CYB102
Fundamentals of Cybersecurity I

Windows Operating System Security Basics

Encrypting Your Windows 10 Files

Encryption makes it impossible for your data to be read without a decryption key.

Step1
Prepare a flash drive, preferably a 2GB flash drive

Step 2
Ensure you backup your data before carrying out a major system change like this, so that should something go wrong, you have the most recent backup of your data.

Step 3
Navigate to an encryption programme in this case, **BitLocker**
In the search box on the taskbar, type Manage BitLocker and then select it from the list of results.
Or, select Start > Settings > Privacy & security > Device encryption > BitLocker drive encryption,
Or click Control Panel > System and Security > BitLocker drive encryption
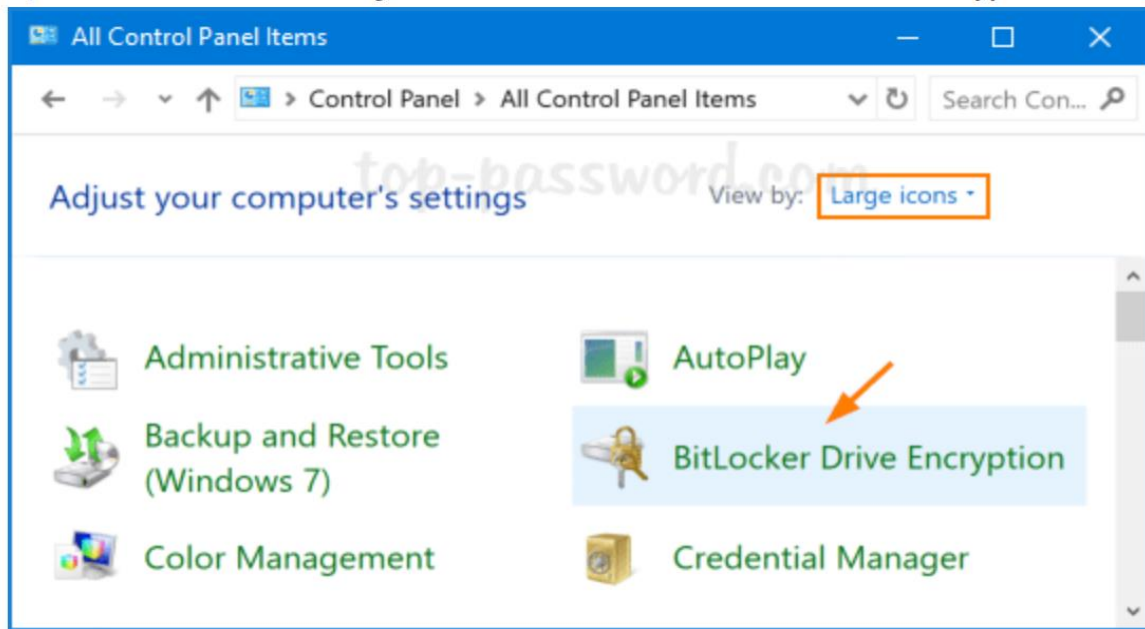
Step 4
Select the drive you want to encrypt (in this case – Removable Data Drives i.e Drive D) and turn BitLocker ON. **Note** that your **Flash Drive** must have been inserted before commencing this operation. Click the **Turn on BitLocker** link to the right of your operating system drive
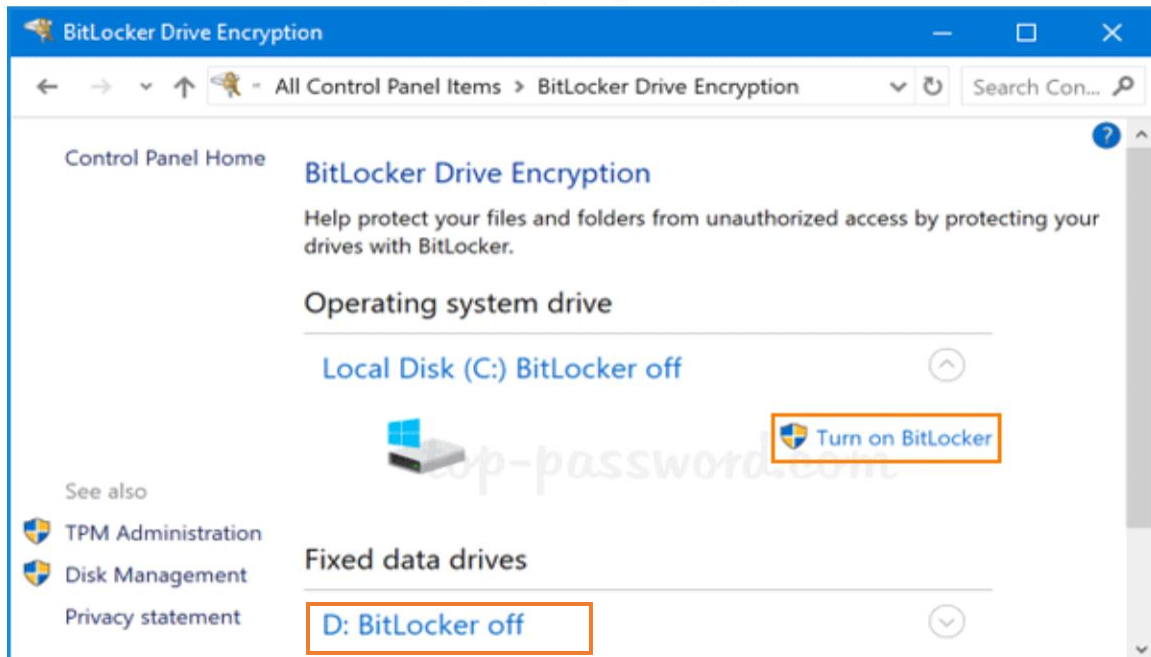
Step 5

