

Udacity Cybersecurity Course #1 Project

Contents

Student Information	2
Scenario	3
1. Reconnaissance	4
2. Securing the PC	6
3. Securing Access	8
4. Securing Applications	10
5. Securing Files and Folders	13
6. Basic Computer Forensics (Advanced)	14
7. Project Completion	15

Learning Objectives:

- Explain security fundamentals including core security principles, critical security controls, and cybersecurity best practices.
- Evaluate specific security techniques used to administer a system that meets industry standards and core controls
- Assess high-level risks, vulnerabilities and attack vectors of a sample system
- Explain methods for establishing and maintaining the security of a network, computing environment, and application.

Student Information

Student Name: saleh Abdullah alshehri

Date of completion:

Scenario

Congratulations!

You have been hired to secure the PC used at your friend's business: Joe's Auto Body. Joe provides car repair services throughout the tri-state area. He's had previous employees use it for activities un-related to work (e.g., web browsing, personal email, social media, games, etc.) and he now uses it to store his critical business information. He suspects that others may have broken into it and may be using it to transfer files across the internet. He has asked that you secure it for him according to industry best practices, so it can be once again used as a standard PC.

You will be given access to a virtual image of Joe's Auto Body's PC. It's a copy of the actual computer operating system in use that will be transferred to Joe's computer once you are done.

This template provides you with the high-level steps you'll need to take as part of securing a typical computer system. For each step, use the virtual Windows 10 PC to answer the questions and challenges listed in this project. You'll also need to explain how you got the answers and provide screenshots showing your work.

It's important that you read through the entire document before securing the system and completing this report.

To start, you need to login to the virtual PC. You can use Joe's account using the user-id and password below. You may also use any other account on the PC.

Account Name: JoesAuto

Password: @UdacityLearning#1

1. Reconnaissance

The first step in securing any system is to know what it is, what's on it, what it's used for and who uses it. That's the concept of systems reconnaissance and asset inventory. In this step, you'll document the hardware, software, user access, system and security services on the PC.

Complete each section below.

Hardware

1. *Fill in the following table with system information for Joe's PC.*

Device Name	JoesGaragePc
Processor	Intel ® xeon ® platinum 8272CL CPU
Install RAM	4 GB
System Type	64-BIT
Windows Edition	WINDOWS 10 PRO
Version	20H2
Installed on	11/23/2021
OS build	19042.1387

2. *Explain how you found this information:*

I right click the "start window" after that I click the system button

3. *Provide a screenshot showing this information about Joe's PC:*

About

Device specifications

Device name	JoesGaragePC
Processor	Intel(R) Xeon(R) Platinum 8272CL CPU @ 2.60GHz 2.59 GHz
Installed RAM	4.00 GB
Device ID	E5C64EC4-3404-4D29-8CE1-72C6EF2E1932
Product ID	00331-10000-00001-AA949
System type	64-bit operating system, x64-based processor
Pen and touch	No pen or touch input is available for this display

Copy

Rename this PC

Windows specifications

Edition	Windows 10 Pro
Version	20H2
Installed on	11/23/2021
OS build	19042.1387
Experience	Windows Feature Experience Pack 120.2212.3920.0

Copy

Software

Another common early step in securing is taking an inventory of software or applications installed on a computer system. These are programs outside of the standard operating system.

1. *List at least 5 installed applications on Joe's computer:*
 - 7-Zip
 - Adobe
 - Candy crush friends
 - Cortana
 - Fam heroes friends
2. *Explain how you found this information. Provide screenshots showing this information.*

I right click the "start window" after that I click the apps and features button

3. *The Center for Internet Security Controls lists this as one of their steps for security. Which step does this fulfill? Control of software assets*

Apps & features

Apps & features

Optional features

App execution aliases

Search, sort, and filter by drive. If you would like to uninstall or move an app, select it from the list.

Sort by: Name ▾

Filter by: All drives ▾

25 apps found

	7-Zip 19.00 (x64)	4.96 MB 11/23/2021
	Adobe Reader XI (11.0.01)	128 MB 5/11/2020
	Candy Crush Friends king.com	226 MB 11/23/2021
	Cortana Microsoft Corporation	8.00 KB 11/23/2021
	Farm Heroes Saga king.com	259 MB 11/16/2021

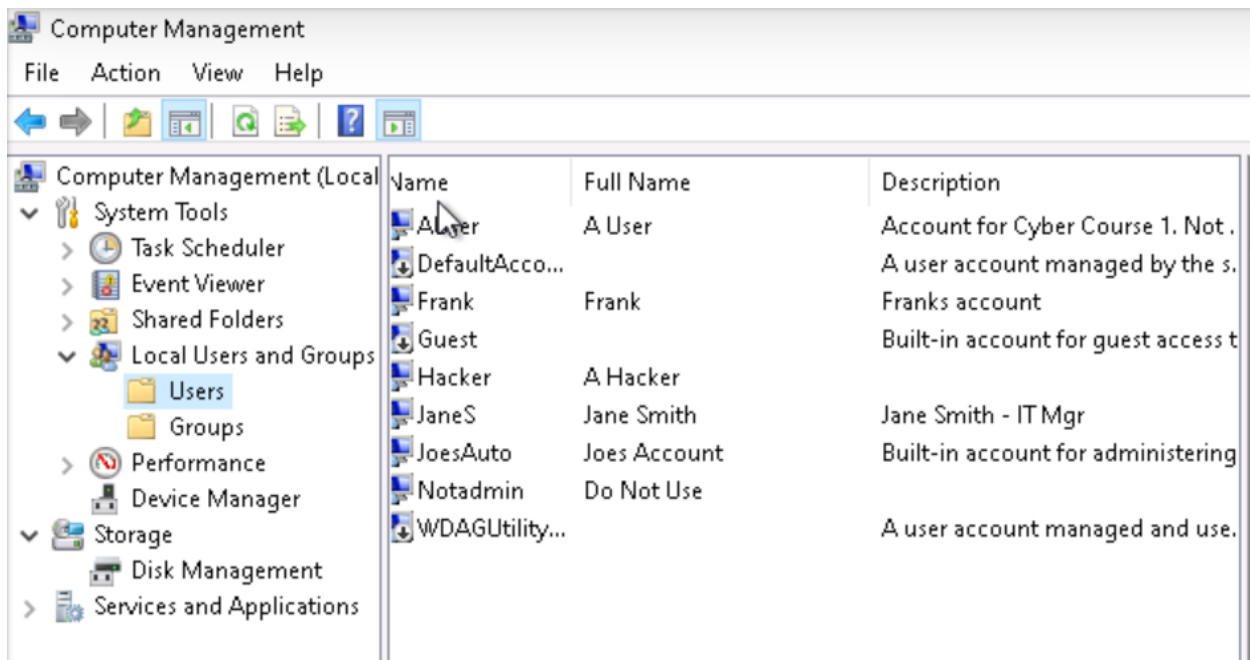
Accounts

As part of your security assessment, you should know the user accounts that may access the PC.

1. List the names of the accounts found on Joe's PC and their access level.

Account Name	Full Name	Access Level
A User	A User	Standard
DefaultAccount		
Frank	Frank	Standard
Guest		
Hacker	A Hacker	Administrator
JaneS	Jane Smith	Administrator
JoesAuto	Joes Account	Administrator
Notadmin	Do Not Use	Standard
WDAGUtilityAccount		

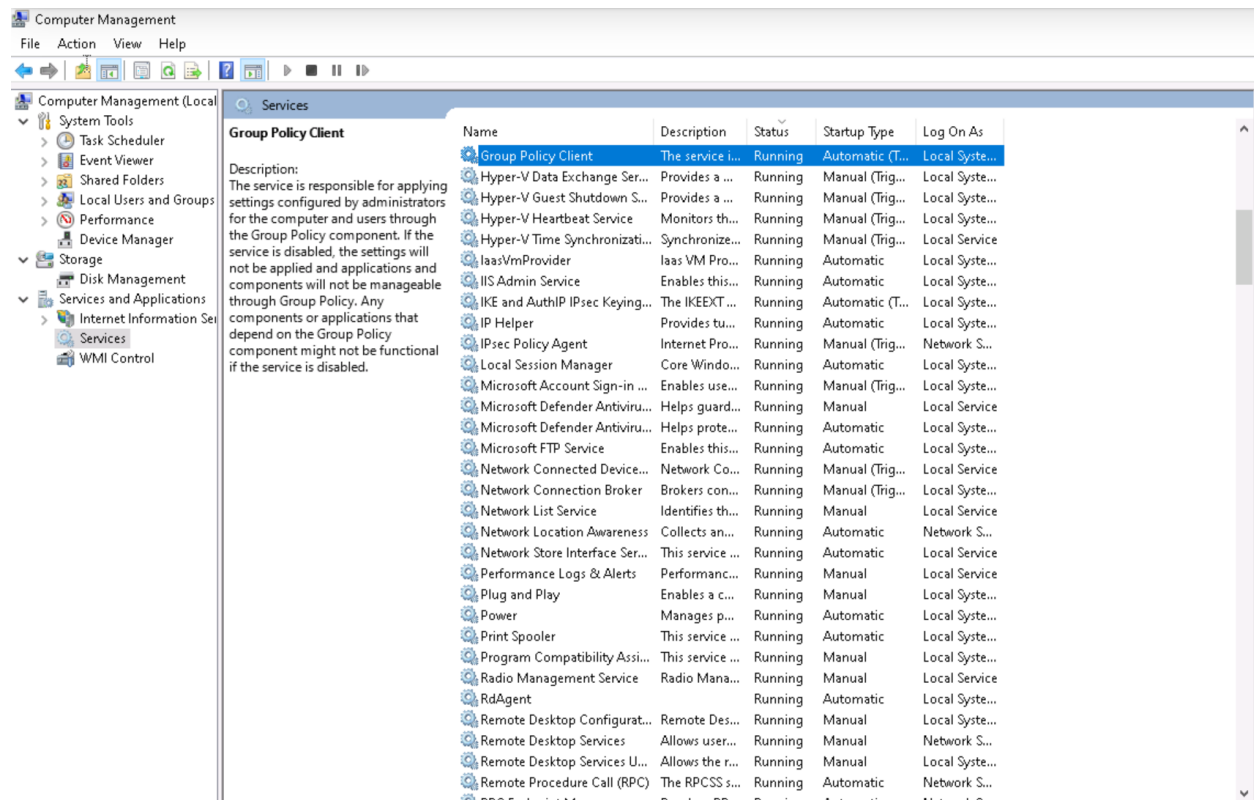
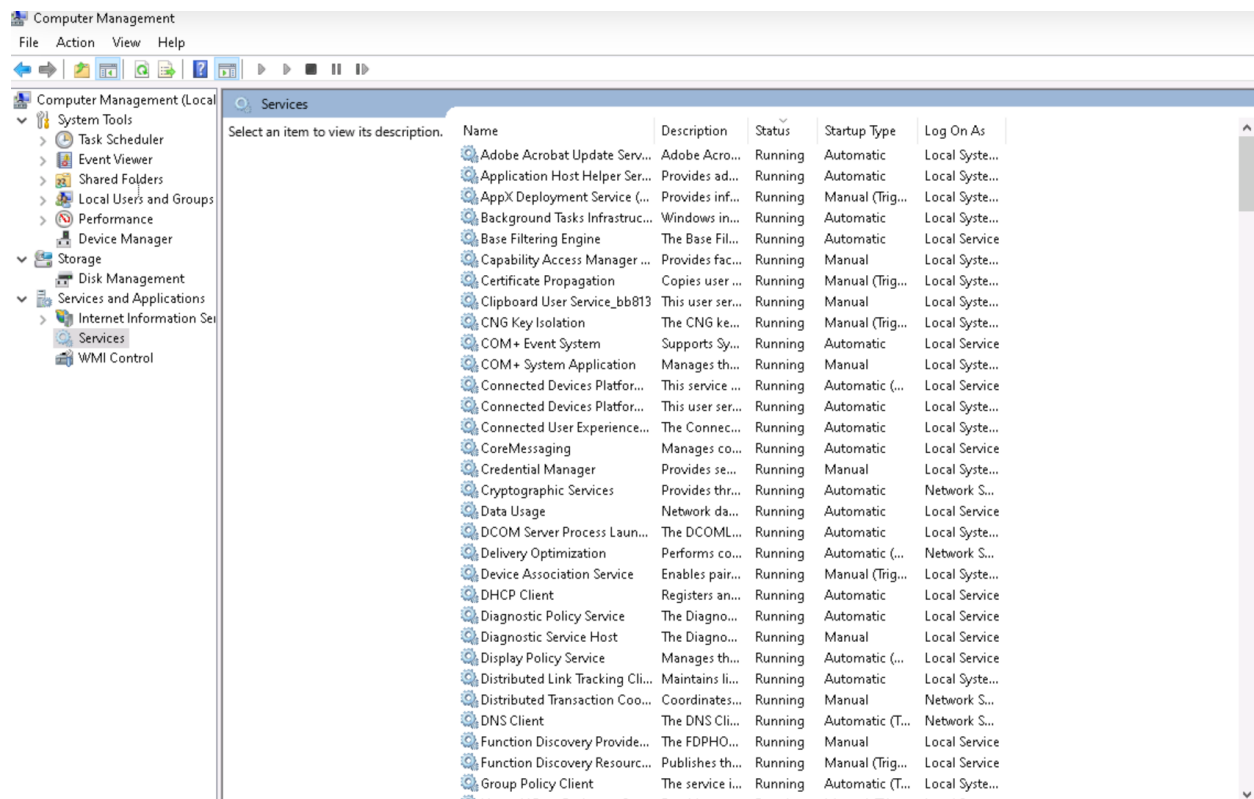
2. Provide a screenshot of the Local Users.

