Operating System & Computer Architecture

Group Assignment Report

**Microsoft Surface Pro 3**

Intake: UC1F1809IT(IOT)/IS

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# ASSESSMENT CRITERIA (MARKING GRID)

|  |  |  |  |
| --- | --- | --- | --- |
| Group Component (70%) | | | |
| Fully | Partially | Not | Performance Criteria |
| 🞎  🞎  🞎 | 🞎  🞎 | 🞎  🞎  🞎 | Distinction (55 – 70 marks)  All credit criteria fully met  Work shows aspects of originality and creativity  Discussions and opinions were well informed and help the point being discussed |
| 🞎  🞎  🞎  🞎  🞎 | 🞎  🞎  🞎  🞎 | 🞎  🞎  🞎  🞎  🞎 | Credit (45 – 54 marks)  All pass criteria fully met  Organization’s history and achievements were well reviewed  People in the organizations were identified and discussed  Hardware was properly evaluated indicating strongest points  Operating System discussions contains a good amount of details |
| 🞎  🞎  🞎  🞎  🞎 | 🞎  🞎  🞎  🞎  🞎 | 🞎  🞎  🞎  🞎  🞎 | Pass (0 – 44 marks)  Table of Contents  Basic Introduction of Organization(s)  Basic Description of Hardware  Basic Description of Operating System  Citation and Referencing |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Individual Component (30%) | | | | | | |
| Criteria | S1: Int | S2: Int | S3: Int | S4: Int | S5: Int | S6: Int |
| Well-articulated discussions with reference to the documentation. | Fully  Partially  Not | Fully  Partially  Not | Fully  Partially  Not | Fully  Partially  Not | Fully  Partially  Not | Fully  Partially  Not |
| Critical review discussed technology. | Fully  Partially  Not | Fully  Partially  Not | Fully  Partially  Not | Fully  Partially  Not | Fully  Partially  Not | Fully  Partially  Not |
| Total. |  |  |  |  |  |  |

# ABSTRACT

This document consists of research work done on a specific computing device namely, Microsoft Surface Pro 3. Microsoft is an American multinational computer technology corporation which develops, manufactures, licenses, and supports a wide range of software products for computing devices. This assignment consists of an introduction about Microsoft who is the producer of the Microsoft Surface Pro 3, the people involved in the production of the device and an introduction of components found in the device. The components are recorded in a table with an appropriate amount of description. A conclusion has been specified for the essential component. For the Operating System part, topics such as user interface, Cortana, windows defender and many more have been covered in this assignment. The individual components consist of the user, engineer, student, journalist, Social-technical issues, programmer and environmental sustainability. Furthermore, the study on the users will also shed light on the skills and advantages of the device in the point of view of the users. For the social-technical issues, there will be an analysis of the interaction and impact between human and the Microsoft Surface Pro 3. For the programmer, a review upon the tools and language and the materials available have been discussed. For environmental sustainability, the environmental impacts and consequences of using this particular device have been discussed.

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# GROUP ASSIGNMENT

## Section A: Introduction

### A1. Introduction to Company



Figure 1: Microsoft’s Logo

Microsoft, as in Figure 1, is an American multinational computer technology corporation. It develops, manufactures, licenses, and supports a wide range of software products for computing devices. Microsoft's best-selling products are the Microsoft Windows operating system and the Microsoft Office suite of productivity software. (Khan, 2008) Microsoft was founded on April 4, 1975, by Bill Gates and Paul Allen in Albuquerque. The corporate headquarters, known as the Microsoft Redmond campus, is located at One Microsoft Way in Redmond, Washington. 'Microsoft Corporation's success as a global computer technology company is founded on the fulfilment of its corporate mission and vision statements. The vision statement directs the development of the business toward the desired future condition. Microsoft's corporate vision includes what the company can do for individual and organizational customers.'

(Lawrence G.,)



Figure 2: Surface Pro 3 with a detachable

The Surface Pro 3, as in Figure 2, was introduced on June 20, 2014. The Surface Pro 3 is the third-generation of the Surface-series 2-in-1 detachable, designed, developed, marketed, and produced by Microsoft, which initially ran the Windows 8 Pro operating system (OS). The display size and the resolution has been increased up to 12 inches and 2160x1440 respectively. Compared to the Surface Pro 2, it has a 38 percent larger screen and more pixelated by 50 percent. It is provided with a strong magnet that latches onto the Pro 3's lower bezel, and the Type Cover can rest with just a portion of it touching your lap or desk. The Type Cover has a detachable newly improved Surface Pen. (Osborne, 2015) The Surface Pro 3 is remarkably slim and lightweight. The benefit of using this device are: it has an outstanding quality, a sharp and bright screen and has a precise digital pen.

### A2. Introduction to People

Microsoft, the company who created the surface series began by developing a device which is a pen oriented portable computer called the tablet PC. The company Microsoft have always been interested in the project of developing the portable computer with a touch screen and a pen, long before Apple invented their iconic tablets. The Microsoft surface pro three was first announced in the year 2014, making it the 3rd generation of the Microsoft surface series. Initially, the Surface Pro 3 was running on windows 8.1 pro operating system. Then in 2015 when the windows 10 operating system was released, the surface pro 3 runs on a Windows 10 OS. The lightweight OS implies it will work a considerable measure like a Chromebook, even though clients of the Surface Laptop will have the capacity to move up to the full form of Windows 10. The Windows 10 OS is Microsoft's most robust operating system that Microsoft has developed. For the user to experience the full capacity of the operating system, the user has to explore the different uses of the operating system. Some of the features of Windows 10 include the Cortana voice assistant, and the voice assistant can be considered as the Microsoft version of SIRI. Other features are the remote user mode, windows defender device guide, and windows defender credential guard. These features are used to secure the users' data, processes and their credentials to secure them from receiving any damage.

### A3: Facts and Stats of The Company

**Important dates:**

|  |  |
| --- | --- |
| Date | Events |
| 1975 | Microsoft founded |
| 'June 25, 1981.' | 'Microsoft incorporates.' |
| 'Aug. 12, 1981.' | IBM introduced their personal computer with a Microsoft's 16-bit operating system, MS-DOS 1.0 |
| 'Aug. 1, 1989.' | Microsoft introduced the prior version of the Office suite of productivity applications |
| 'May 22, 1990.' | Microsoft launched Windows 3.0 |
| 'May 31, 2001.' | Microsoft launched Office XP |
| 'Oct. 25, 2001.' | Microsoft launches Windows XP |
| Nov. 7, 2002 | Microsoft and partners launch Tablet PC |
| Oct. 21, 2003 | Microsoft launches Microsoft Office System |
| 'Jan. 30, 2007.' | Microsoft launched Windows Vista and the 2007 Microsoft Office System to their consumers worldwide |
| Nov. 10, 2010 | Microsoft launches Windows Phone 7 |
| June 28, 2011 | Microsoft launches Office 365 |
| Oct. 26, 2012 | Microsoft launches Windows 8 and Microsoft Surface |
| Feb. 18, 2013 | Microsoft launches Outlook.com |
| 'Feb. 4, 2014.' | Satya Nadella was named chief executive officer for Microsoft |
| 'Jan. 19, 2016.' | Microsoft Philanthropies announced $1B in donations putting Microsoft Cloud to work for the public good |
| 'June 14, 2017.' | Surface Laptop and new Surface Pro available in 25 markets worldwide |
| June 4, 2018 | Microsoft announces the agreement to acquire Github |
| Aug. 2, 2018 | Surface Go becomes available |

(Stories, 2018)



Figure.3 Microsoft's annual revenue worldwide, from FY 2002 to FY 2018 (in billion U.S. dollars)

