

Acknowledgment

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We'd like to thank our parents for their affection, love, and backing, and for the education they provided us. Also, we extend our appreciation to everyone who has provided helpful contributions and to those who have helped us with our refreshments.

Abstraction

The report aims to provide an extensive analysis of Apple's MacBook Air 2019 and include a thorough assessment of its impact on human life as well as a full specification of the device. The study shows the various types of users' perspectives to conduct a strategic analysis of Apple Inc. The study's goal is to examine the factors that exist in Apple's internal and external environments, as well as how the company provides end products and services to maintain its position as the market leader in the computing world.

The report the major topics like the introduction of Apple Company, facts about Apple, detailed specifications of MacBook Air 2019, operating system used by the device, user interface, file management of MacBook ecosystem, security services provided by the device, user perspective, environmental sustainability and socio-technical issues regarding the Apple itself.

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Group Component

1. Introduction

1.1. Introduction to Company

Apple Inc. is a popular brand in technology. Apple Inc. is a multinational technology company of America headquartered in Cupertino, California. Apple is known for manufacturing smartphones named iPhones, tablets known as iPads, laptops known as MacBook, desktop computer known as iMac and other computer peripherals such as Magic Mouse, Air Pods, Magic Keyboard and more.

Apple was founded on 1st April, 1976 by a 42-years-old Ronald Wayne who was an electronics worker, Steve Jobs who was a college dropped student and Steve Wozniak and raised Apple Computer Inc. On January 9, 2007, the company changed the name Apple Computer Inc. Apple's logo was first developed, representing Newton's gravitational law. Later, the logo was redesigned with rainbow and used until 26th August, 1999 by Apple. Apple currently uses dark and grey logo designed on 2017.



Figure: Apple Logos



Figure: Apple's founders

Though it was very hasty start of the business at the beginning, Jobs understood about professional management and substantial funding was necessary in order to accomplish company growth. Apple I was introduced with a circuit board without any keyboard. After Ronald Wayne's exit from Apple the company introduced Apple II in 1977. Jobs and Wozniak started getting better sales and they redesigned their product with keyboard and floppy disk attached on the device.

In 1980 Apple introduced their own PC and the rivalry was originated between Apple and IBM. Later Apple used GUI from XEROX PARC and used the GUI in upcoming devices. Apple also launched Apple III and Lisa, both of which were flopped. Jobs introduced the Macintosh later in 1984 to a large audience that earned a lot of applause and recognition.



Figure: Apple Macintosh.

In 1987, Apple launched their first Mac with graphics in it. It was the second version of Macintosh I named Macintosh II. Apple developed Macintosh portable and struggled to

render Macintosh portable in the early 90s. The weight of the unit was the reason for its failure. The unit was very bulky and awkward. After the lessons of disappointment, Apple released the PowerBook 100, which they got right.

In 1999, Apple's first consumer laptop iBook which came with a Wi-Fi card was launched with total domination in the market. This became the origin of Apple's consumer line laptops i.e., MacBook and MacBook Air.



Figure: Apple Mac Portable

MacOS X and iPod were introduced by Apple in the same year, 2001. Both of them were very good for the market. The iPod sold so well and outperformed all music players on the market.



Figure: Mac OS

Figure: iPod

Apple finally switched from PowerPC chips to Intel Chips in 2007. iPhone was presented by Steve Jobs at Macworld 2007 and became the most successful product in the Apple history at that time (DELVENTHAL, 2020). In 2011 Steve Jobs resigned appointing Tim

Cook over his directives due to his pancreatic cancer illness. Job died on October 5th 2011 being chairman of the board at the Apple.

Tim Cook following Steve Jobs legacy is currently working at Apple Inc, as Chief Executive Officer. The new well-known Apple product in the market are iPhone 12 Pro Max and MacBook Pro 2020.

1.2. Facts about Apple Inc

The facts about Apple Inc. are as follows bellows: -

- The ‘Apple’ name came from founder Steve Jobs. Steve Jobs liked apple fruit and named the company name Apple.
- Apple's first logo was created depicting Isaac Newton and his gravity experiment.
- Apple made the first digital color camera.
- Samsung currently manufactures the Apple Retina display.
- The idea for name iPod was originated from the movie 2001: A space Odyssey
- The Mac's battery is bulletproof.
- The most expensive iPhone in the world cost \$15 million.
- Apple has four times more cash on hand than the US treasury.
- Apple has a ‘no smoking’ ban rule, if Apple users smoke while using an Apple computer their warranty will be discarded.

2. Introduction to Device and Hardware Specifications

2.1. Introduction to device

MacBook air is a laptop computer which was manufactured and introduced by Apple Inc. since 2008 January. It is a modern version and thin light structured which consists of a full-size keyboard with an aluminum case. MacBook air redesign and add intel core i5 or i7 processor after designing MacBook air in October 2010. MacBook air was released four generations with astonishing upgraded facilities. MacBook air introduced a retina display with reducing dimension of screen and USB – C or thunderbolt 3 ports for ports and power in third generation in October 2018. Moreover, in November 2020, MacBook air came with upgraded facilities and based on an apple silicon processor.



Figure: MacBook Air General Specifications

MacBook Air (2019) with unboxing:



Figure: Apple MacBook

In 2019, Apple inaugurated a brand-new MacBook laptop in two different products (MacBook Air and MacBook pro). The MacBook Air 2019 is one of the thinnest and lightest Apple products with a 13-inch large screen. In comparison with the 2018 version, it is a more affordable product with much needed improvement. This makes a more enticing proposition to an individual who wants a student laptop. Though, it might not seem measurable against MacBook pros in terms of facilities. But Airs has been refined over the years and an affordable option in contrast with MacBook pros.

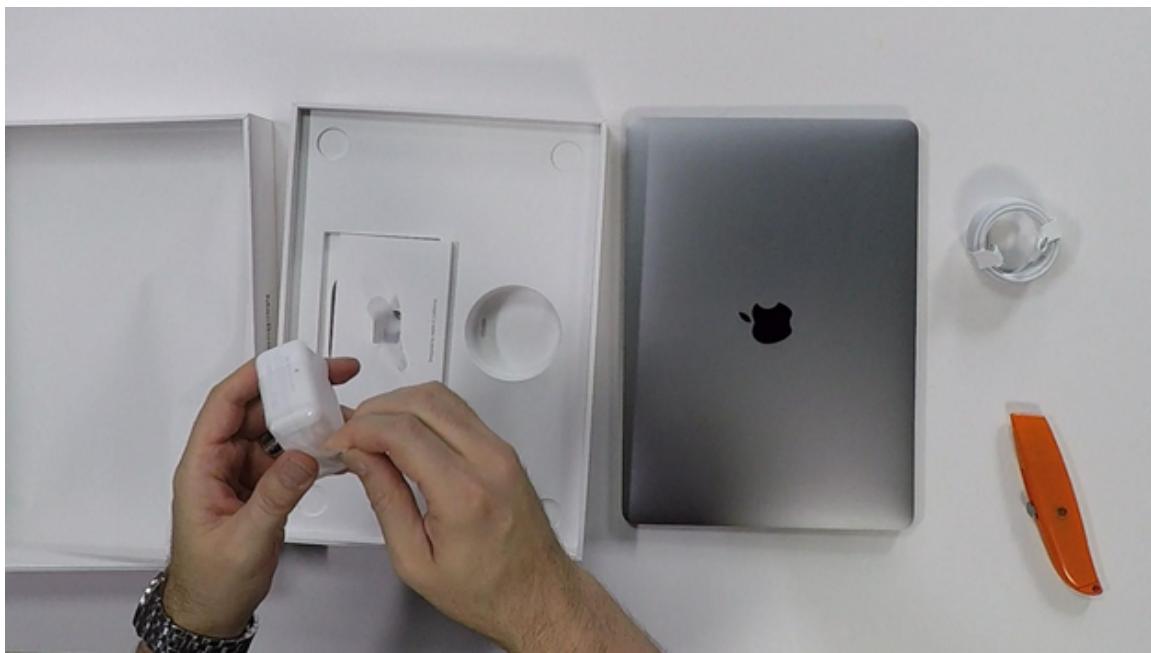


Figure: MacBook Air Unboxing

Likewise, the Apple brand facilitates some useful things with the MacBook air laptop in a box. After unboxing, we can get a brand new 13- inch large screen laptop which is lightest and thinnest. MacBook air 2019 upgraded in comparison with 2018 version of MacBook air. They modified the display into a retina display. Considering its durability and features, the price of MacBook can be handy for long term use. It provides this brand-new laptop in three different enticing colors; space grey, silver and gold. They also inaugurated an apple sticker with the representative color of MacBook air. They provide user manuals information of warranty paper which might be a reason that a person can buy it. In addition, they provide a charge with 30 watt charging brick which we can charge a laptop through USB-C cable.

2.2. Hardware Specifications

Hardware Component

S.N.	Component	Specification	Description
1	Processor	1.6GHz Dual-Core Intel Core i5	The CPU is Intel's Turbo Boost Technology based chip which has the maximum turbo speed upto 3.6GHz. There is 4MB L3 cache memory. Moreover, the device is armed with a Y-Series Intel Core i5-8210Y (8th gen) CPU.
2	Display	Retina, 13-inch display	The True Tone IPS LED display has 2560x1600 (WQXGA) resolution with 16:10 aspect ratio.
3	Storage	128GB PCIe SSD	The 128 GB PCIe SSD has a decent read and write speed of 1.3GB/s. (Blackmagic Disk Speed Test)
4	Memory	8GB 2133 MHz LPDDR3	The device comes with 8GB memory soldered into the motherboard. However, there is 16GB memory option available at purchase.
5	Cache Memory	L3 cache 4MB	4MB of L3 cache capable of rapid writing and rewriting data
6	Graphics	Intel UHD Graphics 617 1536 MB	The device is equipped with a midrange UHD Graphics card Intel. Since the device comes with two Thunderbolt 3 ports, users can equip external graphics processors (eGPU) for more graphic oriented tasks.
7	Body	Aluminum	The device has a sturdy Aluminum build which gives lightest metallic premium build quality.
8	Ports	Gold, Space Grey and Silver	MacBook Air 2019 comes with 3 colors i.e. Gold, Space Gray and Silver.

9	Audio	Stereo speakers and 3 microphones	One of the deal breaker features on MacBook Air 2019 is crisp and loud sound. The 3 microphones on the device are above average in sound production.
10	Trackpad	Force Touch trackpad	The trackpad has luxury features like multi-touch with gesture recognition. The pressure sensitivity is also quite accurate and very much addictive to play with.
11	Battery	49.9 Wh Lithium Polymer	MacBook Air 2019 is equipped with nearly 50Wh built in Lithium Polymer battery. The 30W USB-C Adapter fills the battery pretty fast and the battery lasts up to 12 hours of wireless web surfing. (Apple.com)
12	Camera (Webcam)	720p front facing webcam	The 720p Facetime HD camera on Macbook Air 2019 works fine on good lighting conditions. The camera system is one of the weakest sides of this device following the keyboard.
13	Keyboard	Butterfly-switch Keyboard	The MacBook Air is equipped with the 4th gen of its Butterfly-switch keyboard.

2.3. Conclusion

MacBook Air 2019 has a fourth-generation butterfly keyboard. In order to reduce the thickness of MacBook Air 2019, Apple switched to the butterfly keyboard as each key moves less when pressed so that less room is required (Clover et al., 2021). It is one of Apple's worst inventions ever. To make thinner laptops Apple's use butterfly mechanism. Butterfly keys can get jammed up with dust, tiny pieces of food due to which butterfly keys have big issues like some keys don't register, some keys register twice and sometime keys get stuck.

A magic keyboard is the most important component the device has to offer. After the butterfly keyboard issues Apple's should change butterfly mechanism to scissor mechanism. The Magic keyboard is based on a scissor mechanism and it is more reliable, giving better experience while typing. Magic keyboards increase key stability and reduce key travel.

3. Operating System

3.1. Introduction to Mojave OS

The fifteenth version of MacOS, after MacOS High Sierra, is MacOS Mojave. It was released on the 24th of September 2018. North America and the Mojave Desert have borrowed the name MacOS Mojave. This is the latest version of MacOS to support software for 32-bit applications. This is the first version of MacOS with functionality in dark mode.

3.2. User Interface

The fifteenth version of MacOS, after MacOS High Sierra, is MacOS Mojave. It was released on the 24th of September 2018. North America and the Mojave Desert have borrowed the name MacOS Mojave. This is the latest version of MacOS to support software for 32-bit applications. This is the first version of MacOS with functionality in dark mode.

- MacOS Mojave User Interface**

The main attraction for some users is the user interface. There is a menu bar in the MacOS Mojave at the top of the screen. From where all your system settings can be accessed. The Dock is at the bottom of the Home Screen. There's a desktop screen between the menu bar and the dock. When an application opens, it appears on the desktop.