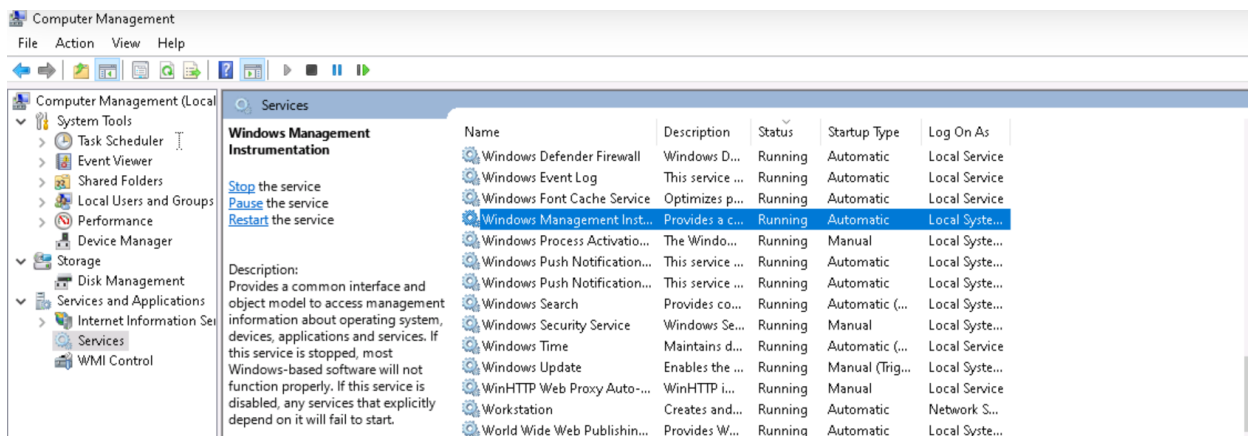
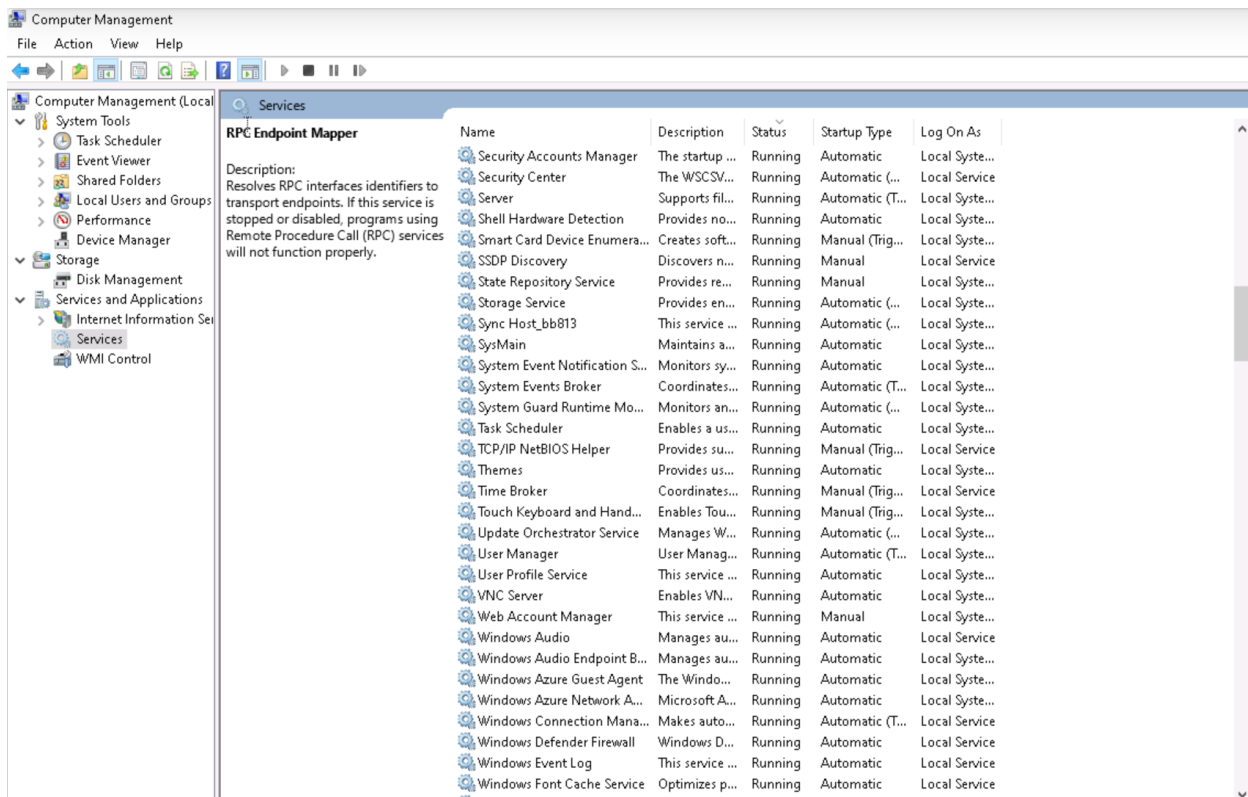


Services

Services are applications often running in the background. Most of them provide needed functionality for the PC. Some may also be used to violate security policies.

1. Provide a screenshot of the services running on this PC.



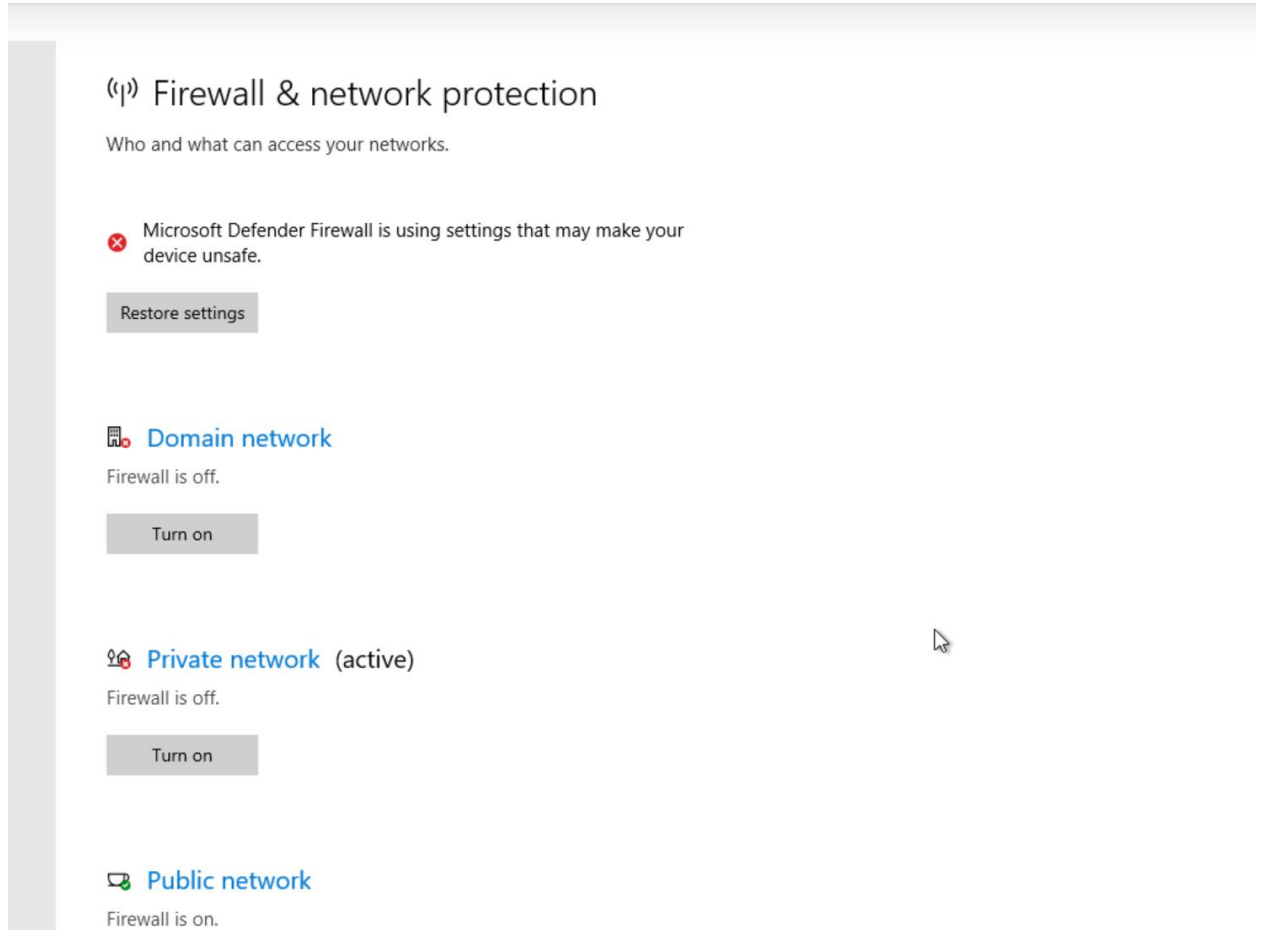


Security Services

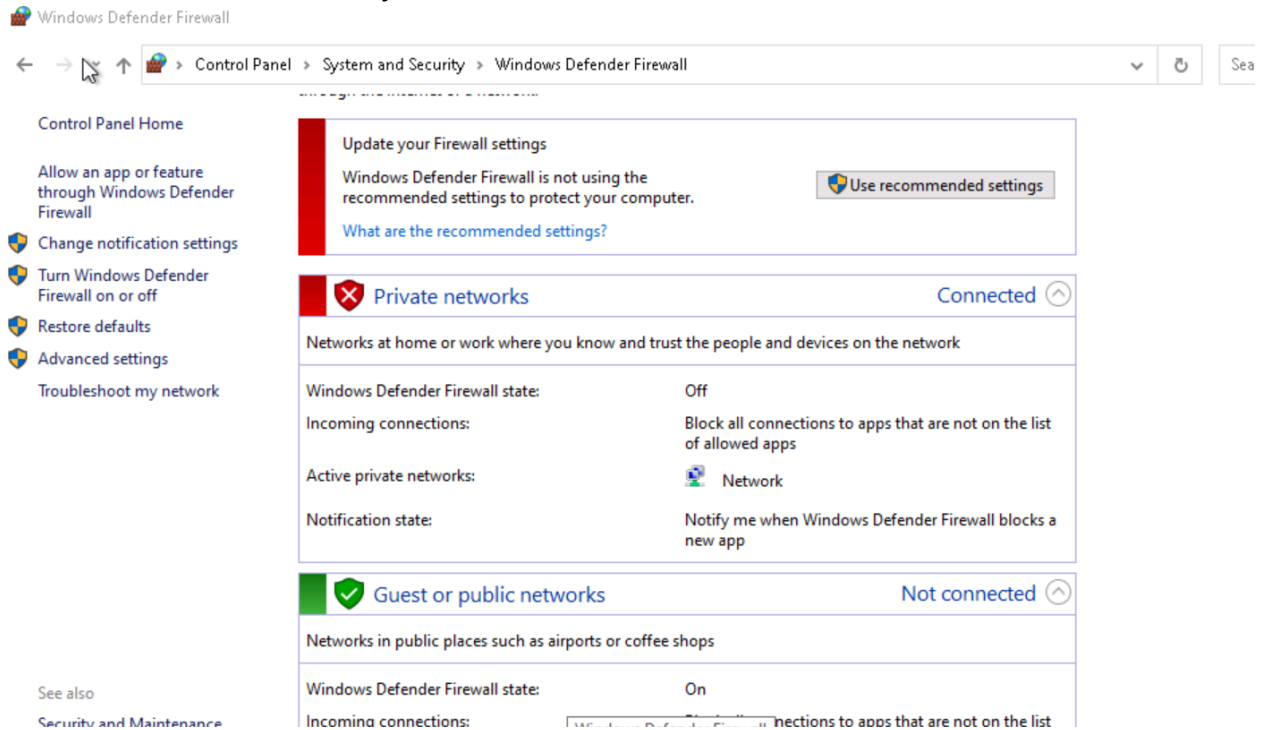
Joe wants to ensure that standard security services are running on his PC. He's content with using default Windows security settings and applications except for the rules outlined later. **Reminder that at this point you are just reporting what you observe. Do not make any changes to security settings yet.**

1. To view a summary of security on Windows 10, start from the **Control Panel**. Use the "Find a setting" bar and search on Windows Defender. You can also search for Windows Defender using the Windows Run bar. Take a screenshot of what you see on the Windows Security screen and include it here:

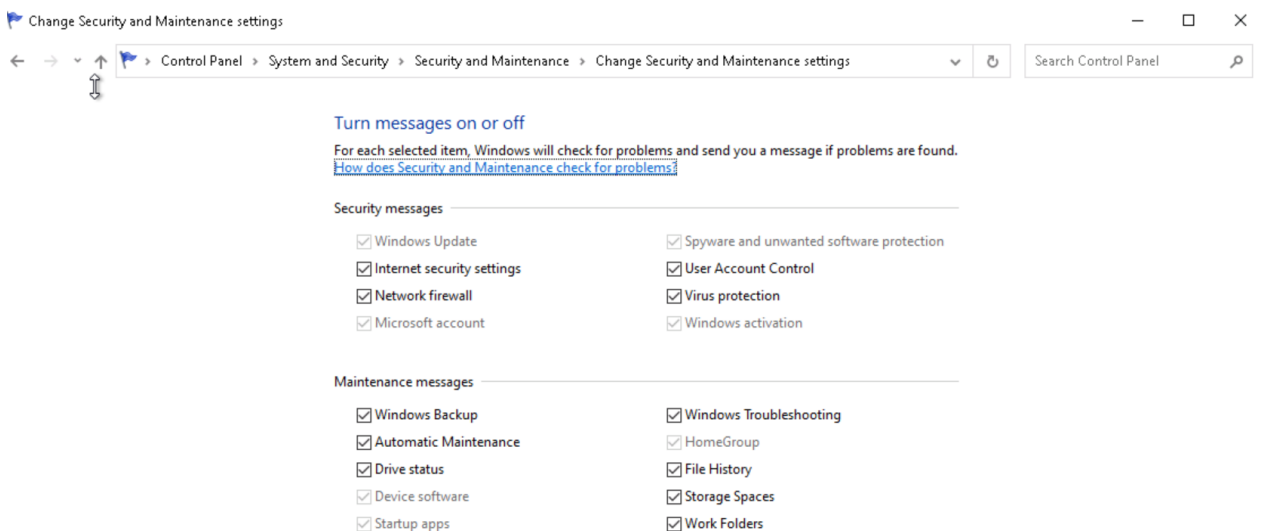
2. The Windows 10 Security settings are also found from the **Control Panel > System and Security > Security and Maintenance**. Start by viewing **“Review your computer’s status and resolve issues.”** Provide a screenshot of this below:
3. Click on View in Windows Security to see the status there. Provide a screenshot of the **Firewall** settings.



