**Class Assignments**

**Module -1**

**1) Computer Fundamentals**

1. **Character Generation / Image generation**

Character generator adds character or animated text to video in video editing. It is based on hardware and software.

Most computers today use a special device called a character generator ROM to convert the ASCII bytes to a tiny dot matrix pattern for displaying on the tv screen.

This dot matrix can have a density ranging from 5×7 (the most coarse and not allowing lowercase) to 10×12 (the most dense and allowing all symbols of the alphabet).

As the resolution of the dot matrix of the character increases so does the cost of the ROM chip; so, the 5×7 and 7×9 matrixes have become popular, the 7×9 .

2-4B having uppercase, lowercase, and Greek math symbols.

Besides cost, another factor that limits the character matrix density is maximum dot frequency permitted by the tv.

This simply means that the internal circuits of the television set will not allow a dot pattern to be resolved if there are frequency components in it which exceed

about 6 MH.

1. **LCD working**

To create an LCD, you take **two pieces of [polarized glass](https://electronics.howstuffworks.com/sunglass4.htm)**. A special polymer that creates microscopic grooves in the surface is rubbed on the side of the glass that does not have the polarizing film on it. The grooves must be in the same direction as the polarizing film. You then add a **coating of nematic liquid crystals** to one of the filters.

As light strikes the first filter, it is polarized. The molecules in each layer then guide the light they receive to the next layer. As the light passes through the liquid crystal layers, the molecules also change the light's plane of vibration to match their own angle. When the light reaches the far side of the liquid crystal substance, it vibrates at the same angle as the final layer of molecules. If the final layer is matched up with the second polarized glass filter, then the light will pass through.

1. **Firmware :**

***What is a firmware?***

**Firmware** is a software program permanently etched into a hardware device such as a keyboards, hard drive, BIOS, or video cards.

It is programmed to give permanent instructions to communicate with other devices and perform functions like basic input/output tasks.

Firmware is typically stored in the flash ROM (read only memory) of a hardware device. It can be erased and rewritten.

Firmware was originally designed for high level software and could be changed with having to exchange the hardware for a newer device.

Firmware also retains the basic instructions for hardware devices that make them operative. Without firmware, a hardware device would be non-functional.

***What are the different levels of firmware?***

There are levels of firmware :

**Low Level Firmware**: This is found in ROM, OTP/PROM and PLA structures. Low level firmware is often read-only memory and cannot be changed or updated. It is sometimes referred to as hardware.

**High Level Firmware**: This is used in flash memory for updates that is often considered as software.

**Subsystems**: These have their own fixed microcode embedded in flash chips, CPUs and LCD units. A subsystem is usually considered part of the hardware device as well as high level firmware.

***What is difference between hardware, software and firmware ?***

**HARDWARE:**

Computer hardware includes the physical parts of a computer, such as the case, central processing unit, monitor, mouse, keyboard, computer data storage, graphics card, sound card, speakers and motherboard.

**SOFTWARE :**

Software is the set of instructions that can be stored and run by hardware.

**FIRMWARE :**

In computing, firmware is a specific class of computer software that provides the low-level control for a device's specific hardware.

***What are advantages and disadvantages of firmware?***

**ADVANTAGES :**

1)A Firmware updates and improves the functionality and features of your device.

2)It can provide fixes to any performance issues that may occur.

3)With the ever-changing advances in technology, a firmware update also helps a device remain competitive with newer models.

**DISADVANTAGES :**

1)You can't use your PC while updating your BIOS (so time lost).

2)You might not need to update your BIOS but problems still happen even with dual BIOS though less frequently.

**4)Difference between Hard disk, RAM and Cache**

***RAM & CACHE :***

| ****RAM​​​​​**** | ****Cache**** |
| --- | --- |
| Read/Write rate of RAM is slower than Cache Memory. | Read/Write rate of cache memory is quicker than RAM. |
| RAM is limited expensive than Cache Memory. | Cache Memory is more valuable than RAM. |
| RAM is used to store less redundant data. | Cache Memory is used to save more frequent data. |
| CPU reads RAM after expressing Cache Memory. | CPU reads Cache Memory before holding RAM. |
| RAM is commonly internal. | Internal and external both can be in Cache memory. |