- **MacOS Mojave Home Screen Elements**

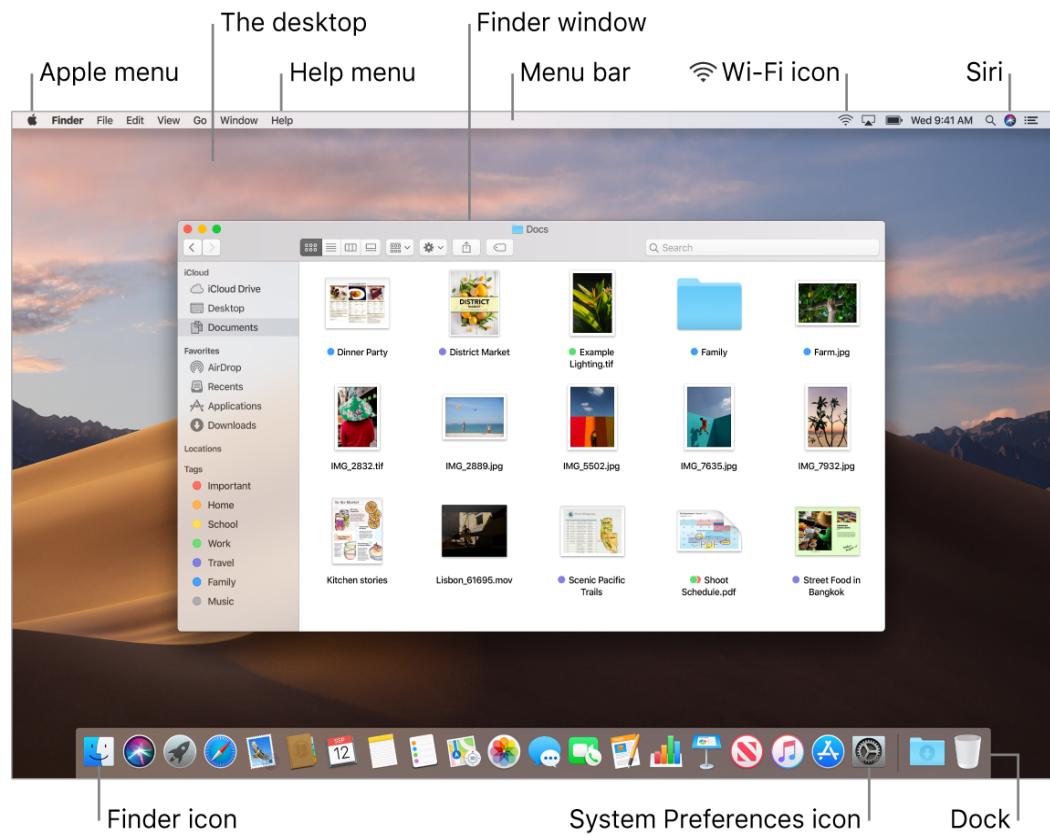


Fig: MacOS Mojave home screen elements (Apple, 2020)

- **Apple Menu**

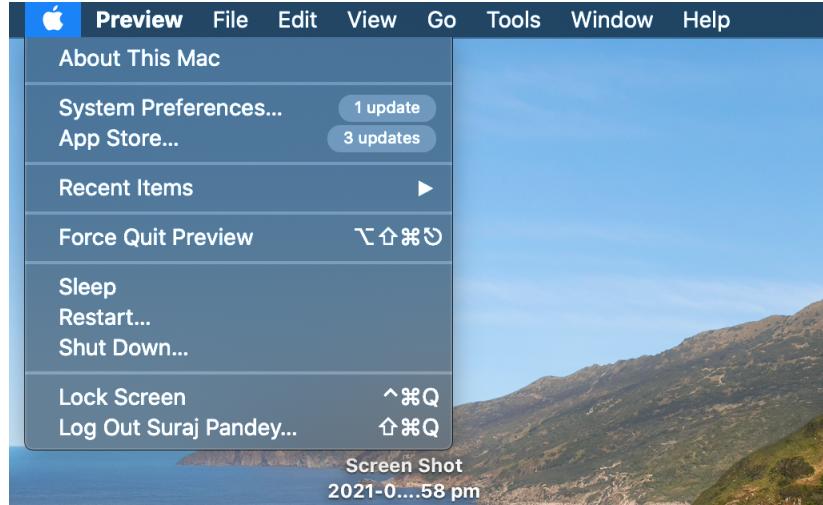


Figure: Apple Menu

In the top left corner of the home screen lies the Apple Menu. Device preferences and newly used documents, programs, and other objects can be accessed from there.

Apple Menu items	Description
About This Mac	To view information about your mac devices such as processors, OS, storage etc.
System preferences	To change settings on MacBook and update MacOS.
App store	Visit the app store to download required applications.
Locations	Choose your location.
Recent items	To view and use recently used apps, file, folders etc.

Force quit	To turn the app if it is not responding.
Sleep	Dim the screen and reduce power consumption without turning off the device.
Restart	To restart the computer.
Shut down	Turn off the Mac completely.
Lock screen	To lock the computer
Log out	Log out the current user account.

- **Menu Bar**

The menu bar is located at the top of the screen. It provides a home for the top-level menus of the device. These menus include standard system menus as well as custom menus.

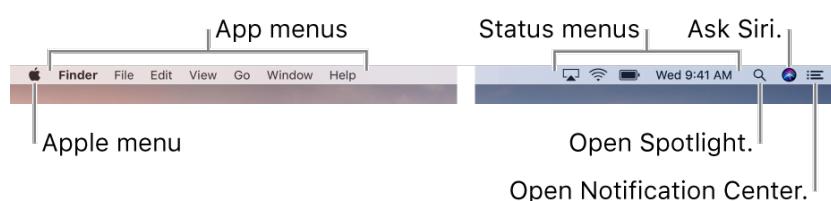


Fig: Menu bar MacOS

- **Menulet**

Menulets are the little icons in the menu bar's right corner. It consists of items such as battery, Wi-Fi, sound, time and date, and other panels. By turning off the

corresponding check box in the system preferences, the user can also disable the menu.



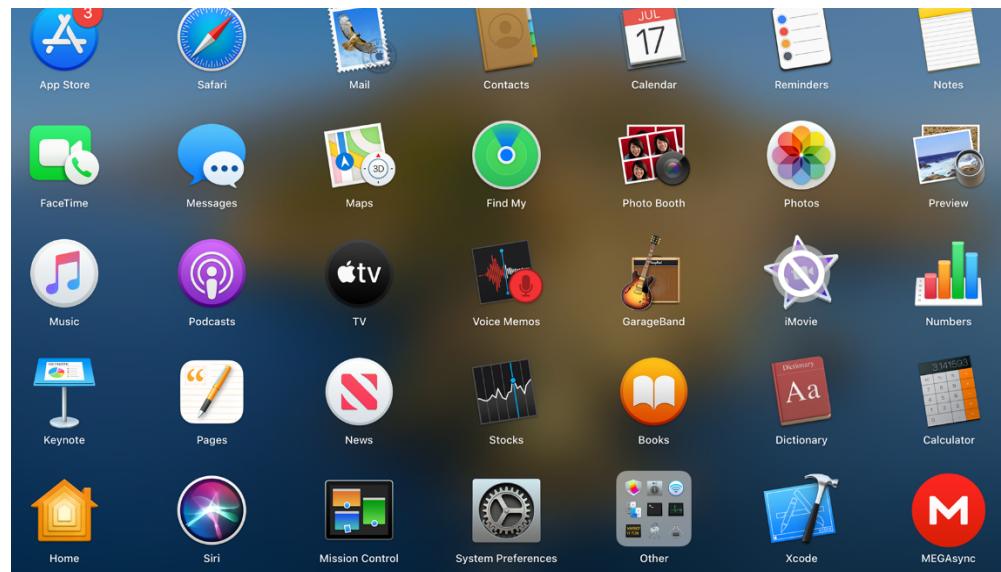
Fig: Menulet of MacOS Mojave

- **Apps and icons**

Attractive icons are an important element of the user experience. MacOS shares a common set of visual attributes including rounded rectangle shape, front perspective layer position, and smooth drop shadow. Most of the MacOS icons are built using components from Appkit. (Legal - Repair Terms and Conditions - Apple, 2021).

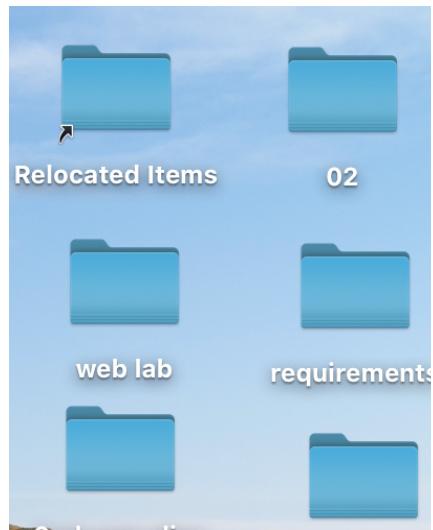
Types of icons:

- ❖ **App icons**



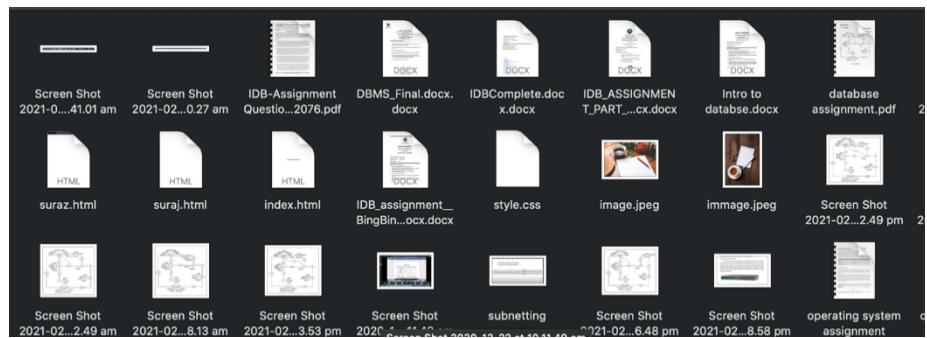
(Fig: Apps icons)

❖ **Folder icons**



(Fig: Folder icons)

❖ **File icons**



(Fig: file icons)

❖ Status icons

Image	Name
●	Available
○	None
■	Partially Available
●	Unavailable

(Fig: file icons)

❖ Mac Window

A window on MacOS consists of a frame area and body area which let the user to view and interact with the content in an app. A window on mac can

appear alongside on screen with other windows, or full screen mode. Users can resize the size of the window by clicking and dragging the edge of the window, if the window supports resizing.

The window frame: The window frame is the border Holds of the window.

Title bar: The title bar includes options like closing, minimizing, expanding to full-screen the window. These options are mostly visible, but can be hidden such as while playing music, playing video on Quick time play. The title bar may contain file names in the case document window.



Figure: Mac Window (Window Frame & Title Bar)

❖ **Window toolbar**

A toolbar offers commonly used controls such as display, zoom and other easy access to commands and features. A toolbar cab will be hidden in full-screen mode to increase the content focus.

❖ **Manage window on MacOS Mojave**

A window appears on the screen when you open the software or the Finder on your Mac. Just one app at a time is active; in the menu bar, the app name (in bold) and the app menus are shown.

❖ **Maximize, minimize and close window**

Close a window: In a Mac window, click the red close button  in the top-left corner. If multiple windows of an app are open to close the app click the app name in the menu bar and choose quit app.

Maximize Window: To maximize window, click on green button  in the top left corner of the app window.

Minimize a window: To minimize window click on yellow minimize bottom  on top-left corner of the app window (Legal - Repair Terms and Conditions - Apple, 2021).

❖ Visual design

Dark mode: Dark mode was first introduced in MacOS Mojave. In dark mode, dark colors are used in place of bright colors in UI. In dark mode text has higher contrast which makes it easier for users to read documents and menu items. In addition, dark colors reduce glare and reduce eye fatigue. We can enable this feature from menu system preferences (Voorhees, 2021).

❖ Dynamic desktop

MacOS Mojave introduces dynamic desktop features. This feature will automatically change the lightning of the desktop wallpaper throughout the day based on the day in the location.

3.3. File Management

A file in a computer system is nothing but a collection of data like documents, audio, video, application in one unit. Similarly, file management is the process of creating, modifying and deleting the files. This is one of the most important features of operating systems. This feature helps us to easily locate files in the computer, helps to create new files, helps to modify the name of the files and also helps to search files easily and quickly. File manager also helps to identify the characteristics of the files through

Files	Files extension
Text files	.txt
Images	.jpeg, .jfif, .jpg, .jfif
MacPaint	.mac
Web pages source code	.html, .htm

different file extensions.

Figure: File extension in MacOS

File management in MacOS

As we have selected MacBook Air as our device for the project, users can manage or organize files using Finder. It is equivalent to the windows explorer of Microsoft windows. So, like that in windows explorer we can search files, view apps, locate each of the drives on the computer through finder in macOS.



