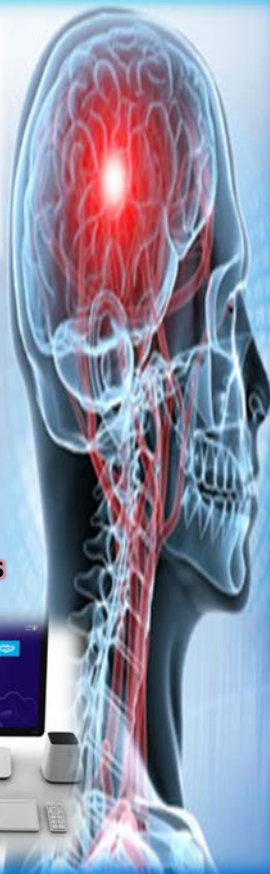
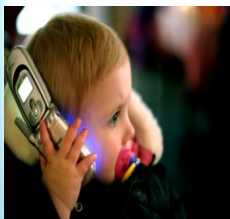




Modern Technology impacts on health

By Public health students





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Technology in our life:

Technology is modern collection of skills, methods and techniques that service in providing good services and objectives accomplishments. Technology has its advantages and hazards. We are going to discuss three of these technological devices which are: mobile phones, computers, microwaves and their uses in our daily life. Moreover precautions for their uses and health consequences of their misuse will be discussed.

**Best uses for Mobile Phones,
Computers and Microwaves**

1- Best Uses of each Device

➔ Mobile Phones

Mobile phones are portable telephone “system” whose work is based on radio frequency through which the user can receive and send calls within a telephone service area. Mobile phones can be used in a variety of purposes including:

- ✚ Keeping in touch with family and relatives
- ✚ Banking services
- ✚ Business planning
- ✚ The best to be used in emergency events
- ✚ Taking the advantage of variability and multiplicity of SIM cards (Teachers & Leverage n.d.)(Care n.d.)
- ✚ They can also function as calculators. They tell you where you are in unfamiliar neighborhoods.



✚ The calendar function on the mobile phones can help us track our lives.

✚ Phones can also function as radios. For some, the mobile phone also becomes a notepad



✚ Mobile phone is used in making video, recording information.

✚ Mobile phone is used in medicine field, now Bluetooth protocol used to develop a generic and real time Internet telemedicine aid system.

➔ **Computers**

Computer is a system whose construction purpose is based upon carrying out a set of logical operations in a fast, automatic manner. Computers can be used for many purposes such as:



✚ Aiding at Education as it serves in many educational fields at variable levels. It's one of the factors that contribute in assessment of a qualified, well-educated students.



✚ In health and medicine: as computers include many databases that involves medical information; moreover they act as the linkage between the physician, patient to the internet information resources.

✚ Computers act as a method for our transport systems through which booking of plane tickets for instance can be done.



✚ Computers have a role in shopping as well which is called online shopping (E-commerce)

- ✚ Computers can be used for designing such as designing an instruction, artistic purposes and many other things
- ✚ Computers also can be used for entertainment purposes for children and even adults.
- ✚ In financial institutions used in banks for different purposes to storing and giving the information regarding your account
- ✚ Computers can also be used for our defense as Computer builds the links between the soldiers and commanders through the satellite. Construction of weapons and controlling their function is not possible without the aid of computers. The list of the criminals and the records of the cops are maintained regularly in the system.

➔ **Microwaves**

- ✚ Microwave oven is a kitchen appliance used in cooking through food exposure to microwave radiation within the electromagnetic spectrum. It acts automatically as it

switches off as soon as the end of the food cooking time. It takes the advantage of speed and easiness.