4. From the **Control Panel**, go to **System and Security**. In that window, select **Windows Defender Firewall**. Provide a screenshot of it here:



5. PC users should be notified whenever there is a security or maintenance message. In the **Security & Maintenance** window, click on **Change Security and Maintenance settings** and take a screenshot. Paste it here:



6. Document the status of the PC's security settings listed below. Include the process you used to determine this information along with any screenshots. At this point, you are only documenting what you find. Do not make changes (yet).

Security Feature	Status
Firewall product and status – Private network	Off

Firewall product and status – Public network	On
Virus protection product and status	on
Internet Security messages	Windows defender firewall is not using the recommended settings to protect your computer
Network firewall messages	Firewall are turned off your device may be vulnerable
Virus protection messages	Set up oneDrive for file recovery options in case of a ransomware attack.
User Account Control Setting	Never notify

7. *Now that you are familiar with the security settings on Joe's PC, explain at least three vulnerabilities and risks with these settings. In other words, what can happen to Joe's PC if these are not changed?*

[Hint: Refer to the CIS Controls document for ideas.]

Np proper monitoring, unsecure configuration of network devices , no proper monitoring

2. Securing the PC

System and Security

At this point, you need to enable security services for this PC. Pick at least 3 of the following 5 areas to secure in order to satisfactorily meeting the project requirements:

- Firewall
- Virus & Threat Protection
- App & Browser Control
- User Account Control settings
- Securing Removable Media

Firewall

You need to ensure the Windows Firewall is enabled for all network access.

1. *Explain the process you take to do this.*
2. *Include screenshots showing the firewall is turned on.*
3. *What protection does this provide?*

Virus & Threat Protection

You need to ensure the Windows Defender anti-virus is enabled to always protect against current threats. It should be set to automatically update and continually scan the PC for malicious software. Note: Ignore any alerts about setting up OneDrive.

1. *Explain the process you take to do this.*
2. *Include screenshots to confirm that anti-virus is enabled.*

Once you determine that virus & threat protection is on and updated, you need to turn on messages about the Network firewall and Virus protection. Refer to the instructions above for viewing the settings within Security and Maintenance, Review recent messages and resolve problems.

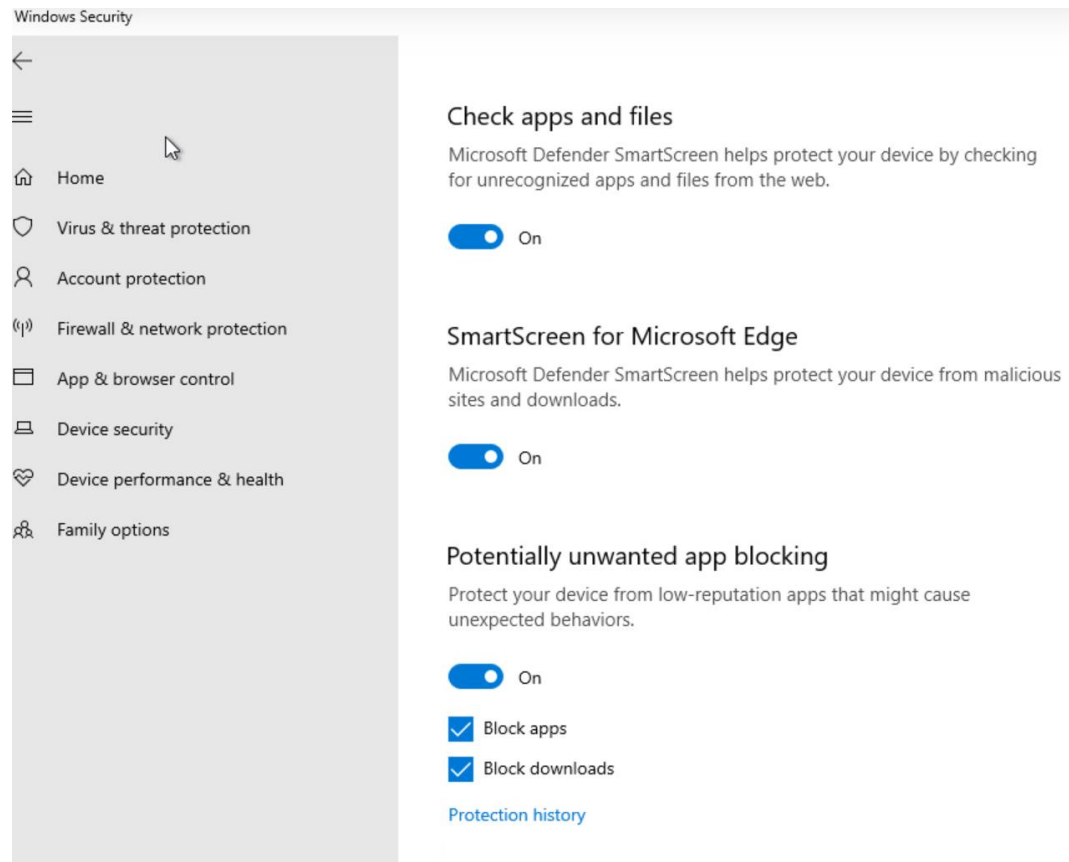
1. *Turn on the Network firewall and Virus protection messages using Change Security and Maintenance Settings.*
2. *Show a screenshot here of them enabled.*
3. *Provide at least two risks mitigated by enabling these security settings:*
 -
 -
4. *From the CIS baseline controls, provide the controls satisfied by completing this.*

App & Browser Control

The App protection within Windows Defender helps to protect your device by checking for unrecognized apps and files and from malicious sites and downloads. Review the settings found within the *Account protection window*, and *App & browser control windows* found on the *Windows Defender Security page*.

Advanced students: You should also review the settings on the Exploit protection page.

1. *Change the settings to provide **maximum** protection for Joe's PC and provide a screenshot of your results.*



SmartScreen for Microsoft Store apps

Microsoft Defender SmartScreen protects your device by checking web content that Microsoft Store apps use.

☒ On

User Account Control Settings

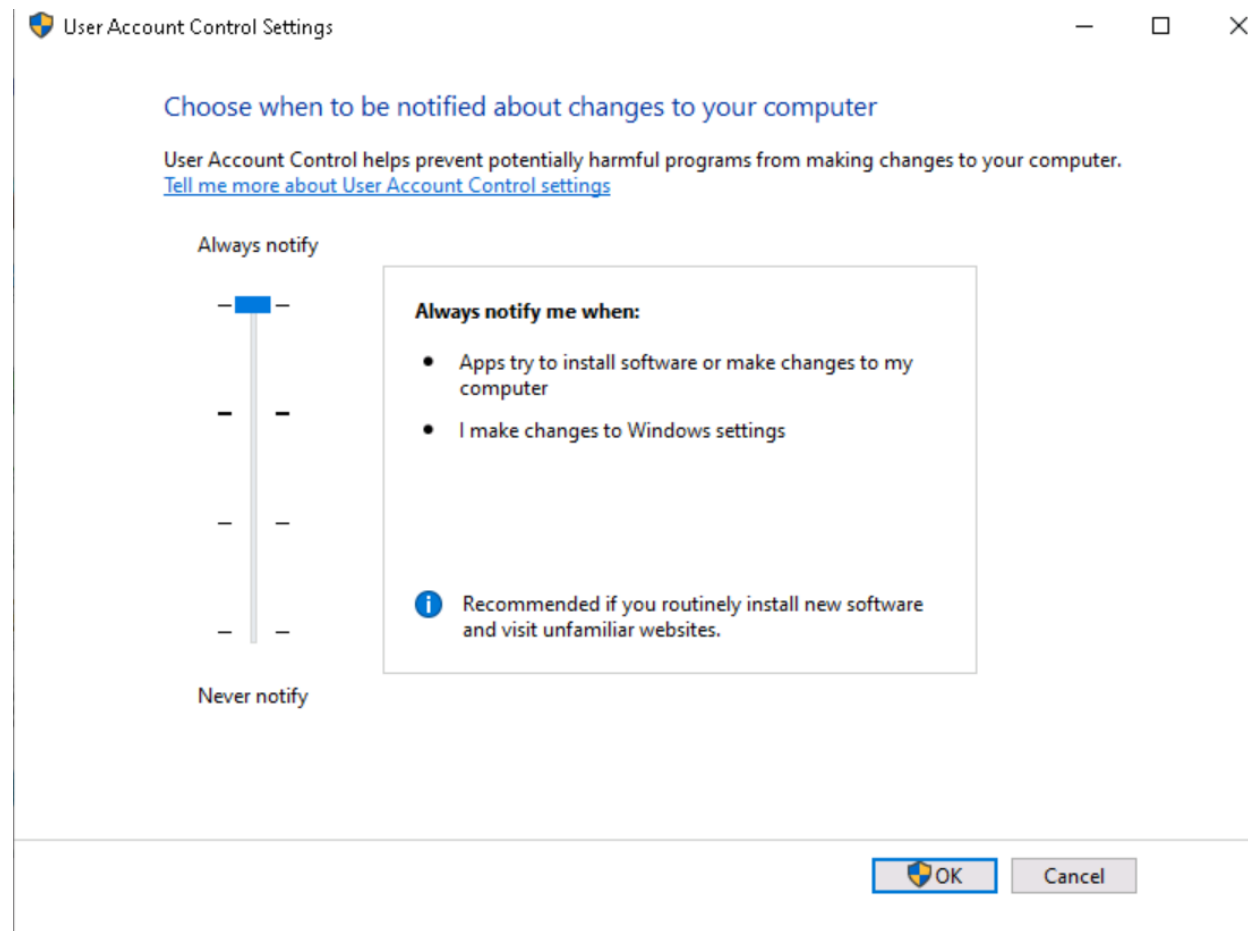
Joe wants to prevent potentially harmful programs from making changes and wants to be notified whenever apps try to make changes to his computer. This is done through the User Account Control Setting.

1. *What is the current UAC setting on Joe's computer?*

This is available from the above security settings.
never notify

2. What should it be set to? Include a screenshot of the new setting.

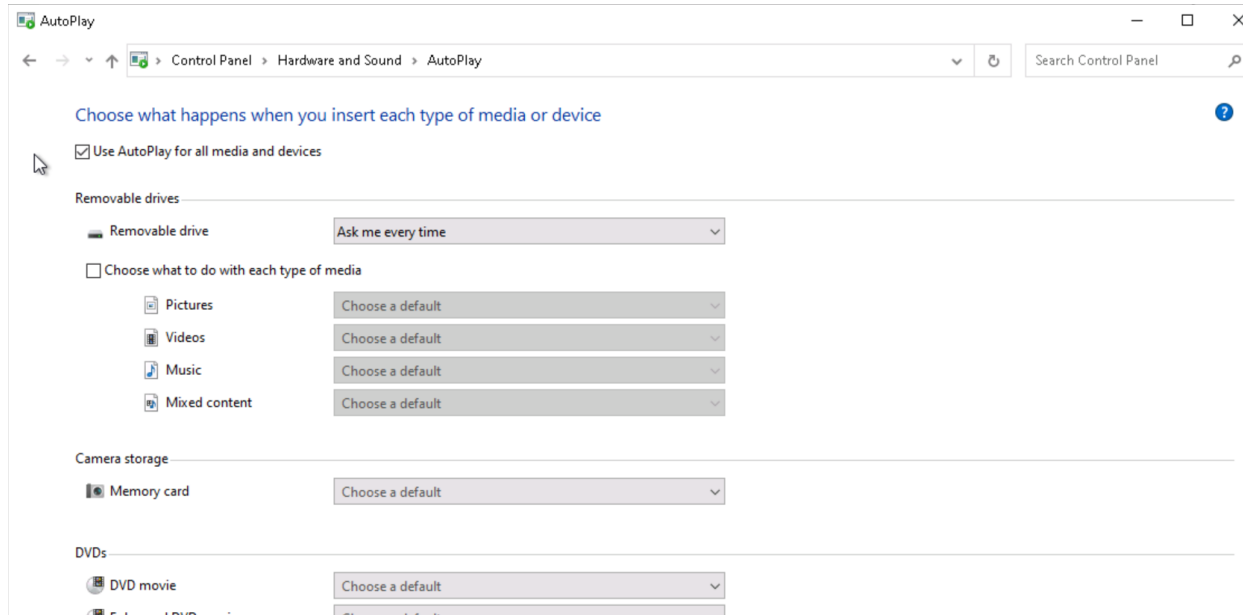
Always notify



Securing Removable Media

A security best practice is to not allow the use of removable hard drives (USB sticks, Memory Cards, and DVDs). They are needed as part of Joe's backup policy. The next best thing is to make sure that any applications don't automatically start when the media is inserted and the user is asked what should happen. This is set from the Control Panel > Hardware and Sound > Autoplay menu.