Figure: Finder App in MacOS

Finder can be simply found on the dock at the bottom of the macOS screen or at the top left corner in the menu bar of the screen as soon as you start your computer. As all the activities related to file management are carried out through finder there you can create a folder to store data, copy files to other disk, delete items, rename items, move data. Like that in windows explorer file extensions are used for the easy identification of different kinds of file in macOS too. For example: .pdf for pdf documents, docx for word documents, jpg for images, .html for web page source code, .txt for plain text like that on the figure.

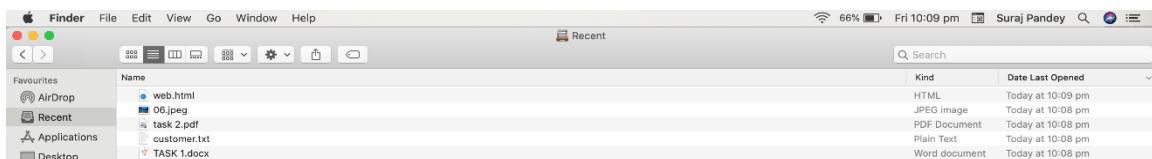


Figure: File Extension in MacOS

When you open finder window, there you can view a side bar where you can see various options like applications, desktop, documents, iCloud derives and many more.

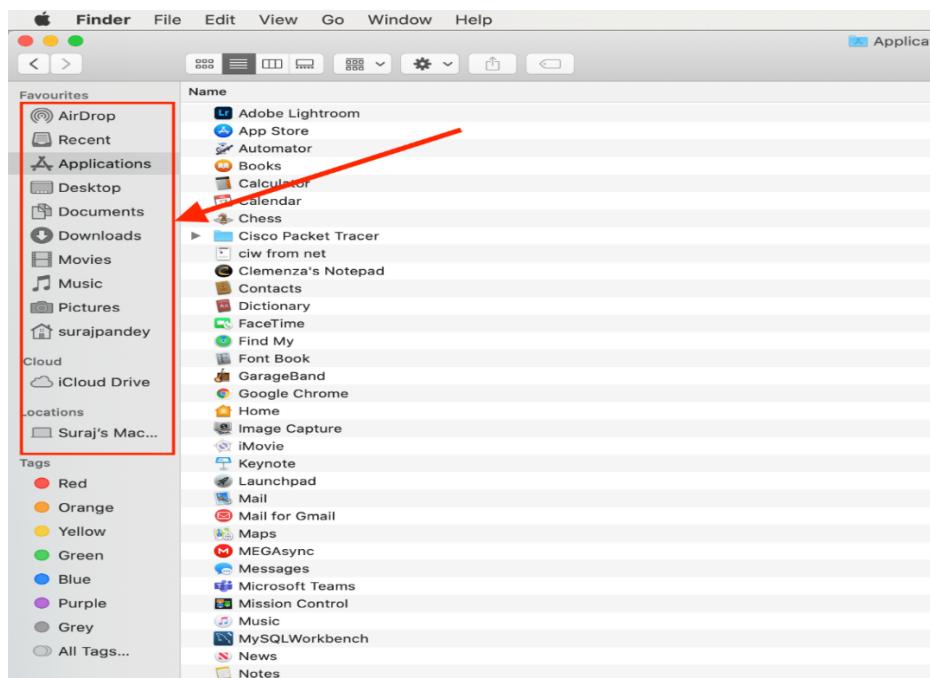


Figure : Sidebar on Finder

So, all the files and documents which are located in different places of the computer can be found here. You can hide or show other options on the sidebar simply by clicking the preference option after clicking the finder option of the menu bar of the screen.

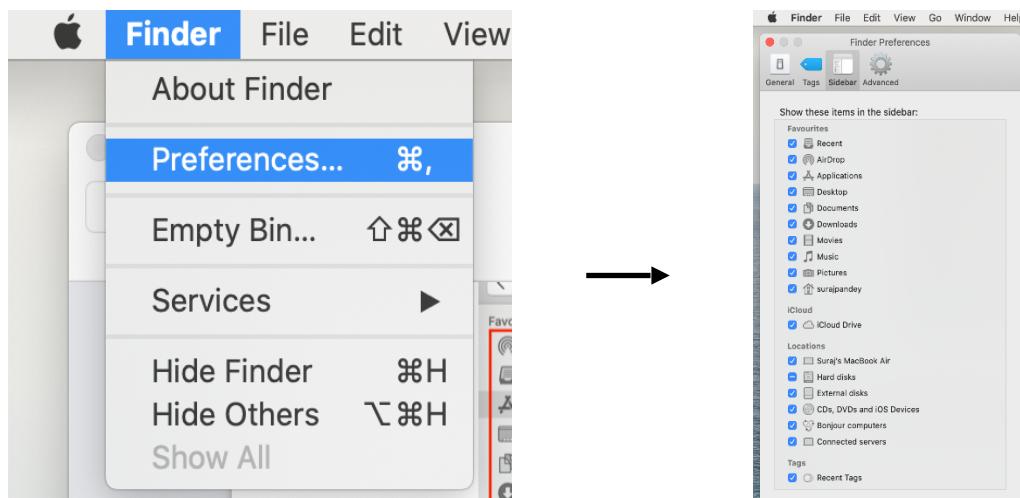


Figure : Preference Option

Not only sidebar we can also modify the arrangement of the files in finder windows. So, to change the view you have given different options like icon, in list, in columns, or in a gallery at the top of the finder windows on view menu bar along with the quick search box. This quick search box is given to find the files easily.

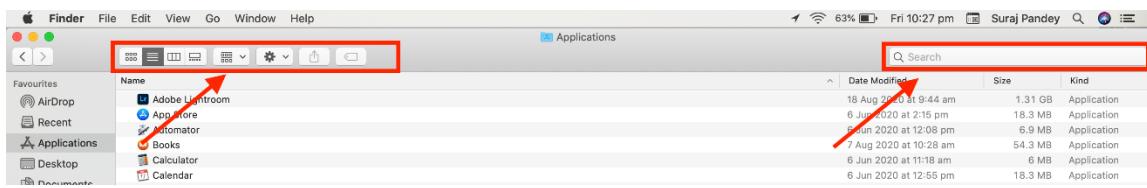


Figure : View menu bar and Quick search box.

Similarly, the other way to search files is through the option given on the side bar. In various applications like safari, app stores, test files are located. Likewise, downloaded files can be found on downloads option. If you are not able to find the file then you can simply search it through the quick search which helps to find out your file quickly and easily. And when you click the searched file then location of the file in your computer is shown at the bottom of the finder window.

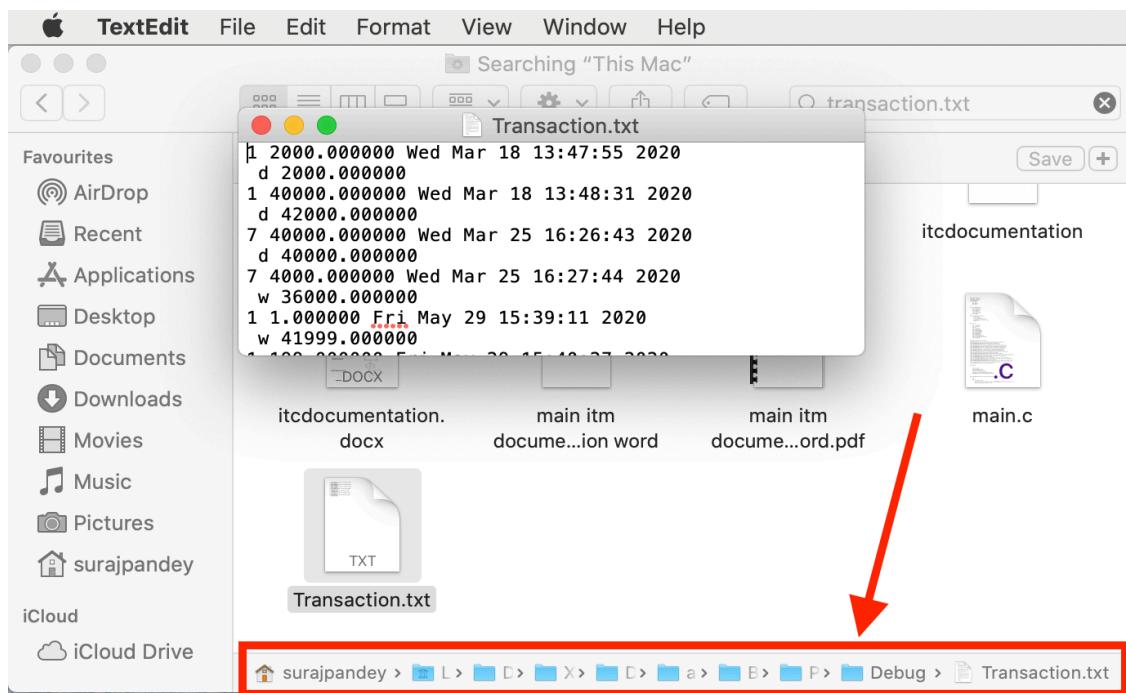


Figure : File Location

3.3.1.File directory in macOS

The files and folders in macOS are arranged in hierarchical structure as follows:

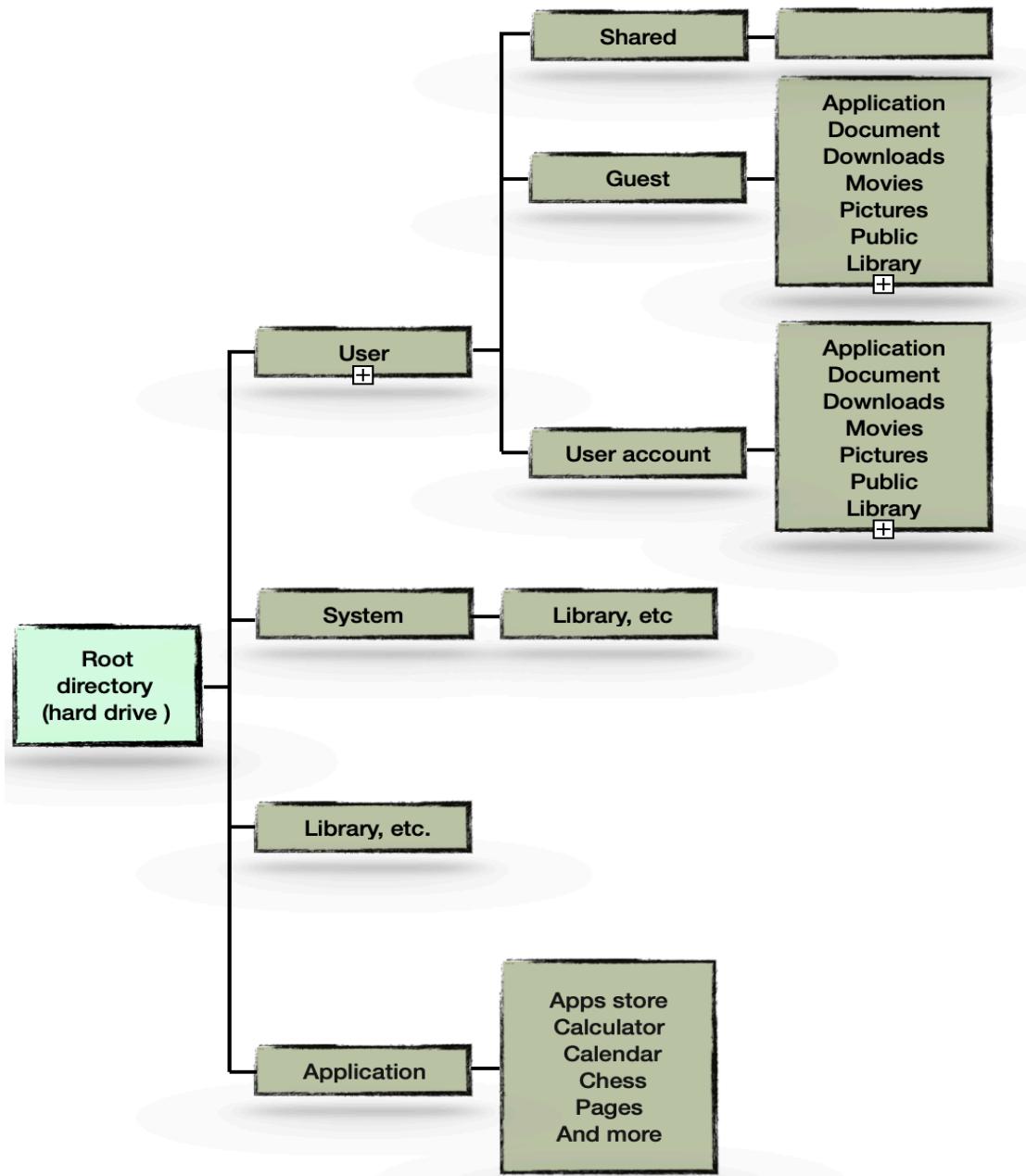


Figure: File directories in MacOS

Root directory (hard drive) is the topmost directory of macOS file system where folders store files. Inside root directory four folders are available I.e., users, system, library and application folder.

