Advanced Scripting   
Script Security

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Document Prepared for: CIT361 Student

# Name Ryan Skidmore ID 615907798

# Instructions

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

# Overview

In this exercise you will learn how execution policies are used to help protect users from malicious code.

# Requirements

* Windows PowerShell
* Internet connectivity

# Task 1—Viewing the Execution Policy.

The local machine execution policy defines

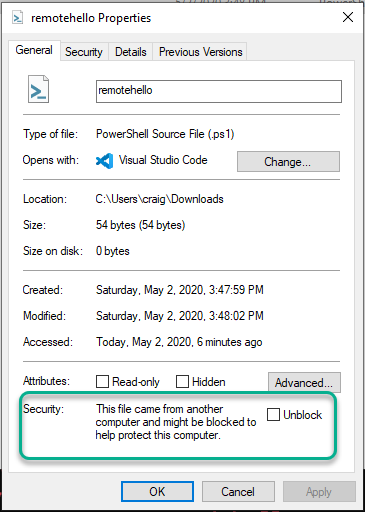
## Steps

1. Enter the command   
   Get-ExecutionPolicy
   1. What is was reported? unrestricted
2. To get a complete list of the execution policies on your machine enter  
   Get-ExecutionPolicy -List
   1. Record each scope’s setting
      1. MachinePolicy undefined
      2. UserPolicy undefined
      3. Process undefined
      4. CurrentUser undefined
      5. LocalMachine unrestricted
3. For a newly installed Windows Machine **Get-ExecutionPolicy** will return Restricted. **Get-ExecutionPolicy -List** will return *Undefined* for all scopes.
   1. What does this tell you about the default policy? Put in place to protect everyday user
   2. Is your computer using the default settings? no
4. Were you able to run your script in the last exercise? yes
5. After viewing your Execution Policy settings explain your results. I was able to run the script as my execution policy on the local machine is unrestricted.

# Task 2—Modifying the Local Machine Scope

Now you will change the policy settings so that you can run scripts on your machine according to your desired preferences. You can set the *Process*, *CurrentUser*, and *LocalMachine* scope with PowerShell. To change the *MachinePolicy* or *UserPolicy*, you need to use a GroupPolicy which is beyond the scope of this class. To modify the LocalMachine policy you must run an elevated PowerShell

## Steps

1. Change the LocalMachine scope to **RemoteSigned**.
   1. Open an elevated PowerShell instance.
   2. Enter the command   
      Set-ExecutionPolicy -ExecutionPolicy RemoteSigned
2. Close PowerShell and then start a new instance of PowerShell. These changes will only effect new instances of PowerShell.
3. To test the policy, you need to download a script from the internet. Using Edge, IE or Chrome download the file <http://cf.esage.com/as/rhello.ps1> and save it to your psfiles/scripts folder. (NOTE: you must save it to that location, if you didn’t use the move command to move it)
4. Make your psfiles/scripts folder your current directory
5. Run the rhello script by entering  
   ./rhello.ps1
   1. What was the result? ./rhello.ps1 : File C:\Users\Derek Ryan\Desktop\School\CIT 361\psfiles\scripts\rhello.ps1 cannot be loaded. The fileC:\Users\Derek Ryan\Desktop\School\CIT 361\psfiles\scripts\rhello.ps1 is not digitally signed. You cannot run thisscript on the current system. For more information about running scripts and setting execution policy, seeabout\_Execution\_Policies at https:/go.microsoft.com/fwlink/?LinkID=135170.At line:1 char:1+ ./rhello.ps1+ ~~~~~~~~~~~~ + CategoryInfo : SecurityError: (:) [], PSSecurityException + FullyQualifiedErrorId : UnauthorizedAccess
6. When you copy a file from a remote system the file gets flagged as coming from another system. PowerShell looks at the source of the file to help decide if it should be allowed to run. If you would like to run it anyway you can either change your Execution Policy or change the files blocking flag. Using file explorer navigate to your psfiles/scripts folder. Right-Click the rhello.ps1 file and look at its properties. You should see something like this.  
   
   1. You can check the **Unblock** checkbox to unblock the file but what is the fun in that when you can do it in PowerShell. You can use the Unblock-File cmdlet to do just that. We will unblock the file in a few steps. Leave it alone for now.