Microwaves are also used for Defrosting Frozen

Vegetables and Meat,

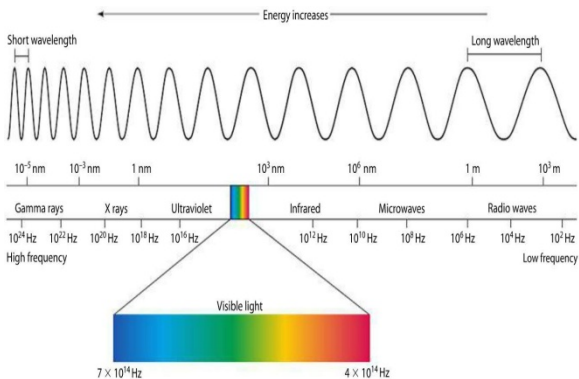
Grilling Food. Blanching vegetables, Boiling and Steaming.



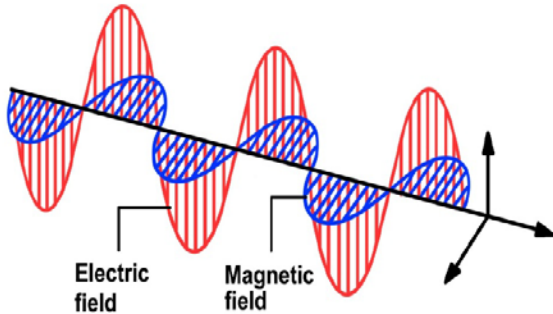
**Kinds of Radiations emitted
by Mobile Phones,
Computers and Microwaves**

2- Kind of waves emitted by each device

A lot of natural (sun) and artificial (mobiles) stuff that share significantly in our daily lives are considered a source for the emission electromagnetic waves. Electromagnetic radiations are called so as they were found the form of waves. Radiations of high intensity may cause the atom to



be charged or become ionized on the other hand radiations of lower intensity are called non-ionizing. Different types of electromagnetic radiations are expressed on the electromagnetic spectrum as expressed in the following diagram.



The electromagnetic radiation consists of both electric and magnetic fields that propagates at right angles to each other and to the direction of energy transmission.

➔ **Mobile phones electromagnetic radiations**

The mobile phones emits mainly two types of radiations the first is in the microwave (2.4 GHz) range and the second is radiofrequency energy (3 kHz to 300 GHz) (non-ionizing) this second type is easily absorbed by tissues near to mobile phone, this type of radiation don't have enough energy to

cause cancer by directly damaging the DNA inside cells. Radiofrequency waves are different from the strong ionizing radiation such as gamma rays and ultraviolet light that can break the chemical bonds in DNA and interfere with them.

➔ **Computers electromagnetic radiations**

There are mainly two types of radiations to which the computer user is exposed which are extremely low frequency electromagnetic radiation from computers. Although this is not very intense radiation but long time exposure may lead to lethal hazards. On the other hand microwave radiation that caused by the nearby devices such as wireless connections and modems are considered to be highly fatal.

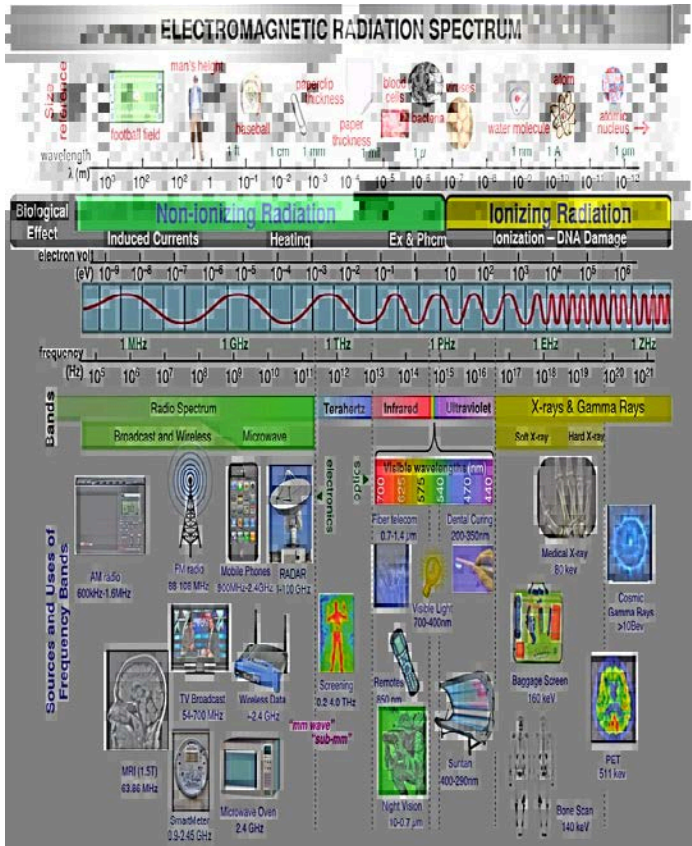
It was also found that computer monitors emit the electromagnetic radiation not due to the design intention such as:

- ✚ Ionizing radiation such as X-rays: they are produced inside the cathode ray tube monitor when electrons flow in a beam towards the screen, hitting the inner surface, causing it to glow. But these units are designed in the normal measures in order that the levels of X-rays emission don't exceed the limits.
- ✚ Non-ionizing radiation such as Ultraviolet (UV): it was found that the amount of UV emitted from monitors is much lower than that from the sun.
- ✚ Infrared (IR): the intensity of IR emitted from monitors is barely distinguishable above background.

➔ **Microwaves electromagnetic radiations**

Most of kitchen equipment including stoves, hot plates and microwaves produce what is known as low frequency electromagnetic radiation in the microwave radiation range (2.4 gigahertz) which upon exposure for two hours or more may leads to negative effects on the user. They are produced by an electron tube called a magnetron. The

microwaves are reflected within the metal interior of the oven. The radiation emitted is non- ionizing that can cause molecules in the food to move only which mean that it don't alter the chemical structure of food components. This energy causes the water molecules to vibrate, generating heat through this (harmless) friction, which cooks the food. This mechanism is what makes microwaves much faster at heating food than other methods.



Different radiations emitted by different devices

**Consequences of Overuse of
these devices on children and
adults**

3- Bad health consequences of the overuse of these devices on children and adults

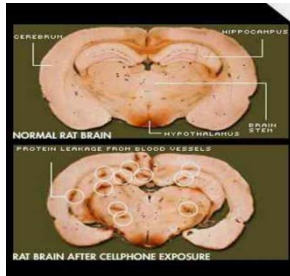
→ Bad Effects of mobile on Health

Brain Cancer

Cell phone radiation leads to slowly damaging brain. The generation of radio field by mobile causes heating up of brain tissue. The brain absorbs the radiation which is carcinogenic.



Children are more susceptible for cancer as they absorb 60% of these radiations more than adults due to they have thin skin brain, bones and tissue and their nervous system are vulnerable to this carcinogen.



Damaging radiations effects' on brain

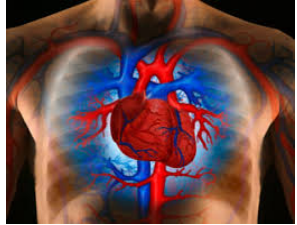
Loss of Hearing

The radiation emitted by cell phones can damage the inner ear and may lead to hearing loss. That caused to People who use mobile for long time.



Heart risks

Radiations from phones can cause anomalies functioning of heart. Cell phones emit radiation lead to forces red blood cells to drip hemoglobin then



hemoglobin builds up in the body and this can cause health complications including heart diseases. Maybe that is result from keeping the cell phone in the front pocket of your shirt.

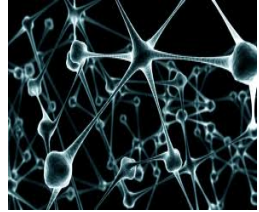
Risks to the Unborn

Cell phones during pregnancy slow down the rate of brain development of the fetus or lead to hyper activity. Also, radiations emitted by mobile phones can lead to miscarriage.



✚ Neurodegenerative Disorders.

The harmful radiations radiated by the cell phones can damage DNA in brain that lead to affect neurological functions.



✚ Blurred vision

Hold phone too close to your eyes along with staring at its viciously small font lead to eye strain, dry eye, headaches and blurred vision.



✚ General Sickness

Touch the mobile screen, 20% to 30% of all virus and bacteria transmitted to hands and inter body.