- User

User folder contains three accounts. By default, there is a shared account, guest account and user account. So, most of the users spent time in the user folder.

- Shared

In a shared account we can share our files and folders between the user's account. It is empty.

- Guest

In a guest account, guest files and folders are stored but as soon as you log out of the guest account all the documents and folders of the guest account also disappear.

- User account

Similarly, in case of a user account there you can see various options like application, documents, pictures, music, etc. which are only accessible to the specific user. The personal information of the specific user is located in this section. There is also another major folder in the user account I.e., library which is by default hidden. But this is different to the library folder located just below the root domain and guest account.

- System

System domain contains assets documents and applications, which are connected to the system, and which are introduced by apple.

- Library

There are many library folders in different domains as you can see in above figure 6 I.e, library folder under local domain, library folder under system domain and library folder under user domain. User domain library folder stores the information of the current user. While the library folder of the local domain and system domain contains information shared by all the users and resources related to system application.

- Application

Like the library folder, the application folder is also located under multiple domains. Application folder under user domain contains applications related to the user. Similarly, the application under system contains the application installed by apple. While the application that can be used by all the user are located under local domain.

4. Security

When it comes to security, the MacBook Air escalates itself to a entire new level. Having security tools built within the system, macOS Mojave offers a compelling defense that keeps device unharmed from susceptibility and jeopardies. Enhancement in technologies like XD (execute disable) and ASLR (Address Space Layout Randomization) have made file verification effectual, assuring that the files are not tampered. Similarly, improvement in password guidance and privacy has also been beneficial as users can have a secured experience while operating the device. Moreover, there are also other substantial functions provided on MacOS Mojave.



Fig: macOS Mojave and its security services

With ‘web world’ flourishing immensely, number of cybercrimes are also multiplying day by day. Web browsers are being tracked and data from device are being pirated, vanished or stolen. To get rid of these issues, Safari (default web browser) in macOS Mojave has been upgraded with crucial security features. Today, abundance of websites uses third-party software that tracks device with distinct determination. So, Intelligent Tracking Prevention

has been introduced, that averts cross-site tracking and makes browser free from malware or any other threats. With Safari, interpreted version of system composition is displayed which bemuse trackers when trying to detect the device they are searching for.

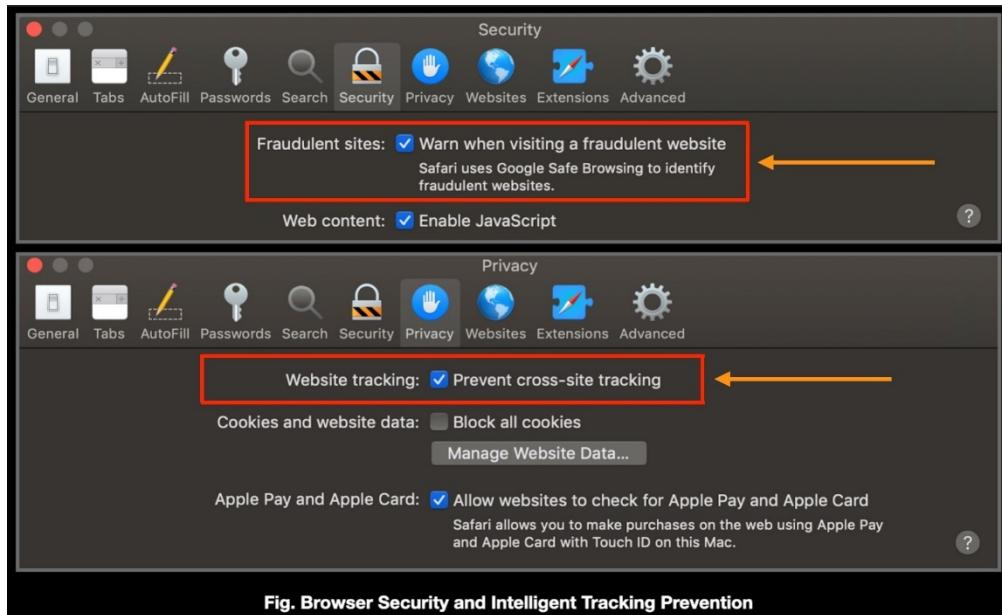


Figure: Browser Security and Intelligent Tracking Prevention

Correspondingly, automatic strong password has been brought in browser that suggests a strong password while creating a new account. If accepted, the password is stored in Safari and can also be used with other apple devices.

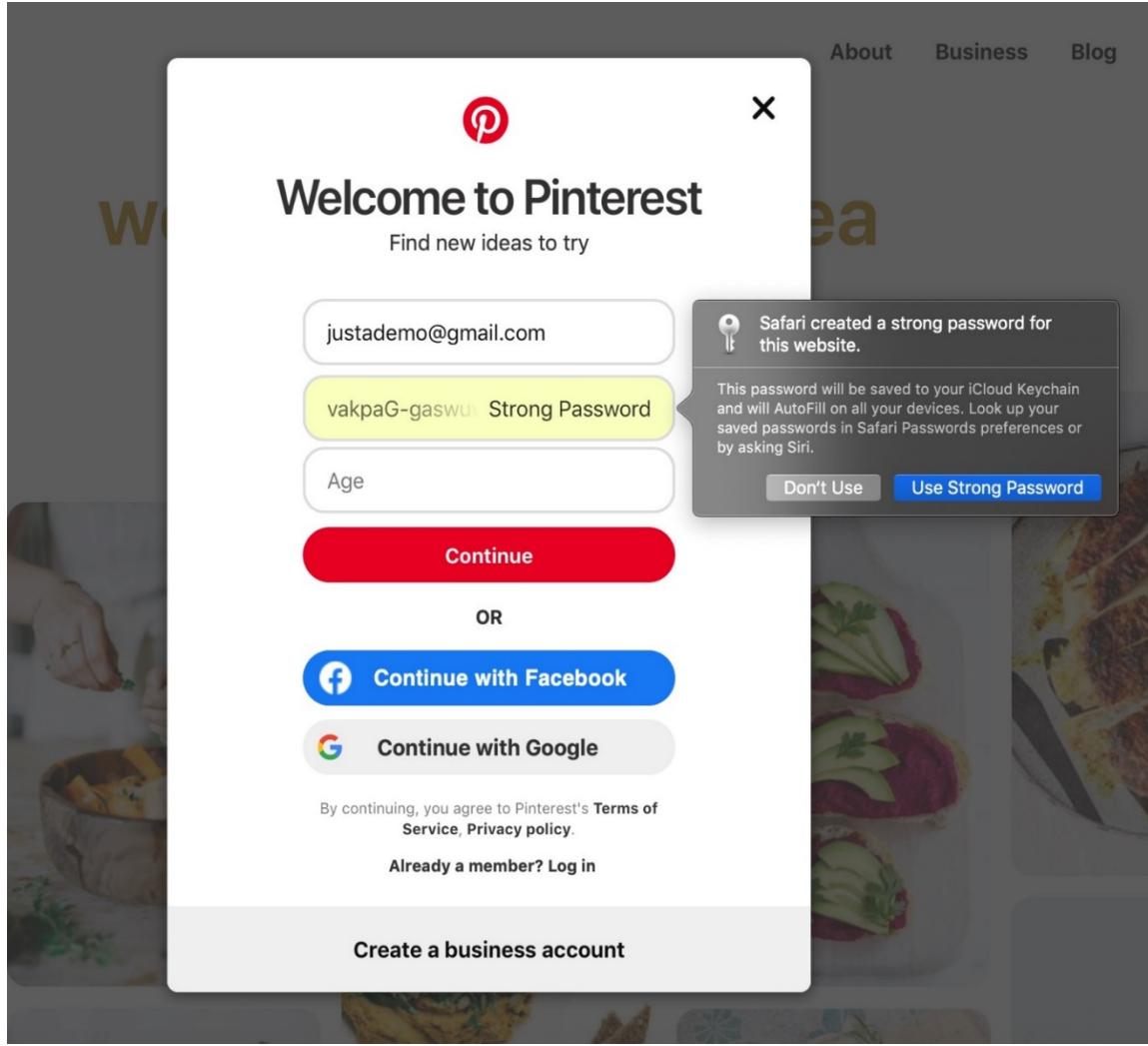


Fig. Automatic Strong Password from Safari

When a user tries accessing the account from the browser, fingerprint is asked for the verification. This helps to keep data safe from unauthorized users so that it does not create any complications. However, if any security concern is perceived, Password Monitoring will immediately alarm the user and let know about the measures to overcome the trouble. When an infected application is downloaded, malicious code in that application also gains access to the device. To avoid this threat, Gatekeeper, an OS based security service is introduced in macOS Mojave. Gatekeeper implements code

signing and allows users download applications either from Mac App Store or from the internet (only if they are approved by Apple).

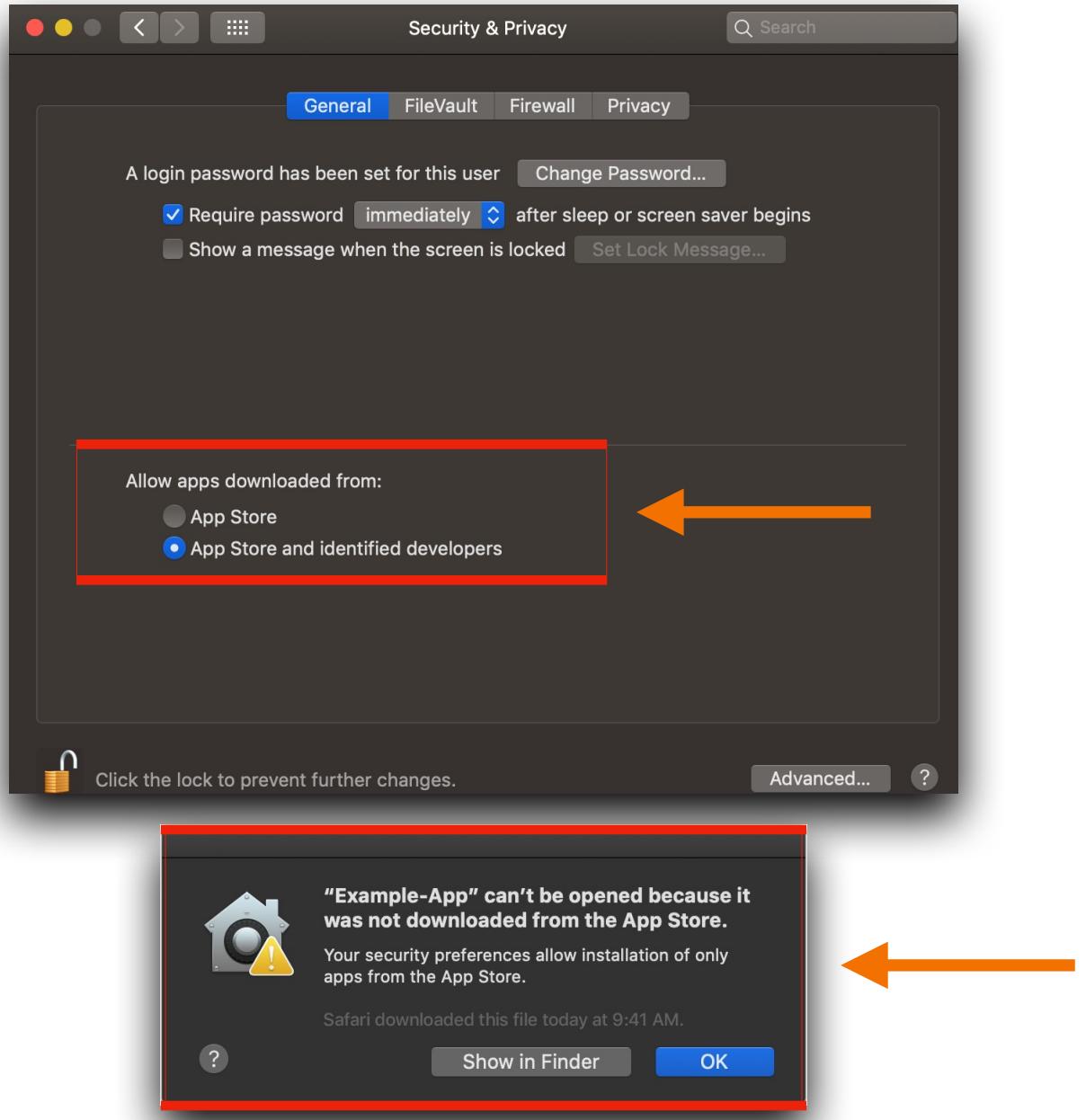


Fig: Gatekeeper filtering application

Alike gatekeeper, SIP (System Integrity Protection) is also a built-in safeguard tool that prevents the device from malware or third-party applications. With SIP, the secured systems can only be altered by processes that are approved by Apple.

Furthermore, the FileVault in MacBook provides a powerful security by encrypting the drive and keeping data safe and secured. When the device is misplaced in wrong hands, FileVault encodes the data on startup disk so that unauthorized operators cannot access or modify the data. Not only it encrypts existing data but also shields new data with a password to prevent it from random users. This keeps storage unharmed and allows users to store data without facing any sort of inconvenience.