The system will check whether your PC meets the system requirements for using BitLocker. If everything's OK, you'll be prompted to save the BitLocker recovery key just in case you have problems unlocking your PC. Backup your recovery key in one of the options provided. Note the is safer to have the backup key saved on a location other than your PC.
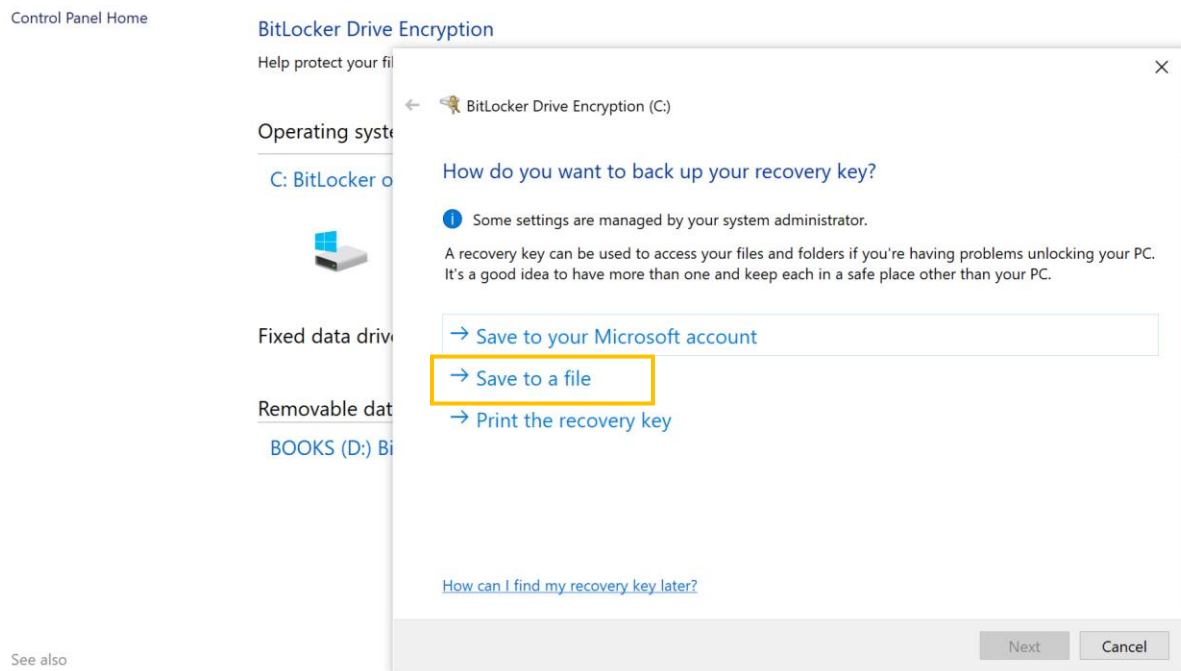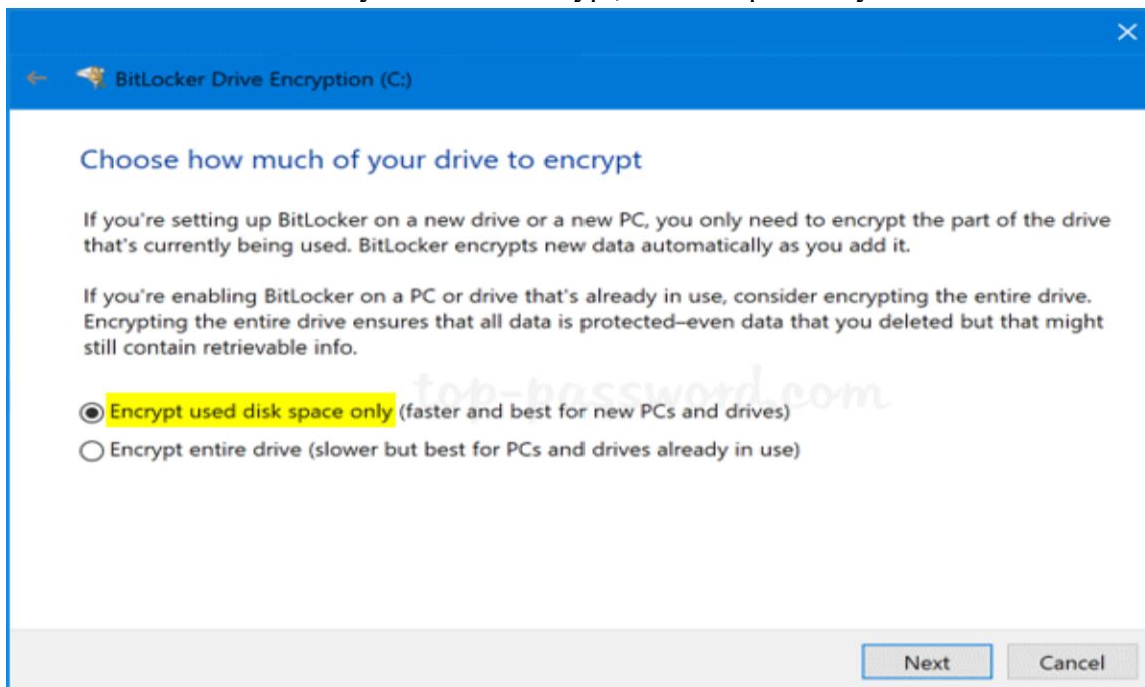
Step 6