✚ **Impaired Concentration.**

✚ **Reduced Fertility**

✚ **Increased Stress**

➔ **Bad Effects of Computers on Health**



✚ **Musculoskeletal problems**

Regular computer users are Muscle soreness and muscle fatigue. Chest pain, numbness in arms, shoulder, feet top the list and back pain. That result from your posture and from you is sitting for long time on chair.

✚ **Repetitive stress injury**

Pain in anywhere from the shoulder to fingers that mean repetitive stress injury

Vision problems

Bright and bad light or flickering image cause strain your eyes. When you focus on the screen without blinking can cause Computer vision syndrome and dry eye.

Headache

Long time using computer lead to common problem increased muscle tension or pain in the neck at the base of the skull, headache .

Obesity

Using computers for long time, especially in children, is the major causative factor of obesity and loss of activity.

Stress

.Prolonged uses of computers with other factors as job environment, poor health and work pressure cause you susceptible to stress.

- ✚ **Cardiovascular disease.**
- ✚ **Hormone disturbance**
- ✚ **Immune system and reproductive systems is**
Disturbance to nerves
- ✚ **Memory loss**
- ✚ **Change in white blood cell**

➔ **Bad Effects of Microwave on Health**



The food's nutritional value is lost.

The result from testing Microwaving food

- ✚ Microwaving grains and milk is carcinogenic substances being formed through the conversion of amino acids
- ✚ Microwaving of nearly all foods tested form Carcinogenic substances.

- ✚ Prepared meats in Microwave caused cancer causing form of some agents as d-Nitrosodienthanolamines.
- ✚ Microwaving fruits cause conversion of glucoside and galactoside into carcinogenic substances
- ✚ Microwaved root vegetables form Carcinogenic free radicals

Microwaving Food Leads to bad effect on health

- ✚ Increase cholesterol levels
- ✚ Decreased hemoglobin levels, that indicate anemia
- ✚ A plummet in leukocytes which could recommend poisoning
- ✚ Production of radiolysis compounds
- ✚ Decreased levels of red blood cell

The effects of microwave radiation have been shown to

- ✚ Ability to the BBB to viruses and toxins
- ✚ Change in brain activity and brain tissue.

- ✚ Reverse cell membrane polarity
- ✚ Affect alter brain waves and chemistry.
- ✚ Electrical activity in brain's during sleep.
- ✚ Memory loss and mental distribution.
- ✚ Stimulate extreme fatigue and Cause headaches
- ✚ Damage nerves in the scalp
- ✚ Affect in hemoglobin



Healthy Measures during the
use of mobile phones,
computers and microwaves

4- Precautions in using each device to avoid their risk on health

➔ Mobile

1-Distance Is Your Friend

Prefer to position the cell phone away from your body by use the speaker phone mode or an Air tube wired headset.

2. Avoid using your cell phone when the signal is weak or when moving at high speed, such as in vehicles (car, train or airplane) and elevators as automatically power increases to emit a maximum amount of radiation because the phone repeatedly attempts to connect to each nearest network antenna

3. Avoid Carrying Your Cell Phone on Your Body at All Times

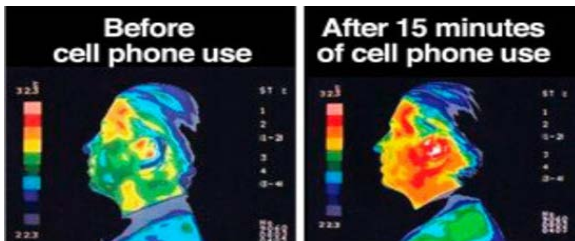
Cell phones emit radiation constantly, even when you are not actively using them.

4-Do Not Sleep With Your Cell Phone Powered On.

Simply put the phone on “airplane”, which will stop “wireless” electromagnetic field emissions.

5-Avoid Using Your Cell Phone In Metal Contained Spaces Like A Car, Elevator, Bus, Train Or Airplane.

The metal surroundings reflect the waves inside the vehicle, often increasing your radiation exposure. Your use also passively exposes other persons near you (children, pregnant women)



6-Choose to communicate via text messaging rather Than making a voice Call to limit the duration of exposure to the body.