1. On Joe's computer, go to that function and deselect "Use AutoPlay for all media and devices."
2. For the Removable Drive, make the default, "Ask me every time." Include a screenshot of your results.



3. Securing Access

Ensuring only specific people have access on a computer system is a common step in information security. It starts by understanding who should have access and the rules or policies that need to be followed.

On Joe's computer, only the following accounts should be in use:

- JoesAuto
- Jane Smith (Joe's assistant)
- A User - Used for exercises (Not used in this project)
- Notadmin - Built-in administrator account (Not used for this project)
- Windows built-in accounts: Guest, DefaultAccount, and WDAGUtility (Not used for this project)

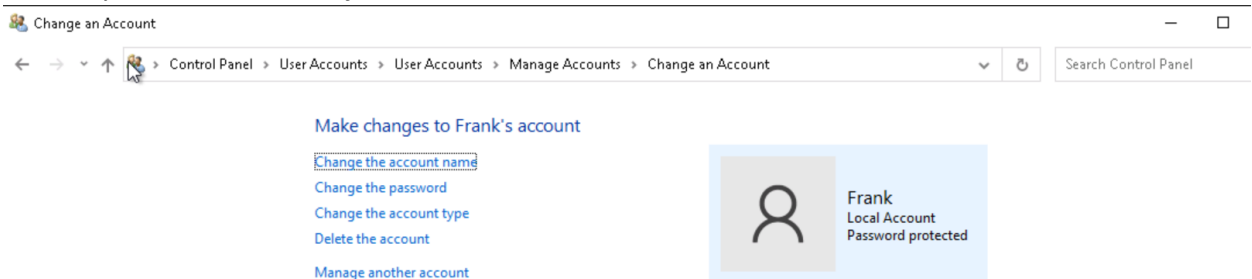
Joe's Auto Access Rules:

- Only JoesAuto and A User should have administrative privileges on this PC.
- Joe wants to prevent potentially harmful programs from making changes and wants to be notified whenever apps try to make changes to his computer.
- All valid users should have a password following Joe's password policy below
 - At least 8 characters
 - Complexity enabled
 - Changed every 120 days
 - Cannot be the same as the previous 5 passwords
- Account should be automatically disabled after 5 unsuccessful login attempts. The account should be locked for 15 minutes and then should automatically unlock.
- Upon first logging into the PC, Joe wants a warning banner letting anyone using to know that this is to only be used for work at Joe's Auto Body shop by authorized people.

- There is to be no remote access to this computer.

User Accounts

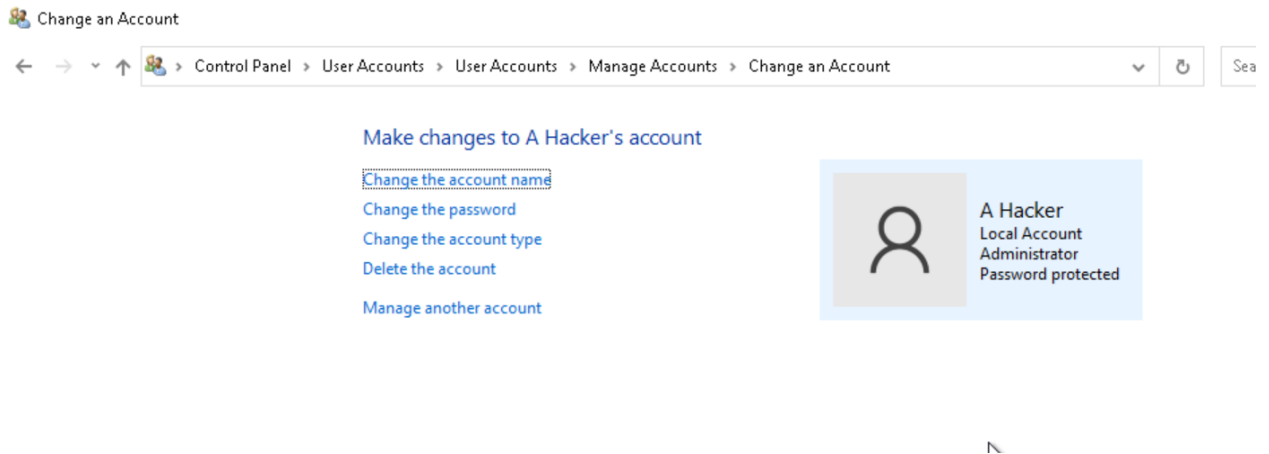
1. *What user accounts should not be there? Frank and hacker*
2. *Bonus questions: What is Hacker's password?*
3. *Explain the steps you take to disable or remove unwanted accounts. Write in search bar "control panel" and then click "user accounts" button after that "manage accounts" now chose the account you want to delete after click "delete the account"*



4. *Why is it important to disable or remove unneeded accounts from a PC or application? Include potential vulnerabilities and risks. Because I will know and make sure who can access to the pc and use it.*

Only specific accounts should have administrator privileges. This reduces the ability for unwanted applications to be installed including malware.

5. Which account(s) have administrator rights that shouldn't? Hacker
6. Explain how you determined this. Provide screenshots as needed. Because as joes rules he do not want Hacker to have account and he is administrator



Administrator privileges for too many users are another security challenge.

7. Provide at least three risks associated with users having administrator rights on a PC.
 - access all the assets in the pc
 - remove and download software
 - create and delete user account

Now you need to remove administrator privileges for any user(s) that should have it.

8. *Explain the process for doing this. Include screenshots to show your work. Write in search bar "control panel" and then click "user accounts" button after that "manage accounts" now chose the account you want remove the administrator privilege after that click "change account type"*

And then choose the type "standard"



9. *What is the security principle behind this? minimum privilege to account access*

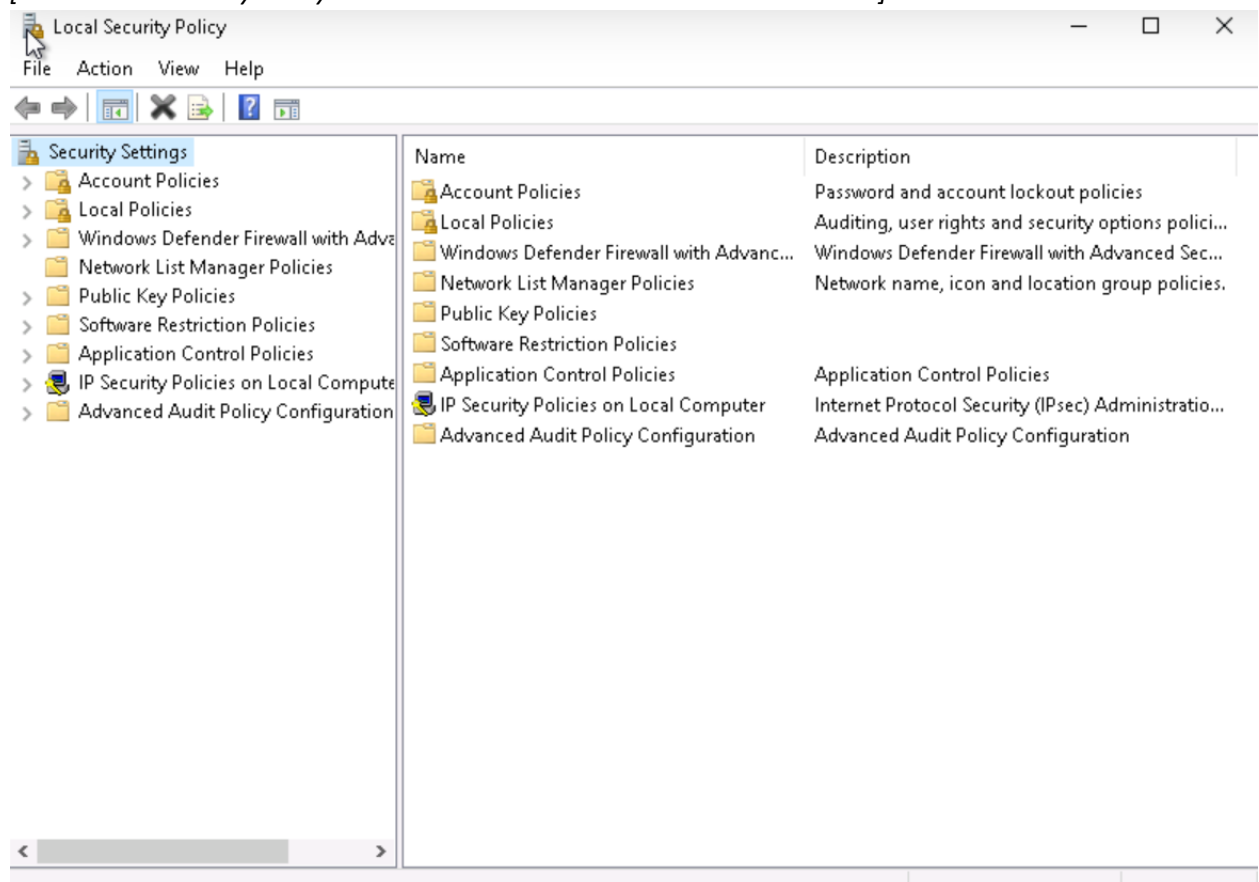
10. The Center for Internet Security Controls lists this as one of their steps for security. Which step does this fulfill? *Control of Administrative Privileges*

Setting Access and Authentication Policies

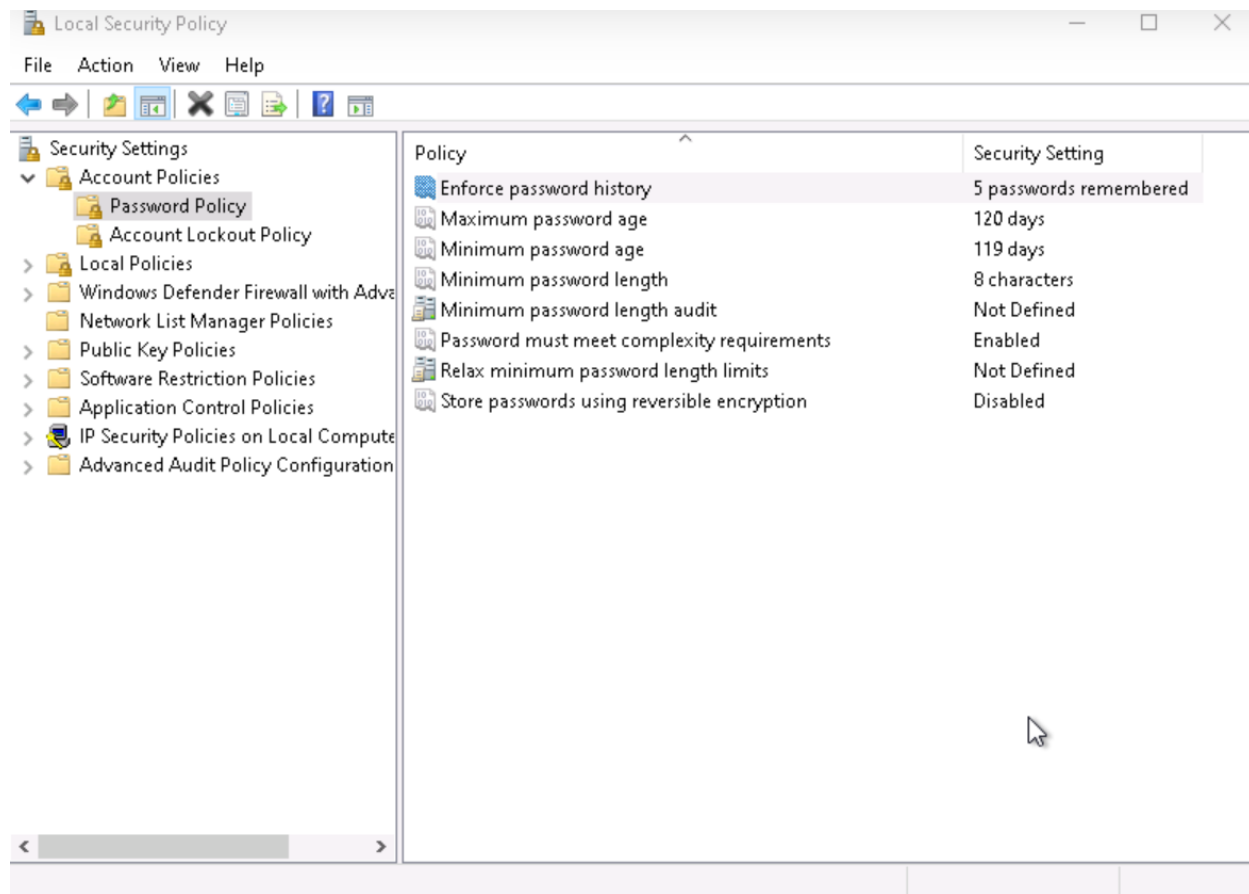
After you talked with Joe about security, he has asked that the access rules outlined above be in place on his PC. These are set using the Local Security Policy function in Windows 10. On the Windows search bar, type “*Local Security Policy*” to access it. Click the > arrow next to both “*Account Policies*” and “*Local Policies*” and review their contents.