In my case, I chose to save the recovery key to a file on external USB drive. Afterwards, click **Next** to continue.
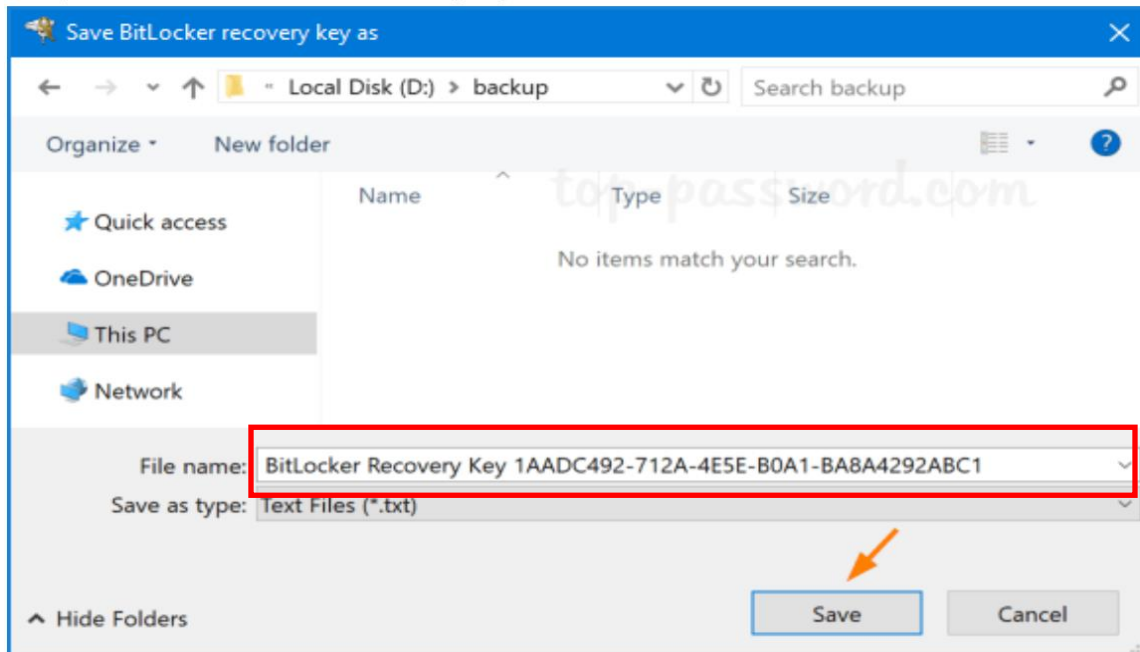

Step 7

Choose how much of the drive you want to encrypt, i.e used space only or the entire drive

Step 8

You're asked to choose how much of your drive you want to encrypt: encrypt the used disk space only, or encrypt the entire drive to ensure no one can recover previously-deleted files.Chose an encryption mode i.e either new or compatible encryption mode. The later is the best option for removable media, since we are encrypting a flash drive, we chose the compatible mode
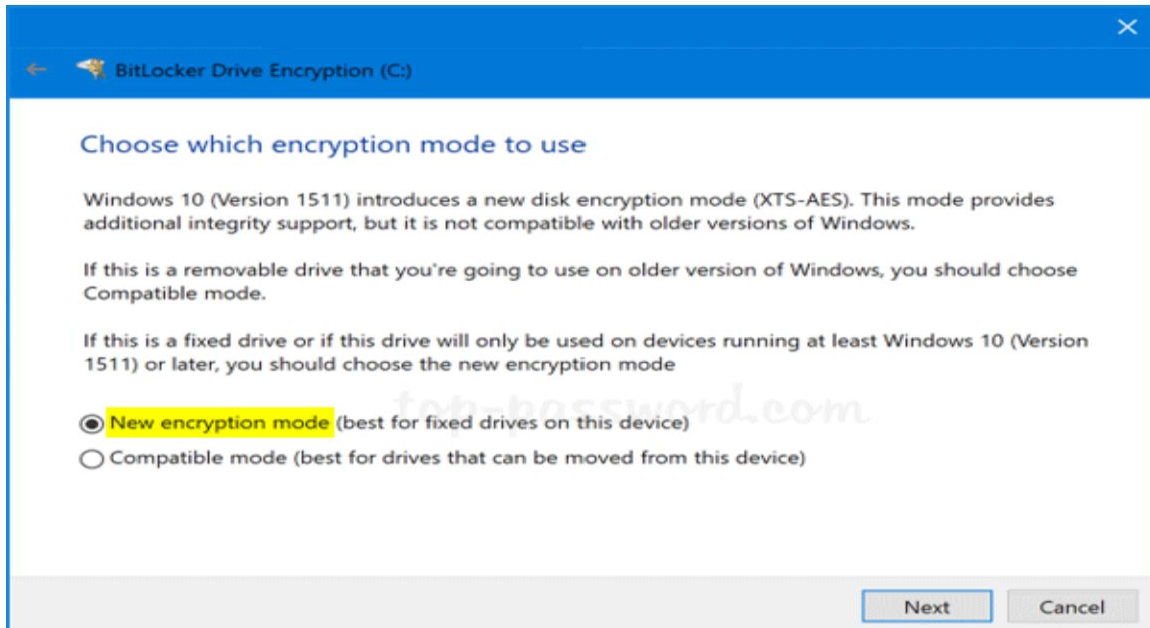
Step 9

Start encryption, it is recommended that you run the **BitLock** system check before clicking the start encryption button.
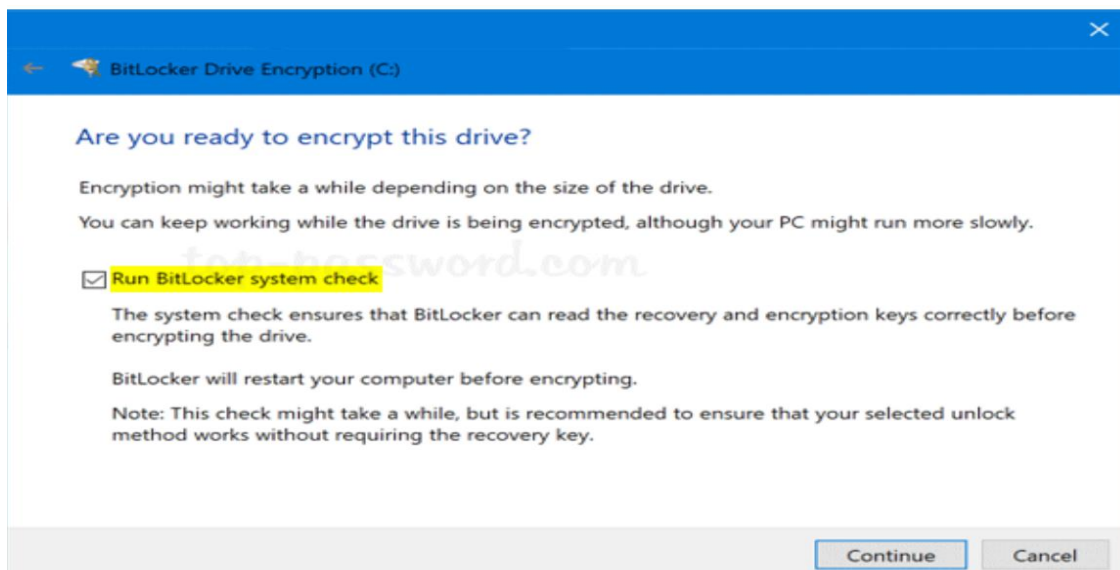
Step 10
Allow the encryption to run. Note that this may take time

Lab Two
Windows Security with Windows Defender

Windows 10 and 11 include Windows Security, which provides the latest antivirus protection. Your device will be actively protected from the moment you start Windows. Windows Security continually scans for malware (malicious software), viruses, and security threats. In addition to this real-time protection, updates are downloaded automatically to help keep your device safe and protect it from threats.