➔ **Computer**

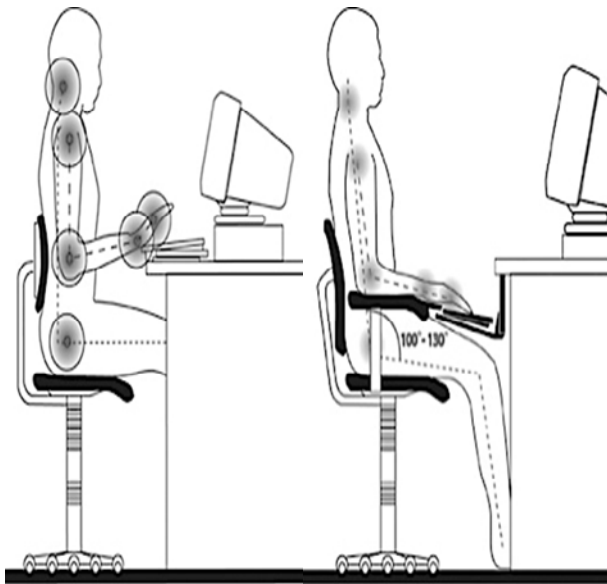
If we use a computer for many hours, there are some health issues that might affect us.

1-to avoid Eye Strain (tiredness of the eyes)

- ✚ Must Look away from the monitor at regular intervals
- ✚ Take regular breaks.
- ✚ Use an anti-glare filter in front of the monitor to cut down on screen reflections
- ✚ Use protective tinted eye glasses to protect your eyes from the monitor glare

2-Back and Neck Ache due to them having a bad sitting posture.

- ✚ Use an adjustable, ergonomic chair.
- ✚ The keyboard and monitor should be at the correct height for the seated person
- ✚ Take breaks: walk around, stretch your muscles



Bad Posture

Good Posture

3-To avoid repetitive Strain Injury in Wrists and Hands due to any repetitive movement

- ✚ Must using a mouse for long periods are common causes of RSI in the wrist (called carpal-tunnel syndrome).

- ✚ Use a wrist rest to support the wrists while typing and when using the mouse.
- ✚ Take regular breaks from typing or using the mouse.

5-Eyes and eyesight

Working at a screen for a long time without a break can have effects similar to reading or writing uninterrupted, and may make your eyes feel 'tired' or sore. You might find that it helps to look away from the screen from time to time and focus your eyes on a distant object.

6- Take a break


You should take breaks before the onset of fatigue, not in order to recuperate. The timing of the break is more important than its length.

Short, frequent breaks are more satisfactory than occasional, longer breaks. A break of thirty seconds to two minutes after twenty or thirty minutes of continuous work with the screen and keyboard is likely to be more effective than a fifteen-minute break every two hours. If possible, you should take your breaks away from the screen, and avoid

activities that require actions similar to your work (writing, crosswords or needlework, for example

➔ **Microwaves**

A microwave oven usually called as a microwave, is an electrical appliance to heat the cold food items through dielectric heating that is caused by electromagnetic waves produced by microwave. It is used commonly to reheat the previously cooked foods and also used to cook vegetables that are cooked fast and easy. It uses less energy than a stove to reheat the food. There are certain dangers associated to the usage of microwaved food. The reheated food from microwave can be a cause of very dangerous health hazards like hormonal disruption, brain damage, malnutrition, increased body fat and weakened immune system.

 Foods should not be heated in plastic containers or covered with plastic sheets. When heated in the

microwave, chemicals that are harmful to the plastics and interact with foods can cause many diseases

- ✚ Don't look closely into oven when it is switched on
- ✚ People with heart pacemakers must not use this oven because the microwaves may cause pacemaker interference.
- ✚ Never use metal container or aluminum foil in microwaves oven it cause fire, use only microwaves safe food container.
- ✚ Don't store anything on top microwaves to avoid any danger
- ✚ Ensure there is no leakage of microwave radiation.

1. Follow the manufacturer's instructions for use. Directions in the user manual provide recommended operating procedures and safety precautions.