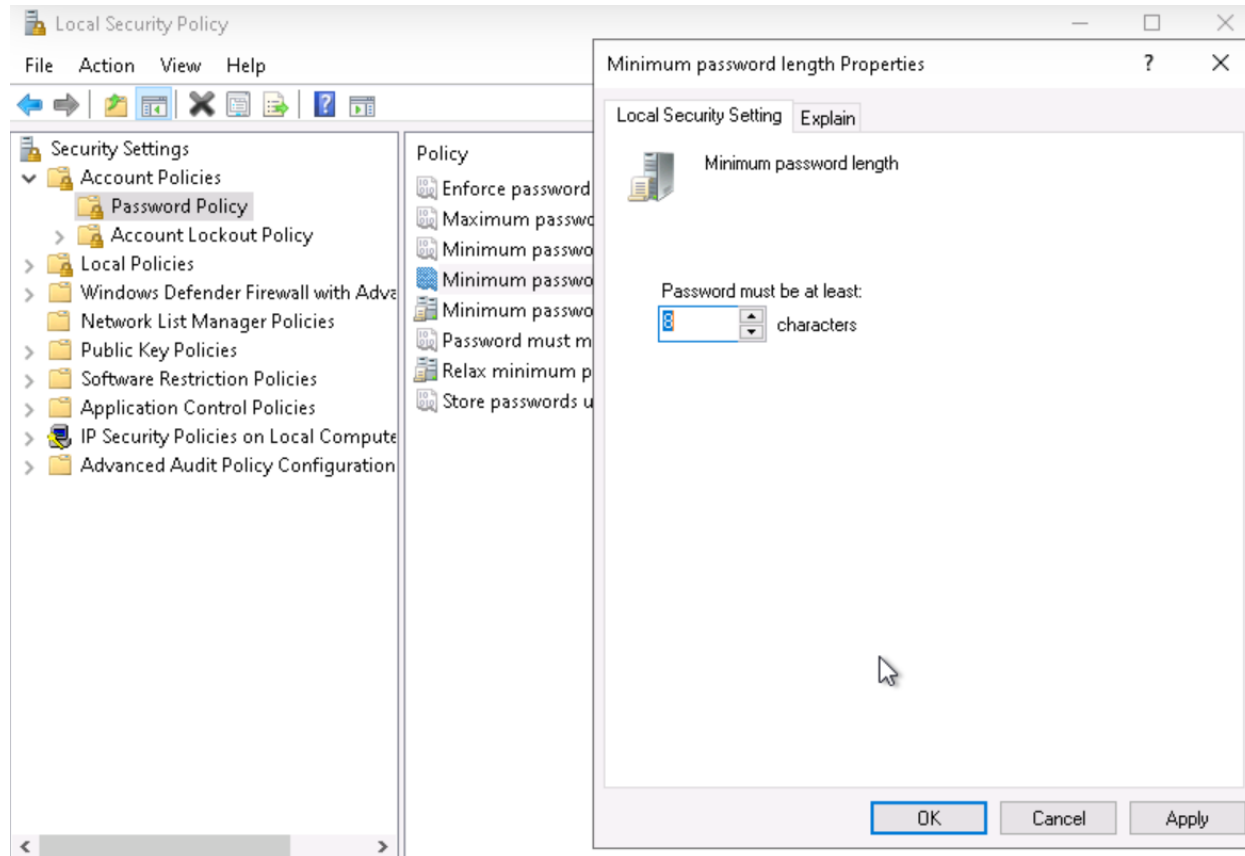
1. Provide a screenshot of the Local Security Policy window here.

[Note: Local Security Policy is not available on Windows 10 Home edition.]



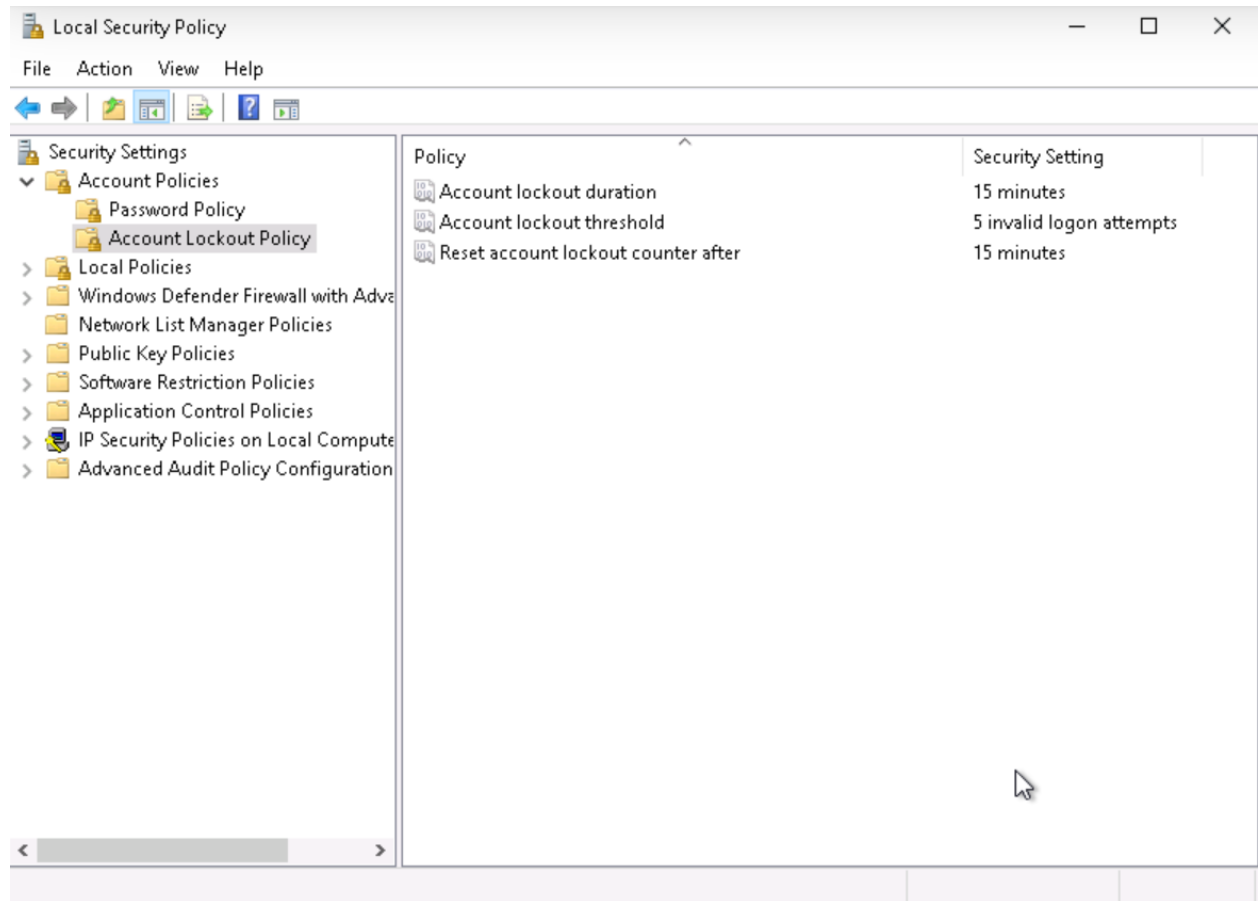
2. Explain the process for setting the password and access control policies locally on a Windows 10 PC. Provide screenshots showing how you set the rules on the PC.
- Setting the Password Policy:

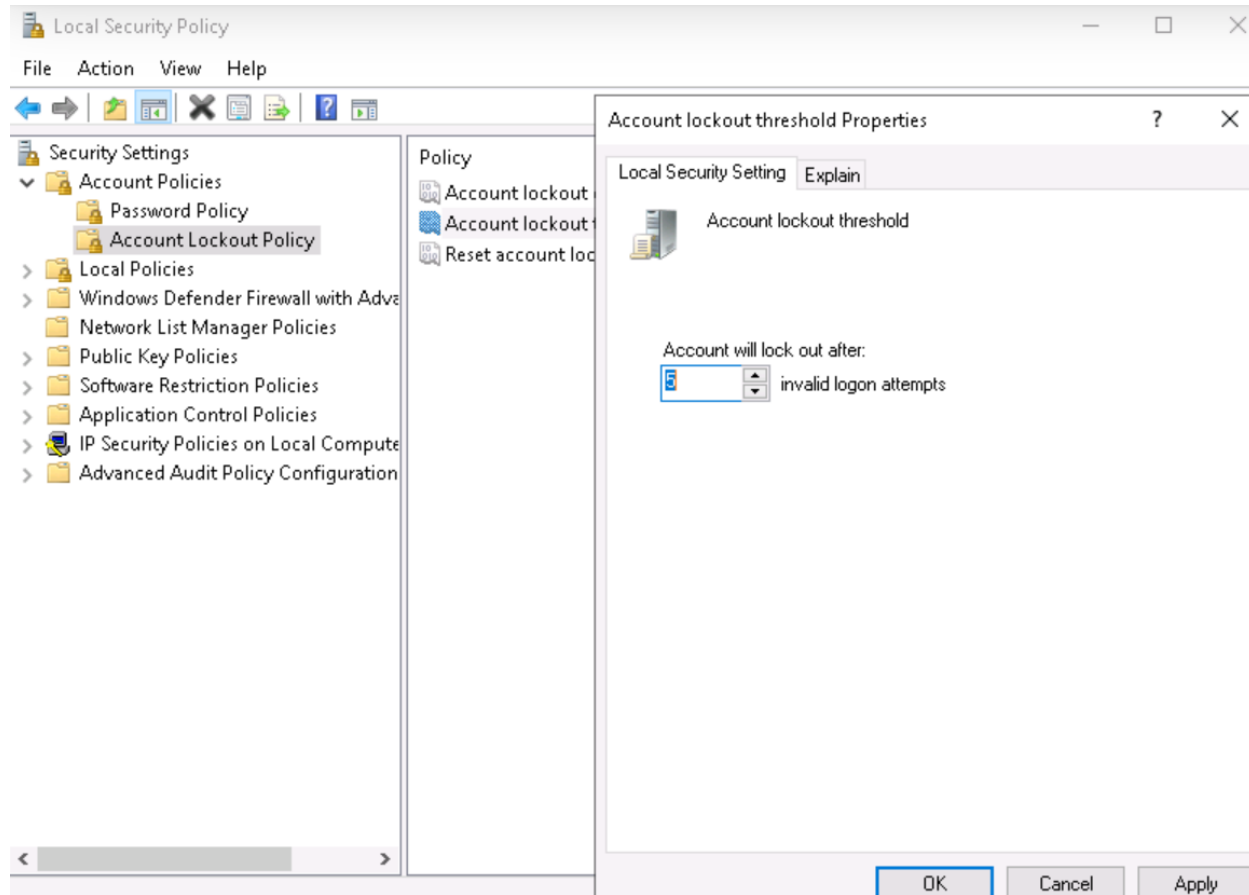




Go search bar write “local security policy” click it after click “account policy” after click “password policy” for example click “minimum password length “ now u can change the password minimum length

- Setting the Account Lockout Policy:



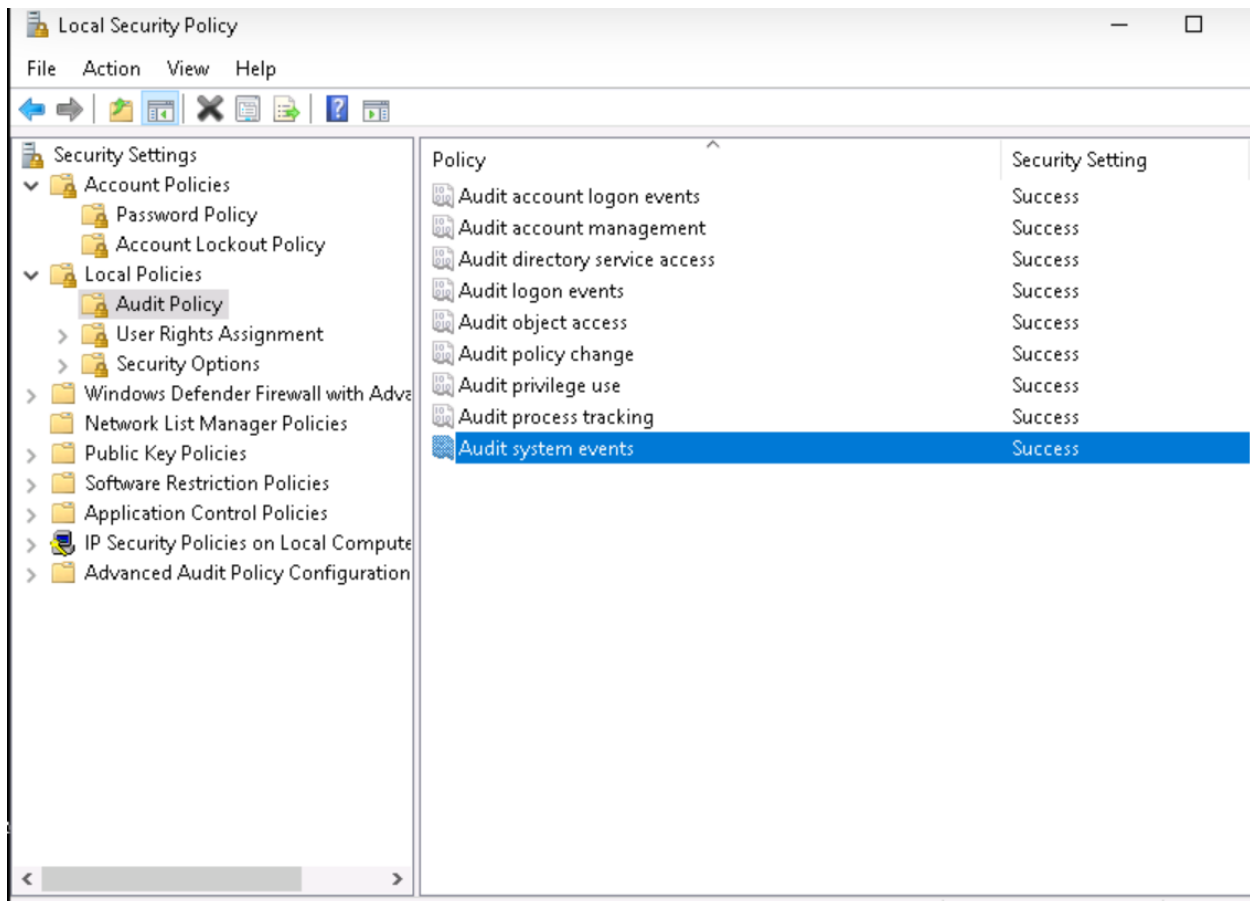


Go search bar write “local security policy” click it after click “account policy” after click “account lockout policy” for example click “account lockout threshold “ now u can change the invalid logon attempts

Auditing and Logging

Security best practices like those found in the CIS Controls or NIST Cybersecurity Framework require systems to log events. You need to enable the Audit Policy for Joe’s PC to meet these standards.