To enable **Windows Defender**, follow the steps below:

Step 1

Click the windows logo in the bottom left corner of the screen. The Start menu will pop up. Scroll down and click **Windows Security** to open the application.
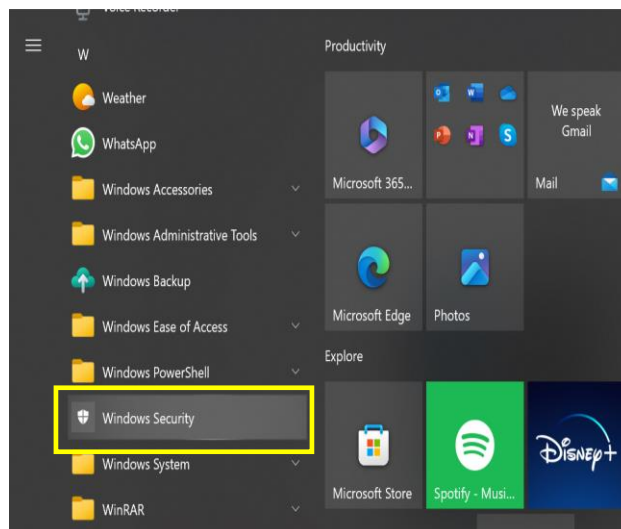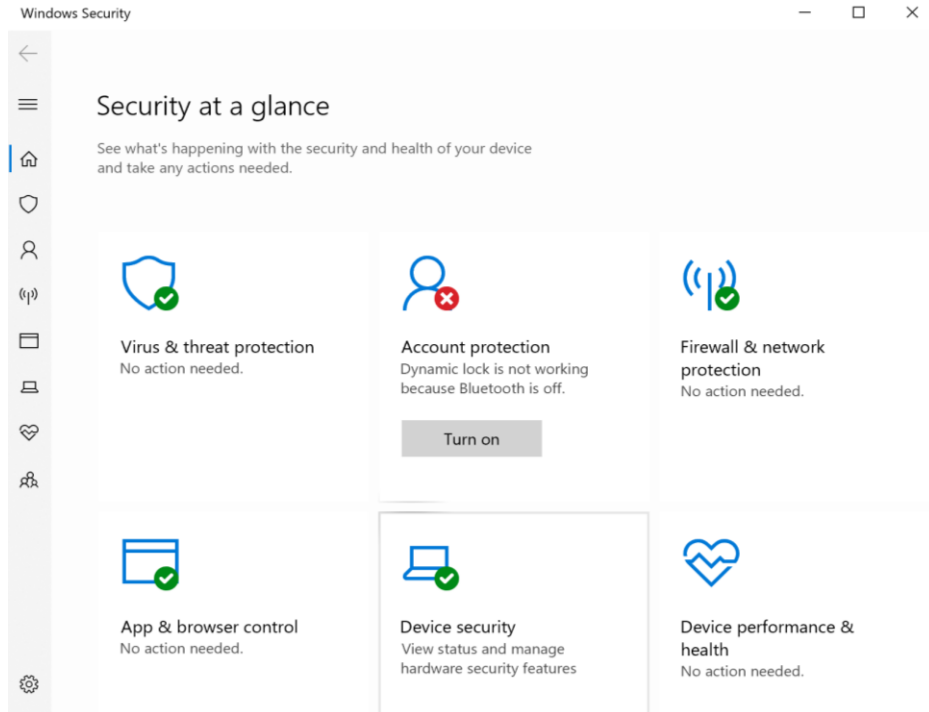

Step 2
On the **Windows Security** screen, check if any antivirus program has been installed and running in your computer or windows defender has been previously activated.

***Green tick*:** An antivirus program is present and running in your computer. Enabling of Windows Defender is not necessary as your computer is protected by Windows Defender.

No tick: No antivirus present and Windows Defender is not enabled in your computer. Please proceed to next step to enable Windows Defender, to keep your personal computer safe.

Step 3
Click on virus threat protection

Step 4
Next, select **Virus & threat protection** icon

Step 5
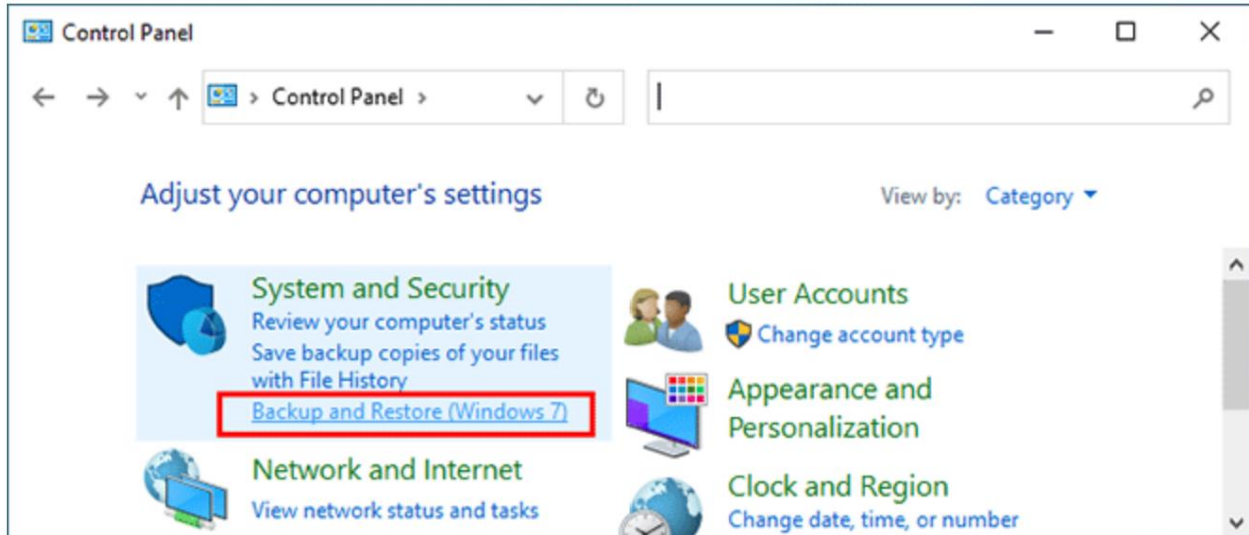Turn on for **Real-time protection**

