OPERATING SYSTEMS

Course Code : SWE3001 Slot : F2+TF2

Digital Assignment - 1

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[A]. Write a one-page review of an article about operating systems that appeared in a recent computing magazine or academic journal. Be sure to cite your source. Give a summary of the article, including the primary topic, the information presented, and the author's conclusion. Give your personal evaluation of the article, including the author's writing style, inappropriate use of jargon, topics that made the article interesting to you, and its relevance to your own experiences.

Article : After mauling telcos, Mukesh Ambani now fires at operating systems

Review : On 5th Sep 2016 Jio launched its 4G sim into the market without any cost and the jio swiped all over the telecom industry including many network like airtel, idea and many more. At the share market (bse) jio kept a peek rate of share till now. But all these happen because of Mukesh Ambani who is the founder of jio digital life. At early 2017 the jio mobile launched in the market with the low rate at 1,500. And this jio phone bought by many people across India. But now the Jio is launching its new smart phone partnership with Google. Jio phone is likely to emerge as a strong challenger of mobile phone operating systems. But this is due to the KaiOS that powers the jio phone and becomes No.2 operating system after android. KaiOS has swiped 15% of

market share in the last one year but it may increase day by day. KaiOS beats Apple devices into third (with 9.6%)," says the latest DeviceAtlas report. We know that android OS is dominant in India with over 70% percent of share and it may increase. But the KaiOS eating the shares of both android and IOS. KaiOS has an HTML5-based app store, which makes it easier for tech companies to create apps as compared to Android and iOS. Apps also run much faster on this OS, It's is an efficient and lightweight OS, so it does not need a Snapdragon 835 with 8 gigs of RAM and 5000MaH battery. Its made to run on weak and affordable hardware. This is the biggest advantage of KaiOS over Android.

The next Jio smartphones focuses more on :

- Multitasking
- Graphical user interface
- Security
- Networking
- Memory Management
- Many more

So these Kai Operating system helps the processor to read input from hardware, allocates memory, calls the required application software to process the input and sends output to the hardware device.

The main summary of the article tells about the feature Jio smartphones on KaiOS mobile devices and how much they are going to invest in the next Jio smartphones. The authors point of view have morality in the message. He can also present the abbreviation of KaiOS so these may lag in his article. The information presented by the author is content full in the article.

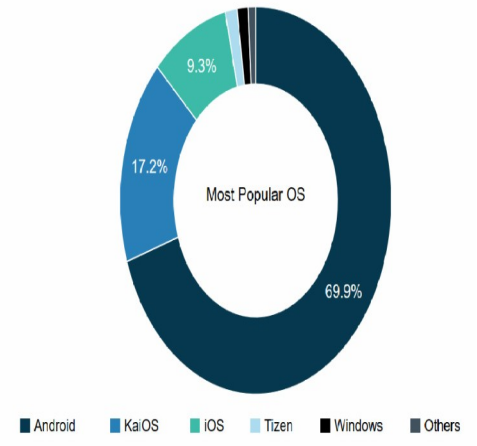
Conclusion :

Article says the popularity of KaiOS stems from the massive success of

Reliance’s Jio phones. According to Counterpoint Research, KaiOS has been able to push the feature phone demand in India, also helping Reliance Jio to become the leading feature phone brand with its 4G-powered JioPhone.
“KaiOS has helped bridge the digital divide for hundreds of millions of feature phone users who were not upgrading to smartphones due to steep learning curve or pricing or digital illiteracy,"

Personal Evaluation :

The main interesting part of the article Mukesh Ambani’s jio. He turns into 64 and has a net worth of $73 Billion. But now he is going to invest in the KaiOS to release the new jio smart phone so it makes me interesting. And this particular plan will take him like a big bull of the telecom industry as soon. And from the below graph we can see that KaiOS is going to break the market as soon and also Jio is going to launch the smartphone as soon.



Source : Internet article

Website : economictimes.indiantimes.com

[B]. Research the Internet or current literature to identify an operating system that runs a cell phone or handheld computer. (These are generally known as mobile operating systems.) List the key features of the operating system and the hardware it is designed to run. Cite your sources.

Mobile operating system is an operating system that helps to run other application software on mobile devices. Moreover, it handles all the interactions between the software and the hardware.
There are many mobile operating system in the market but only two of them are mainly used in many mobile device they are android and iPhone os.
But there are many more OS like Symbian OS, RIM's BlackBerry, Window Mobile, Palm OS, Web OS, Firefox OS, Sailfish OS, Tizen, Ubuntu Touch OS, LiMo, MeeGo and Maemo. The Android, WebOS and Maemo are derived from the Linux OS.