Figure 3 shows the level of sales for each year as from 2002 to 2018 for Microsoft. This figure shows that from 2002 to 2005, the sales of Microsoft had an increase of approximately 4 billion U.S dollars each year. From 2006 to 2008, the sales were rising swiftly to ultimately have a decline of approximately 1.98 U.S. billion dollars in 2009. This tragedy repeated itself in 2015 where Microsoft had its highest revenue of 93.58 U.S. billion-dollar till that date to eventually have a decline of approximately 8.26 U.S. billion dollars in 2016. The highest revenue recorded for Microsoft is in 2018, where it collected 110.36 U.S. billion dollar. To conclude, we can see that Microsoft's revenue has had some fluctuation. (Microsoft,2017)

As per annual report 2017 of Microsoft:

1. 'More than 100 million people use Office 365 commercial.'
2. 'More than 27 million consumers are using the Office 365 Home & Personal across devices.'
3. 'More than 53 million members are active on Xbox Live.'
4. 'More than 500 million LinkedIn members use the LinkedIn network.'
5. 'Windows 10 is active on more than 500 million devices around the world.'
6. 'Dynamics 365 customers grew more than 40 percent year-over-year.'
7. 'Azure compute usage more than doubled year-over-year.'

(Microsoft,2017)

### A4: Facts and Stats of The Device

There are seven main facts about the Microsoft surface pro 3. The first is that the screen of the notebook has only two layers. The first layer of the screen is the LCD, followed by an ultra-thin optical glass. A scientist named Steven Bathiche stated that the glass is covered with indium tin oxide, which gives more sensitivity to the screen. Secondly, the charger doubles as a high-speed data port. The previous Microsoft surface tablets had proprietary charges, but none of them were working well. However, the surface pro 3 has a different proprietary design compared to the previous models. The previous surface designs used a purely magnetic connector, whereas the new design can be slotted into a port which also doubles as a data port. When the tablet is placed in its docking station, it interfaces the dock's information ports to the Surface Pro through the second reason charging port.

Moving on to the active capacitive pen for the surface pro 3. This pen allows the user to draw, to take down notes and even to push a button. This Bluetooth stylus pen is active. Based on the scientist Steven Bathiche, this pen which is powered by a battery gives out an electrostatic field which allows the user to hover the pen above the screen using the cursor without even touching the screen. This additional technology provides the pen with its 265 levels of sensitivity. Unlike other notebooks, the surface pro 3 has its speaker built in the front of the notebook in a way they are so cunningly coordinated that the user may miss them. On the right-and left-hand sides, approximately a half inch from the best edge of the tablet, are two 1-inch patterns in the glass, and if the user looks carefully, the user can see the small speaker grills.

The surface pro 3 scales the desktop resolution. Microsoft scaled the desktop screens to an effective resolution of 1,440 x 960. This resolution allows the icons on the surface pro 3 to be seen more easily. The surface pro 3 comes with a camera on the front and the. The cameras can take decent pictures, with decent quality but, the pictures will not be breathtaking. Whereas, both cameras are developed to shoot videos at 1080p quality. This function is most probably used more for video conferencing and not for shooting a film. The surface pro 3 does not come with an LTE option. Users can purchase an external ethernet port from Microsoft which will be plugged into the USB 3.0 port.

The Microsoft surface pro has received many awards such as:

· The stuff gadgets award- The Microsoft surface pro was given the title of the gadget of the year in 2014.

· The GSMA award- For the best mobile tablet in Barcelona

· The MCCA award- In 2015 the surface pro was given the title The Mobile Choice Tablet of the year.

· The UX design awards- The surface pro 3 was awarded for the usability of the device.

**Statistics**

The Microsoft surface series did not do well in their first few years, as there were specific complaints about the device. When the surface pro 3 was introduced, it was in a way a turning point for Microsoft's surface series. The surface pro 3 was sold at a price of $800. When the surface pro 3 was introduced, the revenues were at $1.1 billion which means that the sales revenue has increased by 24%. Therefore, Microsoft states that the surface pro 3 was the main reason for the growth and expansion of the surface series. The sales revenue for the Microsoft surface series increases by 25% every year since the release of the surface pro 3. Now in July 2018, Microsoft reported that their sales revenue $30.1 billion and their net income is $8.1 billion.

## SECTION B: HARDWARE

### B1: Introduction to the device

Microsoft Surface Pro 3 is the third-generation Surface-series 2-in-1 detachable. It was initially running the Windows 8 Pro operating system, and it can upgrade to Windows 10 Pro (OS) operating system. In the box, there are Surface Pro 3, Surface Pen, 36-watt power supply, Quick Start Guide, Safety and warranty documents.

### B2: Significant Hardware Component

|  |  |  |
| --- | --- | --- |
| Component | Specification | Rating |
| *Display screen* | Corning Gorilla Glass 3 with oleophobic coating, 2160 x 1440 of display pixels resolution and enable multi-touch on display screen | 4/5 |
| Description | | |
| Microsoft Surface Pro 3's display screen made from Corning Gorilla Glass 3 for durability and oleophobic coating to avoid fingerprints. Its display screen with 2160 x 1440 of display pixels resolution enables the user to multi-touch and perform excellent work on the screen. | | |
| Opinion & Advantages/Disadvantages | | |
| Corning Gorilla Glass 3 helps users to resist from fall, and the oleophobic coating is used to prevent user's fingerprints and maintain the cleanliness of the device. Microsoft Surface Pro 3 enables users to enjoy the UHD movies and photos due to its high resolution of the display screen. The multi-touch screen is to recognize the presence of multiple points of fingers contact yet speeding and simplifying the users’ interaction. | | |

|  |  |  |
| --- | --- | --- |
| Component | Specification | Rating |
| *Battery* | Lithium-ion battery with the battery capacity of 5600 mAh | 4.5/5 |
| Description | | |
| Microsoft Surface Pro 3 is using the removable Lithium-ion battery with the capacity of 5600 mAh that enable the device to perform up to 9 hours web browsing. | | |
| Opinion & Advantages/Disadvantages | | |
| Lithium-ion battery allows the device to self-discharge yet do not require any maintenance to ensure its performance. It ensures Microsoft Surface Pro 3 to perform up to 9 hours web browsing with the help of large battery capacity. | | |

|  |  |  |
| --- | --- | --- |
| Component | Specification | Rating |
| *Storage & RAM* | 64 GB or 128 GB storage with 4 GB RAM  256 GB or 512 GB storage with 8 GB RAM | 4/5 |
| Description | | |
| Microsoft Surface Pro 3 has 64 GB or 128 GB storage with 4 GB RAM meanwhile 256 GB and 512 GB storage with 8 GB RAM. | | |
| Opinion & Advantages/Disadvantages | | |
| A solid-state drive (SSD) helps to run programs faster than another laptop that used hard-disk drive (HDD). Microsoft Surface Pro 3 with the support of an SSD ensure the users to enjoy the maximum performance of the device. Besides, this device is running up to 8 GB RAM to enable users to perform better multi-tasking, fast browsing, and much more. | | |

|  |  |  |
| --- | --- | --- |
| Component | Specification | Rating |
| *Processor* | 4th generation Intel® Core™ i3, i5 and i7  TPM Chip | 4.5/5 |
| Description | | |
| Microsoft Surface Pro 3 introduced with 4th generation Intel® Core™ i3 with 1.5 GHz base frequency, 4th generation Intel® Core™ i5 with 1.9 GHz base frequency up to 2.9 GHz max turbo frequency and 4th generation Intel® Core™ i7 with 1.7 GHz base frequency up to 3.3 max turbo frequency. Besides, this device comes with TPM Chip for enterprise security. | | |
| Opinion & Advantages/Disadvantages | | |
| Microsoft Surface Pro 3 offered in 3 types of 4th generation Intel® Core™ i3, i5 or i7 to allow users to choose the optimum performance yet targeted different user’s needs and budget. Furthermore, this device comes with the TPM Chip to protect the user’s data from hacking by an unknown user. | | |

