in the name of ALLAH

slide-8:

framework for ethical decision making

ethical decision process involves individuals:

-individuals in their personal lives

-individual in organizations(it includes procedures,organizational pressure)

examples of pressure in work environment:

-unrealistic budget

-tight deadlines

-bonus incentives for performance goals

-aggressive competition from peers

-politics

-harrasment

factors and processes leading towards ethical decisions

-intensity of ethical issue

-individual factors

-organizational factors

-opportunities

this all are conected with evaluations and intensions which is connected to ethical or unethical behaviour

role of leaders:

leaders,supervisors,managers,ceo,directors?

who are them?

Anybody who passes you the blueprint of how things are done in an organization (culture of organization)

Must be able to guide and direct others towards achieving a goal

Must be able to play impact in ethical decision making (by playing motivating role) in-line with company policies

leadership styles:

-coercive leader: Demands instantaneous Obedience and focuses upon achievements only (good for times of crisis but creates negative climate otherwise)

-authoritative leader: Inspires followers to follow a vision (general case, but most effective style)

-affiliative leader: Values peoples, their emotions, their requirements, creates friendship and trust with people in order to promote goals

-democratic leader: Involves participants to reach collaborative decisions

moral philosophies:

The specific principles (or rules, or values) that people use to decide what is right and wrong

– Used to settle conflicts in decisions
– Decisions are optimized for mutual benefit of all groups
– Different types of Moral Philosophies!!!

Moral Philosophy != Professional Ethics (person specific) (person + group specific) but we have seen in framework that they are linked

GOODNESS:

Clearly defined good and bad? Lesser good and better good?

Aristotle: Goodness = Happiness

Happiness is the universal goodness

Immanuel Kant: Goodness = Goodwill applied towards accomplishments Accomplishments is the universal goodness

Moral philosophies revolve around theory of goodness, what it is, and how it is obtained, and who will benefit from it.

Teleology:

An act is morally right if it leads to some desired results such as Pleasure, knowledge, career growth, utility, wealth, fame, good family life,

An act is morally right if it leads to a “consequence”

– Consequence that benefits an individual (Egoists) Wealth, good family life, fame, etc.

– Consequence that benefits others, but own self-interest is paramount (Enlightened Egoists)

E.g., Employee reporting another employee for malpractice for the only reason that he may come into good books of employer

– Consequence that benefits the greatest number of people (Utilitarians)

Teleology: Utilitarian Decision Making

Perform systematic comparison of costs and benefits to all affected parties (Cost-Benefit Analysis)

● Calculate a utility of consequences for all alternatives

● Select the one which results in greatest benefit

● How does one put a cost on life or environment?

●E.g., in a risky job, the employee life is at risk. But if employee does the job, will bring in a lot of money to the company + the employee.

How to do cost-benefit of life vs profit?

Kantianism: Immanuel Kant

Moral philosophy that focuses on:

– rights of individuals (equal respect to all)

– intentions associated with particular behavior

– rights can be upheld if people act upon duties

Consequences is given secondary priority

Argue that somethings must never be done, even if they have maximum utility of consequences

–E.g., it is wrong to kill a person even if it has great social utility. Utilitarians may argue that it is justified because of the social utility !!

Freedom of Conscience

Freedom of Speech

Freedom of Consent

Freedom of Privacy

Kantianism:

If a factory employee dies on production line, Kantians will argue to modify the production line no matter how big the cost (even if it means bankrupting the company)

Utilitarian will argue that company should not be bankrupted and to benefit all, heavy compensation should be paid to employee

Virtue Ethics:

Best ethical decision is one that best reflects the moral virtues of ourselves and our communities

– Trust

– Self-Control

– Fairness

– Honesty

– Learning

– Courtesy

– Moral Leadership

A superior decides that company should give a “gift” to secure a contract. You think it is a “bribe” and stand against decision.

Some colleagues will call you brave !

Other colleagues will call you stupid !

Common Good Approach:

Ethical choice is one that advances the common good (society as whole instead of individuals or businesses)

A government invests in a bus service for common good of transportation for public. But it involves huge costs. Should the government do it?

–Perception of common good varies with society/group.