Android Operating System :

Android is an open-source mobile OS developed by Google and launched in 2008. Android is a Linux-based OS that uses Linux 2.6 to provide core services such as security, memory management, process management, network stack, and a driver model.

Apple iOS :

Apple iOS is a closed-source code mobile phone OS developed by Apple in 2007; it is used by Apple-only products (iPhone, iPod, and iPad). The iOS architecture is based on three layers incorporated with each other.

Symbian Operating System :

Symbian OS is an open-source mobile OS written in C++ programming

language developed by Symbian Ltd. in 1977; it is mostly used by Nokia phones.

Windows Phone Operating System :

Windows phone OS is a closed-source code mobile OS developed by Microsoft corporation and used by multiple smart devices (personal digital assistants, smartphones, and touch devices).

Maemo Operating System:

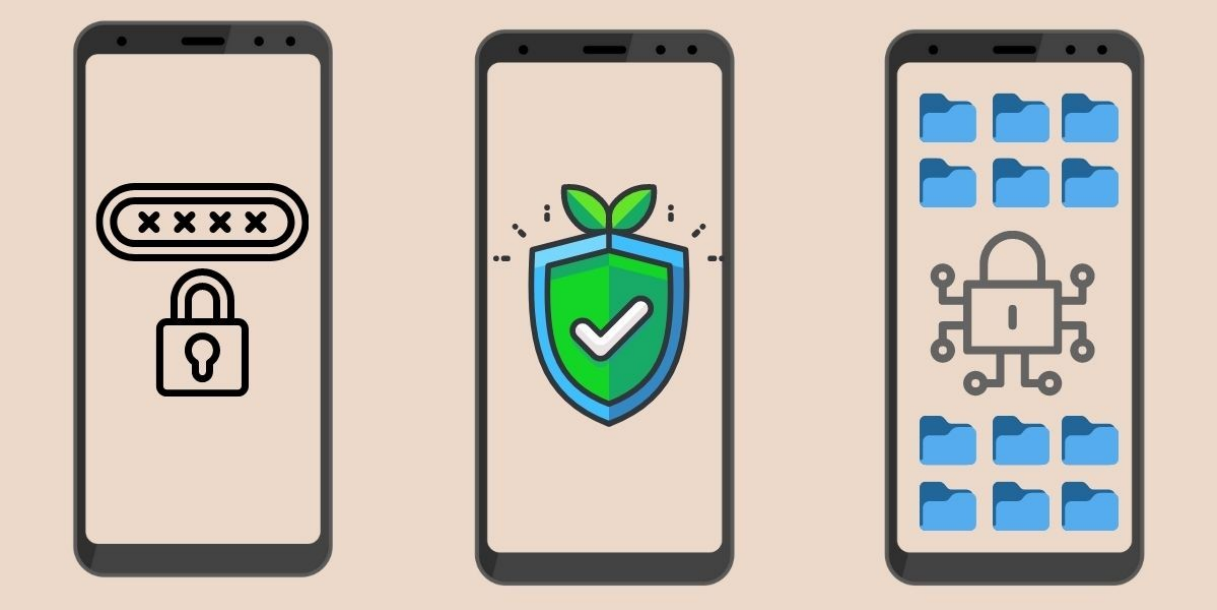
Maemo is a software platform originally developed by Nokia, now developed by the community, for smartphones and Internet tablets. The platform comprises both the Maemo operating system and SDK. It was developed in the programming language c, c++ and mono.

Key Features of Mobile Operating System :

- **Protection and Security :**

  Mobile Device Security refers to the measures designed to protect sensitive information stored on. At the root of mobile device security is the goal of keeping unauthorized users from accessing the enterprise network. With more than half of business PCs now mobile, portable devices present distinct challenges to security.Potential threats to devices include malicious mobile apps, phishing scams, data leakage, spyware, and unsecure Wi-Fi networks. On top of that, enterprises have to account for the possibility of an employee losing a mobile device or the device being stolen. To avoid a security breach, many mobile OS company uses there unique security level like android have Security-Enhanced Linux (SELinux) and iphone OS has built-in AES crypto engine, which

provides advanced encryption technique and accelerates the encryption process etc.