Note
Carryout similar settings for firewall and network protection, apps and browser control and device security.
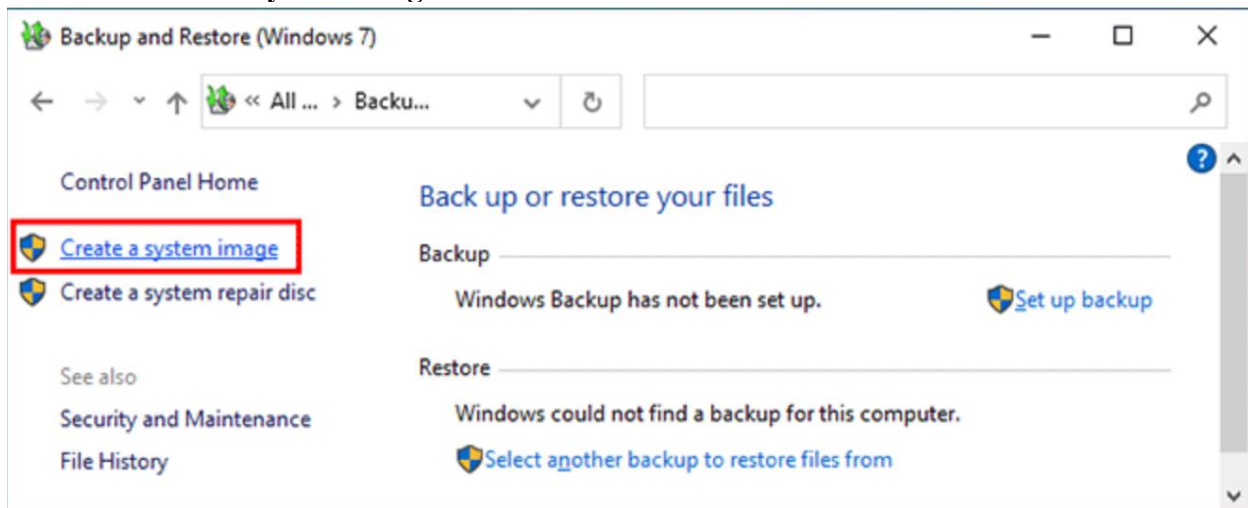
Lab 3
Create a Windows 10 Systems Image

Step 1

Open Control Panel and click **Backup and Restore (Windows 7)** under the **System and Security** option.

Step 2

Click the **Create a system image** link on the left.

Step 3

Connect the drive where you want to save the system image backup to the computer. It's recommended to use an external hard drive. **Select the "On a hard disk"** option and select your backup drive from the drop-down menu below this option. Then click Next.