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| --- | --- | --- |
| Component | Specification | Rating |
| *Camera* | 5.0-megapixel rear-facing camera | 4/5 |
| Description | | |
| Microsoft Surface Pro 3 has two cameras which are a front and back camera with 5.0 megapixels. | | |
| Opinion & Advantages/Disadvantages | | |
| Microsoft Surface Pro 3 enables the user to take pictures with its camera. Although the camera has only 5.0-megapixel yet, it allowed this device to record video in 1080 pixels. However, it is unusual compared to its competitor which does not offer the back camera. | | |

|  |  |  |
| --- | --- | --- |
| Component | Specification | Rating |
| *GPU* | Intel HD Graphics 4200  Intel HD Graphics 4400  Intel HD Graphics 5000 | 4/5 |
| Description | | |
| Intel HD Graphics 4200: It offers a clock speed of 1.3 GHz.  Intel HD Graphics 4400: It offers a base speed of 1.6 GHz with Turbo Boost speeds of up to 2.9 GHz.  Intel HD Graphics 5000: It offers a base speed of 1.7 GHz with Turbo Boost speeds of up to 3.3 GHz. | | |
| Opinion & Advantages/Disadvantages | | |
| Microsoft Surface Pro 3 is built in with Intel HD Graphics 4200, 4400 and 5000 which is offer users to choose based on their requirement. Intel HD Graphics 4400 and 5000 have two modes of graphics that usually run base speed of 1.6GHZ and 1.7GHZ respectively to achieve the effect of energy saving. Thus, these graphics cards will automatically switch to the efficient mode of independent graphics cards due to the graphics processing needs is high. On the other hand, Intel HD Graphics is not capable of running intense mobile games due to the animation and resolution requirement of the particular games needed. | | |

|  |  |  |
| --- | --- | --- |
| Component | Specification | Rating |
| *Sensors* | Ambient light sensor | 5/5 |
| Description | | |
| The function of the Ambient light sensor is to automatically adjust the backlight of the display screen as the light changes. | | |
| Opinion & Advantages/Disadvantages | | |
| This component able to extend the battery life of the Microsoft Surface Pro 3 by automatically adjust the backlight of the display screen. Thus, it helps the user to reduce visual fatigue for long-term usage. | | |

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| --- | --- | --- |
| Component | Specification | Rating |
| *Sensors* | Accelerometer | 5/5 |
| Description | | |
| The accelerometer in laptops protects hard drives from damage. | | |
| Opinion & Advantages/Disadvantages | | |
| With the help of this component, the accelerometer will detect the sudden fall and instantly turn off the hard drive to avoid damaging the reading heads into the hard drive platter. | | |

|  |  |  |
| --- | --- | --- |
| Component | Specification | Rating |
| *Sensors* | Gyroscope | 5/5 |
| Description | | |
| The gyroscope is a device that uses Earth's gravity to help determine orientation. | | |
| Opinion & Advantages/Disadvantages | | |
| This component enables users to rotate and enjoy the different angles performance of the device. | | |

|  |  |  |
| --- | --- | --- |
| Component | Specification | Rating |
| *Port* | microSD card reader | 5/5 |
| Description | | |
| A MicroSD card reader is a port that can transmit information with a MicroSD card. | | |
| Opinion & Advantages/Disadvantages | | |
| MicroSD card reader provides a quick and convenient way to transfer and read images, music, videos, and other data between memory card. On the other hand, Microsoft Surface Pro 3's microSD card reader failed to plug in Apple's products. | | |

|  |  |  |
| --- | --- | --- |
| Component | Specification | Rating |
| *Port* | Full-size USB 3.0 | 4/5 |
| Description | | |
| USB 3.0 is the third main edition of the Universal Serial Bus (USB) standard for microcomputers and electric devices. | | |
| Opinion & Advantages/Disadvantages | | |
| Microsoft Surface Pro 3 has full-size USB 3.0 to increase the performance and better power management. Moreover, it allowed the user to transfer his/her files at faster speeds and save time. | | |

|  |  |  |
| --- | --- | --- |
| Component | Specification | Rating |
| *Network* | Wireless: Wi-Fi 802.11 a/b/g/n/ac  *Bluetooth*®4.0 with low energy technology | 4/5 |
| Description | | |
| Microsoft Surface Pro 3 has a wireless connection which is Wi-Fi 802.11 a/b/g/n/ac and *Bluetooth*®4.0 with low energy technology. | | |
| Opinion & Advantages/Disadvantages | | |
| Microsoft Surface Pro 3 enables the user to enjoy the fastest maximum speed, and best signal range with the help of Wi-Fi 802.11ac whereas the other features is to support the device in bandwidth improvement, etc. Also, it runs *Bluetooth*®4.0 with low energy consumption, low latency communication, and fast device pairing. | | |

|  |  |  |
| --- | --- | --- |
| Component | Specification | Rating |
| *Material* | Magnesium | 4/5 |
| Description | | |
| Microsoft Surface Pro 3 is made in magnesium alloy to protect the internal component. | | |
| Opinion & Advantages/Disadvantages | | |
| Microsoft Surface Pro 3 is made in magnesium alloy to protect the internal component. Thus, it helps to decorate the laptop. | | |

|  |  |  |
| --- | --- | --- |
| Component | Specification | Rating |
| *Pen* | Surface Pen | 4/5 |
| Description | | |
| Surface Pen has 4096 pressure points respond to the lightest touch. | | |
| Opinion & Advantages/Disadvantages | | |
| Microsoft Surface Pro 3 offered Surface Pen to enable the users to draw on the display screen which compares to another laptop they do not offer this feature. Surface Pen has precision ink at one end yet eraser at another end. | | |

### B3: Hardware Conclusion

Microsoft Surface Pro 3 is a portable laptop and function as the combination of tablet or laptop. This device has a high-resolution display screen that enables users to enjoy the high quality of images. Moreover, it is built in with Lithium-ion battery with 5600 battery capacity. Microsoft Surface Pro 3 has the support of RAM and SSD storage to maximize the performance. Furthermore, it is offered in 4th generation Intel® Core™ i3, i5 or i7 which is the latest version of processors and TPM chip to enterprise security. Microsoft Surface Pro 3 has two camera which allows the user to take pictures and record video in 1080 pixels. Besides, the device has few sensors which are an ambient light sensor, accelerometer, gyroscope in it. Microsoft Surface Pro 3 offered ports such as microSD card reader and full-size USB 3.0. Microsoft Surface Pro 3 is made of magnesium alloy and provide Surface Pen to users to simplify their work. Overall of Microsoft Surface Pro 3 is a laptop which better than average laptops.

## SECTION C: OPERATING SYSTEM (WINDOWS 10)

### C1: Introduction

The first version of Microsoft Windows was launched on November 20, 1985, by Bill Gates and named it as Windows 1.0 (Thompson, 2015). It was Microsoft's first operating system with 16-Bits GUI and first to rely entirely on mouse device as input. At first, Microsoft team decided to name it as "Interface Manager," but later on they came up with the name "Windows." Windows OS has 90% shares in the operating system market. While Windows 7 is the most used operating system ever (SmartTS, 2017).