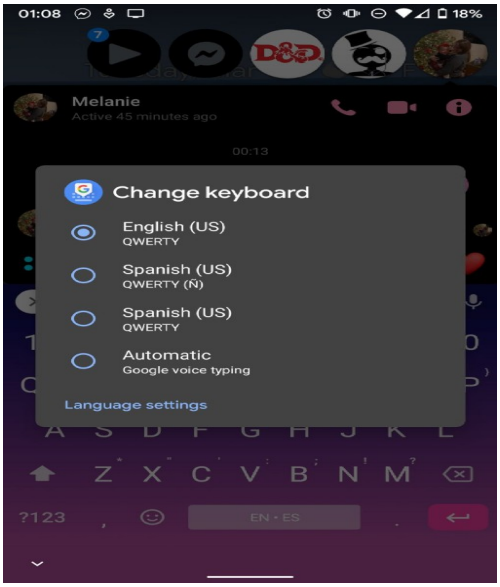


- **Mobile Memory allocation :**

  Memory management is the process of controlling and coordinating mobile memory, assigning portions called blocks to various running programs to optimize overall device performance. Memory management resides in hardware, in the mobile OS (operating system), and in programs and applications. A managed memory environment, like the ART or Dalvik virtual machine, keeps track of each memory allocation. Once it determines that a piece of memory is no longer being used by the program, it frees it back to the heap, without any intervention from the programmer. The mechanism for reclaiming unused memory within a managed memory environment is known as garbage collection. And also the IOS has non-ARC (Automatic Reference Counting) feature for the memory allocation in the mobile device of many operating system.

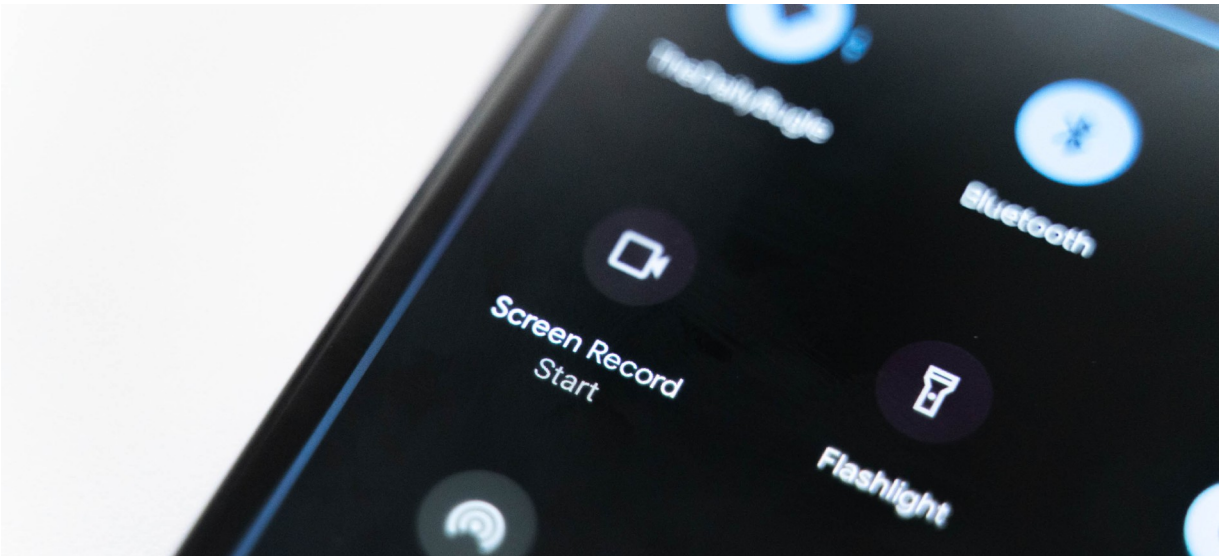
- **Alternate Keyboard language:**

  Many Mobile OS have alternate keyword where the user can type in his or her own language by using the alternate keyboard.



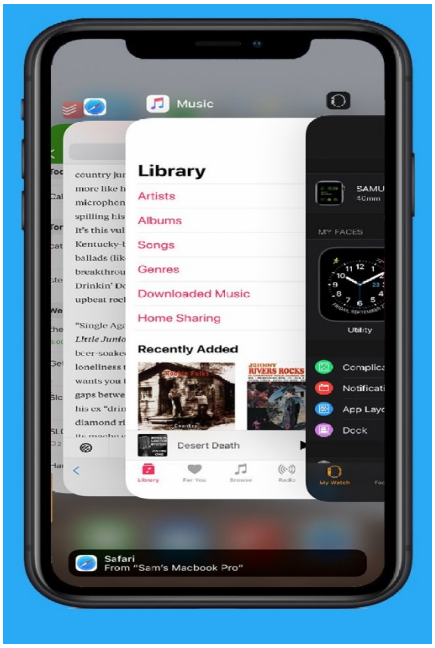
- **Default Screen Recording in OS :**

  It is a screen recorder to capture video, with or without audio on the mobile device automatically. By using these feature the user need not to be downloaded the external apps.