Relativists: Fairness Approach

Derive ethical decisions from individual and group of people around individuals

When Formulating a business strategy, relativist will try to

– anticipate conflicts that arise between different philosophies of members of organization as well as suppliers, and customers.
– take a decision based on consensus
– take a decision that is fair to all parties (without favoritism and discrimination)

A director decides to give vacation to muslim employees on account of Eid. To be fair to other minorities, he/she also gives vacations for Christmas, Easter, Holi, Diwali, Baisakhi, Chinese New Year, …..
Is it practical to be fair?

Ghazalian Ethics:

المعمال میزان ،الدین معلوم احیاء ،سعادت کیمیائے
● Blend of contemporary philosophy and religion

●Happiness is the chief goodness, but contains two sub-divisions; Worldly and Other-Worldly

●Other-Worldly happiness cannot be achieved without certain Worldly virtues:
– Moral Virtues
– Logic and Reasoning

●But man is imperfect by nature; hence his objective in world is to obtain perfection using concept of Ma'arifat;
●Only then can worldly virtues be developed through education and training (or for Prophets using Revelation)

Relativists & Utilitarians:

-Table of Issues/Questions vs Stake-Holders/Options

-Assignment of Weights

-Questionnaire/Survey

What if an ethical issue cannot be resolved through any given set of moral philosophy (or if there is conflict of moral philosophies)
– Apply relativist approach?
– Get a better understanding of the issue !!! (4-step process)

Process of Ethical Decision Making:

1)Describe & Analyze a Real Case … Get the Facts, Prepare a scenario

2)Identify the Stake-Holder Network and their Positions

3)Identify the Ethical Issues in making a Decision. Also identify the consequences of this decision

4)Develop and evaluate alternate options. Weigh various guidelines and principles, e.g. presence of laws, personal principles, etc.

Stakeholders:

Primary Stake-Holders: Individuals/Groups whose continued association with a company is necessary for company's survival (Employees, Cusotmers, Investors, Share-holders)

Secondary Stake-Holders: Do not engage in company transactions, but affect its working and operations (Media, Associations, Watchdogs, Special Interest Groups, standardization organizations, competitors)

Stake-Holder Network:

Case Studies:

-Is Hacking a Computer Crime?

-Youth and On line Friends: Ethical Risk of Social Networks

-Cyber Censorship

Assignment:

- Describe and Analyze a Real Case
- Identify the Stake-holder Network
- Identify the Ethical Issues
- Identify and evaluate the course of Actions

Lecture 9:

Computer Crime & Security:

Security of ICT's is very important for all stake-holders

Protect Confidential Data (Banks, Governments, Your employee details, Your Customer details, Your Operating System)

Means of Protection against Malicious attacks, Theft of Data, Disruption of operations

How to balance between security issues and normal business operations

Computer Crime:

Ethical Issues with this thought?

How to balance between security issues and normal business operations

– My customer information has been hacked and sold by the hacker to a 3rd party. I have found the hacker. If I prosecute the criminal, the affair will go public. People will find out about the hack and will loose trust in my business.

– Security is important to my company. Therefore, I have set-aside 10% of my profits in maintaining data security. If my company is facing a financial crisis, should I reduce this percentage?

Ethical Issues with this thought?

How to balance between security issues and normal business operations

– To make sure there are no spy-bots visiting my site, I have programmed numerous CAPTCHA's in my code. As a result, the spy-bots are kept out. On the other hand, my genuine and regular visitors have stopped visiting due to this added security. Should I remove the CAPTCHA ?

Why/How are these happening?

Bad Quality Software is Being Written (vulnerabilities)

Increased Complexity = Increased Vulnerability

– Many Many other examples .

●Sharing of Hardware/Data
● Users do not care (strong passwords, lax rules, etc.)
● Increased reliance on commercial software with known vulnerabilities.

Why/How are these happening?

● But there is some small decline also . ? why ?

National Security Council Bill, 2014

●Some points from the bill:
– Access an information system without authorization and face 6 months in jail and/or Rs 100,000 fine. Change data on the information system and get 9 months jail and/or Rs 200,000 fine.
– If electronic fraud is found and proved then guilty can face an imprisonment of up to five years or a fine of up to Rs. 10 million or both.