***RAM & HARD DISK:***

|  |  |  |  |
| --- | --- | --- | --- |
| ***1*** | ***Definition*** | ***RAM stands for Random Access Memory.*** | ***HDD stands for Hard Disk Drive.*** |
| 2 | Memory | RAM is also called Primary Memory or Main Memory. | HDD is also called Secondary Memory. |
| 3 | Component | RAM has no moving mechanical parts and consists of transistors etc. | HDD contains moving mechanical parts like arm, pin etc. |
| 4 | R/W Time | RAM has small read/write or R/W time. | HDD has higher read/write time. |
| 5 | Access | Every memory area of RAM is accessible at same speed. | Different area of HDD may take different time to access. |
| 6 | CPU Access | CPU can access data stored on RAM. | Data to be copied from ROM to RAM so that CPU can access its data. |
| 7 | Capacity | RAM memory is generally smaller than HDD. Now-a-days it ranges fron 1GB to 8 GB in desktops. | HDD memory is very high. It ranges from 500GB to 4TB in desktops. |
| 8 | Noise | RAM don't produces any noise. | HDD produces noise due to mechanical movements. |
| 9 | Cost | RAM is costly per unit storage. | HDD is cheap per unit storage. |
| 10 | Impact on Speed | If RAM is low, computer will become slow. | HDD has not much inpact on computer's speed. |

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**5)Levels of Computer language**

Basically, there are two main categories of computer languages, namely Low Level Language and High Level Language. 

## **1] Low Level Languages**

Low level languages are the basic computer instructions or better known as machine codes. A computer cannot understand any instruction given to it by the user in English or any other high level language. These low level languages are very easily understandable by the machine.

The main function of low level languages is to interact with the hardware of the computer. They help in operating, syncing and managing all the hardware and system components of the computer. They handle all the instructions which form the architecture of the hardware systems.

1. **Machine Language :**

This is one of the most basic low level languages. The language was first developed to interact with the first generation computers. It is written in binary code or machine code, which means it basically comprises of only two digits – 1 and 0.

### Assembly Language :

This is the second generation programming language. It is a development on the machine language, where instead of using only numbers, we use English words, names, and symbols. It is the most basic computer language necessary for any processor.

EG : Assemblers

1. **Middle level language :**

C is called middle-level language because it actually binds the gap between a machine level language and high-level languages. A user can use c language to do System Programming (for writing operating system) as well as Application Programming (for generating menu driven customer billing system ). That's why it is called the middle-level language.

EG : Middle level - [C++](https://www.dotnettricks.com/learn/cpp" \t "https://www.dotnettricks.com/learn/c/_blank), [C](https://www.dotnettricks.com/learn/c/introduction-to-c-language" \t "https://www.dotnettricks.com/learn/c/_blank), FORTH, Macro-assemble

**3] High Level Language :**

When we talk about high level languages, these are programming languages. The important feature about such high level languages is that they allow the programmer to write programs for all types of computers and systems. Every instruction in high level language is converted to machine language for the computer to comprehend.

Some prominent examples are : Ada, Modula-2, Pascal, COBOL, FORTRAN, BASIC.

### Scripting Languages :

Scripting languages or scripts are essentially programming languages. These languages employ a high level construct which allows it to interpret and execute one command at a time.

Scripting languages are easier to learn and execute than compiled languages. Some examples are AppleScript, JavaScript, Pearl etc.

### Object-Oriented Languages :

These are high level languages that focus on the ‘objects’ rather than the ‘actions’. To accomplish this, the focus will be on data than logic.

The reasoning behind is that the programmers really cares about the object they wish to manipulate rather than the logic needed to manipulate them.

Some examples include Java, C+, C++, Python, Swift etc.

### C) Procedural Programming Language :

This is a type of programming language that has well structured steps and complex procedures within its programming to compose a complete program.

It has a systematic order functions and commands to complete a task or a program.

EG : FORTRAN, ALGOL, BASIC, COBOL are some examples.

**6) Create a flowchart for following steps:**

Take 5 marks.

Calculate average.

check if average >60 then print Pass otherwise print Fail

End

**MODULE - 2 : COMPUTER NETWORKING**

**1)Cloud Network /computing :**

# What Is Cloud Networking or Cloud-Based Networking?

[Cloud networking](https://www.sdxcentral.com/cloud/" \o "Cloud Infrastructure), or cloud-based networking, is when some or all of an organization’s networking resources are hosted in [the cloud](https://www.sdxcentral.com/cloud/definitions/what-is-cloud/" \o "What is the Cloud? &#8211; Definition).



The network resources are hosted on a public, private or hybrid cloud platform. Network resources can be virtual routers, bandwidth, virtual firewall, any network management software and more.