Windows 10 is the latest operating system of the Microsoft Windows family released in July 2015. Microsoft announced that it would be the last version of windows. They will release future updates on the name of Windows 10 rather than releasing a new operating system. Windows 10 is simple, easy to use and user-friendly Operating System. It is the perfect combination of some of the best features of Windows 7 and Windows 8/8.1. Windows 10 is available for many devices such as phone, tablet, Xbox, laptop, PC and many more (Rouse, 2017).

### C2: Features of The Operating System

**LOCK SCREEN:**

A picture containing person, dark, man

Description generated with high confidenceWhen the user turns on its device, the first user interface you see is "Lock screen." Lock screen comes with the background wallpaper. The bottom-left part shows the time, date and day, the bottom-right part shows the internet connectivity and battery life, and at the center part sometimes we can see the Microsoft store notifications. By Pressing any key will take the user to the login screen. The center of the login screen shows the account picture, the name of the device and an area to enter the password. The bottom-right corner of the login screen contains language change option, internet connectivity, ease of access and power button.

A picture containing outdoor, grass, tree, sky

Description generated with very high confidence

**START MENU:**

Start Menu of Windows 7 was the most flexible, user-friendly and one of the best start menus of all time. Whereas, Windows 8/8.1 was a farrago of start screen (full-screen start menu), live tiles, interface, etc. creating a hassle in user's mind. Microsoft's team decided to mix the traditional start menu of Windows 7 and live tiles of Windows 8/8.1 (Tonasam, 2015).

Start menu of Windows 10 is quite simple and easy to use. Mainly it is divided into two sides. The left side contains system settings, account settings, power and all the applications installed on the device.

The right side contains useful and critical applications such as calendar, mail, Microsoft store, photos, and many more.

There are two ways to open the start menu:

1. **![A close up of a logo

   Description generated with very high confidence](data:image/png;base64,iVBORw0KGgoAAAANSUhEUgAAAC0AAAAtCAMAAAF6wyI+AAAAAXNSR0IArs4c6QAAAARnQU1BAACxjwv8YQUAAAAwUExURQAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAFo/HAsAAAAPdFJOUwAOLzheX4SVq7vK2ODh6GGr9VYAAAAJcEhZcwAAIdUAACHVAQSctJ0AAACxSURBVDhP7Y7tDoIwDEVRUPGz7/+2lvayNSuFgdGY6PnT7vSuWzNCA0GRRlIMdzqaKDoG42UpKw+zSAhZ5S29fWueHJF0uQbdyz4Cieo96JxPE+cLIj9NueYgQhnO6LQo+fCtOgDjyiWon9Tpj04DGAHKEOi1LO24yzsZ6MRVpcw8HEBn+KfRGTamb+dTt+eIAROix6U/du0OOgBZw8aflPxM2sJGpFYHUgEIJaCrIGqeKp1S36BzRvoAAAAASUVORK5CYII=)**Click on **the start icon** on the bottom left corner of the screen. (Microsoft Support, 2018)
2. ![A close up of a logo

   Description generated with very high confidence](data:image/png;base64,iVBORw0KGgoAAAANSUhEUgAAAC0AAAAtCAMAAAF6wyI+AAAAAXNSR0IArs4c6QAAAARnQU1BAACxjwv8YQUAAAAwUExURQAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAFo/HAsAAAAPdFJOUwAOLzheX4SVq7vK2ODh6GGr9VYAAAAJcEhZcwAAIdUAACHVAQSctJ0AAACxSURBVDhP7Y7tDoIwDEVRUPGz7/+2lvayNSuFgdGY6PnT7vSuWzNCA0GRRlIMdzqaKDoG42UpKw+zSAhZ5S29fWueHJF0uQbdyz4Cieo96JxPE+cLIj9NueYgQhnO6LQo+fCtOgDjyiWon9Tpj04DGAHKEOi1LO24yzsZ6MRVpcw8HEBn+KfRGTamb+dTt+eIAROix6U/du0OOgBZw8aflPxM2sJGpFYHUgEIJaCrIGqeKp1S36BzRvoAAAAASUVORK5CYII=)Press the **window logo key** on your keyboard.(Microsoft Support, 2018)

A screen shot of a computer

Description generated with very high confidence

**TASKBAR:**

The black colored bar at the bottom of the screen is taskbar. It is helpful in showing the currently opened application. Mainly the taskbar contains the start menu button, search bar powered by Cortana, task view button and some pinned applications. The right side of the taskbar contains the action center, day, date and time, language, volume, internet connectivity, battery life, hidden icons, and others. The search bar helps to find any document or application just by keywords, and it is also connected with Cortana to give the best results. Task view is another feature of the taskbar that allows you to do multitasking by creating a new desktop.

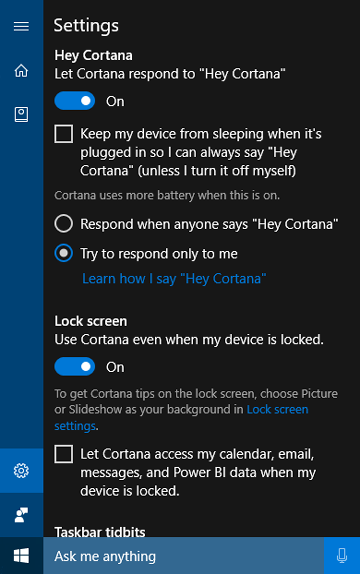
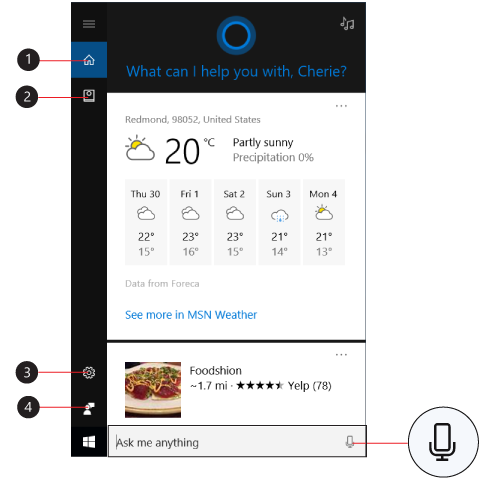


**CORTANA:**

Cortana is a voice-activated virtual assistant by default present in the taskbar of windows 10. It is an unusual feature introduced to make Windows 10 even more unique and standout operating system. This feature was also introduced to save the time of users and to make multitasking much more comfortable. Cortana has to be connected to the internet to work and to search anything over the internet also. The small microphone symbol present next to the search bar allows the users to talk to Cortana.

Cortana has many features such as opening an application on the system, telling the weather forecast, finding a specific email in the mailbox, sending an email without leaving the application the user is working on, giving the directions and performing many more functions as per the user's command (Thomas, 2015).

Cortana also learns some details of the users like name, home/work addresses, favorite music genres, choice of preferred mode of transportation and a lot more.



**MICROSOFT STORE:**

Microsoft Store is a platform that allows you to shop apps, games, devices, movies and tv, books content in its marketplace. The Microsoft store was initially released in Windows 8/8.1 that replaced theWindows Marketplace, Windows Phone Store, Xbox Video, Xbox Music and Xbox Games Store (Bowden, 2018). It provides useful features to attract the users, and it innovates new deals which even provide benefits to the users such as providing paid games or apps at a comparatively low price and free shipping on hardware products, and others. Many things are available over Microsoft store, and it is easily accessible. It also has been stated to be a useful feature.