– If someone is found guilty of posing another person’s identity then he/she may face imprisonment of three months of a fine of Rs. 50,000 or both
– Unauthorized interception of private data (for example hacking emails) can result into imprisonment of two years or a fine up to Rs. 500,000 or both
– Special protection for women: If someone is found publicly spreading any content (video/pictures/audio) that may harm the reputation of women then he/she may face imprisonment for one year or a fine up to Rs. 1 million or both

Some Terminologies:

●Exploit != Vulnerability
–Exploit = Attack that takes advantage of a particular system vulnerability
● Zero-day attack
–Takes place before a vulnerability is discovered or fixed
●Patch
– A “Fix” to eliminate a problem
– Problem: Users responsible to install patches

Types of Attacks:

●Viruses
●Worm
●Trojan Horse
●Denial of Service
●...

A program that disguises itself as something else and which causes undesirable events.

Usually attached to a file/folder. When infected file is opened, virus delivers payload .. includes following:

–Transmitting strategy
●Not automatically transmitted. Human negligence big source of transmission
●Re-transmitted in forms of infected emails, document attachments, infected USB's.

-Damaging strategy:
●Damage files/folders and other programs
●Other programs may be Targeted User Software, Operating Systems, Boot
Loader, or BIOS.

Types of Attacks:

Viruses:

-A text file is a file that cannot be executed. A virus is a

computer program and it can be executed. How can a virus be “bound” to a text file, or even folder for that matter?

-Macro-Virus: Many files support macro-languages, e.g. VBScript, JavaScript.

-Resident Viruses: Resident in memory. Serves as an OS service. Overwrites interrupt-handling + signal handling functions of OS. Present from Computer start to shutdown.

-Non-Resident Viruses: Scans disk for files and corrupts all of them. When done, exits from memory.

-Boot Sector Virus: Targets the BIOS and/or MBR/GPT

Counter-Measures:

Anti-Virus software:

-Search for virus signatures in files that they are known to infect.

-Heuristic based scanning: Identify behavior of programs. Leads to false positives. E.g., a software supporting online ads may be flagged as a virus/un-trusty software.

-Patch current software (Security Updates)

Removal Methods:

- System Restore (some resident viruses disable this + task manager +
command prompt to avoid removal)

-Anti-Virus Scan and Quarantine

-Re-install the operating system (be careful !! If not formatted, the virus
is still on the file-system)

Types of Attacks:

Worm:

Same as viruses but with the possibility to transmit without human intervention.

ILOVEYOU:

-2000: Sent to all contacts on address book (as attachment LOVE-LETTER-FOR-YOU.TXT.vbs)
– Patch written in 2 days. Within this time, infected 10 million computers. Repair cost estimated at 8.75 Billion $

– Virus written by a student in Philippines after his project was rejected by his teacher.

1999: Melissa:
20% of computers world-wide affected through email retransmission

2000: Blaster:
“Billy Gates, why do you make this possible? Stop making money, and fix your software!”. Exploited RPC.

2004: SASSER:
Exploited RPC in Windows 2000/XP

2004: W32.MyDoom@mm:
10% reduction in global internet access. Transmission through email attachments

Trojan Horse:

Gets secretly installed on a computer, planting a minimum payload.

Steal passwords, listen for key-strokes and transmitting to 3rd party.

Transmission methods can be through email (worm-like behavior), or installed by physically/remotely breaching system.

Different from Logic Bomb. Logic Bomb triggered when specific condition occurs. E.g., a specific time/date.

Sub7:

Owner claimed his
software
is simply a remote
administration
tool with added
support
e.g., recover lost
passwords, etc.

Back Orifice http://sourceforge.net/projects/boxp/

Remote administration tool . also controversial

Denial of Service:

Distributed Denial of Service

Break-in to source computers (thousands of them), ideally through worm. Flood a target site with data packets from compromised computers. Idea is not to breach the target, but keep it busy so legitimate traffic can not go through.

Avoid self-denial attack by spoofing return addresses on packets sent out.

ISP's can identify false IP addresses. Incoming false addresses are processed through ingress filtering, while outgoing false addresses are processed to egress filtering.

Filtering is expensive (w.r.t processing time)

Solution: Invest in more powerful router with built-in filtering.

