH client to connect to the lab.

# Requirements

Internet Access, and an SSH client.

# Setup

Your instructor has created an account for you on the lab “jumpbox” VM at **cit361-lab.cit.byui.edu**. Your **username** is the **mailbox** part of your BYU-I email. (This is the email on the class roster. It is usually the first three letters of your last name followed by five numbers.) Your **password** is your **I-Number**; you are welcome to change your password if you choose.

After you log in, enter **powershell** to launch Windows Powershell (Desktop edition).

# Task 1—Use select queries to read data from a SQL Server

To run a network query against a Microsoft SQL server you need to know three pieces of information:

1. The name of the SQL Server instance: **ms-sql.cit361.com**
2. Username: **ps**
3. Password: **PowerShellRocks!**

*You will not remote into a PowerShell session on the SQL Server host. Instead, you will query the SQL Server from the jumpbox using* **Invoke-Sqlcmd** *cmdlets, as outlined the following steps:*

## Steps

1. Connect to the jumpbox and start Windows PowerShell, as directed above in Setup.  
   Example: if your BYU-I email address is **bar23032@byui.edu** and your SSH client is the built in **ssh** command in Windows or macOS:  
    **ssh bar23032@cit361-lab.cit.byui.edu**   
   Then run **powershell** to ensure you are using Windows PowerShell (Desktop edition).
2. Assign some variables, then use those variables to execute a query:   
      
   $srvr='ms-sql.cit361.com'   
   $user='ps'   
   $pass='PowerShellRocks!'   
   $sql="select \* from metal"   
   Invoke-Sqlcmd -ServerInstance $srvr -Username $user -Password $pass -Query $sql
3. That’s all there is to it!
   1. In your prior study of databases and SQL, you might recall that, in standard SQL, every command must end with a semicolon, (**;**). But notice that the query string above does *not* end with a semicolon. MS-SQL is forgiving, and presumes a semicolon terminator if it’s not there.
   2. Does it matter whether the query string is double quoted or single quoted? Try these queries:   
      1. $sql="select \* from metal where Symbol='Sn'"   
         Does it succeed? If not, what exception does it cause? Click or tap here to enter text.   
            
          $sql='select \* from metal where Symbol="Sn"'   
         Does it succeed? If not, what exception does it cause? Click or tap here to enter text.   
            
         (*Hints: if neither of the above succeeded, then you probably made a typo; check and try again. If both of the above succeeded, then you definitely did it wrong; try again.*)
4. Now try this query, which gets a list of the tables in the database:   
   select name from sys.tables
   1. What tables are in the database? Click or tap here to enter text. (If you don’t see **Metal** among the table names, you probably did it wrong; check and try again. )
5. Now write a SQL select query to read all the records from one of the *other* tables you just found.
   1. Your query: Click or tap here to enter text.
   2. List the column names (field names) of your chosen table: Click or tap here to enter text.

# Task 2—Use other SQL queries to practice writing and reading data

## Steps

1. Since you are each very precious, add a new record for yourself in the gem table! Use your username for the mineral. Make up your own data for the rest of the columns (fields), except for the GID. (The GID is a *primary key* in the database table. SQL Server will automatically assign a new unique value to that column.) *Consult an Internet search engine or generative AI if you need help with this step.*
2. Now write and run a query to retrieve your mineral record that you just created.
   1. What GID was assigned? Click or tap here to enter text.
3. What is the melting point of the alloy *coin silver*? Click or tap here to enter text.

# Wrap-up

Close your SSH session.

# Deliverable

Upload this document with completed answers to I-Learn Canvas.