Figure: File Vault Protection on MacBook Air 2019

Individual Part

Name:	Tej Bahadur Thapa
Roll No.	NPI000054
Topic Selected:	User

5. User

5.1. Student's Perspective.

MacBook Air (2019) is the best product for college and school students. MacBook Air (2019) has 13.3-inch, 2,560 * 1,600 Retina True Tone displays which give the best experience to students when they are typing their assignment or just researching on the web for assignment or classes. MacBook air (2019) has a fingerprint scanner which makes students faster to sign in to their laptop. MacBook Air (2019) has 128 gigabyte of storage which is fine for most students to store all their documents files or lectures. The weight of MacBook Air (2019) is 2.75 pounds (1.25 Kg) and 15.6-millimeter-thick due to which a college student can easily carry laptop from class to library or house to coffee shop, while walking between class and library at college or while doing homework at the house or a coffee shop. Due to light weight and its thin shape students can easily fit in a backpack with other text books. MacBook Air (2019) has 1.6 GHZ dual-core 8th generation Intel core i5 processor and 8GB RAM due which students can have plenty of tabs open when browsing and run multiple applications with no noticeable showdown. MacBook Air (2019) has sloped downward towards the front edge keyboard which makes it more comfortable while typing assignment, homework and report. MacBook Air (2019) has dark mode features which make it more comfortable for students at night or dark place and dark mode also reduces eye strain. It has 12 hours 'of battery life which is the best part of MacBook Air (2019) for students. Apple gives a \$100 discount for the students.

5.2. Programmer's Perspective.

The MacBook Air (2019) is the best laptop for programmers. MacBook Air (2019) has 128 gigabytes storage which is fine for programmers also because code takes less space and every programmer stores their code in a version control system like GitHub. MacBook Air (2019) has SSD secondary memory all programmers need SSD type of hard drive because SSD is flash memory which has read and write speed up to three to four times faster than HDD. Maximum programmers prefer Mac OS for developing apps or programs because Mac OS and Linux are part of the UNIX family of operating systems due to which programmers can move programs that they develop in mac over to Linux very easily. Programmers use mac while they are developing iOS apps by using XCode and XCode only works on mac. MacBook Air (2019) has 1.6 GHz dual-core 8th generation Intel core i5 processor and 8 GB RAM if programmer doing C++, Java, JavaScript, python or web developed by using lightweight text editors like Visio studio code or sublime text it is an amazing machine by giving high performance. If a programmer is designing some of the web templates on MacBook Air (2019) they will face no problem whether they develop web on PHP, Django, node is they will face no lags with full support, browsers are amazing for web development in it. Most programmers look for light and portable laptops. So, MacBook Air (2019) is the best laptop for programmers because the weight of this 2.5 pounds (1.25 Kg) and it is superlight and portable programmer can easily carry it from one place to another. Programmers need a comfortable keyboard to type or code MacBook Air (2019) has sloped downward towards the front edge keyboard which makes it more comfortable for programmers for type or code. MacBook Air (2019) has a backlit keyboard which helps programmers code at night or in a dark room. MacBook Air (2019) has 13.3-inch, 2,560 x

1,600 Retina True Tone displays and 12 hours of battery life programmer can get a lot of work done with a great screen.

5.3. Businessman's Perspective.

For business and businessman their first priority is to keep their data secured for security MacBook Air (2019) is best for them because MacBook Air (2019) has mac OS which are more secure than windows because it is based on LINUX. The weight of MacBook air (2019) is 2.5 pounds (1.25 Kg) and it is superlight and portable which is the best laptop for business or businessman because they travel a lot from one place to another for business meetings or business projects so they need a superlight and portable laptop. MacBook Air (2019) has a great hinge which allows the user to easily open it up with just one finger. For business and businessmen, they need durable and reliable laptops because if they need to change laptop due to laptop problems within two or three years, they need some time to become familiar with a new laptop which is a drawback for businessmen, for businessmen time is money. MacBook Air (2019) is best for businessmen in case of durable and reliable because it has a metallic body which is more durable and reliable than other laptops which have plastic bodies. MacBook Air (2019) has a fingerprint scanner which helps businessmen to protect their important files or documents and Touch ID fingerprint sensor makes faster sign in to the laptop. MacBook Air (2019) has 720p FaceTime HD webcam which is not best but it is fine for video conference. For business and businessmen, they need the best battery backup laptop. When businessmen travel from one place to another for business purposes, they need a laptop which has a long-lasting battery. The battery life of MacBook Air (2019) is up to 12 hours which is best for businessmen, businessmen can do their task in this laptop without charging it while they are traveling. MacBook Air (2019) has 13.3 inch, 2,560 * 1,600 Retina True Tone display,

1.6 GHz dual-core 8th generation Intel core i5 processor and 8GB RAM gives high performance and smoothness while they do business tasks with best experience.

Name:	Pradip Kunwar
Roll No.	NPI000034
Topic Selected:	System Architect

6. System Architect

System architecture with various stakeholders in an organization to consider the standards of specification, viable technologies, the domain and expected growth anticipated. Their task involves the identification of multiple design alternatives, the evaluation of such alternatives based on all specified timeline, such as cost, schedule, safety, power, space, availability, usability, reliability and selection of the most appropriate options for further design. The outcome of such work points out system's core properties which are hard to change.

6.1. Cost of the device:

MacBook air is more costly than many 13-inch laptops of other brands. But it became the most affordable MacBook when it was launched on July 9, 2019 at a cost of \$ 1,099 which is \$100 less than the previous model. It had become the most affordable MacBook. The base model features an 8th Gen Core i5-8210Y CPU, 8 Gigabyte of RAM and 128 Gigabyte of storage for SSD. It could be configured from the base option originally configured with a 128 GB SSD with a 256 GB, 512 GB or 1 TB SSD storage with additional charge of an additional US\$200, US\$400, and US\$600 respectively. (LLC, 2021) RAM could be upgraded at the time of purchasing up to 16 GB for US\$ 200.

6.2. Storage and speed:

An Intel Core i5 processor of the eighth generation, Intel UHD Graphics and up to 16 GB of 2133 MHz system memory are featured on the MacBook Air. For comparison, processors of the 10th generation offer only marginal performance improvements. It also provides capacity for SSDs of up to 1.5TB.

6.3. Battery performance:

MacBook Air 2019 provides better battery life. A 49.9-watt lithium polymer battery comes with it initially. Apple Company claims that it will run up to 12 hours in web wireless, 13 hours on Apple TV app and video streaming and up to 30 days on standby time. It is provided 30W USB -C power adaptor inbox. It takes about 3 hours to full charge from zero.

6.4. Security

Apple has a built-in fingerprint sensor on the keyboard, allowing you to quickly unlock the computer without having to enter a password. With the Apple T2 Security Chip included in the MacBook Air, Apple wants to protect your personal data. To ensure that nothing has been tampered with, it preserves Touch ID information and analyzes apps. For anything stored on your SSD, it also provides data encryption.

6.5. Performance

MacBook Air 2019 is operated by an Intel Core i5 (Y-series) 8th generation 1.6 GHz dual-core processor with Turbo Boost up to 3.6 GHz and Intel UHD Graphics 617 and RAM of 8GB and storage of 128 GB SSD (Apple MacBook Air (2019) Review, 2021).

6.6. Warranty

In compliance with Apple's published guidelines for the original packaging of Apple products, Apple provides a warranty service against defects in materials and workmanship in regular use. The warranty duration is one year from the date of the end user's initial purchase. (Legal - Repair Terms and Conditions - Apple, 2021). Apple does not guarantee liability for harm caused by non-compliance with the guidelines relating to the use of Apple products.

Process to obtain warranty:

- Carry –in service:
In this form of service, the apple product can be transported to the retail AASP location providing carry in service. Then they give your product to the service center for apples. They'll inform you once the service is over.
- Mail-in service:
First, Apple decides that your Apple product is eligible for service by mail. Then you will be issued with a prepaid waybill by Apple. Packaging material and instructions on how to correctly package and address your apple product if appropriate, so that you can take your apple to the Apple Repair Center or AASP site. The apple repair center of the AASP location will return your product to you when the service is done. All costs, including shipping from your place, will be charged by the Apple Company. This is true if all guidance on the packaging and delivery methods of the Apple product have been properly followed.
- Do-It yourself parts service:
Apple will give you a replacement part for your product on this service if Apple decides that you have access to your Do-it yourself service. Apple still accounts for the cost of distribution, but does not account for the cost of labor.

6.7. Maintenance and services

Apple do not charge any price within the warranty terms and condition.

The maintenance cost if no warrantee.

Parts	Cost
Battery replacement	\$129
Keyboard	\$29
Adaptor	\$79
Screen	\$99 to \$300 (depending upon nature of damage) with apple care

6.8. Conclusion

For business owners and staff who fly regularly, the MacBook Air 2019 is perfect. It provides a lightweight, strong experience for laptops. It's a great computer because of the improved hardware, the slimming design, the outstanding security and the long-lasting battery. While it is definitely not inexpensive, it may be a primary choice for business owners observing for long lasting, powerful, slim laptop and reliable Apple product. While admitting to oneself can be challenging, status and interpretation by others is a reason why many people prefer Apple computers. If a large part of your business includes impressing consumers or investors, springing for the "designer" laptops of the company may be worthwhile. It appears to be very costly at first, but its capabilities and lower maintenance costs can be best choice for the company. It also provides greater working experience to employee.

Name:	Nabin Chhetri
Roll No.	NPI000032
Topic Selected:	System Administrator

7. System Administrator

System administration is way of work in which manage the one or more system like hardware, software, workstation or server. System administrations make a goal to run system effectively and efficiently. There are some duties for system administration:

- Checking software or system in every morning.
- Backups of data should be performing well.
- Maintain the responsibility of security.
- Responsibility should be taken to handle the issues related to technical system.
- Requirement component of system should be configured and installed.

7.1. Ease of Installation

There are experts as system admin who help to ensure about the function and secured of organization's computer software and equipment. Firstly, there are some step to set up MacBook air and after set up there are some method to update software on Mac. Whenever Mac needs to update in time, automatically Mac sends a notification for update a latest version if needed. Almost, people well know about the updating Mac. So, there is no special requirement or skill to install or update software, but it needs some few more time to update.

There is some few step to install or update software on MacBook air 2019;

- First, click on system preference from Apple menu to check the software update.

- If update available for your system, then click on update and follow the step as per the requirement. There might be asked administration password for confirming Id.
- Software update asked for up to date update and installed version of macOS which cover Music, Photos, Messages, Mail, Calendar, and FaceTime.
- There is an option for automatic future updates, select “Automatically keep my Mac up to date” which update and install automatically include apps that App store provides.

7.2. Ease of Maintenance

Few rarely things might go wrong in day-to-day use of Mac, and user run continuously their system for long time without any hiccup. But Macs are complicated computer which intend that there might get issues on performance like erratic app behavior, bugs and network problems. That why, Mac must be look after or routine of maintenance tip should be followed to prevent from serious trouble that create while running.

Some few maintenance tips for MacBook air 2019 are described below:

a) Back up your data:

Back up your data tip should give top priority. To maintain Mac properly, Mac has built time-machine that back up with set routine for restoring files to an external storage device safely.

b) Scan for malware:

Mac has made them more renown and attractive through support of malware. Malware should be scan properly through installing an anti-virus software on your system. CleanMyMac X is a one of the great optional to detect which can be removed viruses, adware, worms and more at the click of a button.

c) Clean up junk files:

10% of disk space should be make free at all time and regularly deleting junk file from your system for smooth performance. You can download and install

CleanMyMac X for remove old files permanently. CleanMyMac X is design to detect old files and deep scan to get junk files and remove permanently.

7.3. Availability

Mac has got change with updating. Almost each and every running device have been upgraded when MacBook air 2019 updated into MacOS Mojave 10.14 version which available in website of Apple. There is some improvement available after updated Operating System of MacBook air 2019. There might get issues on automatic Wi-Fi connection which fixes a bug that might prevent files from syncing through iCloud Drive. As a result, old version of MacOS has ended and run with the different improvement macOS Mojave 10.14 version. Apple has large number of new features which lead to decrease support of old version due to performance and resource.



Fig: MacOS Mojave

7.4. Efficiency

New version of MacBook air Mojave 10.14 running and facilitate a new feature. In this latest version, there are some features which cannot miss out. This version provides users a great control over data by fixing security. It facilitates a better screenshot tools as a screen grabbing menu. Mojave come with great attractive feature like dark mode. This version might impact on energy consumption. From Mac started to last 12 hours, energy might impact averagely. Apple has launched new m1 chip in which delivers CPU performance up to 3.5 times faster. Apple says the new processor will focus on combining power efficiency with performance. It says CPU has four fast CPU cores, paired with four high-efficiency cores which by themselves offer comparable performance to an existing dual-core MacBook air.