Cost of Attacks:

Lost Data and Software

Lost productivity

-(employees can't work on damaged systems)

-(employees work on fixing their computers instead of doing company work)

Who are the Perpetrators ? :

Hacker:

-Test Limits of Computer System out of “intellectual curiosity” . to see how far they can go.

-Desire to learn more about the system internals.

-Common profile is a male, 20-25, avid gamers, plenty of spare time, little/no money

-Lamers/Script Kiddies ← Hackers whose knowledge only limited to available tools

-Prefer to be part of community instead of working alone. Get a lot of information from chat-groups (mIRC). Have a Pseudonym.

Who are the Perpetrators ? :

Cracker:

Hackers argue that they break-in to check the vulnerabilities of a computer/computer network.

Crackers engage in clear criminal activity.
-Deface websites, crash computers, spread harmful programs, spread offensive messages, forge program software installation keys, and write scripts/programs that allow other crackers to do the same type of activities.

Who are the Perpetrators ? :

Insider:

The biggest threat to companies. More than 70% of network intruders are found to be company insiders.

Who is an insider: Employee, contractor, consultant.

Not necessary to be hired as an IT professional.Numerous Non-IT Professionals are equally good at hacking/cracking.

Difficult to catch. So companies introduce access control levels. Each employee only allowed, designed to access information that is relevant to his level.

Collusion: Cooperation between an insider and outsider

Who are the Perpetrators ? :

Industrial Spy:

Professionally hired to get inside secrets (e.g., trade secret or new product information) of an organization or spy on another government

Who are the Perpetrators ? :

Cyber-Criminal:

Hack into computer networks to steal money related assets.
– Steal credit card numbers (for fraud)
– Steal personal identity (for fraud)
– Steal cell-phone information (for fraud)
Checks & measures
– Keep strong passwords and change them often.
– Credit Cards: Website encryption, Match card-holder name, card expiry, CCV code, address of card, added password check, added finger-print verification.

Who are the Perpetrators ? :

Cyber-Terrorist:

Intimidates governments/organizations to advance political/social objectives. For this purpose, attempt to
– Breach computer systems and steal sensitive information
– Perform Denial of Service Attacks

Engage in propaganda through online forums, social groups, video sharing sites.

Interact/pass messages discretely to other cyber-terrorists.
– Encrypted Messages
– Code words/symbols
– Correspond through Email without sending Emails

Perpetrator Summary:

Do it from the slides

What can be done to prevent this ? :

Should USB's be allowed in the office?
● Should IM/P2P/Social networking sites be allowed in the office?
● Encryption methods and their enforcement
● VPN Systems
●Educate employees about good measures (for e.g., how to choose a good password)
● Installation of firewalls, anti-virus software
● Defining role of employees (e.g., access levels)
● Keep track of well known vulnerabilities (install patches)
● Regular system backups
● . many many more examples

Slides 10:

Intellectual Property & Copyrights:

Intellectual work … created by minds .. arts, books, films, formulas, inventions, music, movies

If work is unique, is created by a person, and owned by person/group), then it becomes intellectual property.

How to protect it?
– Copyright: Covers authored Works (books, art, film, music)
– Patent: Covers inventions
– Trade Secret Laws: Information critical to product/company success

Ethical Issues with Intellectual Property:

●Some people think that intellectual property protection stifles innovations

–Case Discussion: Wikipedia Articles

●Owners of intellectual property want compensation or royalties for their work.

Some Definitions:

Copyright: Right to distribute, display, perform, reproduce an original work in copies, or to prepare derivative works based on the work

Copyright Protection: The Legal Process through which a person/entity can be granted copyright

Copyright Holder: The person/entity that holds legal rights of copyright

Copyright infringement: Violation of legal rights secured by owner of copyright.

If work is used without obtaining permission from copyright holder, the copyright holder may (1) Give permission for free (2) Charge fees for its usage

(3) Take infringer to court for violation of copyright (results in fines/penalties)
–What IF: Violator doesn't know he/she is committing a violation?

●Copyright Term: The period for which a copyright is a copyright (typically 30 years – US law). It is not indefinite. If extension is required, can be granted for another period.