Step 4
Select which drives you want to include in the system image backup. The drives that are required for Windows to run properly is included by default. Then click Next.
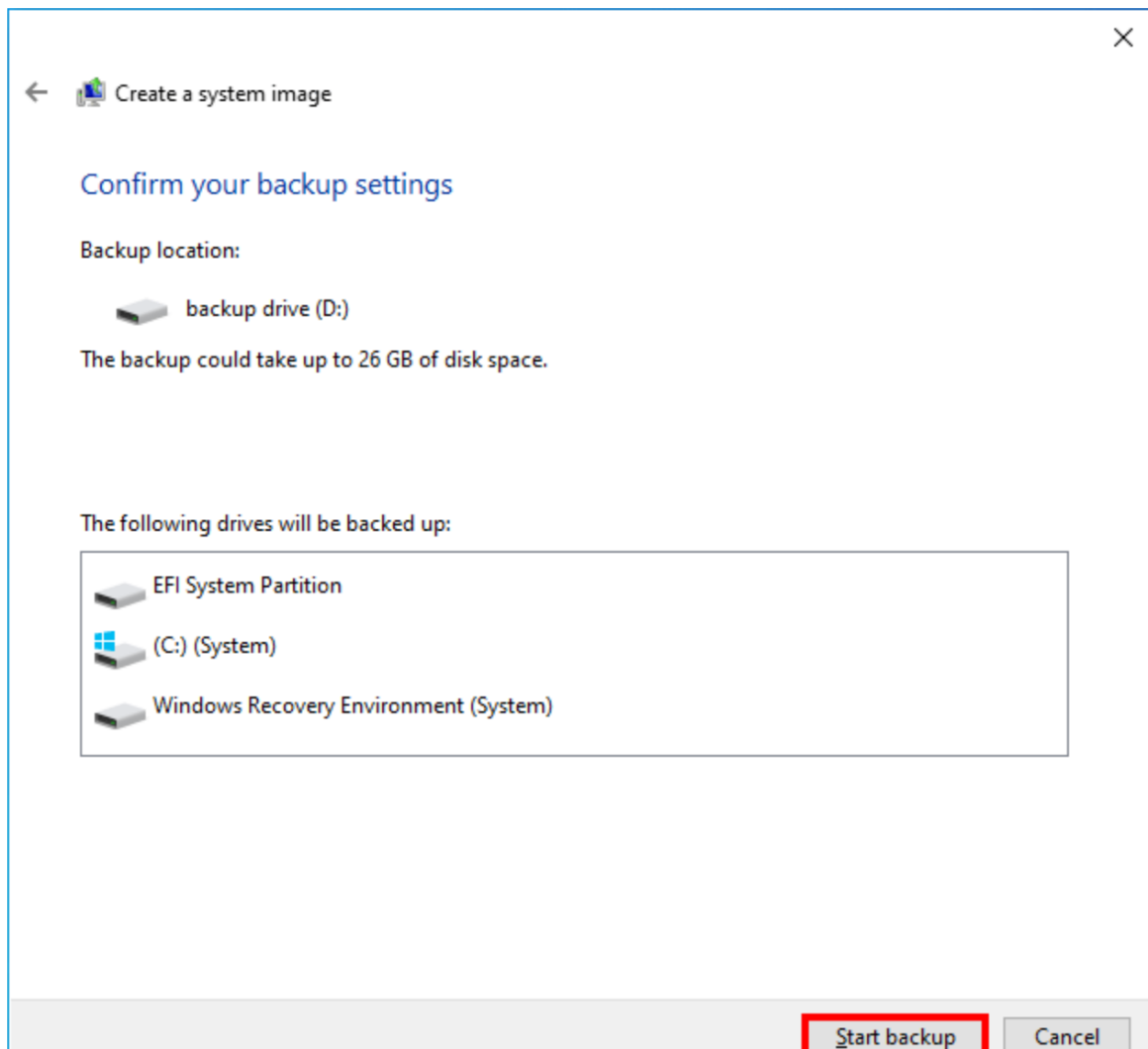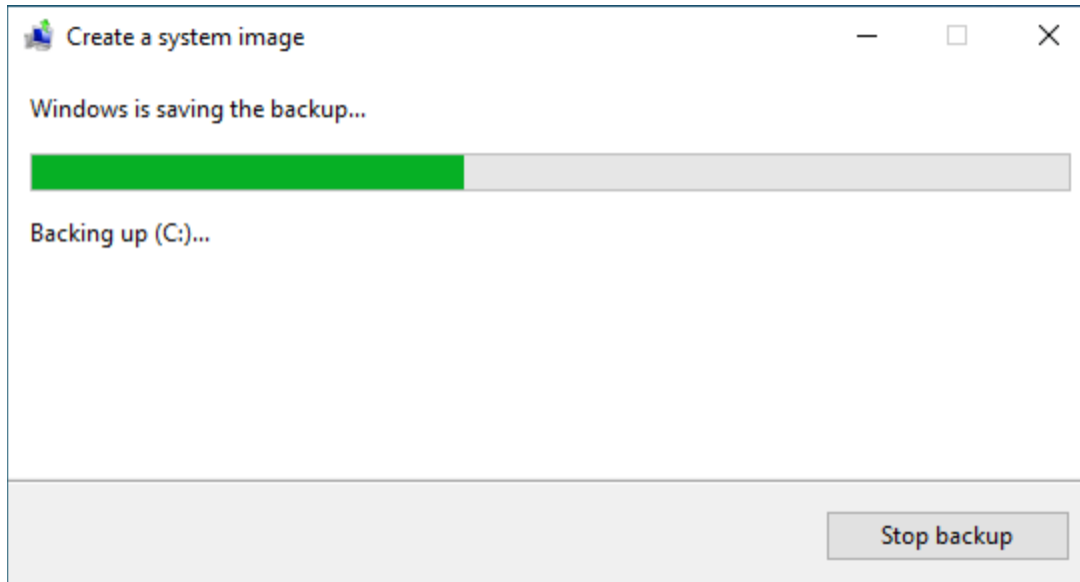
Step 5
Everything is ready. Now click the **Start backup** button to start creating a system image backup for your Windows 10.

Step 6

Then wait for the backup process to complete. This will take a few minutes, depending on the amount of data to be backed up. Keep the computer charged or connected to an interruptible power source to avoid backup failures.

Step 7

When the backup completed successfully, Windows will ask if you want to create a system repair disc which can be used to boot your computer and help you recover Windows from a serious error.