A screenshot of a video game

Description generated with high confidence

### C3: Process Control Management

Windows 10 is the asymmetric operating system. The 'Symmetric operating systems divide themselves among the various CPUs, balancing demand versus CPU availability even when the operating system itself is all that's running.' (Franklin and Coustan, 2000) The operating system data structures are kept in the shared memory. All the processors are connected to this shared memory. (Goḍabole and Kahate, 2011) Hence, the operating system can be executed on any processors, and in parallel. With this feature, any threads can be assigned to any processors. The scheduler can now schedule threads to run concurrently with different processors. In other words, symmetric multiprocessing is allowed. Such an operating system is very efficient because it utilizes the processors to the maximum.

### C4: File Management

Windows 10 uses NTFS (Next Technology File System) as its primary file system. NTFS provides a long file name, data protection, and recovery, and implements security through file and directory. (Docs.microsoft.com, 2018) NTFS is in support of storing files (called volume) in sizeable hard disk and multiple hard disks. It also provides built-in security features which control the subordinate file relationship and file access. (Data-recovery-app.com, 2018) Hence, NTFS is designed to perform standard file operations such as read quickly, write, and search and even advanced operations such as file system recover in a large disk.

# INDIVIDUAL ASSIGNMENT:

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| **Name:** | Meghnah shabajee |
| **TP No.** | TP051965 |
| **Topic Selected:** | Social & Technical issues |

## S1: Socio-technical issues

In simple terms, having individuals grouped together is called a society. The basic definition of socio-technical is the study between the interaction of human behaviour and man-built machines. Man created these machines to simplify and ease their work. This started during the Industrial, and later man introduced the first electro-mechanical binary programmable computer. These evolutions were easily accepted by the society which is why we are still in demand of latest technology, in simple words, we need technology to simplify our daily routines further. Similarly, the Surface Pro 3 which was introduced in 2014 was one way or another accepted by the society which led to a high revenue upon its release. The Surface Pro 3 has left an impact on each type individuals of the society.

Microsoft tools have been very user-friendly with the Windows, MS Paint, and Office. The Surface Pro 3 has also been useful to write bestsellers, artists create masterpieces, musicians craft music and much more. In the business and government field, the Surface Pro 3 has somehow been of great help to these people. The primary platform used by the small and large enterprise is Microsoft. For instance, the surface pro 3 is very useful to a salesperson. For a salesperson, the most precious thing is time. The more time they have, the more productive they can be. According to Belikoft, companies have openly appreciated the Surface Pro 3 as it was proven to be effective for its employers. (Chonney S., 2015) The Surface Pro 3 being lightweight and offering a traditional system of laptop help the salesperson to have detailed information at the tip of their fingers and could answer any query of customers without any hesitation. Nevertheless, the Surface Pro 3 had a negative impact on the employers as in they would rather spend time in the technology than assisting customers which leave a negative impact on the company. The Surface Pro 3 has become an advantage for the businessman who travels a lot. For instance, instead of bringing their laptop, they can simply bring the Surface Pro 3 which will ease their task as it is ultraportable, and the Surface Pro 3 is convenient. Its prolonged existence of battery can be an advantage for businesspeople as they do a lot of video conferencing. However, the Surface Pro 3 cannot replace a laptop. We as human we tend to think that the bigger the gadgets are, the better it is which not at all true. Considering this fact, fewer people will want to shift from their laptop to the Surface Pro 3.

Microsoft has a particular tool called Microsoft Education. Microsoft Education was launched to facilitate the task of both teachers and students. With Microsoft education, teachers are able to save time by storing student's data such as their attendance, grade, any special remarks and much more. Surface Pro 3 has the perfect tools to attract students and enhance their performance. Firstly, the Surface Pro 3 has a good performance, good screen quality, good sound quality, and pen input. Due to its popularity, Microsoft even launched a 30 percent discount on the Surface Pro for all students. Educators can even use to the Surface Pro 3 to project data which cannot be explained or drawn on a whiteboard. For example, chapters dealing with 3D objects can be easily explained with the Surface Pro 3 due to its quality of the screen and thus students will have a better understanding. Similarly, it can be used for subjects like science, in biology, students will be able to visualize things more realistically, and in arts, the student can use the pen input as it gives and projects accurate lines and drawings. Students will no more have to carry heavy bags as all the subjects can easily fit into the Surface Pro 3.

However, the Surface Pro 3 can be an inconvenience for students. The surface pro 3 has a reading problem. This means the font may cause a problem for students. In addition, both students and educators become dependent on it. The student will learn new things for the first few months, t. Then, instead of learning with the surface pro 3, the gadget will become a habit to them. Instead of developing logical and critical thinking, students will blindly believe the gadget. This can also cause a lack of communication between the educators and the students. As any other gadgets, the Surface Pro 3 will also have a negative impact on the health of the student especially the eyes. The light projected by the tablet is harmful if the students use the Surface Pro more than 1-2 hours without taking the break. Furthermore, students will tend to be lazy and procrastinate at their homework.

To conclude, we can see that the Surface Pro 3 have a different level of the impression on everyone. Technology itself has an impact on everything surrounding humans. On a medical aspect, technology has given many people new life. On a social aspect, technology has enhanced communication via social platforms — for instance, overseas companies communicating with each other to trade and boost their respective economy which will somehow improve the lifestyle of people. In this day and age, this remains the fact that we all need the latest technology gadgets to be able to facilitate our daily task and have a maximum output out of an input. Nevertheless, it should not affect other things such as socialization and hard work. Any individual of the society should be able to include the usage of the Surface Pro 3 to such an extent that it does not affect their human life.

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| **Name:** | Praveen Thamotharam A/L Ravintheran |
| **TP No.** | TP048423 |
| **Topic Selected:** | User for student |

## S2: User for students

The Microsoft surface pro 3, is a device that can be used by anyone with any job specification. Such as an artist, an engineer, a businessman and many more. (Soquiat, 2014) The Microsoft surface pro 3 is also an excellent device that can be used for education to help students. First off there are benefits of using the Microsoft surface pro 3 for students. The device is built in such a way that the device is thin and light. (Coffee For The Brain, 2015) Therefore, making the device easy to carry around. Based on critics the surface pro 3 is much lighter than the MacBook Pro, making it convenient for students. (Coffee For The Brain, 2015) Due to the surface pro 3 being a light device, students can stop carrying multiple books in their bags or even a full heavy laptop.

The surface pro 3 is a device which can be brought around anywhere without worrying about the weight. Even if the device is thin and small, it does not make the device less powerful. (Coffee For The Brain, 2015) The developers of the surface pro 3, designed the device to be like a paper. The device has a ratio of 3:2 to mimic the A4 size paper. (Foong, 2014)) The surface pro 3 comes with a surface pen, which feels exactly like an ordinary pen. (Foong, 2014) Therefore, when students use this device, it would be like writing on a plain paper. The surface pro 3 is unlike the previous Microsoft surface devices; the surface pro 3 has long-lasting battery life. (Foong, 2014) Also when students purchase the surface pro 3, they get a discount of 10%. (Foong, 2014)

The screen of the surface pro 3 is detachable, and it can be used as a tablet to be carried around. This can be very useful for students to carry. The Microsoft surface pro 3 contains all the necessary software's such as Microsoft Word. On Microsoft Word, students can use the comfortable keyboard to type their essays or their assignments. The Microsoft surface pro 3 has an additional software which is called the one note. (Foong, 2014)This software does not only allow the user type their notes down, but it also allows them to use the pen provided by the device to write down their notes. Based on reviews from students, while using the pen to write down notes feels as natural as using a regular pen to write an essay on a piece of paper. (Foong, 2014) The pen provided by the surface pro 3 has various ink colour options to choose from. (Coffee For The Brain, 2015)Students can take down notes with different colours to mark the more important notes compared to the less important ones. Also, the students won't have to be worrying about the ink drying up. (Coffee For The Brain, 2015)

As stated before the battery life on the Surface Pro 3 can last for quite some time. After doing some test on the battery, the battery lasts for at least seven hours. The surface pro 3 has a screen which is 12 inches. Also, the ratio of the screen is set in a way to give users a good landscape and portrait viewing. This allows the students to read any article of any materials based on their subjects to have a comfortable view. Study materials such as online textbooks, because in most of the colleges these days only provide online textbooks, unlike the old days. Also, the screen gives the user a vibrant and clear view.