–Putting books on-line written 100 years ago? A good collection can be found on google books.

What the Laws Say:

Universal Copyright Convention
– Geneva: 1952, Paris: 1971
– A formal copyright notice is required for all copies of a work.
– Minimum term of copyright (books) is life of author + 25 years
– Does not apply to computer software (not considered tangible)

Copyright Ordinance, 1962 (Pakistan)
– Minimum term of copyright (books) is life of author + 50 years
– Registration of copyright not mandatory but recommended
– Infringement can be taken to either civil court, or criminal courts

What is Eligible for Copyright? :

Condition 1: Architecture, Art, Audio/Visual works, Music choreography, drama (audio/video/stage), graphics (pictures/images), sculptures.
–New technologies: software, video games, multimedia

●Condition 2: Must satisfy Condition 1, and must be original (Not derivatives).
–Issue: How to check originality? From where to check?

Fair Use:

Some copyrighted material can be used in another work without asking for permission from copyright owner.
Parody, Teaching, Search Engine Indexing, Text Mining, Data Mining, Web Mining, Reverse-Engineering
2003: Case by commercial photographer against image search engine on usage of thumbnail images. The photographer lost on grounds of fair-use
What if the copyright owner finds out and performs litigation?
–
Court will decide on following grounds:
●Is copy used for profit/non-profit
●Nature of copied work. Is it verbatim copy or just conveying of idea? Is attribution present?
●The portion of copied work compared to whole
●How much the copied work has effected the value of original work

If copyright owner does not want fair-use, they must declare so in copyright agreement.

Copyrighting Software:

Developer may observe the operation of a competitor’s copyrighted program and then create a program that accomplishes the same result and performs in the same manner.
– Microsoft Office vs Libre Office vs Open Office
– KDE Environment vs Windows 8 Environment
– Tic-Tac-Toe created by company 1 and Tic-Tac-Toe created by Company 2?

Copyrighting Software: Historical Perspective

Software historically viewed as intangible object, hence could not be copyrighted

1983: Franklin Computers produced a clone of Apple Computers. Apple won the case. First time a computer software (OS) was protected by claim of copyright

1995: WTO Trips Agreement

-Computer programs are protected as literary works. Authors of computer
programs and producers of sound recordings have the right to prohibit the
commercial rental of their works to the public. (World Trade Organization,
“Overview: The TRIPS Agreement,” http://www.wto.org)

1998: DMCA Digital Millennium Copyright Act
introduced for bringing US law into compliance with
global copyright laws, and essentially criminalizing
copyright infringement.

Criminalizing Copyright Infringement:

DMCA Digital Millennium Copyright Act (1998)
– It is an offense to circumvent a technical prevention of the copyright.
(e.g. DRM, license management software, etc.)
– It is an offense to develop tools that allow others to access technologically protected work.
– It is an offense to manufacture, import, or provide, tools that enable
others to circumvent protection of copyrighted work technically.
– 5 Years Jail + $ 500,000 Fine for each offense
Ammendment in Copyright Ordinance, 2000 (Pakistan)
– Criminal Penalty = 3 years, or fine of Rs 100,000/-, or both
– Doubled for two offence counts, tripled for three offence counts, etc.
– Search orders can be carried out by law enforcement without any formal notice from courts

Copyrighting Software:

Software to enable copying of DVD
movies ?

Usually original DVD movies can
be played but not copied because
the production companies use a
technology called Content
Scrambling System (CSS)

DeCSS circumvented the scramble

Series of litigation cases by movie vendors against owners of DeCSS. Case decided in favor of DMCA proponents

Movie Vendors also file series of Lawsuits to prevent electronic copy of DeCSS

Opponents of DMCA:

Example Arguments
– It gives intellectual property owners too much power .
– It restricts free flow of information.
– It does not allow fair-use
–It can be a person's right to copy or circumvent copying of a copyrighted material (back-up, copy music for different playback devices)
–Why ban something which does not kill (while guns that kill are not banned)

Some specific scenarios:

–Web-hosting companies will have to remove web-sites that allegedly break copyright law
–File-sharing companies may remove content just on an accusation that a copyright is being infringed.
–User uploads a music file on your web-site without you knowing … music company can sue you under DMCA, i.e., the website, rather than the file uploader.

