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| Microsoft Windows OS BasicsEditions Microsoft Windows Operating System has been developed through a dozen or so **Editions** over the last 30 plus years.  Microsoft only supplies updates and support to ***Windows 8*** and the current edition, ***Windows 10***. Note, many users were familiar with **Windows 7** features and have not learnt many of the Windows 10 newer systems and features.  Windows 10 comes as either a 64-bit or 32-bit System Types. This refers whether each program instruction “word” is 64 bits long or 32 bits long. The 64-bit is faster and more efficient than 32-bit and is the preferred system type for most PCs. The 32-bit system type can run on 1 GB RAM which is half the minimum PC RAM required by 64-bit types and so should be used when the PC has very limited RAM available.  Windows 10 comes in 3 basic Editions,   * **Windows 10 Home.**  Used by home PCs that are not connected to a server network (Local Area Network LAN). * **Windows 10 Pro** Used mostly by small business PCs that are connected to a LAN server network. This edition also contains extra Services and Network Apps to allow the PC to be a node in the LAN and useful extra utility apps such as ***Bitlocker***. * **Windows 10 Enterprise** A bulk licence edition of Windows 10 Pro used by organizations with dozens to thousands of PCs, all using the same Enterprise licence.   Note there are some lesser used editions such as Windows 10 Education, which is like Windows 10 Pro but with an “education use” licence.  Microsoft’s current practice is to provide free significant yearly or half-yearly updates to Windows 10. Confusingly also called *Version*, 1709 means this update was released in September 2017. 20H2 means this update was released in the second half of 2020. In addition, Microsoft provides an OS Build number such as 19042.1083 Activity 1. – Do this! Determine the following by opening the Applet called System.   1. Right-click on the *Start Button* to open a shortcut list of Windows tools and select *System*.  Alternately you can click on the *Start Button* and Type *System*, Note that *System Information* is NOT the same as *System*.  |  |  | | --- | --- | | System Type | 64-bit operating system, x64-based processor | | Edition | Windows 10 Pro Education | | Version | 21H1 | | OS build | 19043.928 |  Security Groups Windows is a multi-user OS. That is many different people can log into the same Windows OS PC by entering an Account **Credential** (typically UserName + Password, but can be a fingerprint or some other form of identification). Windows will set up folders such as *Desktop, Downloads, Document, Pictures, Music, Videos*, etc for that user in *C:/Users* folder.  ***Users*** is a ***Security Group***. Windows has over 20 built in Security Groups including,   * **Administrators** – These users can change settings and install or uninstall programs * **Remote Desktop Users** – These users have the right to logon remotely * **Users** – can run most applications, but have limited privileges to change settings, install or uninstall programs or view folders belonging to other users. * **Guests** – like *Users* group members, but with even fewer privileges.   Even if logged into an *Administrators* account, a user will only be able to execute a “normal” *User’s* privileges, unless they **elevate** to the Administrators privileges through clicking YES on the mandatory ***User Account Control*** or enter an *Administrators* credential.  **IT Technicians** are usually assigned an *Administrators* credentials.  To reduce the impact of a successful cyber-attack which targets people with *Administrators* accounts, *Administrators* are usually given a second *Users* Account to logon with and only use their *Administrators* credential as required. This is the **Principle of Least Privilege.** Activity 2. – Do this! Determine your security group(s).   1. Right-click on the *Start Button* and select ***Computer Management*** 2. In the left pane menu select *Local Users and Groups* (If you have Win 10 Home, this may not be available. It can be switched on by Googling the ***PowerShell*** command to enable ***gpedit*** (group policy edit), then opening a **command window** and typing ***gpedit /?*** and look for the switch to enable the ***local users and groups*** tool.) 3. Open the *Users* folder 4. Select for the Account name you logon with. 5. Right-click on this Account name and select *Properties* 6. Select the middle Tab, ***Member of*** 7. What Groups is this account a member of?  Note there may be more than one group listed.  |  | | --- | | * Administrators |  1. Click on the ***Add…*** command button 2. Type ***Remote Desktop Users*** 3. Click on the ***OK*** button (and the second ***OK*** button). What happens?  |  | | --- | | In Member Of it added “Remote Desktop Users” to the list. |  Windows Settings and Control Panel Windows 7 used the ***Control Panel***, a set of applets that include adding or removing hardware and software, controlling user accounts, changing accessibility options, and accessing networking settings. Windows 10 retains the *Control Panel* but directs users to use its Settings applets instead. Activity 3. – Do this!  1. Left click on the *Start Button* and type ***Control Panel*** and press Enter.  The ***Control Panel*** should open in *Category* view. 2. Click on the green, ***User Accounts*** 3. Again, click on the green *User Accounts* 4. What does the blue and yellow shield indicate?  |  | | --- | | Requires Admin privileges. |  1. Click on the *Change Your Account Type*. What happens?  |  | | --- | | Opens a menu to change from admin to standard. But require me to create another user and set them as the admin first. |  1. If you are able to open the Account Type, you will notice it only has two options, a *Standard Account* and an *Administrator account*. Based on your Activity 2 findings, what is this Standard Account?  |  | | --- | | Standard account has restricted access to certain features. |   With Windows 8 (and Windows 10) a new set of ***Settings*** applets was introduced. Activity 4. – Do this!  1. Right click on the *Start Button* and in the lower part of the short cut menu select ***Settings***  Note the 12 available *Settings* categories. 2. Select ***Accounts***. 3. What information does it provide directly below your “image”? Make sure you have opened the Setting *Your info*.  |  | | --- | | User acc name, local account and administrator. |  1. If it included an email address, it will be to your ***Microsoft Account***. What is a Microsoft Account?  |  | | --- | | A Microsoft account is a free online account that allows users to access multiple Microsoft products and services. |   So, you can see there are multiple tools and settings to view Accounts, each one providing different options and information. That is true for almost all configurable items in Windows 10! Applications, Background Apps and Services When Windows is installed, it comes with some already included basic applications and utilities. Some of these utility programs will automatically be opened at Start Up. Other apps and utilities will start up to support other major Applications.  We say they run in the Background. That is, you never need to manually run these applications. In addition, administrators will install many other Microsoft and third-party applications to meet the various user’s software needs. Activity 5. – Do this! View active apps and background app processes.   1. Left click on the *Start Button* and type ***Task Manager***and then *Enter* 2. Under the ***Processes*** tab, note the apps currently running on the PC and the much larger number of Background App processes.  |  | | --- | | Number of Apps processes running: 1  Number of Background App processes: 34 |   Associated with these apps and utilities are dozens of ***Services*** that will run in the background to support Windows and any Applications that are started. Activity 6. – Do this!  1. Right-click on the *Start Button* and select *Computer Management* 2. On the left-hand pane select *Service and Applications* 3. On the right-hand pane double-click on *Services* 4. Maximise the Window and expand the *Description* column. 5. Send a few minutes reading a variety of these Services descriptions. 6. Right click on any one service and list the *action* options available. DO NOT change any of these settings. If you have then change them back! 7. Note the *Status* column. Do a quick count of the number of Running Service Hint: Sort by Status first  |  | | --- | | Approximate number of Running Services on my PC: 84 |   Note: Booting the OS in ***Safe Mode*** means only a minimum number of Services are launched at Start up. This is necessary when troubleshooting issues where a running service might be causing problems. Challenge Activity 7  1. Look up how to boot in safe mode. 2. Restart and Boot in safe mode. 3. Determine how many services are now running.  |  | | --- | | Approximate number of Running Services in Safe Mode: 22 |  Other OS Tools As you would have seen in the earlier Activities 1 and 2, right-clicking on the Start Button opens a short cut menu of useful PC Tools. Let us explore some of these. Activity 8. – Do this! Determine what applications are installed on your PC.   1. Right-click on the *Start Button* and select ***Apps and Features*** 2. Reopen *Task Manager* Processes. Compare the two lists. Why are there more Apps & features than processes in the Task Manager?  |  | | --- | | In my task manager I have more processes then apps & features. In settings-Apps & features I have 3 apps founds. |  1. Select one of the Applications (For example *Adobe Acrobat DC*) that is NOT a background application and click on its icon. What options are revealed?  |  | | --- | | In task manager it shows a bit more information about the process. In settings-Apps & features it gives the options to modify or uninstall. Also the install date and the version. |  1. Close the Apps & features settings and the Task Manager. 2. Right-click on the *Start Button* and select ***Power Options*** 3. The second option is for ***Sleep***. What are the differences between Sleep, Hibernation and Soft Off? Research the web for answers. Highlight your answer, eg Yes / No  |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | Sleep  (S1, S2, S3) | Hybrid sleep | Hibernation  (S4) | Soft Off state (S5) | | RAM powered? | Yes / No | Yes / No | Yes / No | Yes / No | | Storage powered? | Yes / No | Yes / No | Yes / No | Yes / No | | Hibernation file created? | Yes / No | Yes / No | Yes / No | Yes / No |  1. On the right side of the ***Power & Sleep*** setting, click on *Additional power settings*. This opens the *Control Panel Power Options*. 2. For the active Power Plan, click on the Change plan settings, then Change advanced power settings 3. Notice you can change the Power plan. Complete  |  |  |  |  | | --- | --- | --- | --- | | Plan: | Power saver | Balanced [Active] | High Performance | | Default hard disk setting (minutes) | ­­­10 | 15 | 20 |  1. Close all the *Power Options* settings 2. Right click on the *Start Button* and select ***Disk Management*** This shows all the connected storage Volumes of the PC. Volumes are made up of connected physical storage devices such as internal or external Solid State Drives (SSD), Hard Disk Drives, Optical Drives and USB Memory Sticks. These in term can then be partitioned into logical drives. List the descriptive **Status** of the Health partitions  |  | | --- | | * Healthy(Boot, Page File, Crash Dump, Primary Partition * Healthy(Recovery Partition) * Healthy(Primary Partition) * Healthy(System, Active, Primary Partition) | |