- **Multitasking Features :**

  It is fairly unique in the ways it allows multiple applications to run at the same time. so current operating-system support for multitasking focuses mostly on switching between different apps. When the user hits the home button, an Active app moves to Background. A Background app is not on the screen, but is still executing code. Most Background apps immediately switch to Suspended mode.

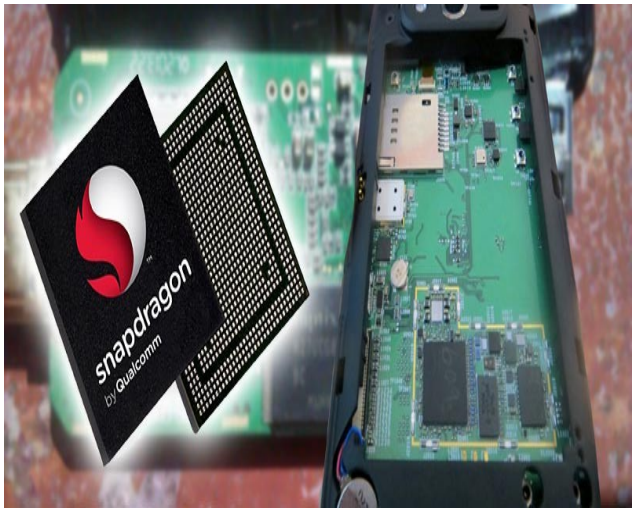


- **Wireless App Download**
- **Custom Home Screen**
- **Voice Assistant**
- **Dark Mode**
- **App permissions**

Every OS has its own hardware it depends on the storage capacity of the device, different processor, the point of charging IC, lash point and the pixel of camera and many more etc.

Android devices incorporate many optional hardware components, including still or video cameras, GPS, orientation sensors, dedicated gaming controls, accelerometers, gyroscopes, barometers, magnetometers, proximity sensors, pressure sensors, thermometers, and touchscreens. Some hardware components are not required, but became standard in certain classes of devices, such as smartphones, and additional requirements apply if they are present. Some other hardware was initially required, but those requirements have been relaxed or eliminated altogether. For example, as Android was developed initially as a phone OS, hardware such as microphones were required, while over time the phone function became optional.

Source : Researchgate and medium.com



[C]. Select one of the following professionals: an insurance adjuster, a delivery person for a courier service, a newspaper reporter, a doctor (general practitioner), or a manager in a supermarket. Suggest at least two ways that such a person might use a handheld computer to work more efficiently.

The Handheld computer is a portable computer which is small in size in one's hand. It is useful to store the information like maintaining schedule and many more.

Handheld computers have a number of advantages. They are inexpensive, very portable, and have a battery life of many weeks. They allow for easy access and entry of information. Most operating systems have excellent integration with the desktop and laptop world. Data from databases, spreadsheets, word processors, websites, calendars, and other applications can be exchanged quickly and accurately between many computers. Small screen size is the biggest limitation of these devices; only a small amount of information can be seen at any one time. Learning how to enter data by writing requires a certain amount of time and some users find this frustrating. Lastly, at this time, some expertise with computers is needed to use these devices to their fullest potential. However as they become more prevalent they are becoming easier to use and incorporate into one's work.

"Handheld computers appear to provide easy and timely access to information and to support more accurate and complete documentation,"

Managers in a super market can use handheld computer by the following efficient ways :

- **Database Storage :**

Mangers are responsible for the intake stock and sold stock in the supermarket so they should be proper data to calculate the stock which has been sold by the worker so they can maintain a digital notes about the stocks and they can calculate the sold stock with the help of handheld computer. In early days they should maintain the separate notes to maintain the stock but know they can use the handheld computer to maintain the stocks easily. So handheld computers can provide a real time access to the managers to analyse the supermarket information about the stock, workers and many more.

Basically the handheld computers is useful in the following ways :

- Keep a track on the stock
- Stores the information of the stocks
- Stores the information about the workers
- Point of care assistance – Providing feedback from the customers and also they can maintain the goods records like what is the expiry date of that particular product and many more.