Another point that can benefit the education industry is that time can be saved. Instead of the student or teacher traveling to meet each other personally, it is much easier to do the teaching and learning online. This saves much time for both the teacher and the student thanks to the display of the device. This device can recreate a desktop with a screen/television, and Bluetooth console and mouse, this tablet can be associated with a screen and run a second screen interface. The Surface Pro 3 also has a magnetic which is attached to the bezel will provide significant support for students.

The Surface Pro 3 also has a kickstand which can be set at an angle of 0 to 150. (On MSFT, 2014) By having this feature on the surface pro 3, it allows students to place the Surface Pro 3 on their lap without going through any trouble. They can do their work while they are on the train or the bus. The Surface Pro 3 also comes with an extra micro SD card port. Students who have a lot of important files do not have to worry about storage on the Surface Pro 3 because they can always add an extra SD card. (Support.microsoft.com, 2018) The Surface Pro 3 is a device which can be used for multitasking purposes. (Babb, 2017) The device allows the user to run three apps side by side. A fourth application can also run at the same time, but the font size will be lowered. (Babb, 2017) For a student who is researching on the web for an assignment, he /she can simply open the web and Microsoft Word at the same time.

By doing so, it helps the student to view the material and then type down the important facts. The Surface Pro 3 is designed to run sophisticated programs such as auto cat, Photoshop, premium pro and much other software's. (Babb, 2017) For students who are in the designing department, the surface pro 3 would be a very useful device for them.

In conclusion of this topic, it can be said that the surface pro 3 is a convenient and suitable device for students. To help students to be more successful in their education.

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| **Name:** | Zhang ZiTeng |
| **TP No.** | TP052096 |
| **Topic Selected:** | Environmental sustainability |

## S3: Environmental sustainability

As we all know, with the massive growth of social science and technology, environmental harm is becoming increasing seriously. Under the leadership of Google, Apple and other leaders, the electronics field has gradually paid attention to this issue. Microsoft is indeed no exception as one of the computer industry giants. This assignment will be a separate analysis of Microsoft surface pro 3 and further analysis by Microsoft.

The Surface Pro 3 screen is an In-Plane Switching material. IPS displays are more energy efficient than traditional CRT displays. Its casing is composed of VaporMg which is a magnesium alloy. Compared with previous generations of products, this material is lighter, with better ductility and endurance, significantly extending the service life of the equipment. Also, it has several ports, but none of them are repetitive. It is a very energy-efficient design.Other than that, this product uses ultra-low-pressure CPU. Its heat dissipation effect is better than most similar products in normal operation. However, its standard graphics card is not enough to run massive games, that is, when running a large game will appear stuck and machine fever phenomenon. Finally, the standby time of this device is 9 hours, which is enough for routine work and study. So overall, the invention is doing a pretty good job of being environmentally sustainable.

Microsoft is the company with strict requirements on environmental sustainability. Each of their devices aims to reduce the environmental and community impact of the product lifecycle. They require minimum compliance with all applicable environmental law standards and expect their manufacturing partners and suppliers worldwide to follow good environmental practices in their facilities, operations, and products manufactured for them. Their manufacturing and supply chain of the environment mainly reflected as the following aspects.

**Conserve, reuse, and recycle**

Microsoft protects natural resources by purchasing and using recycled, recyclable and renewable materials, the energy utilization and take part in recycling programs for their products.

**Reduction and disposal of wastes**

Microsoft reuses materials through factories, reducing sources and recycling to reduce and eliminate waste as much as possible. Then treated and disposed of all waste in a safe and environmentally friendly manner.

**Sustainable products**

Microsoft's environmental policies designed to protect and sustain the world's natural resources, as well as their customers and people's lives and business communities. They improve our environmental sustainability by using Microsoft digital technology.

**Continually improve performance**

Microsoft sets goals to ensure continuous improvement of its environment and management systems. They value employees' innovative ideas about environmental protection. They regularly review all aspects of business activities. Promote progress by assessing its plans, practices, and goals. They actively manage environmental risks and opportunities to ensure areas for further improvement. They work with suppliers to ensure they have the same commitment to continuous improvement in environmental performance.

**Responsible sourcing of raw materials**

Microsoft is committed to responsibly sourcing raw materials. Working with people, industry groups and NGOs, they strive to build responsible practices in harvesting and extracting materials used in our products.

**Demonstrate responsibility to our stakeholders**

They communicate with the Community of Interest on their goals and regularly communicate our progress to the Board of Directors, shareholders, customers, and the public.

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| **Name:** | Leong Soong Jun |
| **TP No.** | TP050994 |
| **Topic Selected:** | Programmer |

## S4: Programmer

In this assignment, C#, F# and Visual Basic which is introduced as programming languages and Integrated Development Environment (IDE) is reviewed as tools that are available in the Windows Operating System.

C# is a programming language that specially designed for developing applications on Windows. C# is a simple, modern, object-oriented, and type-safe programming language developed by the Microsoft yet widely-used in the .NET environment. Besides, C# is the hybrid of C and C++ programming language. C# can be used to develop many applications, but it mainly excels in developing Windows desktop applications and games. The error is easily tracked down and maintain in size and complexity yet more consistent. C# take less time to process since the code is clearly defined. (Mkhitaryan, 2017) (Gupta, 2017)

F# is a cross-platform, open-source, functional programming language that is simple to write correct and maintainable code. F# is initially defining types and functions that are type-inferred and generalized automatically. Moreover, it focused on the problem domain and manipulating its data, instead of the details of the programming. F# can be passed as parameters or combine the existing functions to create new functionality. Meanwhile, it can switch from the object-oriented to a functional paradigm that is suitable for calculations and manipulations with data. F# enforce the compiler to determine the correctness of function and pattern making. (EastBancTech, 2014) (Carter, 2018)

Visual Basic is standard to build the type-safe and object-oriented application. Visual Basic’s strength is to enable graphical user interface (GUI) to choose and modify code written in its programming languages. Furthermore, Visual Basic allowed programmers to develop Windows applications meanwhile accessing database rapidly but unpopular in game development. Visual Basic is known as slow performance, but flexible compare to other programming languages. The process of building a program in Visual Basic is to draw the interface by adding certain controls, define essential characteristics of the controls and code is written to determine the control react to user’s actions. (Siddiqui, 2015) (Hughes, 2018) (Dollard, Wenzel, Florin, Jennifer, & Matt, 2018)

An Integrated Development Environment (IDE) is a software development tool that is commonly used by programmers to write and test the programs or software. However, it helps the programmers with provide one tool with all features and eliminate the integration's needs. There are several advantages for programmers to consider Integrated Development Environment (IDE). It allows the programmers to navigate quickly through code. Also, programmers can easily test and debug in Integrated Development Environment (IDE) instead of the code editor. Moreover, code refactoring is one of the crucial support features. It helps programmers to restructure existing code and save time to change manually. Integrated Development Environment (IDE) help in spell-checking, track changes, and database integrations with data explorer. (Louis, n.d.) (Best Integrated Development Environment (IDE) Software, n.d.) (Integrated Development Environment (IDE), n.d.)