1. From the Local Security Policy window, select Audit Policy and make applicable changes to Joe’s PC to enable minimal logging of logon, account, privilege use and policy changes.
2. Provide a screenshot of your changes here.



4. Securing Applications

As part of the inventory process, you determined computer programs or applications on the PC. The next step is to decide which ones are needed for business and which ones should be removed. Unneeded programs could be vulnerable to attacks and allow unauthorized access into the computer. They also consume system resources and could also violate licensing agreements.

Joe has established the following rules regarding PC applications:

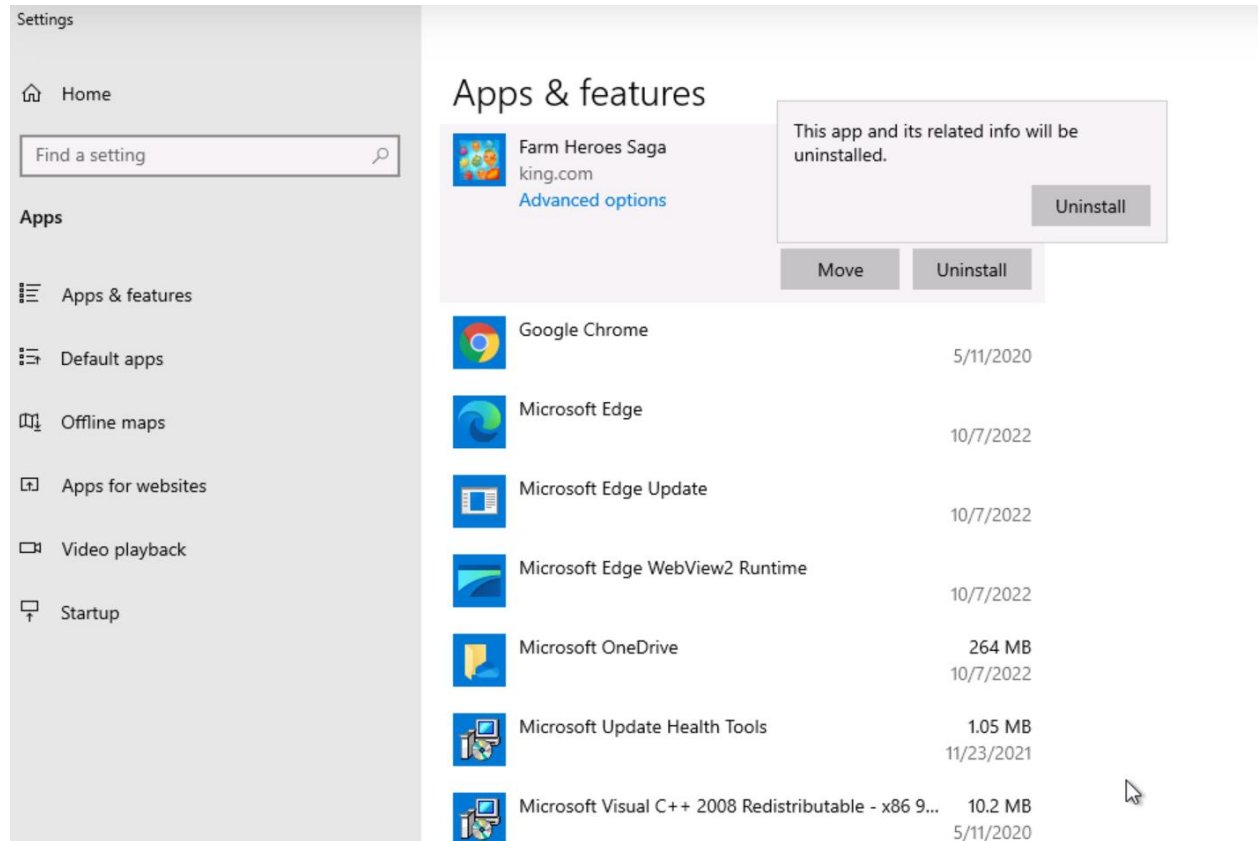
- Joe wants everyone to use the latest version of the Chrome browser by default.
- There should be no games or non-work-related applications installed or downloaded.
- Joe is also concerned that there are “hacking” programs downloaded or installed on the PC that should be removed.
- This PC is used for standard office functions. The auto-body has a separate service they use for their website and to transfer files from their suppliers.

Remove unneeded or unwanted applications

1. *List at least three application(s) that violate this policy.*
 - *Candy crush friends*
 - *Farm heroes sage*
 - *Nmap*

2. Name at least three vulnerabilities, threats or risks with having unnecessary applications:
 - You do not need game in business pc that will make the employees not focus
 - Scan in your networks
 - Collect assets
3. Joe wants you to make sure unneeded applications or programs are no longer on the PC. Explain the steps you take to disable or remove them. Include screenshots to show your work.

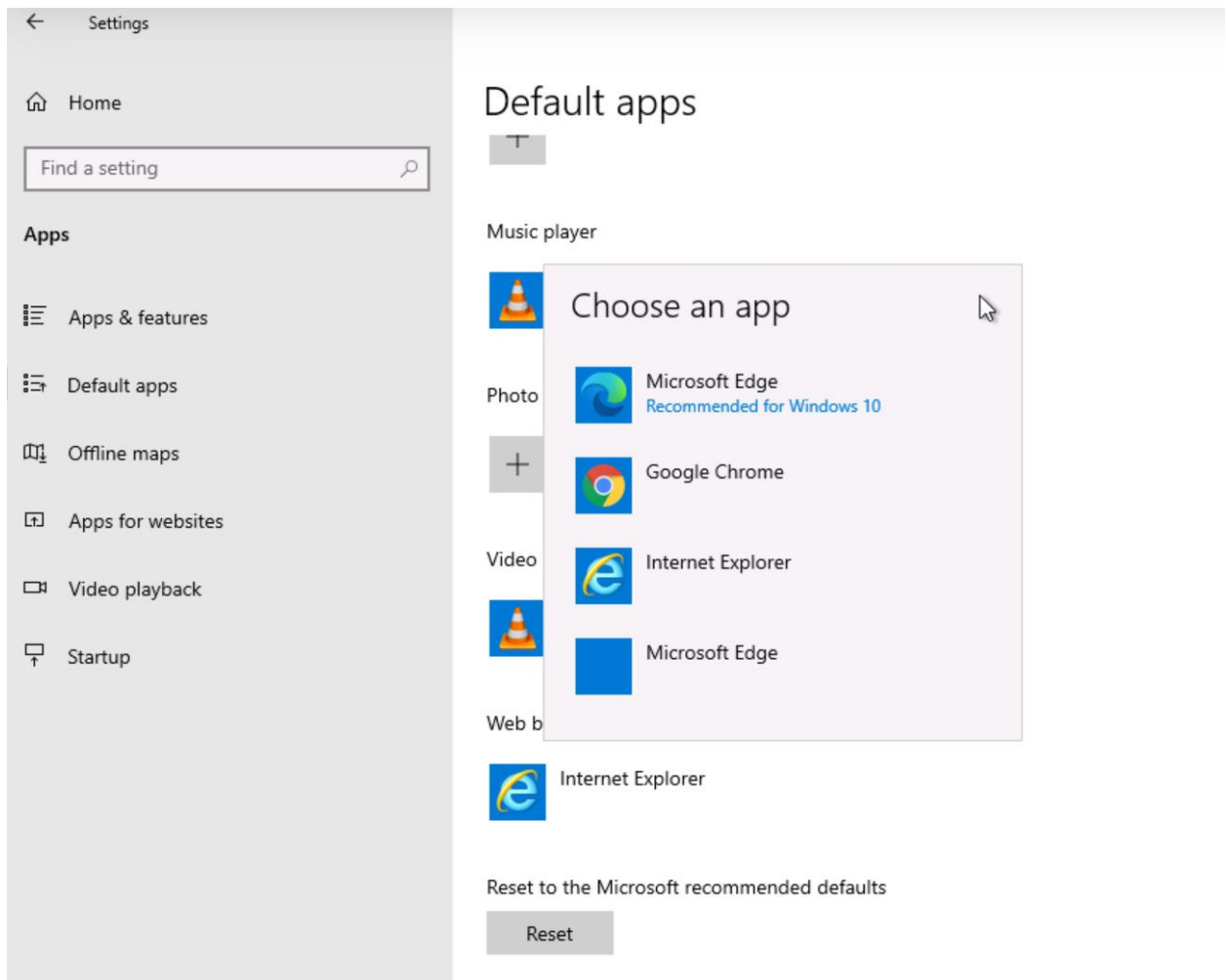
Right click in “windows start” after click “app&features” choose the apps you want to delete after click “uninstall”



Default Browser

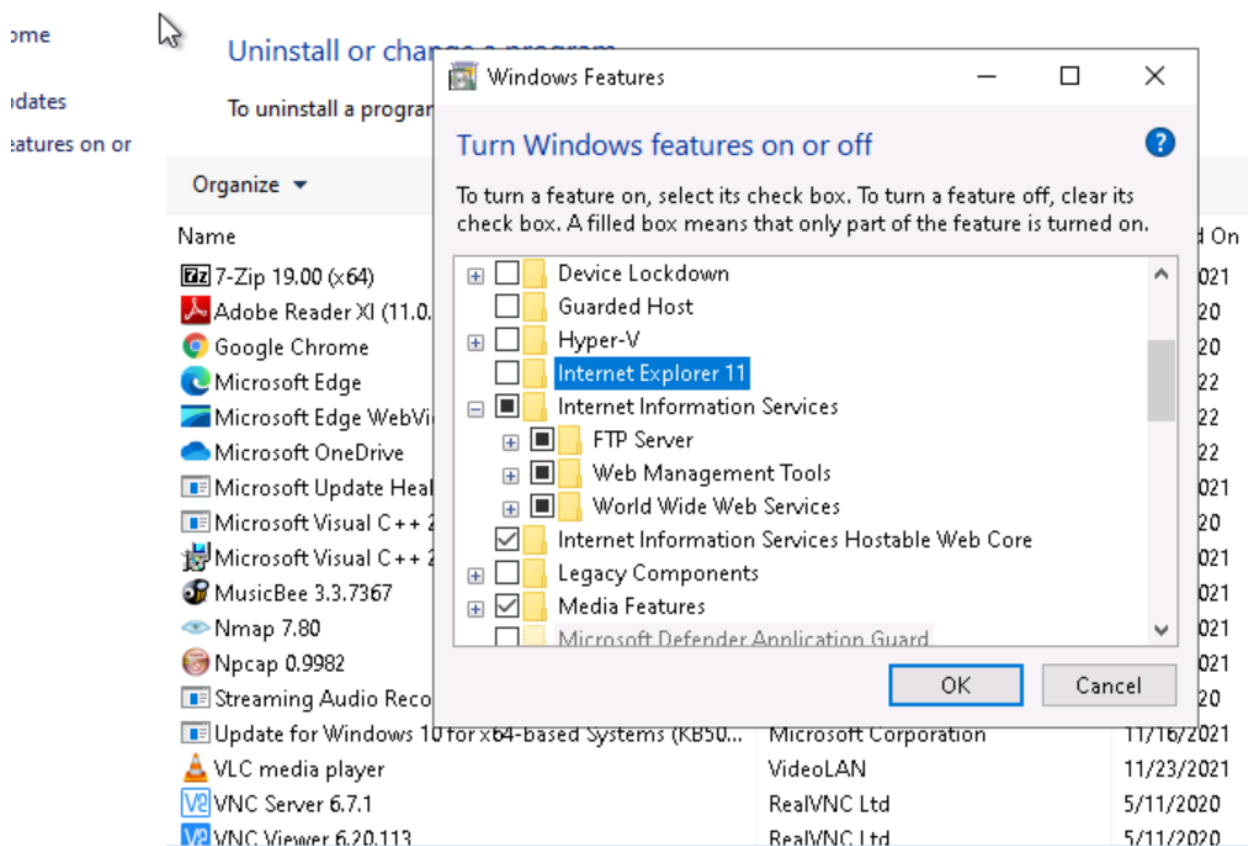
As mentioned in the policy, Joe wants all users to use Chrome as their browser by default.