It is based on cloud computing, which is the centralization of computing resources that are shared between users. It shares the network in the same way and has spurred a trend in pushing more network functions into the cloud.

**TYPES :**

1. **Cloud-enabled networking** : Using the cloud resources, the management of local network/connection like SAAS network management as well as anti-virus solution.
2. **Cloud-based networking** : Using the network resources completely from the cloud. The equiments needed for the utilization should be cloud based.

**2)WI-Fi and Bluetooth :**

**WHAT IS A BLUETOOTH ?**

Bluetooth is a wireless technology standard used for exchanging data between fixed and mobile devices over short distances using UHF radio waves in the industrial, scientific, medical radio bands and building personal area networks.

It was originally conceived as a wireless alternative to RS-232 data cables.

Bluetooth was intended for portable equipment and its applications. The category of applications is outlined as the wireless [personal area network](https://en.wikipedia.org/wiki/Personal_area_network" \o "Personal area network) (WPAN). Bluetooth is a replacement for cabling in a variety of personally carried applications in any setting, and also works for fixed location applications such as smart energy functionality in the home (thermostats, etc.).

**HOW DOES IT OPERATE ?**

Bluetooth operates at frequencies between 2.402 and 2.480 GHz, or 2.400 and 2.4835 GHz including [guard bands](https://en.wikipedia.org/wiki/Guard_band" \o "Guard band) 2 MHz wide at the bottom end and 3.5 MHz wide at the top. This is in the globally unlicensed (but not unregulated) industrial, scientific and medical ([ISM](https://en.wikipedia.org/wiki/ISM_band" \o "ISM band)) 2.4 GHz short-range radio frequency band. Bluetooth uses a radio technology called [frequency-hopping spread spectrum](https://en.wikipedia.org/wiki/Frequency-hopping_spread_spectrum" \o "Frequency-hopping spread spectrum).

**WHAT DOES THE TERM “WI-FI” REFERS TO ?**

 Wi-fi is a family of [wireless network](https://en.wikipedia.org/wiki/Wireless_network" \o "Wireless network) [protocols](https://en.wikipedia.org/wiki/Communication_protocol" \o "Communication protocol), based on the [IEEE 802.11](https://en.wikipedia.org/wiki/IEEE_802.11" \o "IEEE 802.11) family of standards, which are commonly used for [local area networking](https://en.wikipedia.org/wiki/Wireless_LAN" \o "Wireless LAN) of devices and [Internet](https://en.wikipedia.org/wiki/Internet" \o "Internet) access.

As of 2017, the Wi-Fi Alliance consisted of more than 800 companies from around the world. As of 2018, over 2.97 billion Wi-Fi enabled devices shipped globally each year. Devices that can use Wi-Fi technologies include [personal computer](https://en.wikipedia.org/wiki/Personal_computer" \o "Personal computer) desktops and laptops, [smartphones](https://en.wikipedia.org/wiki/Smartphone" \o "Smartphone) and [tablets](https://en.wikipedia.org/wiki/Tablet_computer" \o "Tablet computer), [smart TVs](https://en.wikipedia.org/wiki/Smart_TV" \o "Smart TV), [printers](https://en.wikipedia.org/wiki/Printer_(computing)" \o "Printer (computing)), [smart speakers](https://en.wikipedia.org/wiki/Smart_speaker" \o "Smart speaker), cars, and [drones](https://en.wikipedia.org/wiki/Unmanned_aerial_vehicle" \o "Unmanned aerial vehicle).

**HOW DOES IT WORK ?**

Like mobile phones, a WiFi network makes use of radio waves to transmit information across a network. The computer should include a wireless adapter that will translate data sent into a radio signal. This same signal will be transmitted, via an antenna, to a decoder known as the router. Once decoded, the data will be sent to the Internet through a wired Ethernet connection.  
  
As the wireless network works as a two-way traffic, the data received from the internet will also pass through the router to be coded into a radio signal that will be received by the computer's wireless adapter.

## **WiFi Frequencies :**

A wireless network will transmit at a frequency level of 2.4 GHz or 5GHz to adapt to the amount of data that is being sent by the user. The 802.11 networking standards will somewhat vary depending mostly on the user's needs.

**BLUETOOTH VS WI-FI :**

Bluetooth and [Wi-Fi](https://en.wikipedia.org/wiki/Wi-Fi" \o "Wi-Fi) (Wi-Fi is the brand name for products using [IEEE 802.11](https://en.wikipedia.org/wiki/IEEE_802.11" \o "IEEE 802.11) standards) have some similar applications: setting up networks, printing, or transferring files.