2. Use microwave-safe containers. Use cookware specially manufactured for use in the microwave oven. Generally,

you should not use metal pans or aluminum foil because microwaves reflect off them, causing food to cook unevenly and possibly damaging the oven. And you should not use some plastic containers because heated food can cause them to melt. The FDA recommends using glass, ceramic, and plastic containers labeled for microwave oven use.

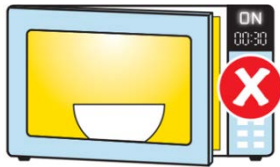
3. Avoid super-heated water. “Super-heated” means water is heated beyond its boiling temperature, without signs of boiling. If you use a microwave oven to heat water in a clean cup beyond the boiling temperature, a slight disturbance or movement may cause the water to violently explode out of the cup. There have been reports of serious skin burns or scalding injuries around people’s hands and faces as a result of this phenomenon.

4. Check for leakage. There should be little concern about excess microwave radiation leaking from these ovens unless the door hinges, latch, or seals are damaged. The FDA recommends looking at your oven

carefully to see if any of these issues exist. The agency also recommends that you do not use an oven if the door doesn't close firmly or is bent, warped, or otherwise damaged.



5. Don't use ovens that seem to operate when the door is open. The FDA monitors these appliances for radiation safety issues and has received increasing reports about microwave ovens that appear to stay on—and operate—when the door is open. The FDA recommends that you immediately stop using a microwave oven if this happens.



**Privacy measures during the
use of mobiles and computers
to avoid attack by hackers**

5- Privacy Measures during the use of mobiles and computers to avoid attack by hackers and how hackers can affect your privacy

Nowadays most of our lives are online as technology become an important thing for most of our life fields. The most common forms of technology are mobiles and computers that we use continuously every day. But technology is a double edged weapon that can benefit and harm our lives as well, so we need protection when using technology as mobile and computers especially from hackers. Hackers may have different purpose for hacking our devices like attacking business or bank account, attacking someone information, breaking the privacy of certain account or device and some hackers do this just for fun. Hackers steel information and use it themselves like steeling personal information to steel the identity and open new credit account with this person's name. Hackers can steel information by planting certain type of virus on the

device either computer or mobile or they may use phishing to steal information.

➔ **How hackers can affect your privacy**

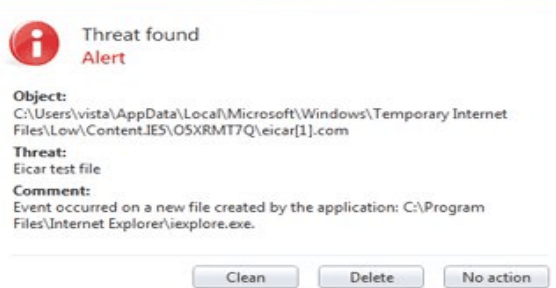
- ✚ The hackers discover the weaknesses (or pre-existing bugs) in your security settings and exploit them to be able to access your data.
- ✚ It can be easily done without you know. Mobile harmful software– Smartphones and tablets are vulnerable to viruses and spyware and so are computers. Portable devices malware can take delicate information, pile on long separation telephone charges and gather client information.
- ✚ A part of digital attacks are propelled through basic vindictive email battles. Email is a superb correspondence stage since you can sending anything to anybody, yet that implies it can be a big security hazard. Phishing, for example, sends casualties apparently

harmless messages that will lead casualties to fake sites making a request to refresh their own data.

- ✚ Unknown messages contain connections to obscure locates. Surfing to a strange site can achieve unintended outcomes. For one, it could mirror a site you know and trust and help you fall prey to a phishing trick. Or, on the other hand, it might be unsecure or tainted with malware.

- ✚ They can hack your device by using hidden malicious code in free downloads and images on website so once the user click on them they starts to steal his information, In addition they use Root kit to Hack our systems which is a software that can be installed and hidden in our computer without our knowledge, after hacking You will notice unexplained decrease in hard drive space, Files suddenly disappear or modified, strange messages appears on screen, and computer performances changes.