1. Explain how you set default applications within the Windows 10 operating system. Include screenshots as necessary. Click “windows start” button after click “sittings “ after click “apps” after click “default apps” for example web browser change it to google chrome

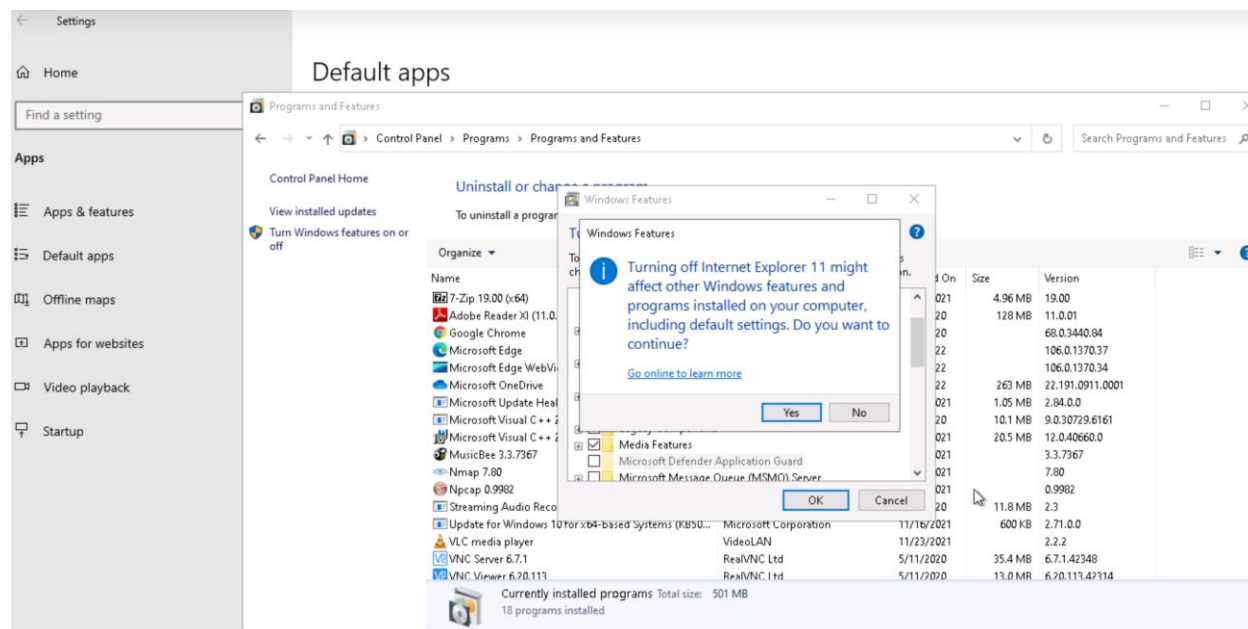


2. *Why should Internet Explorer be disabled from Windows PCs? Provide at least two risks or vulnerabilities associated with it.*
- Lack of support
 - Frequent vulnerabilities

Because of the reasons you give above, Internet Explorer should be removed. To do that, go to the



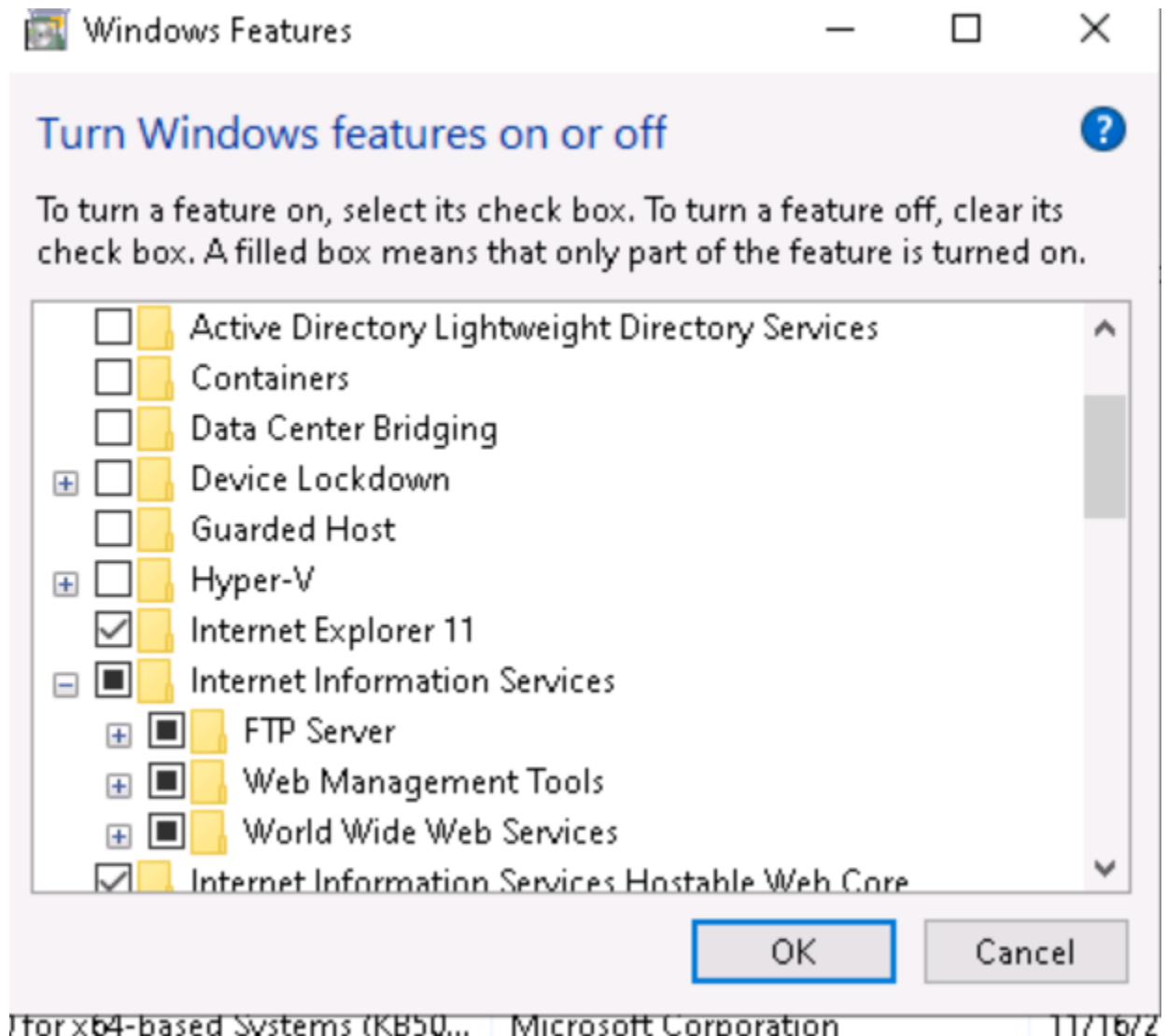
3. Provide a screenshot showing Internet Explorer 11 is off.



Windows Services

There are Windows features running on Joe's computer that could allow unwanted activity or files. He suspects that someone may have used the PC as a web server in the past. Joe wants you to confirm if web services are turned on, stop it if it is and make sure it is not running whenever the computer restarts.

1. How did you determine these services were running? Include screenshots to show how you found them.



2. Advanced users should provide at least two methods for determining a web server is running on a host
3. How do you disable them and make sure they are not restarted?
"Control panel" after click "programs" after click "programs and features" choose the internet information system after that turn off

Click Advanced Users: The File Transfer Protocol FTP service is also running on this PC and shouldn't. Explain the process for disabling it and ensuring it is not automatically restarted.

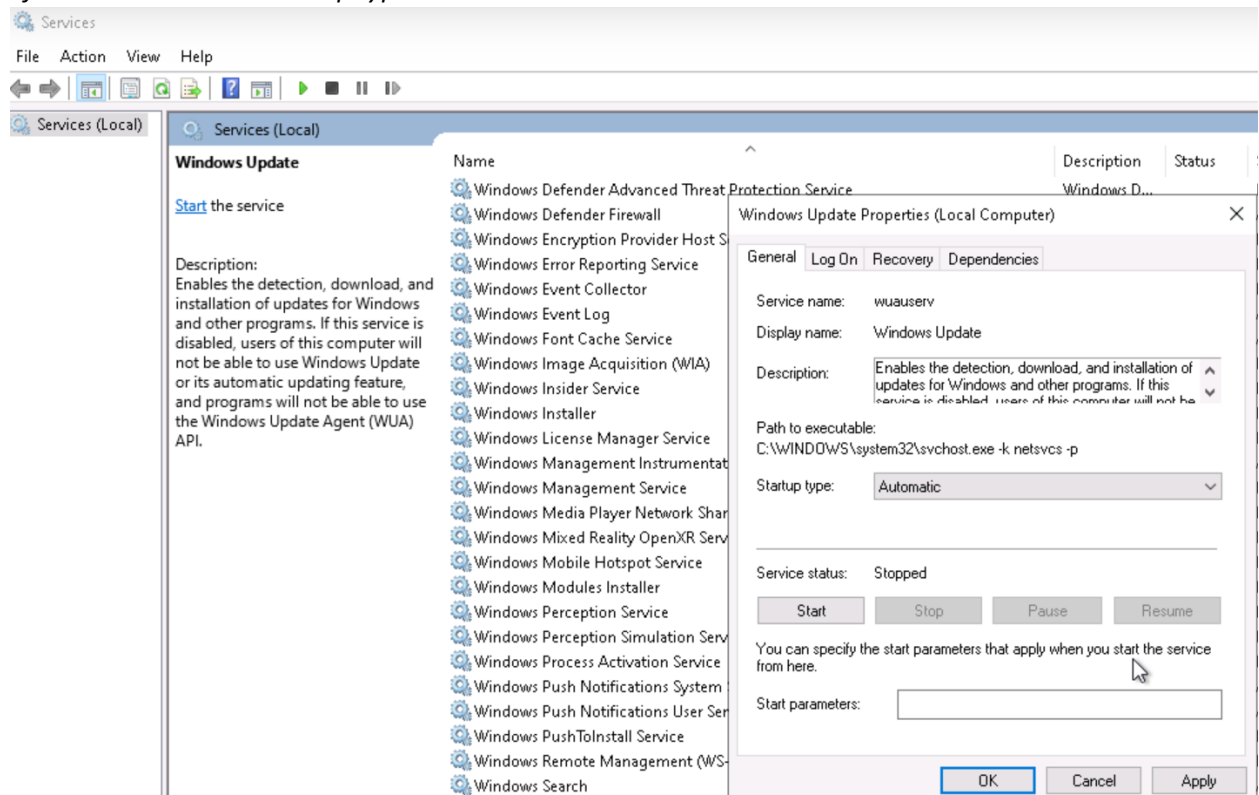
Patching and Updates

Keeping the operating system current on patches and fixes is a critical part of security. Joe wants his PC to be on the latest version of Windows 10. He also wants you to set it up for automated updates.

1. Explain the process for doing this. Include screenshots as needed.

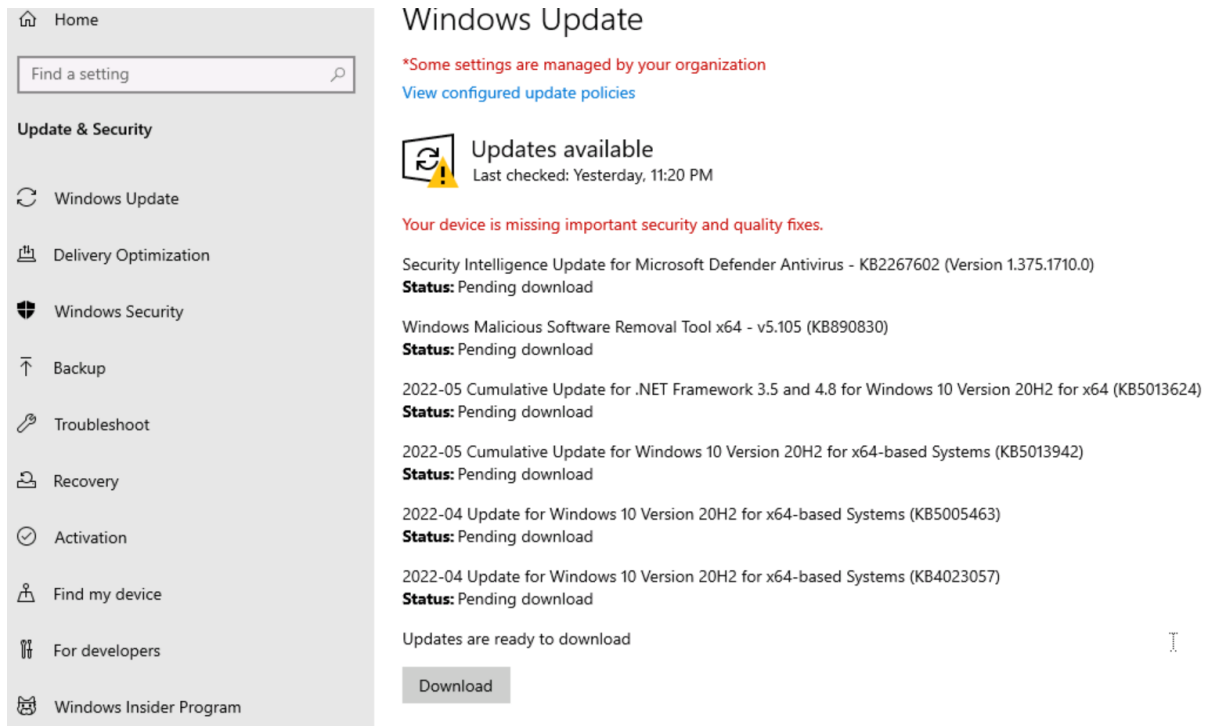
For turn on windows automates updates:

Go for search bar write “services “and click it after that search for “windows updates” and click it after that choose the startup type “Automatic”