Wi-Fi is intended as a replacement for high-speed cabling for general [local area network](https://en.wikipedia.org/wiki/Local_area_network" \o "Local area network) access in work areas or home. This category of applications is sometimes called [wireless local area networks](https://en.wikipedia.org/wiki/Wireless_local_area_network" \o "Wireless local area network) (WLAN).

1. Wi-Fi and Bluetooth are to some extent complementary in their applications and usage. Wi-Fi is usually access point-centered, with an asymmetrical client-server connection with all traffic routed through the access point, while Bluetooth is usually symmetrical, between two Bluetooth devices.
2. Bluetooth serves well in simple applications where two devices need to connect with a minimal configuration like a button press, as in headsets and remote controls, while Wi-Fi suits better in applications where some degree of client configuration is possible and high speeds are required, especially for network access through an access node.
3. However, Bluetooth access points do exist, and ad-hoc connections are possible with Wi-Fi though not as simply as with Bluetooth. [Wi-Fi Direct](https://en.wikipedia.org/wiki/Wi-Fi_Direct" \o "Wi-Fi Direct) was recently developed to add a more Bluetooth-like ad-hoc functionality to Wi-Fi.

## Wi-Fi Vs. Bluetooth :

|  |  |  |
| --- | --- | --- |
| **BASIS OF COMPARISON** | Wi-Fi | Bluetooth |
| **Technology** | Radio waves | Radio waves. |
| **Multiplexing** | OFDM | FHSS, OFDM, DSSS. |
| **Range** | 30 meters for indoor and 100 meters outdoor. | 10 meters range. |
| **Frame Size** | 0 to 2404 bytes. | 350 bytes. |
| **Speed** | Up to  60 Mbps. | 1 to 4 Mbps. |
| **Frequency Range** | 20 MHz | 2.4 GHz. |
| **Media Access** | CSMA/CD, CDMA | Distributed/central CSMA/CA, MACAW. |
| **Application Using The Technology** | Video game consoles, PDAs, mobile phones, consumer electronics. | Microwave ovens, DVD players, Cameras, banking, office, etc. |

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**3)WHAT IS A VIRUS IN COMPUTING ?**  
A computer virus is a type of computer program that, when executed, replicates itself by modifying other computer programs and inserting its own code. When this replication succeeds, the affected areas are then said to be "infected" with a computer virus.

**TYPES OF COMPUTING VIRUSES:**

***9 Types Of Computer Viruses That You Should Know About – And How To Avoid Them :***

#### 1. Boot Sector Virus

#### Even though this virus has now become obsolete, it still pops out in one way or the other. This virus got attention when floppy disks were used to boot a computer. In modern computers, this virus could appear on the “Master Boot Record”. In the partitioned storage device of your computer, it is the first sector to take place.

#### However, thanks to the fact evolution of Internet, the threat of this virus is now mitigated.

#### 2. Web Scripting Virus

#### Similar to the hyperlinks that we used in Microsoft Word, many websites rest on codes to provide engaging content to their users. For example, since the trends of watching videos online have now become very popular – more than 2 Billion Videos are streamed on Facebook every day, these videos also execute a specific code.

#### These codes can be exploited and it is very troublesome to note that this exploitation has taken place on some very notable sites. All the hackers have to do it to leave a comment in the Comments Section of the website which contains that code. Thus, even without the Webmaster knowing it, the code gets exerted into the site.

#### 3. Browser Hijacker

#### Ever faced a problem where the homepage of your web page gets automatically directed to a particular site? Well, that is the most common way by which this ransomware hijacks your browser.

#### While its visual effects might epitomize the threat, this hijacker is nothing more than a tactic to increase income from web ads. However, if you still want to clean your computer from this virus, give [Soft2Secure](http://soft2secure.com/knowledgebase/teslacrypt-3-0) a go.

#### 4. Resident Virus

#### After inserting itself directing into the memory of your system, this virus has the capability to take a number of actions. One of its more troublesome features is its ability to run away. Leaving behind the file which was originally infected, this virus has the ability to run on its own.

#### 5. Direct Action Virus

#### Similar to the Vienna virus which shocked computers in 1998, this virus comes into action after you have executed the file. The load is delivered to your computer and the virus becomes active.

#### However, this virus has a limitation. It takes no action unless the file which is infected gets implemented again.

#### 6. Polymorphic Virus

#### One of the factors that epitomize the usefulness of this virus is its ability to evade. The Antivirus programs that are enabled on our computers detect the presence of any virus by detecting its code.