Exemptions:
– Audio-Visual work is exempted if used in a library for media studies, for example
– ISP's/web-hosts exempted from liability of infringement if one of their subscriber infringes. However, they must still comply with content removal procedures
– All those exempted who copy a software for maintenance and repair, as long as they delete the files after the operation has been performed

Typical DMCA Notice:

DMCA Notices:

view the template from slide 14

youtube.com/yt/copyright/copyright-complaint.html

Wikipedia, Scribd …

Website owners respond VERY VERY quickly to DMCA notices.

Digital Rights Management (DRM):

A set of technologies + tools + licenses allowing copyright holders to control the use of digital content and devices “after” they sell them.

Generation 1 DRM:
Curb Copying

Generation 2 DRM:
Curb Copying
Curb Executing
Curb Viewing
Curb Editing

Participating companies:

–Amazon, Apple, Google, BBC, Microsoft, Sony, Valve, EA

E.g. of DRM In Software:
● CD-Keys, License Servers (See Next Slide)
● Installation limited to specific number of tries
● Persistent Authentication (Always-On-DRM)
● Software Tampering if copy is found un-authentic

E.g. of DRM In Documents:
●Passwords for opening, editing, printing Adobe PDF documents
●Download restrictions on streaming PDF files, E-Book Encryptions
● Image/Document Expiry
● Steganography

DRM Through License Servers:

-License Servers:
Continuously

download new
authorization rules
through the Internet,
and impose those
rules automatically
on your work.
Concept can also be
applied for software

-Content Scrambling
System (CSS) for
DVD-Players
(Variants exist for
BluRay/HD-DVD)

DRM Through Trusted Computing:

● Embed encryption key in hardware.
● Key is not accessible to the rest of the system/software
●Downloaded software will only execute if matched against hardware based encryption key
●Proponents argue that computers will be much safer (e.g., viruses/malware will not execute)
●Opponents argue that technology will be used to enforce DRM and computer security is just a ploy
– You will be no longer anonymous on the Internet
– Whoever controls the TC-protection infrastructure will have “tremendous” control
●Intel, AMD, HP, Dell, Microsoft … All plan to include trusted computing in coming generation of products

The Ethical Dilemma of Copyright:

● Free flow of Ideas ● Copyright system
● Fair Use ● Commercial use
● Encourages creativity ● Rewards distributors
● Public Domain ● Proprietary content

Case for Free Software:

"If I have seen further it is by standing on ye
shoulders of Giants"
- Letter to Robert Hooke (15 February 1676)
Isaac Newton (1642-1727)

●Science: Open, Decentralized, Participation, Sharing, Collaborations, etc. etc.
●IT based restrictions not “scientist friendly”
– Articles/Books not freely available (copyrighted by publishing houses)
– Some scientific tools are not free
●Solution: Free Software
Free Software does not attack closed-source software

vendors. It is a philosophy against the inadequacies of closed-source software.

Free Software Definition by Free Software Foundation:

●Free software means software that respects users' freedom and community. This means that users have the:
– Freedom to run,
// for any purpose
– Freedom to copy, – Freedom to distribute, // share as it is, or share after changing
– Freedom to study, // requires access to source code
– Freedom to change, // for improvement. requires freedom to study
– Freedom to improve
●the software. Thus, free software is a matter of liberty, not price.
●To understand the concept, you should think of free as in free speech, not as in free beer.

All Types of Free Software:

see diagram on page 23

Copyleft:

●Uses same concepts as copyright but instead of restriction/prohibition, copyleft allows freedoms:
– Freedom 0 – the freedom to use the work
– Freedom 1 – the freedom to study the work
– Freedom 2 – the freedom to copy and share the work with others
– Freedom 3 – the freedom to modify the work, and the freedom to distribute modified, and therefore, derivative works.
●Ordering from 0 to 3 ← C style arrays
●Not all free software use copy-left because of Freedom 3. They prefer Freedom 3 to be more Share-Alike.
●Popular Types:
– GNU General Purpose License (R. Stallman)
– Creative Commons (L. Lessig)

(see slide 25 from the slides)

GNU GPL License:

●Most widely used … 65% of free software use GPL License (Source: Freecode statistics: Aug. 2007)
●Version 1:
– Source code must always be available with software.
– Software under GPL can only be merged with permissive free software
●Version 2 & 3:
– Applicable to cases where software vendor is legally obliged to distribute software in binary form only
– Patent compatibility added.