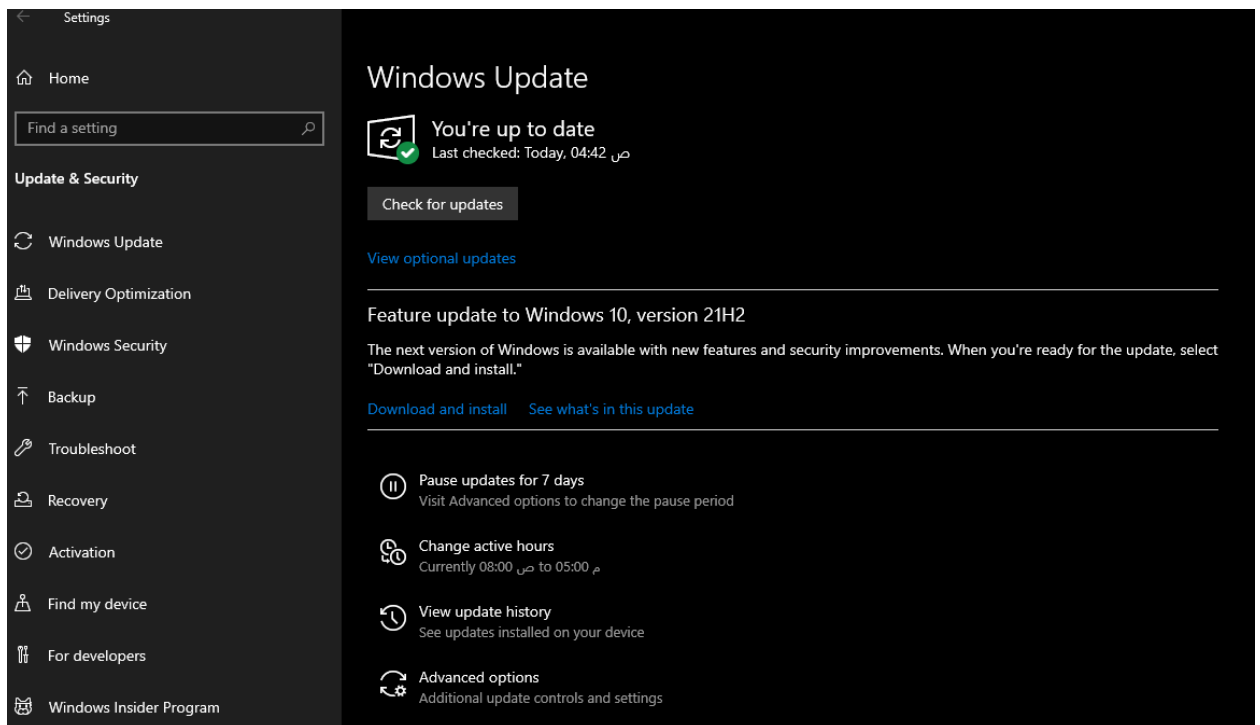
For update the system :

Go for “window start” after click “settings” after click “update & security” after click “download”



2. Go ahead and update this PC to the latest version. Warning this may take a while and require numerous restarts. When it is complete, provide a screenshot showing the PC is on the latest version.

Did not work for me in VM so I did it in my own pc

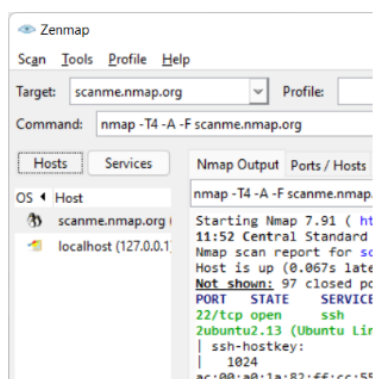


All applications should also be up to date on patches or fixes provided by the manufacturer. Any old versions of software should be uninstalled.

3. *List at least two applications on Joe's PC that are out of date. List them below:*
 - nmap
 - musicBee
4. *Explain the steps you took to determine this information.*
Windows start button after that click settings after that app after apps & features now u can see the app with date and version
5. *Explain the steps for updating each of these applications. Include screenshots as needed.*

For nmap : you can download the last version by visiting
<https://nmap.org/download.html#windows>

Microsoft Windows binaries



Please read the [Windows section](#) of the Install Guide for limitations and installation instructions for the Windows version of Nmap. It's provided as an executable self-installer which includes Nmap's dependencies and the Zenmap GUI. We support Nmap on Windows 7 and newer, as well as Windows Server 2008 R2 and newer. We also maintain a [guide for users who must run Nmap on earlier Windows releases](#).

Latest stable release self-installer: nmap-7.93-setup.exe

We have written [post-install usage instructions](#). Please [notify us](#) if you encounter any problems or have suggestions for the installer.

For musicBee : you can download the last version by visiting
<https://getmusicbee.com/help/release-note/>

Version	Release Date	Operating Systems	Notes
MusicBee Version 3.4.8033	Released on January 3, 2022	For Win7/ Win8/ Win10	Current Release See https://getmusicbee.com/forum/index.php?topic=32142.0
MusicBee Version 3.4.7805	Released on May 17, 2021	For Win7/ Win8/ Win10	https://getmusicbee.com/forum/index.php?topic=32142.0
MusicBee Version 3.4.7764	Released on April 6, 2021	For Win7/ Win8/ Win10	https://getmusicbee.com/forum/index.php?topic=32142.0
MusicBee Version 3.3.7491	Released on July 7, 2020	For Win7/ Win8/ Win10	see https://getmusicbee.com/forum/index.php?topic=27074.0

You can download each update simple by googling it

5. Securing Files and Folders

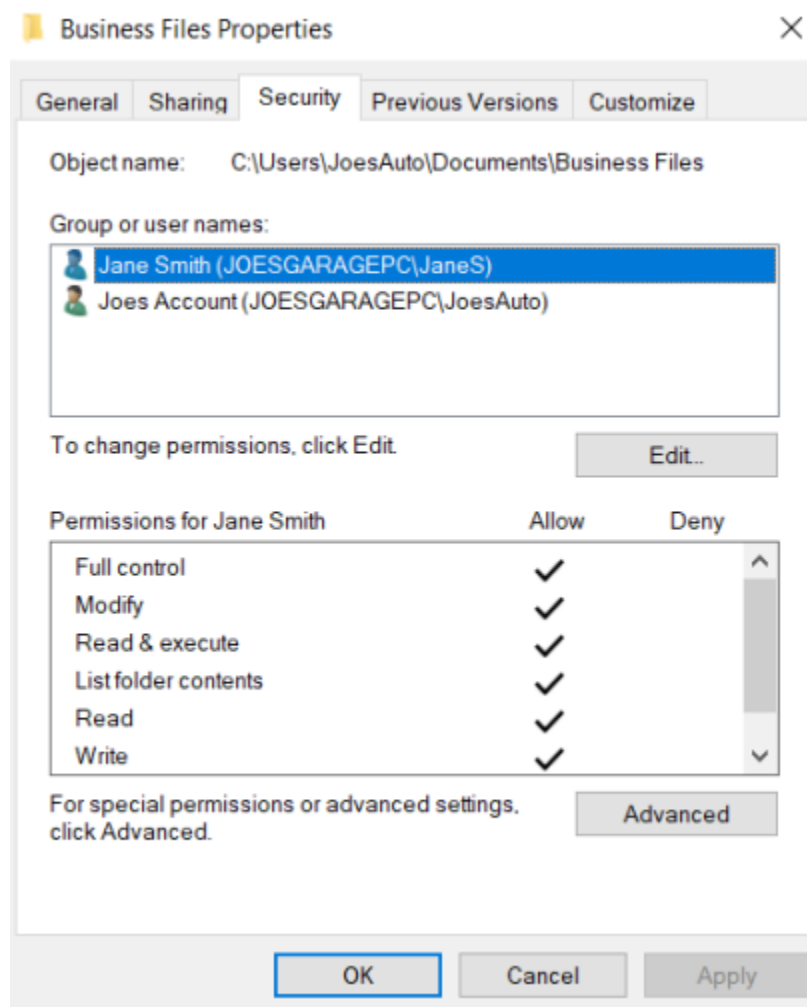
Joe has some work files in his Business folder that he wants to secure since they contain his customer information. They are labeled “JoesWork.”

Joe suspects that other users on this computer beside him and Jane can see and change his business files. He wants you to check to make sure that only those two users have privileges to view or change the files.

Encrypting files and folders

1. *Explain the process for checking this and changing any necessary settings on the file. Include screenshots showing that ONLY Joe and Jane have permissions to change Joes work files.*

[Hint: Right-click the folder and select Properties.]



2. Joe wants his work files encrypted with the password, "SU37*\$xv3p1" Explain how you would do this. What encryption method do you recommend? You may use the pre-installed program 7-Zip for this. Go for "search bar" write "Business File" after that right click in the file click "open file location" after that right click in the file click "7-Zip" after click "add to archive" after that write the password.
- My recommend is using "AES-256" encryption methos because it is strong

Add to Archive

×

Archive

C:\Users\JoesAuto\Documents\Business Files.zip

...

Archive format:

zip

Update mode:

Add and replace files

Compression level:

Normal

Path mode:

Relative pathnames

Compression method:

Deflate

Options

Dictionary size:

32 KB

☐ Create SFX archive

Word size:

32

☐ Compress shared files

Solid Block size:

☐ Delete files after compression

Number of CPU threads:

2

/ 2

Encryption

Memory usage for Compressing:

67 MB

Enter password:

xxxxxxxxxx

Memory usage for Decompressing:

2 MB

Reenter password:

xxxxxxxxxx

Split to volumes, bytes:

☐ Show Password

Parameters:

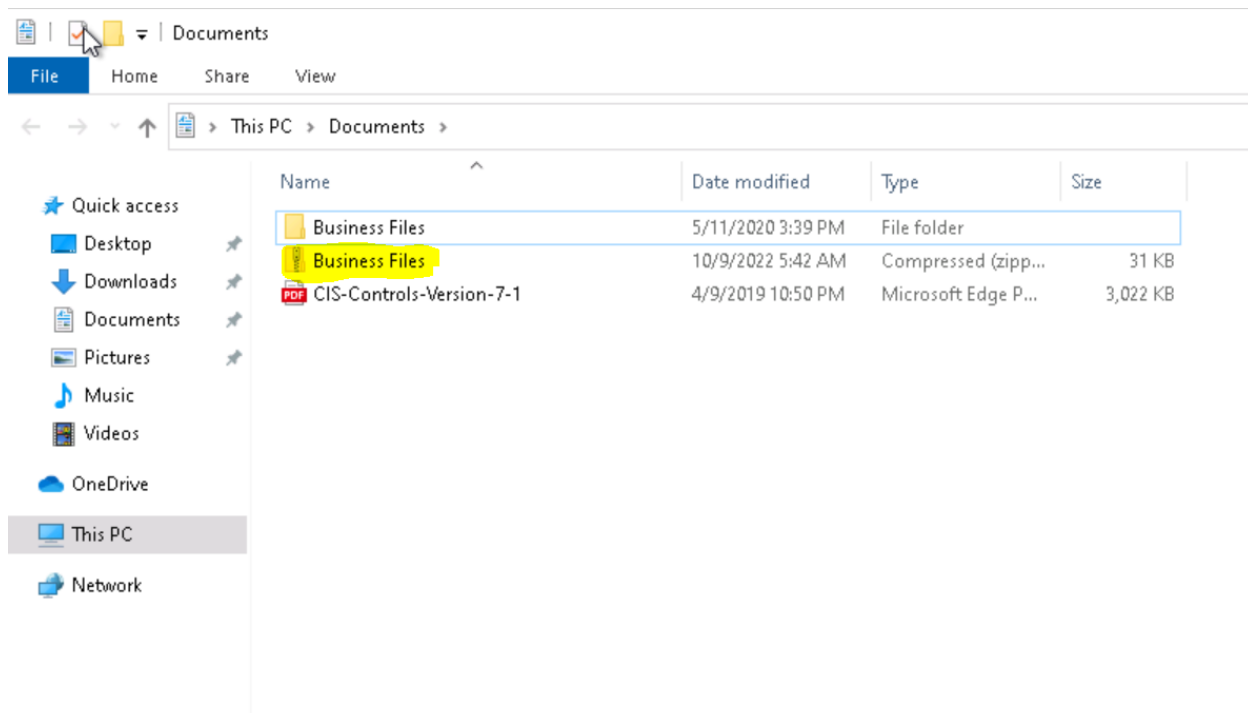
Encryption method:

ZipCrypto

OK

Cancel

Help



3. *What security fundamental does this provide? confidentiality*
4. *The Center for Internet Security Controls lists this as one of their steps for security. Which step does this fulfill? Date protection*

Shared Folders

Shared folders are a common way to make files available to multiple users. There's a folder under Joe's documents called "Business Files" that Joe wants shared with his administrator Jane.

1. *Explain how you would do that and provide a screenshot showing how you can do it. Make sure it's only shared between Joe and Jane.
Go for "search bar" write "Business File" after that right click in the file click "open file location" after that right click in the file choose "properties" after click "sharing" click "share" now u can add the accounts and remove*
2. *For advanced students: Joe wants to make sure there are no other folders shared on the PC. Explain how you view all shared files and folders on a Windows 10 PC. Include a screenshot as proof.*

6. Basic Computer Forensics (Optional)

Joe has asked that you investigate his PC to see if there are any other files left behind by previous unwanted users that may show they wanted to harm Joe's business. Look through the unwanted users' folders and list suspicious files. General students should document three issues and advanced students

at least five issues. Include a brief explanation of their contents and their risks. [Hint: there is a “Hacker” in the PC]

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7. Project Completion

Take the following steps when you are done answering the challenges and securing Joe’s PC:

- Save your answer template as both a Word document and PDF. Make sure your name and date are on it.
- Shutdown the virtual Windows 10 PC.
- Submit the PDF to Udacity for review.