If they increase more supermarket then should should be many managers to every market and they definitely need the handheld computer to maintain the record of workers and stock details.

And also specific applications can allow workers to keep a track on the stock details.

If the managers had forget any information about the stock or the contact number of the workers they can refer to the handheld for those information where they have already stored in it. The Managers can keep there handheld computer in there pocket like a mobile phone.

"Handheld computers appear to provide easy and timely access to information and to support more accurate and complete documentation," .

- **Digital Signature:**

  If the customers contact the managers to book there product for the home delivery. After delivering the products by using the handheld computer they can take the digital signature for the proof of delivery.

- **Barcode Scanning :**

For the billing purpose the customer will get near the counter to pay the bill, so the work should be fast in the bill counter. By using the handheld computer manager and also the workers can scan the barcode which will be available in every product. So if they scan the product then immediately the cost of the product will visible in the handheld

computer. So the work will get fast at the bill counter and the customer, managers are fully satisfied.

- **Invoice :**

  Managers can send and receive invoice from the customer for the home delivery. The managers can also send the invoice to the workers about the customer address if they went to any home delivery. They can also send and receive the invoice from the dealers about the stock buying for the supermarket.

Managers can use handheld device in the following ways :

- Notes are digitized
- Used for sending and receiving invoices
- Used for asset management
- They can sync information or data and share stuff
- For scanning barcodes
- They are extremely easy to hold and portable.

So by these ways the managers can use handheld computer to work effectively and easily with a single device.

[D]. Compare two processors currently being produced for personal computers. Use standard industry benchmarks for your comparison and briefly list the advantages and disadvantages of each. You can compare different processors from the same manufacturer (such as two Intel processors) or different processors from different manufacturers (such as Intel and AMD).

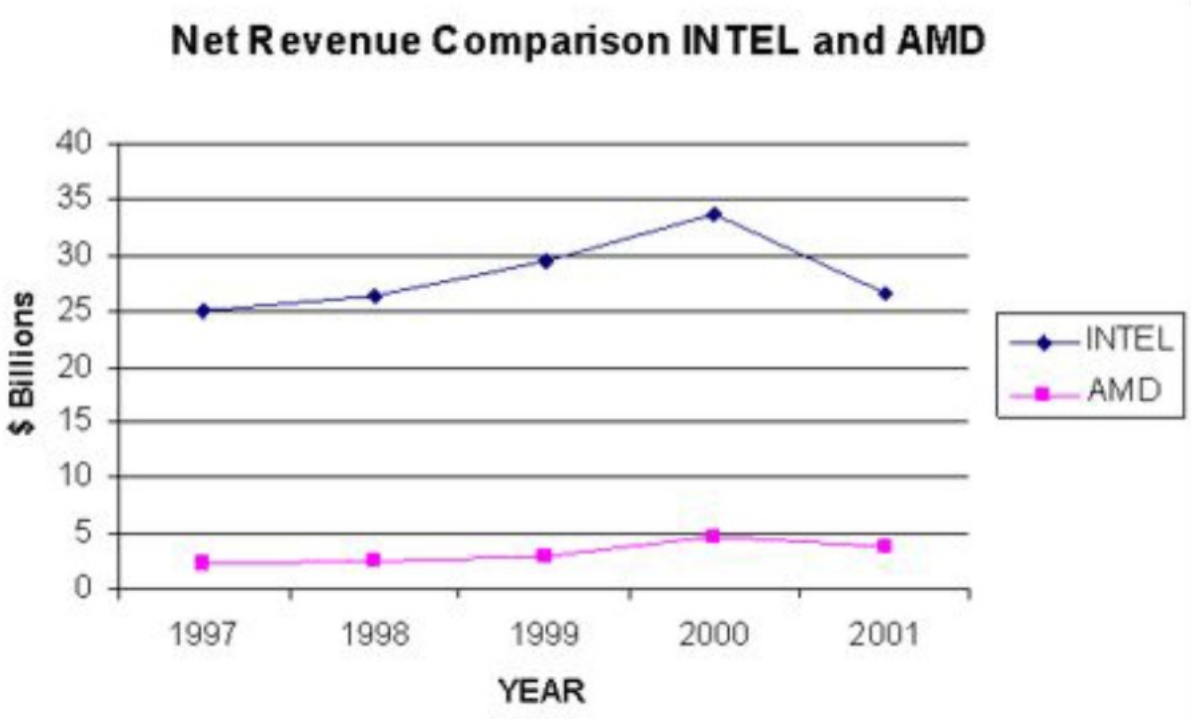
To compare two processors, I have chosen AMD and Intel core processors because they are the two processors best for the personal computers and also well known to all. A processors is an integrated electronic circuit in a device that performs the calculations that run on a computer. In simple terms it is known as the basic instructions that drives a computer to perform activity in the device.