7.5. Performance

After introducing the Mojave, the performance of MacBook air is pretty good. Although, performance wise, Mojave facilitated slow down work like take long time to boot, open files or save and launching apps, there are some tips which will help to make MacBook in a way that we need. After getting latest version of Mojave in MacBook air, there are some features add in Mac. It introduced dark mode which turned color of every element of interface system wide. Mojave provide big change with facilitating desktop stacks. This helps to clear up cluttered stacks. There are some issues on performance of Mojave, but it can be fixed out with following some step. macOS Mojave had a problem while downloading. There is message seen as “macOS Mojave download has failed”. Likewise, there is a problem in installation. Mouse might not work well after installing Mojave. This kind of problem might be solved after restarting your Mac.

7.6. Security

After discussing the slow down performance, security update in Mojave is quite impressive. macOS Mojave increase the security and privacy protection. Let's take an example as "safari", it helps to block who try tracking through social media site. This version brings some good features around passwords which will assist to make more secure on your computing. Safari add new features on suggesting new password or store it when you create website account. Moreover, fingerprinting on profile while creating profile on website. There are so many essential new security and privacy are available in macOS Mojave.



Fig: MacOS Mojave security

Name:	Sandesh Subedi A
Roll No.	NPI000040
Topic Selected:	Programmer

8. Programmer

In terms of programming and developing, the MacBook Air 2019 is considered to be an exceptional solution. With in-built specifications like i5 processor, 8 GB memory, 128 GB of storage and UHD graphics, the Mac is competent of doing anything a programmer needs to. Moreover, it supports multiple frameworks and let programming tools function without any lags. Since MacOS Mojave is built with Unix base OS, it permits users to operate programming tool in their preferred language without any particular IDE. The cross-platform compatibility of MacOS can be handy to programmers as it supports all major operating systems such as Windows and Linux. Along with that, it also authorizes users compile both android as well as iOS applications in it. The MacBook Air might not be the most powerful device, but with all available tools and tutorials, a programmer (especially beginners and intermediates) can learn host of skills from it comfortably.

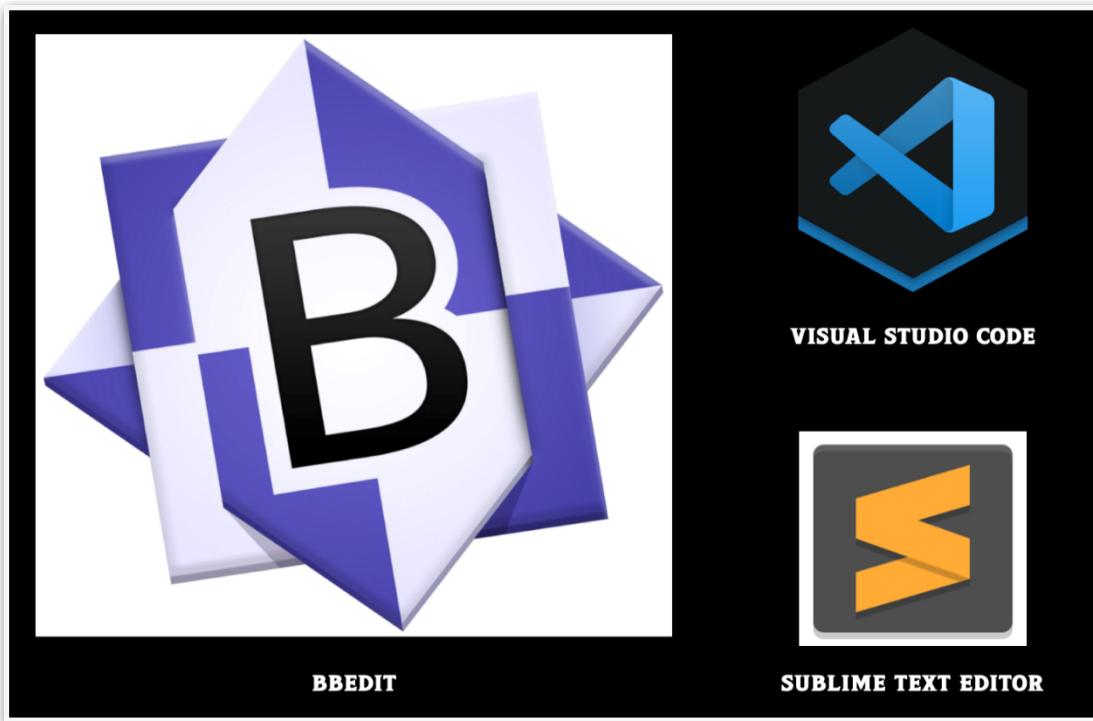


Fig. IDE available for MacBook Air 2019

The MacBook Air 2019 supports abundant programming tools available on internet. However, to keep the device secured from any sort of threats, only applications that are notarized by Apple can be downloaded. Alcatraz, Mockingbird and BBEdit are some of the finest programming tools available on Apple App Store. Behind this, code editors like Visual Studio Code and Sublime Text Editor can also be downloaded through internet globally. Likewise, JetBrains is also an influential IDE that offers examining and configuration for complex code scripts. Apart from all these apps, the device offers one of the most powerful programming tools called XCode, developed by Apple themselves.



Fig. MacBook's default IDE: XCode

XCode is Apple's default IDE (Integrated Development Environment) created to develop applications for iOS (iPhone), MacOS (Mac Computers), watch OS (Apple Watch) and TvOS (Apple Television). This dynamic application is a complete package for writing codes as it includes editor, compiler as well as linker. With XCode in the device, users can code, evaluate, enhance and submit their project to the App Store. XCode supports multiple programming languages such as C, C++, Objective-C, Java, Python, ResEdit, AppleScript, Ruby, etc with diversified programming patterns. It also operates Swift with great functionality as it is a high-performance system programming language to develop Apple

software. Apple regularly updates XCode and appends a fair number of features in order to make learning facile, fun and attentive. Some of the interesting features of XCode are:

i. Dark Interface:

The updated version of XCode offers both light as well as dark mode. As a part of installation process, users will be asked to select the appearance based on their preference. The dark mode in XCode is distinctly appreciated by many programmers because it improves code readability and lessens eye strain during low-light conditions.

ii. XCode Minimap

When a code with thousands of lines is written, complications arise for programmers to find the exact part that they are searching for. To avoid such problems, XCode affixed a mini map on right side of the screen. With mini map, a programmer can reach to any point of his code with a click.

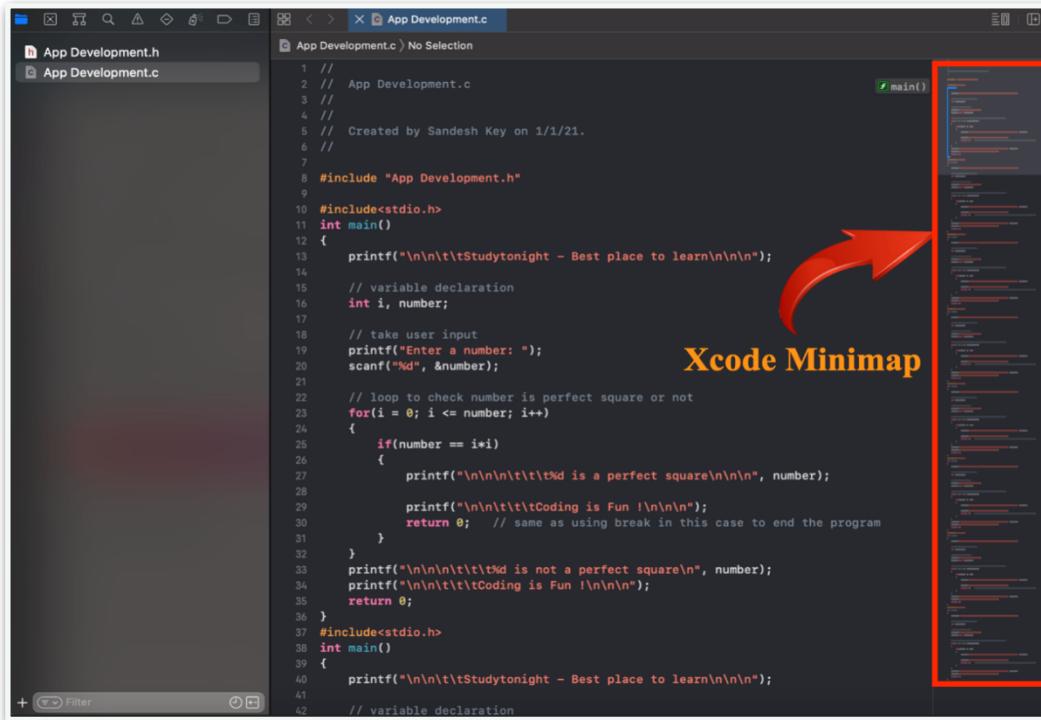


Fig. XCode Mini map with Dark Interface

iii. Unified Documentation

The improved documentation allows users to get detailed information from the device. The documentation methodology in XCode is stylish and makes code easy to read. It also auto-generates information that make comments effective and easy to recall. Additionally, the documentation viewer in XCode demonstrates documentation along with sample codes and comprehensive frameworks.

iv. Accommodative Source Code Editing

When a programmer writes a code in different languages like C, C++ or Swift, XCode examines the code and distinguish possible errors. If the error is noticed, XCode highlights the mistaken code and recommends a solution to make it faultless. This helps programmers to code freely without worrying about minor mistakes. Furthermore, XCode also autocorrects code typos so that users can type swiftly without any hassles.

```

1 //
2 //  main.c
3 //  App Development
4 //
5 //  Created by Sandesh Key on 1/1/21.
6 //
7
8 #include<stdio.h>
9 int main()
10 {
11     printf("\n\n\tStudytonight - Best place to learn\n\n");
12
13     // variable declaration
14     int i, number;
15
16     // take user input
17     printf("Enter a number: ");
18     scanf("%d", &number);
19
20     // loop to check number is perfect square or not
21     for(i = 0; i <= number; i++)
22     {
23         if(number == i*i)
24         {
25             printf("\n\n\t%d is a perfect square\n\n", number);
26
27             printf("\n\n\tCoding is Fun !\n\n");
28             return 0; // same as using break in this case to end the program
29         }
30     }
31     printf("\n\n\t%d is not a perfect square\n", number);
32     printf("\n\n\tCoding is Fun !\n\n");
33     return ;
34 }

```

Errors and Possible Solutions

Expected ';' after expression

Non-void function 'main' should return a value

Fig. Detected errors and solutions on XCode

v. Swift Package Manager

Integrated with Swift build system, swift package manager is a decentralized tool used to control the proper distribution of Swift code. It is a command line-based tool that functions with multiple hosting platforms like GitHub and Bitbucket. XCode helps to trouble-shoot errors while managing the packages and distributing the Swift code.



Fig. Swift Package Manager for XCode

vi. Testing and Application Distribution

When a project is completed, it is inspected before submitting to the App Store. During this process, XCode offers a testing framework and user interface trial which help programmers to build enhanced applications. The test navigator in XCode runs the code and displays possible errors. After the process is finalized, application information is submitted and XCode configurations assists programmers to make code ready for TestFlight.

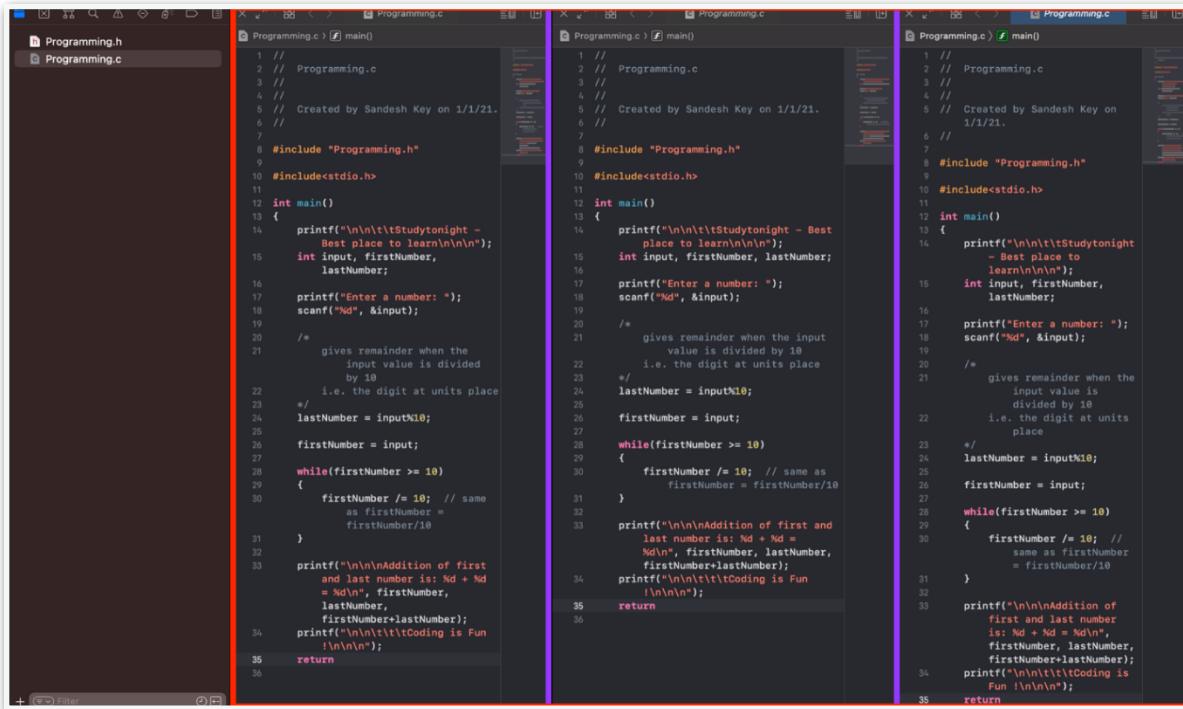


Fig. Window Split feature on XCode

Beside these, the cross-platform development support, window splitting, image previews and code autosaving are some of the features on XCode, that a programmer uses in daily basis.