If you want to create a system repair disc, insert a blank disc into your computer's CD/DVD drive, and then click Yes. Otherwise, click No to finish.
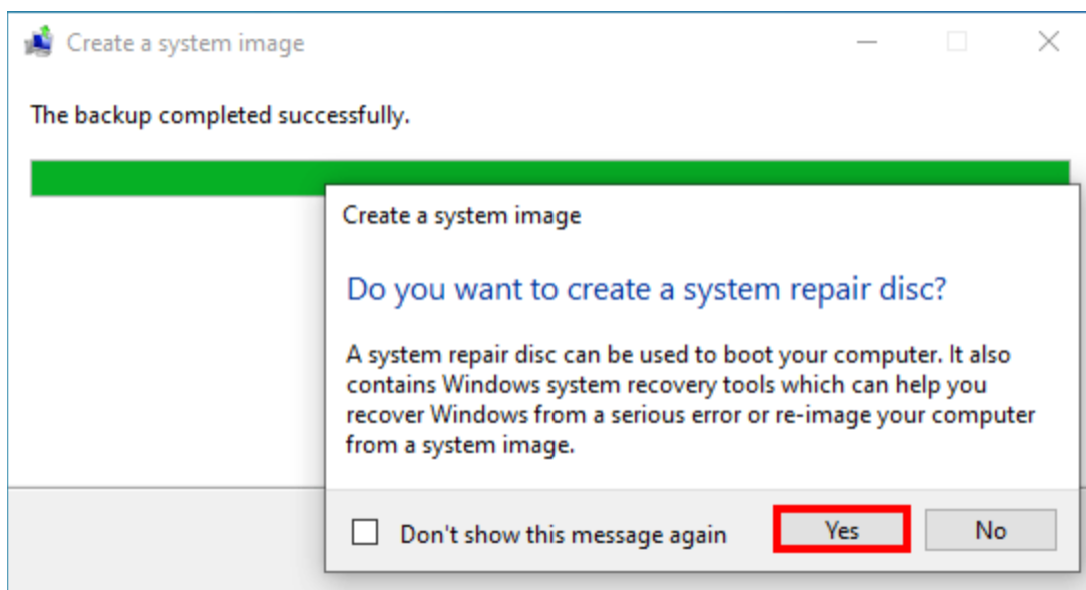
Lab Four
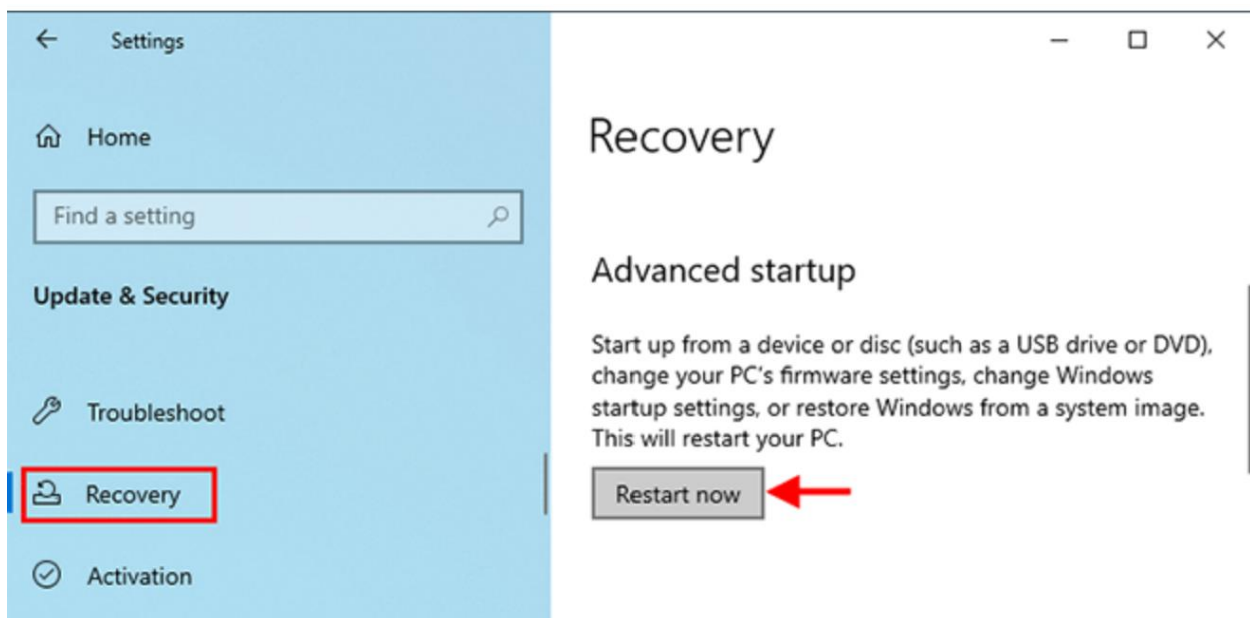**How to Restore Windows 10 From a System Image Backup.**

Case 1: If Windows 10 can Still Boot

Step 1
First, make sure the drive that contains your system image backup file is connected to your computer.
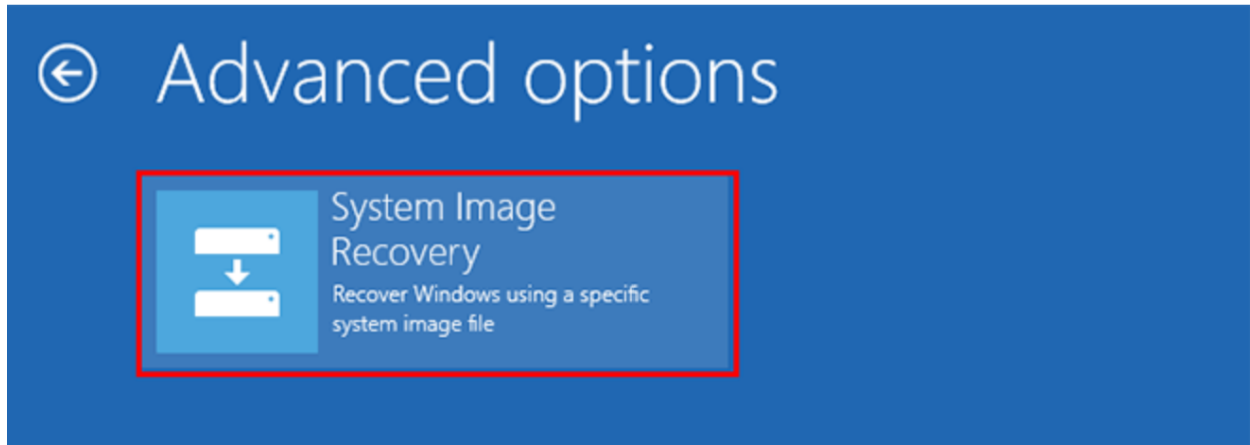
Step 2
Open the Settings app and select the **Update & Security** tile. Select **Recovery** on the left, and then click the **Restart now** button under Advanced Startup on the right.

Step 3
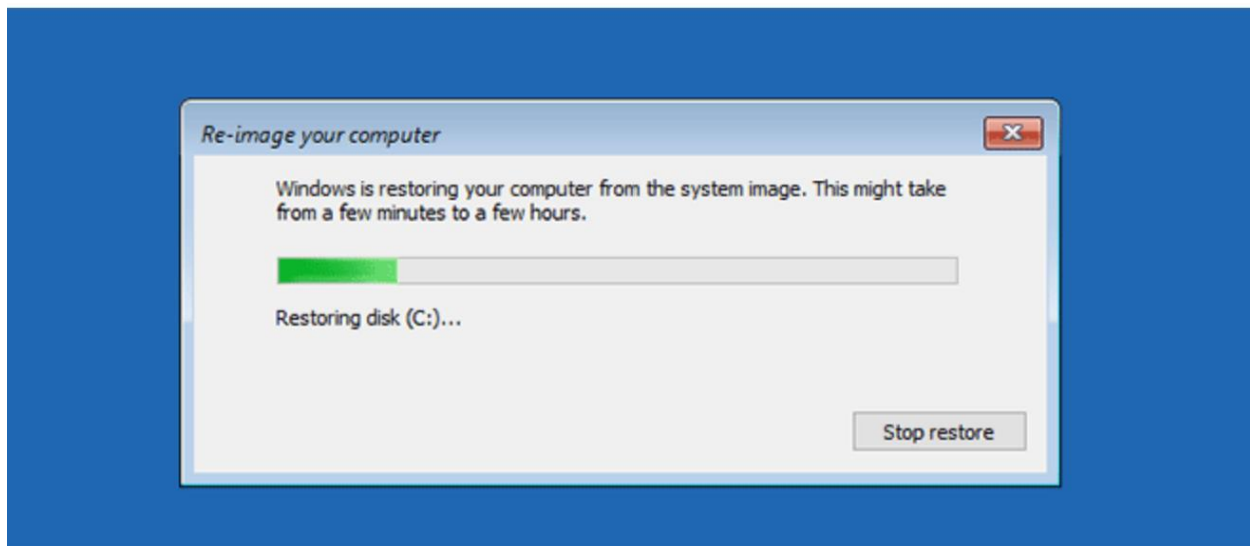
Your PC will restart to the advanced startup options. Select **Troubleshoot** > **Advanced options** > **System Image Recovery**.