The main reason to install the processors in the computer, laptops is to perform your task as soon as possible. By getting the powerful processors like AMD and intel the computer works faster to perform your activity because the processors are the driving force for the CPU and it is the brain of the computer. And also it will have greater impact.

At early 1823 Baron Jons Jackob Berzelius discovered silicon which today is the basic component of processors. And later on many scientist discovered transistor, switches gates etc to perform the logical programs. At 1971 the processor production company Intel with the help of Ted Hoff introduced the first processor the Intel 4004 on November 15, 1971. The 4004 had 2,300 transistors, performed 60,000 OPS (operations per second), addressed 640 bytes of memory, and cost $200.00. And later on Intel has introduced many processor to perform the programs very fast.

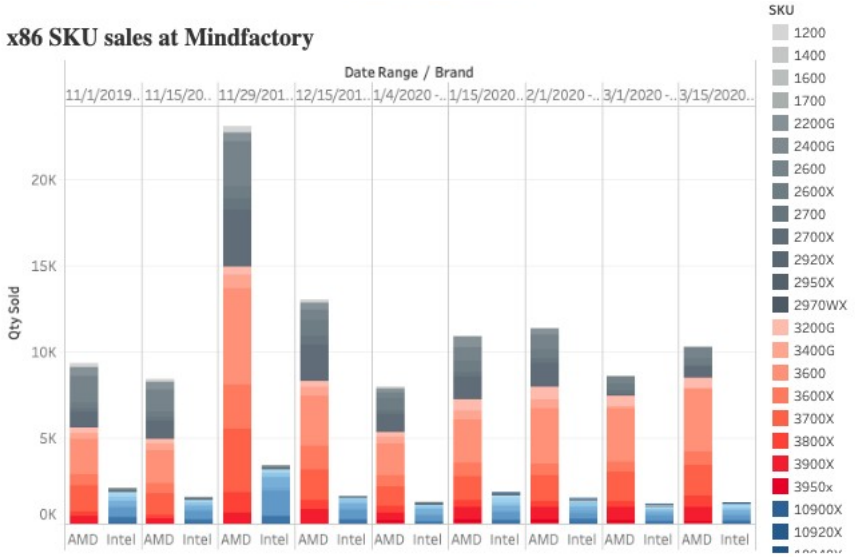
At 1991 were a very important time period for AMD because with the release of the Am386 chip, they broke the monopoly that Intel had on the CPU

market. AMD was also the first processor to be brand to make a seventh generation processor for Microsoft windows computing in 1999 with the AMD Athlon MP processor. Later on AMD had released many processor to perform fast ans efficiently to the user.



At early stage Intel grows more popular than AMD and Intel earns more revenue than AMD

But Now the AMD breaks the market of Intel because the AMD produces more cores, cache memory and the processor works more efficiently than Intel and increase its sales volume.



For comparison of the two processor let’s go with AMD Ryzen 9 and Intel core i9 :

AMD Ryzen 9	Intel i9
It has 12 cores	It has 8 cores
It can handle 24 instruction threads	It can handle 16 instruction threads
The Ryzen 9 base 3.8GHz speed and 4.6GHz maximum boost. The maximum boost frequency is less when compared to Intel i9.	The Core i9 has a base frequency3.6GHz and a maximum boost frequency of 5GHz
70MB L3 cache	Cache 16 MB Intel Smart Cache
Cost is low	Cost is high when compared with AMD
AMD processors still have limits.	Intel processors are able to manage the temperature and the temperature when it works.
Most AMD processors do not include integrated graphics	Every Intel processor includes on-die integrated graphics

Cons of AMD Ryzen 9 :

- Performance of the computer is still no effective than Intel
- Higher IDLE power
- No integrated graphics
- Gaming performance is low
- Requires expensive motherboard for the plugin

Pros :

- Many core and threads
- Base clock speed increased
- Cheep when compared to Intel

Cons of Intel i9 :

- Power usage is high
- Thermal output and cooling requirement needed.
- More costly

Pros :

- Good potential for overclocking
- Fastest Gaming performance
- Strong in both single and multi- threaded application
- Requires new motherboard socket, but compatible with existing mainstream Intel coolers