XCode offers numerous attributes to its users. It might not be feasible for everyone to remember all those features comfortably. So, to make things

trouble-free, Apple created a page called ‘XCode Help’ that accommodates users to gain proper understanding about the tool.

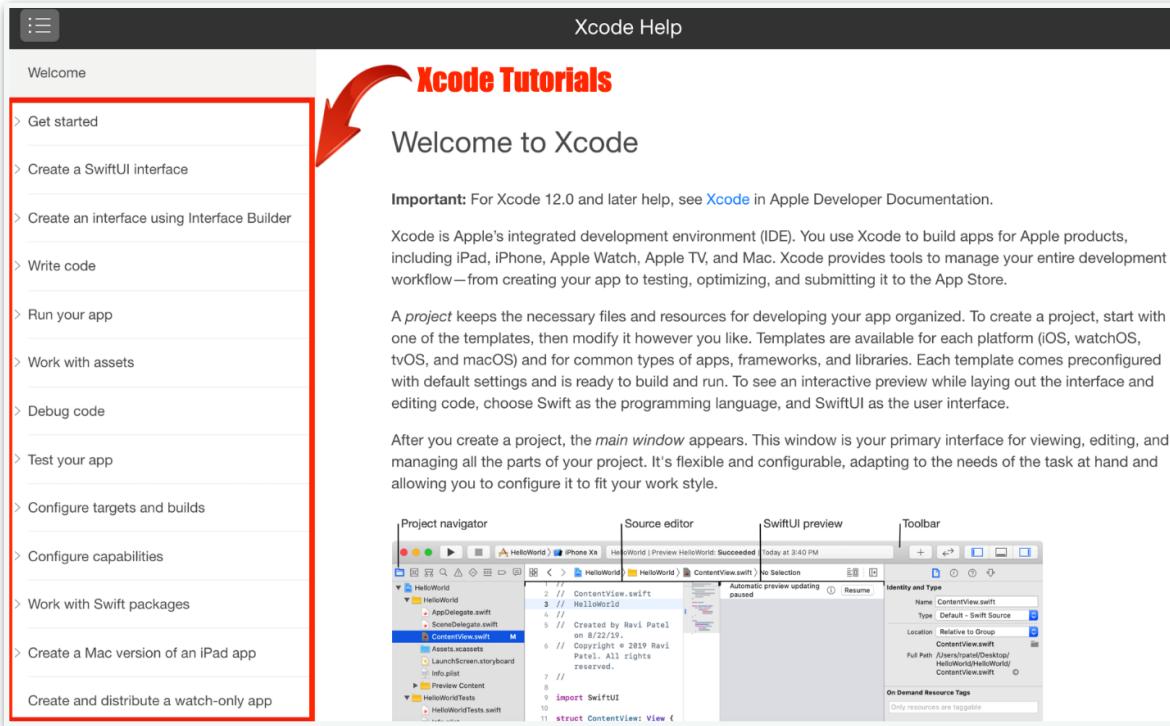


Fig. XCode help page for tutorials

‘XCode Help’ is a webpage full of tutorials, assisting programmers so that they do not have to face any problems while working on it. It comprises of many supportive tutorials like, creating a project, debugging code, testing the application, working with packages, app distribution, creating playgrounds, customizing XCode and many more. These comprehensive lessons help users make use of application without any uncertainties. There is also another webpage from Apple, called ‘developer support’ that alerts users about required updates and application information. Additionally, there are hundreds of other sites and blogs that helps MacBook users to run XCode effortlessly and troubleshoot errors. YouTube videos of tutorials are also considered to be very helpful, especially for beginners.

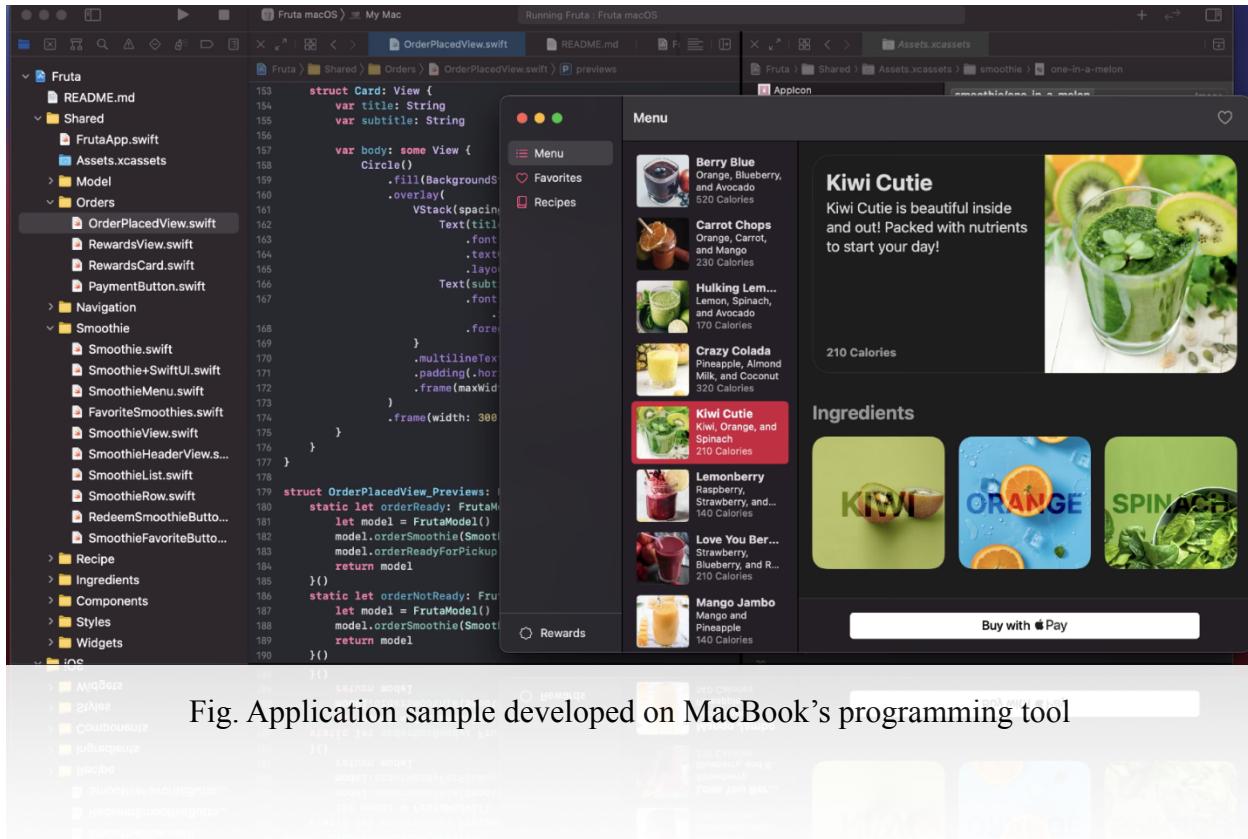


Fig. Application sample developed on MacBook's programming tool

With all these programming tools available, the device is undoubtedly one of the best pick for programmers and developers. From high performing fundamental elements like RAM, CPU and display to powerful IDEs like XCode, the MacBook Air has everything a programmer search for.

Name:	Suraj Pandey
Roll No.	NPI000051
Topic Selected:	Environmental Sustainability

9. Environmental Sustainability

Environmental sustainability refers to the fulfilling humans' requirements using various resources present on the environment without depleting and degrading it. So, it is the responsibility of each and every single individual to keep sustainable environment. This is the generation of technology so there is increment in the manufacturing of various computing devices like laptops, smartphones and many more. So, the materials used in producing those devices may be environmentally unfriendly. Not only the manufacturing of those devices but also the use of them also degrades the environment by emitting greenhouse gases. So, this has become a serious issue for future generation. So, to reduce such impact companies must involve in green computing. Green-computing aims to reduce the carbon footprint generated by the Information Technology and Systems business and related industries.

9.1. Environmental impact of the manufacture of MacBook Air

The use of computer plays a big role in environment pollution. So, the apple company is working actively to make their product eco-friendly. In case of MacBook Air, there are four major areas that need to be considered from an environmental conservation perspective which are applicable for other laptops too. The major four areas are:

a. Manufacturing

Most of the greenhouse gases are produced during the production of MacBook Air, which is about 77 percent, which create negative impact on environment. The energy required to produce this laptop is almost equivalent to the energy required to produce refrigerator. But there are positive sites too.



fig: MacBook Air retina display.



fig: Thickness of MacBook Air

According to the research, the enclosure of MacBook Air is made up of 100 percent recycled aluminum. The substances that are used while manufacturing Mac are 100 percent free from harmful chemicals like PVC, brominate, flame retardants, beryllium, arsenic, lead, and mercury which looks quite impressive. Although the material used are recyclable but they are harmful too, so the apple company has designed the device so thin in order to use less materials on it. Similarly, the keyboard hinge, feet and fan are also made by bio-based plastic which are less harmful than the fuel-based plastics (Apple, 2018).

- **Packaging**

As per the details mentioned, the substances that are used in packing MacBook Air 2019 are 94 percent recycled fibres (Apple, 2018). According to their claim, the device is packed in such a way that it does not create unnecessary wastage as the laptop comes in a box with a charger and instruction paper. As I have also owned this laptop, during unboxing I found that the laptop was wrapped up with a layer of plastic which in my view is unnecessary.

- **Usage**

As I am also the user of MacBook Air 2019, I also have some knowledge regarding the usage and power consumption of it. In comparison to other laptops this laptop has quite good performance regarding the battery power. If we fully charge our laptop then we can continuously use it for 10-12 hours. So, we need not to charge it constantly. Since, frequent charging is not necessary the electricity consumption is also less. Not only this but also the laptop gets automatically powered down when it is not in use. Hence, it has less impact on environment. But, also about 15 percent of greenhouse gases are produced during this phase.

- **Disposal**

As the material used to build MacBook Air are recyclable it is easier to dispose as well. When the lifespan of the laptop comes to the end then the customer can return that laptop to the apple company so that they can recycle it to use in manufacturing new laptop.

Thus, the manufacture of the MacBook Air has both positive as well as negative impact on environment.

9.2. Possible Ways

Tech companies are the main reason in rapid climate change. Climate is changed due to the increase in temperature of the environment due to increase in greenhouse gases. Over the last few years, the production of greenhouse gases is increasing day by day. This has greater impact on ecosystem. According to the information gathered, it is produced mainly through tech companies. Around 70 percent of gases are bringing out during the manufacturing phase of the product of those companies. So, some of the ways that apple company can follow during the production of MacBook Air to minimize the release of greenhouse gases are as follows:

- Increasing the life span of the device can indirectly decrease the production of harmful gases. If apple company increases the lifespan of the MacBook then they need not to manufacture the large amount laptops within short period of time which automatically decreases the carbon footprint along with greenhouse gas emission along with the consumption of electricity used for producing them.
- As we know that trees have the capacity to absorb the carbon. The company can plant trees around their companies in huge amount so that the carbon that are emitted while manufacturing their product can be captured by those pants.
- Although the electricity efficiency of MacBook Air 2019 is good enough but they can even make it better by increasing the electricity efficiency which decreases the consumption of electricity by their product which results the decrement of greenhouse gas emission.
- It is well known that about 8 percent of harmful gases are produced while transporting their product which is also from the smoke released from old vehicles (Apple, 2018). So, the company can open their manufacturing industries in various

parts of the world which helps both company and environment by decreasing the cost of transportation and decreasing the use of vehicles for transportation, respectively.

Not only companies but also customer who uses their product are also equally responsible on creating such harmful gases. So, we can also reduce the release of toxic gases by following various ways which are listed below:

- We should turn our laptops off or turn to sleep mode when they are not in use to decrease the radiation released.
- We should return the laptop to the company so that they can recycle it to manufacture new laptop. This decreases the wastage of the harmful substances which may negatively impact the environment and mining of new materials to manufacture new laptops. As a result, decreases the amount of the release of noxious gases.