Visual Studio is an Integrated Development Environment (IDE) for C, C++ and C# programming languages. However, Visual Studio is an open-source editor that is multi-platform that allowed to run on Windows, Mac, and Linux. It offered a vast number of features to support software development. Visual Studio helps in IntelliSense, debugging, code refactoring, database integration, etc. Thus, it supports multiple programming languages, the code editor and debugger support nearly any programming languages. Visual Basic is a tool available in the platform and uses Microsoft software development which is Windows API, Windows Forms, Windows Presentation Foundation, Windows Store and Microsoft Silverlight. (What is Microsoft Visual Studio used for?, n.d.)

.NET is a programming framework created by Microsoft that programmers are able to create an application which is Console, Windows, Web application and Mobile based applications. It provides a platform with built-in tools for developing, installing and executing different types of applications. .NET is enabled programmers to test their code and learn programming languages. However, .NET offered Visual Studio which is an Integrated Development Environment (IDE) to learn to programme for the Windows Operating System. (Rushaidat, 2017) (Christensson, 2018)

A computer device that runs Windows Operating System has various tools to support and fulfill the programmer's needs. IDE' overall reviews and comments are good due to the support to those beginner programmers to correct their code and reduce their mistake. It is easy since IDE helps the beginner programmers to simplify the process, reduce development time, create quality, reliable and ensure smooth functioning of the complex application.

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| **Name:** | Vaibhav Arora |
| **TP No.** | TP052691 |
| **Topic Selected:** | User for artist |

## S5: User for Artist

A picture containing object

Description generated with very high confidenceMicrosoft launched the second generation of its digital pen (N-Trig Pen) along with its Surface Pro 3 laptop with some unique features like an active stylus, smart buttons, magnet, replaceable tip, etc. and it is also capable of supporting 256 levels of pressure sensitivity. (Tablets for Artists, 2015)

A screenshot of a cell phone

Description generated with very high confidencePairing the surface pen is very easy by just connecting it using the Bluetooth. It may also allow the users to customize the two buttons to set the app for inking on your finger-tips. Pressing the back button of the pen by single time will take you directly to the OneNote and double time will take the screenshot, and the best part is that you can change the functions as you want.

For artists and designers, Microsoft's Team worked hard to give a very natural feel to surface pen and tried to make it better than pen and paper. It allows the user to use the pen in any direction and with any angle supporting tilts and thus it can work with more accuracy, making it very friendly and comfortable for drawing. The surface pen is made accordingly to work with apps like OneNote, Adobe Photoshop, Microsoft Office, Adobe Suite, Sketchbook pro, Bluebeam Revue, draw board, CorelDraw, Staff pad etc. The surface pen comes with a Surface Pen Tip Kit consisting of the pencil tip, low fiction tip, etc. to satisfy different artistic styles A close up of electronics

Description generated with high confidenceand comfort.

Benefits of drawing on Surface Pro 3 over real painting**:**

A piece of drawing is said to be an art, only if it is meant to be beautiful, no matter on what medium it is made on. (Zagrobelna, 2017)

In this techno savvy world, the artists must not limit themselves to the old and traditional style of painting. There are many pros in drawing digitally over using pen and paper. While drawing digitally, you can actually zoom in and work on small details making the artwork more alluring, you can erase the extra and unnecessary parts, can work on layers and blend them later on, can draw keeping the edges clean and sharp and without crossing the line, can use different tools like perspective tools to draw in 3D, scaling tools to get smooth lines, symmetric draw to draw symmetrical patterns etc. Working with the surface pen would be a bit interesting as a single pen can solve the purpose of everything like brushes, pens, eraser, and different tools etc.

Microsoft Surface Pro 3 is one of the best devices for designers, artists, photo editors, animators, creative directors, etc. It is the perfect blend of laptop, tablet, graphics tablet and sketchbook all in one device. The 11.5 x 7.9-inch screen is the perfect size for drawing on and also the Surface Pro is portable as it weighs merely 770g. For meeting the best drawing requirements, the resolution of the device is 2736 x 1824 (267ppi) with 3:2 aspect ratio. (Chie, 2017)

Microsoft's team intensely focused on the accuracy as this is an active stylus, so the cursor is always directly under the tip. For the comfortable drawing experience, it comes with the adjustable stand making it user-friendly for artists. Microsoft worked with some of the best and most used drawing apps to make them work in a very realistic way with the stylus pen and the surface pro 3.

Some of the art applications that has good support on Microsoft Surface Pro 3 are**:**

Autodesk Sketchbook Pro:

A close up of a device

Description generated with very high confidenceA screen shot of a computer

Description generated with very high confidenceAutodesk sketchbook and surface pro 3 is an ultimate combination for sketch artists and designers. This is a professional-level application for those who want to use the surface pen to create powerful sketch art. It has a more user-friendly interface as it offers tilt-responsive brushes and pressure sensitivity. This application gives you a pure digital brush in order to add the colour without blending. It has the feature of full support for the surface pen as you can use the surface pen button to change the colour or to switch between brushes and the top button can be used as an eraser.

Paint 3D:

Paint 3D is an application which you can use to think and draw beyond the 2-dimensional surface and to bring your ideas to life in 3rd-dimensional space. Use your pen to work in 3D layers and to move it in the 3D space. This application allows you to make digital sculptures also. Through the back camera of your surface pro 3, you can see 3D objects mixed into the real world. You can also use your pen to use the stickers or the objects in the word document or presentations. This application supports a number of gestures and also supports the pen buttons for erasing and changing the colour or brushes.

A screen shot of a computer

Description generated with very high confidenceA flat screen tv

Description generated with high confidenceAdobe Illustrator CC:

A perfect application for digital artists as it allows you to show your artistic creativity on a full-screen digital canvas. In this app, you don't really need the keyboard as it entirely emphasis on the use of surface pen and the touchscreen. You can actually draw using the pen and the touch simultaneously which makes the whole experience feel more intuitive and efficient. There are many gestures for the surface pen that are supported in this application like you can hover the pen on the screen to get the preview of what your canvas will look like. Doing everything with pen and touch gives you the natural feel of the drawing.

A picture containing person, indoor, electronics, holding

Description generated with very high confidenceThe Microsoft’s team on Surface Pro 3 has put all the tools and features that an artist needs for vector or graphic artwork in the palm of your hand anytime, anywhere.

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| **Name:** | Grace Ong |
| **TP No.** | TP053002 |
| **Topic Selected:** | User for engineer |

## S6: User for Engineer

Microsoft Surface Pro 3 is a 2-in-1 laptop or so-called hybrid laptop that is manufactured by Microsoft. It can be used as a tablet or a normal laptop. The hybrid laptop is usually more powerful than regular tablets but provides more portable functionality than traditional laptops. (Kyrnin, 2018)

**Powerful Processors:**

Microsoft Surface Pro 3 uses Intel Core i7-4650U Processors which runs approximately up to 3.30 GHz: It also uses Intel HD Graphics 5000 processor that runs approximately 200MHz. (Wollman, 2014) With these processors, Microsoft Surface Pro 3 is powerful enough to run intense engineering software such as Bluebeam, SolidWorks, AutoCAD, and MATLAB. (Chapman, 2015) AutoCAD is a 3D computer-aided design drafting that requires high graphics processing power. Engineers frequently use AutoCAD to create blueprints of their projects. MATLAB is a numerical analysis environment and a fourth-generation programming language which requires high processing power for calculations. (Chapman, 2015) Engineers usually use MATLAB for image or signal processing, industry's control system, robotics, etc. Hence, Microsoft Surface Pro 3's processing power is sufficient for engineers everyday use at their workplace.