# Task 3—Modifying the Local User Scope

Now you will change the Execution Policy for just your user. Since this change only affects you, you do not need an elevated shell to perform this action.

## Steps

1. Set the LocalUser scope to Unrestricted. Enter the command:  
   Set-ExecutionPolicy -ExecutionPolicy Unrestricted -Scope CurrentUser
2. Test the policy by running it.  
   ./rhello.ps1
3. This time you should see a warning with the option to run the script or not. Press **R** then **Enter** to allow the script to run.
   1. Record the warning message here: Hi class, today is 1/21/2022.

# Task 4—Modifying the Process Scope

You can change the Execution Policy for just the current PowerShell session using the Process Scope.

## Steps

1. Restrict this shells ability to run scripts. Enter the command  
   Set-ExecutionPolicy -ExecutionPolicy Restricted -Scope Process
2. Run the script  
   ./rhello.ps1
   1. Record your result. ./rhello.ps1 : File C:\Users\Derek Ryan\Desktop\School\CIT 361\psfiles\scripts\rhello.ps1 cannot be loaded becauserunning scripts is disabled on this system. For more information, see about\_Execution\_Policies athttps:/go.microsoft.com/fwlink/?LinkID=135170.At line:1 char:1+ ./rhello.ps1+ ~~~~~~~~~~~~ + CategoryInfo : SecurityError: (:) [], PSSecurityException + FullyQualifiedErrorId : UnauthorizedAccess
3. Now set the Process Scope to Bypass. Enter:  
   Set-ExecutionPolicy -ExecutionPolicy Bypass -Scope Process
   1. What was the result? Hi class, today is 1/21/2022.
   2. How does this result differ from Unrestricted? You don’t have to give it permission to run.

# Task 5—Removing Scopes.

## Steps

1. To get a complete list of the execution policies on your machine enter  
   Get-ExecutionPolicy -List
   1. Record each scope’s setting
      1. MachinePolicy undefined
      2. UserPolicy undefined
      3. Process bypass
      4. CurrentUser unrestricted
      5. LocalMachine remotesigned
   2. Without closing your current PowerShell, open a new PowerShell instance and record the execution policy settings.
      1. MachinePolicy undefined
      2. UserPolicy undefined
      3. Process undefined
      4. CurrentUser unrestricted
      5. LocalMachine remoteSigned
2. What can you infer about Process settings from this information? Process settings are window based
3. From the new shell, remove the Current User’s setting by entering  
   Set-ExecutionPolicy -ExecutionPolicy Undefined -Scope CurrentUser
4. Try to run the script. What is your result? ./rhello.ps1 : File C:\Users\Derek Ryan\Desktop\School\CIT 361\psfiles\scripts\rhello.ps1 cannot be loaded. The fileC:\Users\Derek Ryan\Desktop\School\CIT 361\psfiles\scripts\rhello.ps1 is not digitally signed. You cannot run thisscript on the current system. For more information about running scripts and setting execution policy, seeabout\_Execution\_Policies at https:/go.microsoft.com/fwlink/?LinkID=135170.At line:1 char:1+ ./rhello.ps1+ ~~~~~~~~~~~~ + CategoryInfo : SecurityError: (:) [], PSSecurityException + FullyQualifiedErrorId : UnauthorizedAccess
5. Compare both shells settings, are they the same? No.

# Task 6—Unblocking a file

## Steps

1. To make sure we are still on the same page close all PowerShell instances. Next, open a new one.
2. Make **psfiles\scripts** your current folder.
3. Run the script again. It should be blocked. If not, go back through the exercises and see what you did wrong. Your settings should be LocalMachine is **RemotedSigned** with all others **Undefined**.
4. Now unblock the script. Enter the command:  
   Unblock-File .\rhello.ps1
5. Run the file again. What is the result? Hi class, today is 1/21/2022.

# Wrap-up

Set your Execution-Policy scopes to values you feel comfortable with. Record your results here:

1. MachinePolicy undefined
2. UserPolicy undefined
3. Process undefined
4. CurrentUser undefined
5. LocalMachine remoteSigned

# Deliverable

Upload this document with completed answers to i-learn.