Rabin Acharya

Name:	Rabin Acharya
Roll No.	NPI000035
Topic Selected:	Socio-Technical Issues

10. Socio-Technical Issues

Over the years, technology has made farming, schooling and travel so much easier, it has helped build up globalization and made it easier for industries and businesses to expand. By means of technological solutions, practically different aspects of human life can be made a lot easier, more effective and quicker, mitigating problems in one hand and more problems in another. Because of the increase in the accessibility of affordable computing technology, the way society functions has undergone a number of dramatic changes. Most of them, with home computers and the Internet providing unrestricted access to all the knowledge mankind has ever found, is for the better. A community uses technology while people use hardware through software, so that social requirements are now included in computer design (Sanders and McCormick, 1993). Following are the socio technical verdicts that computing technology have had on human life.

10.1. Positive Impacts

a. Education

In the modern world, to master almost any talent you need to flourish in, whether it's a new language, a programming language, a technical skill, or a mysterious aspect of history, it's as simple as using search engines, listening podcast, or watching YouTube video. The MacBook Air 2019 on the other hand is budget friendly and a good device for exploring and learning things. The device has swift performance and long-lasting battery life, perfectly suitable for students and teachers. The JAMF survey, conducted by Vanson Bourne, based on answers from 2,244 current university and college students across five nations shows that about 70% of the students prefer Mac and is used by 40%.

The below table includes the apps developed by Apple for education.

S.N.	Application Name	Description
1.	Classroom  Classroom Education	<p>Classroom is a powerful teaching application which guides students through particular lessons of their field. It can be used to interconnect several apple devices like Mac, IPad at the same time. Teachers can create different student's groups and teach them in particulars. The entire class session can be shared with just one click.</p>
2.	Pages  Pages Productivity	<p>Pages is word processing application for Mac devices. It includes all the features like inserting images, visual clips, shapes, charts. It has an interesting feature named real-time collaboration which allows users to work together on a single document at same time. Moreover, there are more than 70 Apple designed templates. It allows users to instantly create beautiful reports, digital books, resume, posters and more.</p>
3.	Swift Playgrounds  Swift Playgrounds Education	<p>Swift Playground is a beginner friendly application to learn and experiment with code. It is best for students since the application has Apple created lessons to guide through the in-depth concepts of programming. Drag and drop snippets are much easier and fun thing to create code lines.</p>

b. Content Creation

Content Creation requires both skill and machine power, as it is no small endeavor. It can be a tedious job to create anything from computing devices that requires special attention to detail, with skills necessary to tweak many items, such as graphics layers, sound effects, photographs, after effects, and combine them all to create a masterpiece. MacBook Air 2019 is an ideal device for creators like photographers, videographers, programmers and others as well. Since the device is equipped with color accurate display with 2560 x 1600 resolution, it can serve well for editing contents at high resolution.

Apple has not only grown its ecosystem in the field of hardware, but also in the software industry. GarageBand, XCode, Final Cut Pro, Logic Pro, Apple Developer are some of the best apps for content creators. Moreover, there are others applications available in the App Store for download too. Some of the popular Mac Apps are, Affinity photos, Notion, DaVinci Resolve 16, Affinity Designer, Figma. Some of the Apple applications for content creation are briefly illustrated in the table below.

S.N.	Application Name	Description
1.	iMovie	<ul style="list-style-type: none">• iMovie has streamlined design and

	 <p>iMovie Photo & Video</p>	<p>intuitive editing functionalities.</p> <ul style="list-style-type: none"> • It lets users to create professional level movies and clips. With iMovie we can edit movies at the resolutions up to 4k. • Background import lets watching and sharing the videos instantly.
2.	XCode  <p>Xcode Developer Tools</p>	<ul style="list-style-type: none"> • XCode is a developer tool where users get everything to create enterprise level software application. • It can be used to develop applications for Mac, iPad, iPhone, Apple Watch, Apple TV. • Refracting function makes it easy to modify the structure of Swift, C, C++.
3.	GarageBand	<ul style="list-style-type: none"> • GarageBand has everything a music

	 GarageBand Music	<p>producer needs to learn or start a professional career.</p> <ul style="list-style-type: none"> • It enables adding realistic, impeccably produced beats to a song. • It supports wireless controls via other Apple devices like iPad.
4.	Apple Developer  Apple Developer Developer Tools	<ul style="list-style-type: none"> • It is the source for developer stories, news and educational information for experiencing World Wide Developers Conference. • The application lets you browse news, features, informative videos and developer stories. • Users can download and pin content for later use and read.
5.	Final Cup Pro	<ul style="list-style-type: none"> • It is revolutionary video editing



Final Cut Pro
Photo & Video

application which has incredible performance.

- Powerful engine which uses full GPUs in the Mac to deliver incredible performance.
- B-roll clip attachment, sound effects and music can be manipulated easily in the timeline.
- Wide range of format support like RED, ProRes, Avid, H.24, HEVC, XAVC and more.

10.2.Negative Impacts of computer technology upon human life.

a. Expensive

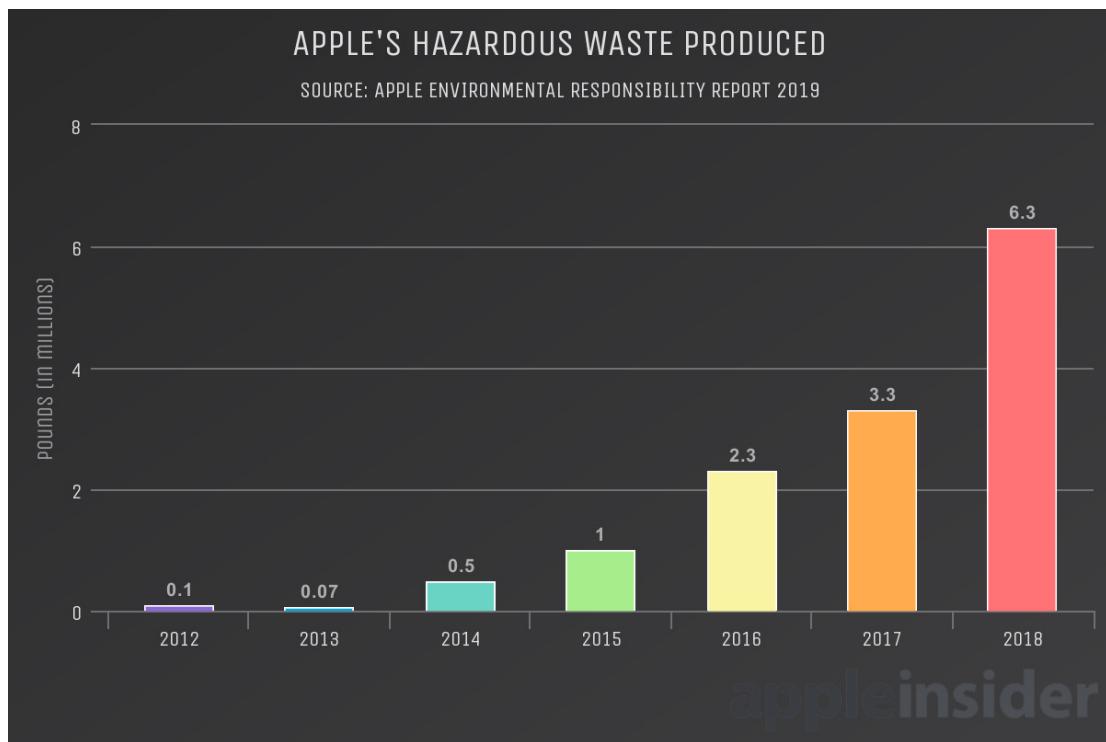
Although the 2019 Apple MacBook Air is regarded as the best value for money, it is still not in the pocket of everyone. The Apple products are well built, packed with lots of features, premium hardware components, and are a luxury computer device overall. MacBook are priced above average laptops because of such specifications. Similarly, MacBook are also more costly when comes to repairing them. Owing to Apple's premium technology and design, MacBook hardware components are expensive. People want easy and inexpensive repair options and often stay away from high-priced repairs.

b. Multimedia and Gaming Addiction

It may not sound a major concern, but video gaming has become part of the culture of human society. The MacBook Air 2019 has very good display, crisp sound and long-lasting battery life. Most of the users are found to be addicted in gaming and multimedia consumption like watching Netflix, YouTube, Spotify, playing Fortnite on Mac devices rather than engaging in education, content creation or employment. Such addiction leads to dullness, loss of productivity and at the end to unemployment.

c. The e-waste problem

Although Apple has been working for compensating for the environmental damage, by implementing environmentally sound practices, Apple is generating far more waste in comparison to the recent years (Laville, 2021). The chart below shows that hazardous waste from Apple has almost doubled from 2017 to 2018 (Neely, 2020).



Since e-waste is disposed of at the site of the landfill, incinerators usually burn it on the site. Massive amount of Hydrocarbon is released into the atmosphere by this process, which pollutes the air that many animals and humans depend on. Moreover, these hydrocarbons can contribute to the impact of greenhouse gases, which are considered by many scientists to be a major contributor to global warming.

11. Conclusion

It's been a long road, but the MacBook Air 2019 is now the perfect middle-of-the-road alternative for the majority of users. Despite being thin and light, it also manages to feel solid and durable, so you don't have to fuss over it and be worried about bends and dents. This is thanks to the MacBook Air being made out of an aluminum alloy that looks great and feels robust.

The study found that a lot of laptops while in sleep mode, in the lab at least, keep draining power and that didn't happen with the MacBook Air (2019). At the price, the MacBook Air (2019) handily holds its own, delivering an incredible 10 hours of battery life in our battery tests. Although the MacBook Air 2019 is one of the best looking and powerful machines, the device is still not the best buy option for many users. This is certainly not a criticism but MacBook Air is not a device that anyone can afford specially students, people from less technologically advanced geographical area. The keyboard on this particular model of MacBook is found to be often criticized being shallow and poor tactile feedback too. Leaving these factors behind MacBook Air 2019 has very good display, crisp sounds, great performance and nonetheless a long-lasting battery.

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Workload Matrix

Student	Allocation of Work	Signatures
S1 (Rabin Acharya)	Group Component & Individual Component: Socio-technical Issues	
S2 (Pradip Kunwar)	Group Component & Individual Component: System Architect/Analyst	
S3 (Tej Bahadur Thapa)	Group Component & Individual Component: User	
S4 (Suraj Pandey)	Group Component & Individual Component: Environmental Sustainability	
S5 (Sandesh Subedi A)	Group Component & Individual Component: Programmer	
S6 (Nabin Chhetri)	Group Component & Individual Component: System Administrator	

Minutes of Meetings (First)

Call to order

Date of meeting: 1/12/2021, 11:30 AM

Location: Infamax College of IT and Management, BSc.IT. Second Sem Classroom

Present • Rabin Acharya

Members: • Pradip Kunwar
• Tej Bahadur Thapa
• Suraj Pandey
• Nabin Chhetri
• Sandesh Subedi A

Next meeting: 1/16/2021, 11:30 AM

Announcements

- Assignment requirement analysis
- Group Discussion on Group and Individual Part
- Work Division (Group Part & Individual Part)
- Resource gathering

All the members will collect data on both the group and individual components. For academic writing, both primary and secondary sources will be used as reference materials. The team members will write the group component first, and a draft will be submitted to the subject lecturer for feedback.

Minutes of Meetings (Second)

Call to order

Date of meeting: 1/16/2021, 11:30 AM

Location: Infamax College of IT and Management, BSc.IT. Second Sem Classroom

- | | |
|-----------------|---|
| Present | • Rabin Acharya |
| Members: | • Pradip Kunwar
• Tej Bahadur Thapa
• Suraj Pandey
• Nabin Chhetri
• Sandesh Subedi A |

Next meeting: 1/23/2021, 11:30 AM

Announcements

- Progress report checking
- Group Component Review
- In-depth discussion about Individual Component
- Prepare individual component draft

After taking feedback from subject lecturer, few modification and correction was done for group component. Progress report was reviewed by the group members and further discussion was done for writing individual component.

Necessary guideline will be asked for subject lecturer regarding the documentation of individual component. Necessary help will be provided to each other while writing individual component.

Minutes of Meetings (Third)

Call to order

Date of meeting: 2/02/2021, 11:30 AM

Location: Infamax College of IT and Management, BSc.IT. Second Sem Classroom

Present • Rabin Acharya

Members: • Pradip Kunwar
• Tej Bahadur Thapa
• Suraj Pandey
• Nabin Chhetri
• Sandesh Subedi A

Next meeting: None

Announcements

- Assignment correction as per guidelines by subject lecturer
- In depth analysis gathered information on System Architect, Analyst, User, Programmer, Environmental Impacts, Socio cultural aspects.
- Documentation (Document formatting and workload matrix).

Few enhancements were done as per the suggestions of subject lecturer. Individual component was discussed regarding different sorts of users like system analyst, architecture, programmer was discussed on group. Environmental impacts and Socio-cultural perspective were also reviewed and major changes were implemented. Documentation standards were discussed and implemented in the assignment document.