#### Polymorphic virus has exploited this limitation beautifully as it changes its code every time the infected file is executed. Thus, it becomes nearly impossible for any ordinary antivirus to track it down.

#### 7. File Infector Virus

#### Although the word “file” in its name might suggest otherwise, this virus does not take the help of files every time. In fact, the file is only the starting point as the file infector dwarfs the first file after which it re-writes the file.

#### 8. Multipartite Virus

#### If you have read carefully the aforementioned viruses, you might have noticed that they use two methods for their transmission. Either they use one method or a single payload is delivered.

#### However, this virus wants to claim both. Depending upon the operating system of your computer or the files that exist on your computer, it might use any of the two methods to spread.

#### 9. Macro Virus

#### Appearing in the form of a word document which seemingly links the user to pornographic websites, Melissa is one of the most known Micro Virus. Going one step further, this virus not only exploits the user but also his/her friends by mailing the copies of the infected virus document to the contact list.

#### If you are handling a website, you can also [keep your website virus and malware-free using Sitelock](https://hostingdecisions.com/what-is-sitelock/" \t "https://www.youngupstarts.com/2016/04/14/9-types-of-computer-viruses-that-you-should-know-about-and-how-to-avoid-them/_blank). You can also see how to stop cyber attacks with these [Cyber Security Kiosks](https://thelab.olea.com/stop-cyber-attacks-front-door-cyber-security-kiosks/) from Olea.

1. **Twisted pair, Coaxial cable & fibre optics:**

|  |  |  |  |
| --- | --- | --- | --- |
| ****BASIS OF COMPARISON**** | ****TWISTED PAIR CABLE**** | ****COAXIAL CABLE**** | ****FIBER OPTIC CABLE**** |
| ****Alternative Name**** | \_\_\_\_ | Coaxial cable can also be referred to as ****coax cable.**** | Fiber optic cable also referred to as ****optical fiber cable.**** |
| ****Description**** | Twisted Pair cable is a kind of wiring in which two conductors of a single circuit are twisted together. A pair of wires forms a circuit that can transmit data. | Coaxial cable is designed to transmit high-frequency signals. It is comprised of a round copper conductor and three layers of insulation and shielding which prevents crosstalk from motors, lighting and other sources of EMI. | Fiber optic cable also referred to as optical fiber cable, is a type of Ethernet cable which consist of one or more optic fibers that are used to transmit data. |
| ****Types**** | Unshielded Twisted Pair (UTP) Shielded Twisted Pair (STP) | RG59 RG6 | Single mode fiber (SMF)  Multimode fiber (MMF). |
| ****Transmission Of Signal**** | Transmission of signals takes place in the electrical form over metallic conducting wire. | Transmission of signal is in electrical form over the inner conductor of the cable. | Signal transmission takes place in light forms over a glass fiber. |
| ****External Magnetic Field**** | It can be affected due to external magnetic field. | It is less affected due to external magnetic field. | It is never affected due to external magnetic field. |
| ****Made Up Of**** | It is made up of a pair of insulated copper wire. | It is made up of four components moving from inside to the outside: a solid conductor wire, a layer of insulation, a grounding conductor and a layer of exterior insulation. | They are made up of very thin optical fibers bundled together into a single cable. The fibers can be made of glass or plastic. |
| ****Price**** | They are comparatively low in price when compared to both Coaxial and Fiber optical cables. | The cost of coaxial cables is higher than that of twisted pair cables. | Fiber optic cable is more expensive than copper cable due to its high performance and capacity cables. |
| ****Noise Rejection**** | It is usually not effective in rejecting this noise | They are relatively good at rejecting noise when compared to twisted pair cables. | It has highest noise immunity as the light rays are unaffected by the electrical noise. |
| ****Attenuation**** | Attenuation is very high. | Attenuation is low. | Attenuation is very much low. |
| ****Installation & Implementation**** | Installation and implementation of twisted pair cables is simple and easy. | Installation and implementation of coaxial cable is relatively difficult. | Installation and implementation of optical fiber is difficult. |
| ****Bandwidth**** | Low Bandwidth. | Moderately high bandwidth. | Very high bandwidth. |
| ****Security**** | The security of transmitted signal is not guaranteed. | The security of transmitted signal is not guaranteed. | It is hard to tap fiber-optic cables without also disrupting the system. Security of transmitted signal is guaranteed. |
| ****Application**** | They are generally used in telephone networks, data networks and cable shielding. | They are used in feedlines connecting radio transmitters and receivers with their antennas, computer network (Internet) connections, digital audio (S/PDIF) and distributing cable television signals. | They are installed to support long distance connections between countries and cities. They are also used in data centers where large volume of data needs to be transmitted. |
| ****Transmission Speed**** | They transmit television, telephone and data at a relatively low speed when compared to fiber optical cable. | They transmit television, telephone and data at a relatively low speed when compared to fiber optical cable. | They transmit television, telephone and data at a relatively faster speed when compared to twisted pair and coaxial cable. |
| ****Diameter**** | They are larger in diameter than fiber optical cables. | They are larger in diameter than fiber optical cables. | They are small in diameter. |
| ****Weight**** | They are heavier in weight when compared to fiber optical cables. | They are heavier in weight when compared to fiber optical cables. | They are lighter in weight when compared to twisted pair and coaxial cables. |
| ****Type Of Loss Occurring In The Cable**** | Resistive loss, Dielectric loss, Radiated loss and Loss over time. | Resistive loss, Dielectric loss and Radiated loss. | Dispersion, bending, absorption and attenuation. |