Step 4

Then follow the on-screen steps to restore your Windows 10 computer from the system image backup.

Case 2: If Windows 10 Fails to Boot

If your Windows 10 has a serious error and fails to boot, you need to rely on a system repair disc or Windows installation disk to boot your computer, and then restore Windows 10 from the system image backup. Connect both the system boot disk and system image backup drive to the computer, then follow these steps.

Step 1: Start the computer from the system boot disk.

Step 1
Insert the system repair disc or Windows 10 installation disk to the computer.

Step 2
Boot the computer to the Boot Menu or BIOS Settings and then set the computer to boot from the disk.

- How to Boot Your Computer from USB Drive
- How to Boot a Computer from CD/DVD

Step 2: Restore Windows 10 from the system image backup.

Step 1
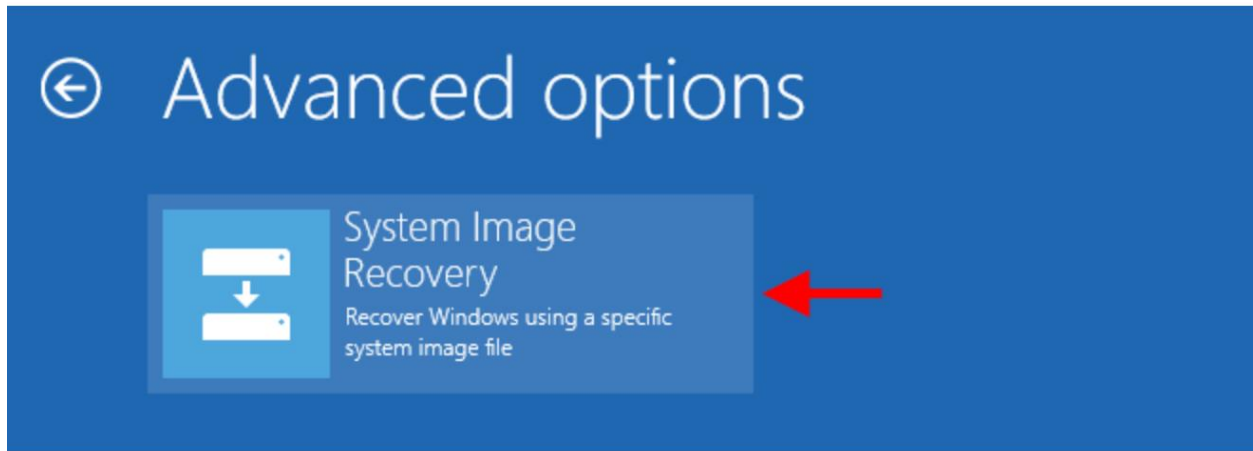When the computer boots up, on the **Windows Setup** screen, click **Next** followed by **Repair your computer**.
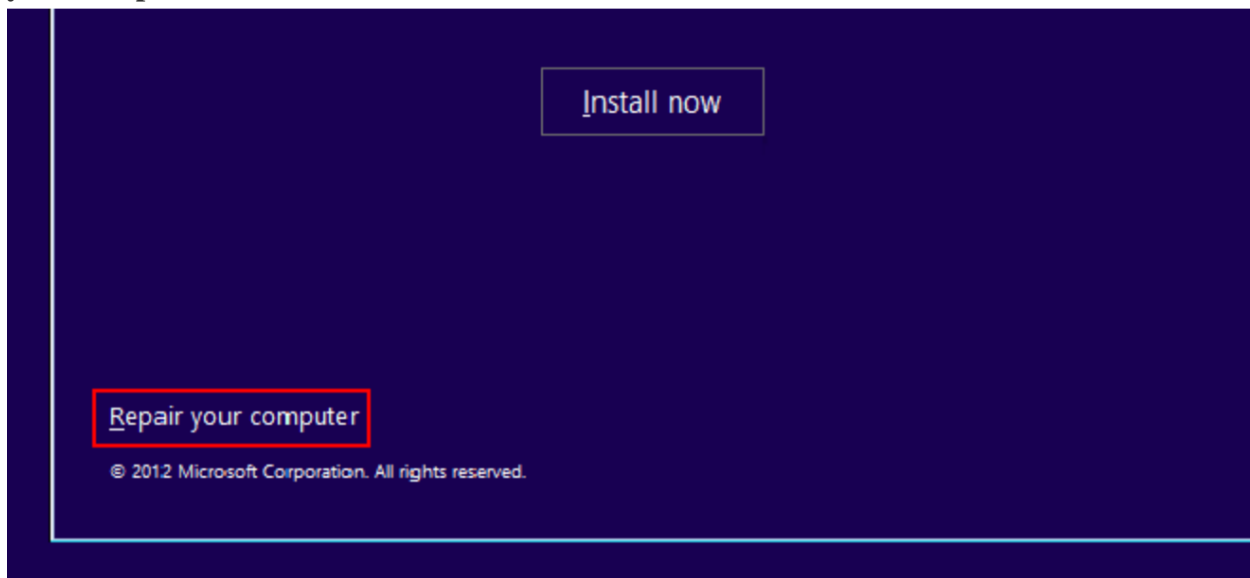
Step 2

The advanced startup options screen is then displayed. Select **Troubleshoot** > **Advanced options** > **System Image Recovery**.

Step 3

Then follow the same steps to restore your Windows 10 computer from the system image backup.