**Well integrated with Microsoft Office and Surface Pen:**

Besides that, Microsoft Surface Pro 3 is well integrated with Microsoft Office and the Surface Pen. Surface Pen is a digital pen and active stylus developed by Microsoft for its Surface series. It works seamlessly like an actual pen with erasing function, providing natural-writing experience for engineers on Microsoft Surface Pro 3. (Maxey, 2018) For example, when engineers are checking their project progress in the factory, they want to highlight a particular part of the project's blueprint, they can just only do it more precisely with Surface Pen instead of a mouse or trackpad. Other than that, a new page of OneNote will appear on the Microsoft Surface Pro 3 even the laptop is in sleep mode or locked when the top button of the Surface Pen is pressed. (Wollman, 2014) This feature allows engineers to quickly jot down their notes or their thoughts in Microsoft Surface Pro 3. Since everything in OneNote is automatically sync to OneDrive, their ideas or thoughts can be shared easily with their colleagues or their teammates even they are not in the office, increasing productivity.

**Quick Switch to Desktop System**

Furthermore, Microsoft had developed a docking station which is called Surface Dock for the Surface series. This docking station allows the engineers to quickly switch from a portable laptop to a full desktop PC. (Li, 2016) After setting up the docking station with other monitors in the office, engineers can turn Surface Pro 3 into a desktop system by just sliding the laptop down into Surface Dock then sliding the sides of the Surface Dock into the sides of Surface Pro 3. Hence, when engineers come back from the site, they can simply connect Surface Pro 3 with multiple monitors multitask more comfortably. (Chapman, 2015)

**High Portability Features**

Moreover, Microsoft Surface Pro 3 is very thin and light, comparing to other 2-in-1 detachable tablets, with only 10.6 inches thick and weight 910g. It also comes with a built-in, multi-position Kickstand for solid support at any angle between 22 to 150 degrees. Besides that, Microsoft Surface Pro 3 can also be used as different modes. For example, Laptop Mode by opening the built-in Kickstand and adding the Type Cover which is a detachable keyboard developed by Microsoft, providing a full keyboard experience, Studio Mode by lowering the Kickstand for the perfect writing and drawing angle with the Surface Pen and Tablet Mode by closing the Kickstand, and removing the detachable keyboard for a powerful, stand-alone tablet. (Maxey, 2018) With these features, engineers can bring around jotting down notes quickly like a notebook, or detaches the keyboard showing the blueprints of the projects with the clients and so on. Hence, Surface Pro 3 offers flexibility in providing different modes of usage that suits engineers from office to site.

**Full Operating System Allowing Multitasking**

Surface Pro 3 uses Windows 10 operating system, enabling Surface Pro 3 to run engineer's essential programs such as SolidWorks and Bluebeam. Engineers can manipulate files and work in the field. Besides that, the snap feature of the Windows 10 operating system allows the engineers to multitask using Surface Pro 3. Being able to both access, view and change files when the engineers are on site, definitely saves time and money, increasing the productivity and efficiency. (Chapman, 2015)

In conclusion, Microsoft Surface Pro 3 is a suitable device for engineers to use either in their workplace, site or home. With all the features provided by Microsoft Surface Pro 3, engineers can work in a more sufficient way by increasing productivity and efficiency.

# CONCLUSION

In a nutshell, Microsoft Surface Pro 3 is an amazing 2-in-1 laptop in the market from 2014 to 2016. The CPU, GPU, and other hardware components are outstanding compared with another standard 2-in-1 laptop. With the features provided by the Microsoft Surface Pro 3, it is suitable for all kinds of users from an academic user such as students, to a professional user such as artist and engineers. Microsoft Surface Pro 3 is using Windows 10 as its operating system. Windows 10 consists of lots of features including a fantastic user interface, improved file management system and symmetric process management system. Thus, people should give a try on this laptop for the best 2-in-1 laptop experience. In the future, we also hope that Microsoft will invest more in their research to develop a similar device like Microsoft Surface Pro 3.

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# APPENDICES

***Work Breakdown Structure:***

|  |  |  |
| --- | --- | --- |
| Student | Allocation of Work | Signatures |
| S1 (Meghnah Shabajee)  TP051965 | Introduction  Social & Technical issues |  |
| S2 (Praveen Thamotharam  A/L Ravintheran)  TP048423 | Introduction  User for student |  |
| S3 (Zhang Ziteng) TP052096 | Hardware  Environmental Sustainability |  |
| S4 (Leong Soong. Jun) TP050994 | Hardware  Programmer |  |
| S5 (Vaibhav Arora) TP052691 | Software  User for artist |  |
| S6 (Grace Ong) TP053002 | Software  User for engineer |  |

***Minutes of meetings***

**Call to order**

Our first discussion took place on the 15th of November 2018

**Attendees**

All our group members attended: 1.Grace Ong

2. Meghnah Shabajee

3. Leong Soong Jun

4. Praveen Thamotharam a/l Ravintheran

5. Zhang Ziteng

6. Vaibhav Arora

**Members not in attendance**

All members were present during our discussion

**Report**

In our first discussion we created a group on Whatsapp and discussed about which device to pick. Also we distributed the group components to each member.

**Announcement**

1. Each group components have to be done following the guidelines provided in the assignment question.
2. Date of the draft submission of the group components is:

26th November:

Section A: Introduction and Section B: Hardware

10th December:

Section C: Software

|  |  |  |
| --- | --- | --- |
|  |  |  |
| **Meghnah Shabajee** |  | **Date of Approval:** |

***Minutes of meetings***

**Call to order**

Our second discussion took place in the quiet zone in the library on the 13th of December 2018.

**Attendees**

All our group members attended: 1.Grace Ong

2. Meghnah Shabajee

3. Leong Soong Jun

4. Praveen Thamotharam a/l Ravintheran

5. Zhang Ziteng

6. Vaibhav Arora

**Members not in attendance**

All members were present during our discussion

**Approval of minutes**

All members approve the last minutes of meetings.

**Report**

In our second discussion we distributed the individual components to our group members.

**Announcement:**

1. Feedbacks of group components draft will be given by tutor.
2. Each group member submitted their work individually.

|  |  |  |
| --- | --- | --- |
|  |  |  |
| **Grace Ong** |  | **Date of Approval:** |

***Minutes of meetings***

**Call to order**

Our third discussion was held at the café on campus on the 21st of December.

**Attendees**

All our group members attended: 1.Grace Ong

2. Meghnah Shabajee

3. Leong Soong Jun

4. Praveen Thamotharam a/l Ravintheran

5. Zhang Ziteng

6. Vaibhav Arora

**Members not in attendance**

All members were present during our discussion.

**Approval of minutes**

All members approve the last minutes of meetings.

**Reports**

Our group discussed about the finalisation of our report, including the graph and receiving signatures from our group members.

**Announcement**

1. Final version of each group components must be done on 26th December.
2. The final document will be submitted by on the 27th of December 2018

|  |  |  |
| --- | --- | --- |
|  |  |  |
| **Zhang ZiTeng** |  | **Date of approval** |

***Gantt Chart:***

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Activities | Week | | | | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Completing Section A |  |  |  |  |  |  |  |  |  |  |
| Completing Section B |  |  |  |  |  |  |  |  |  |  |
| Completing Section C |  |  |  |  |  |  |  |  |  |  |
| Completing Individual Parts |  |  |  |  |  |  |  |  |  |  |
| Finalise Whole Documents |  |  |  |  |  |  |  |  |  |  |