**5)PHISHING :**

Phishing is the fraudulent attempt to obtain [sensitive information](https://en.wikipedia.org/wiki/Sensitive_information" \o "Sensitive information) or data, such as usernames, passwords and [credit card](https://en.wikipedia.org/wiki/Credit_card" \o "Credit card) details, by disguising oneself as a trustworthy entity in an [electronic communication](https://en.wikipedia.org/wiki/Electronic_communication" \o "Electronic communication).Typically carried out by [email spoofing](https://en.wikipedia.org/wiki/Email_spoofing" \o "Email spoofing),[[3]](https://en.wikipedia.org/wiki/Phishing" \l "cite_note-DMARC-3) [instant messaging](https://en.wikipedia.org/wiki/Instant_messaging" \o "Instant messaging), and text messaging, phishing often directs users to enter [personal information](https://en.wikipedia.org/wiki/Personal_information" \o "Personal information) at a fake website which matches the [look and feel](https://en.wikipedia.org/wiki/Look_and_feel" \o "Look and feel) of the legitimate site.

Phishing is an example of [social engineering](https://en.wikipedia.org/wiki/Social_engineering_(computer_security)" \o "Social engineering (computer security)) techniques used to deceive users.

Users are lured by communications purporting to be from trusted parties such as [social web sites](https://en.wikipedia.org/wiki/Social_networking_service" \o "Social networking service), [auction sites](https://en.wikipedia.org/wiki/Online_auction" \o "Online auction), banks, colleagues/executives, [online payment processors](https://en.wikipedia.org/wiki/E-commerce_payment_system" \o "E-commerce payment system) or IT administrators.

Attempts to deal with phishing incidents include [legislation](https://en.wikipedia.org/wiki/Legislation" \o "Legislation), user training, public awareness, and technical security measures (the latter being due to phishing attacks frequently exploiting weaknesses in current web security)

## **Types of Phishing :**

### **Spear phishing :**

Phishing attempts directed at specific individuals or companies is known as *spear phishing*. In contrast to bulk phishing, spear phishing attackers often gather and use personal information about their target to increase their probability of success.

The first study of social phishing, a type of spear phishing attack that leverages friendship information from social networks, yielded over 70 percent success rate in experiments.

**Whaling :**

The term whaling refers to spear phishing attacks directed specifically at senior executives and other high-profile targets.

In these cases, the content will be crafted to target an upper manager and the person's role in the company. The content of a whaling attack email may be an executive issue such as a [subpoena](https://en.wikipedia.org/wiki/Subpoena" \o "Subpoena) or customer complaint.

### **Clone phishing :**

Clone phishing is a type of phishing attack whereby a legitimate, and previously delivered, email containing an attachment or link has had its content and recipient address(es) taken and used to create an almost identical or cloned email. T

### **Voice phishing :**

Not all phishing attacks require a fake website. Messages that claimed to be from a bank told users to dial a phone number regarding problems with their bank accounts.

### **SMS phishing :**

SMS phishing or smishing uses [cell phone text messages](https://en.wikipedia.org/wiki/SMS" \o "SMS) to deliver the *bait* to induce people to divulge their personal information.. Smishing attacks typically invite the user to click a link, call a phone number, or contact an email address provided by the attacker via SMS message. The victim is then invited to provide their private data; often, credentials to other websites or services.