✚ One of the easiest routes for hackers to download malignant code onto casualty PCs is by sending messages with virus loaded files. A visit way organizations get hacked is by one clueless representative downloading vindictive programming that invades the whole system. The most perilous record sorts are Word, PDFs, and. EXEs.



✚ As greater organizations get hacked, the probability that your watchword is spilled increments. When programmers get passwords, they attempt to make sense of which individual records they can access with the information they stole.

- ✚ Reformatting the hard drive of your device causing you to lose all your data.
- ✚ Unlicensed and unmanaged applications – can cost your organization in legitimate expenses. Yet, regardless of whether applications are authorized, they should be refreshed routinely to settle vulnerabilities that could be misused to increase unapproved get to or take information.

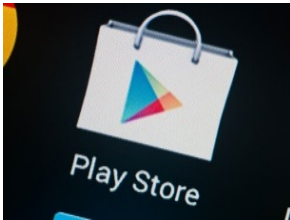


➔ **Privacy measures during the use of computer and mobiles to avoid attack by hackers includes:**

- 1- The operating system (OS) and other software should be updated frequently or automatically. So by this way

the hackers can't access the device through vulnerabilities in the outdated programs.

- 2- Disable the usage of apps now not downloaded out of your device's app store.



- 3- The user should download up to date security programs including antimalware software, antivirus, firewall and anti-spyware. This help to trick the most dangerous hackers and stop any attack before it happen.
- 4- Avoid using open Wi-Fi as it enable hackers to steel your connection easily and downloading illegal files. The user should protect their Wi-Fi with a difficult password and refresh the equipment every few years.

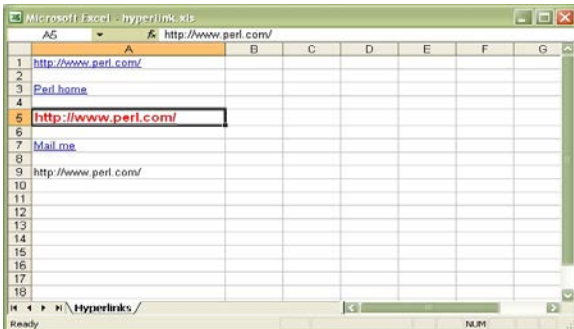
- 5- Using passwords for the protection of all devices as computer, laptop and mobile phone. The mobile should be locked and the timeout of the screen lock should be short as the mobile can be hacked once unlock it. And if possible use finger print for mobile and small computer devices which considered to be safer.



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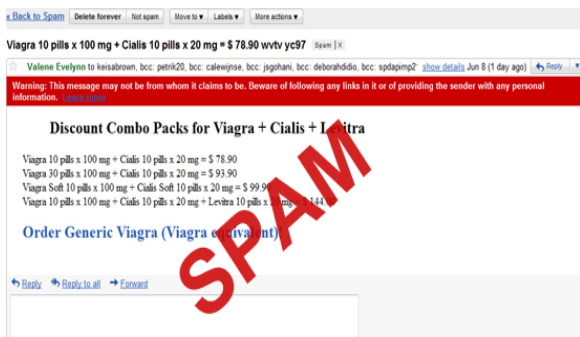
- 6- If the user want to write a comment on an article and is promoted to sign in with Facebook or twitter account ,he shouldn't link the account as linking the accounts will allows the services to get large amount of personal information .

- 7- The user should keep any sensitive data off the cloud as data stored on the cloud become available for anyone and doesn't belong to the user.
- 8- Answer the security questions with creative and difficult answers that are difficult for anyone to know.
- 9- The user should create difficult password or pattern and change it continuously and avoid using the same password for many services. For more protection against hackers use two step authentication which make the taking over of an account very difficult process.
- 10- Do not click on hyperlinks or attachments in unsolicited emails or text messages.



11- All devices need to have a swab function. If the device is misplaced or stolen, all the information on it can be eradicated – remotely.

12- Usage of e mail filters might also help you control unwanted emails, by automatically processing incoming messages depend on certain standards that you set.



13- You must delete messages you observed to be junk mail.

14- Avoid questionable internet web sites.