– Clauses added for vendors who provide free software, but restrict them to a single hardware only (e.g. Trusted Computing)

License Summary:

License	Distribution	Modification	Patent
Apache	Permissive	Permissive	yes
GNU GPL3	GPL3 Only	Copylefted	Copylefted
GNU Lesser	Restrictions	Copylefted	Copylefted

Software Licensing Map:

(see diagram from page 28)

Open Source Hardware:

●Freely distribute the following when selling hardware:
– Mechanical Drawings
– Schematics
– Materials required
– PCB Layout Data
– Open Source Software Code
– IC Layout Data
Arduino Diecimila Board
●Popularized with the usage of programmable logic devices, (Use Hardware Description Language HDL ← Share this then)

Patents:

●Exclusive right granted by a country to an inventor.
– Helps the inventor to exclude public from making, using or selling his or her invention in that country during the life of the patent.
– Allows for taking up legal action against violators.
●Unlike a copyright, a patent prevents independent creation as well as copying.
●If someone else invents the same item independently and with no prior knowledge of the patent holder’s invention, the second inventor is excluded from using the patented device without permission of the original patent holder.

What can Be Patented? :

● Depends from country to country
● Case: USA
– Processes, a.k.a Methodologies
– Machines
– Manufactured Objects
– Compositions of Matter (e.g., chemical compounds)
– Any other thing which is useful, novel, and not immediately

obvious to another person having skills in the same field.
– 157,775 patents registered in 2008.
– 157,248 patents registered in 2007.

Software Patents:

●
Case: USA
~ 20,000 software patents registered per year.
– Amazon.com patent for “one-click shopping,” based on the use of a shopping-cart purchase system for e-commerce, and then sued Barnes & Nobles who used the one-click approach on their website.
● Critique: issuance of patents for very mundane processes which are very broad in understanding.
● Eventually … out of court settlement.

Copyright Registration in Pakistan:

●Instead of legal protection granted by license, copyrights have to be registered in Pakistan.
●Intellectual Property Organization of Pakistan (www.ipo.gov.pk)
●Registers:
– Copyrights
– Patents
– Trademarks

Patents in Pakistan:

●Exclusive right to make, use, and sell an invention for a period of 20 years.
●Patent owner has the right to sell the patent to another party before elapse of period.
●What can't be patented in Pakistan?
– Discoveries of Laws of nature
– Computer Programs (Software)
– Perpetual motion machines
– Literary, dramatic, musical and artistic works.
– Treatment of human beings, animals, flowers & plants.
– Purely scientific & mathematical formulas & principles.

Patents in Pakistan:

●HEC Program:
– Valid from July 2006 till date (2014)
– Patent fee of $ 5000 bore by HEC if patent is determined to be patentable
– Online system developed by HEC to ensure confidentiality (progress can

be checked online)
●Should patent be registered with IPO.gov.pk or internationally (e.g., US Patents Office)?
–International Patent (read US Patents Office):
●Inventor, his/her institution, and country get international exposure,
appreciation (not to exclude that it involves more economic benefits)
●Manking benefits from the patent. Local patents don't have much readership.
-Local Patents
●US Patents may not have jurisdiction in some areas. As a result, ideas can be
copied and re-implemented in those countries.

Patents in Pakistan:

(view slide 36)

Plagiarism:

●Stealing someone's ideas or words and passing them off as one's own.
●Electronic content on www has compounded this problem
●Not just academia, but literary authors, playwrighters, musicians, journalists, software developers, etc. are accused of committing plagiarism

Well defined rules on plagiarism but for many people, there is no clear understanding on what “is” plagiarism, and what is not.

Plagiarism:

●Plagiarism detection systems allow detection ofplagiarized works
– Used by teachers, corporations, law firms, publishers
– Work by matching submitted document against a database of many/millions of other documents, webpages, and repositories.
– Popular Services, TurnItIn, Jplag, Sherlock

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