



HNDIT4042 Professional World

Professionalism note-1

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Professional

- Relating to a job that requires special education, training, or skill.
- Professionalism
- Professionalism, the standards, **practices, or motivations associated with a profession.**

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Professional employees

- Professional employees are employees of a certain status, who are expected, within limits, to put the interests of the organization they work for above their own convenience.
- Professional piece of work
- A professional piece of work means a piece of work that meets established standards of quality.
- professions— lawyers, doctors, dentists, accountants, veterinary surgeons, architects and so on

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Characteristics of profession

- Substantial education and training are required in order to practice the profession.
- The members of the profession themselves decide the nature of this training and, more generally, control entry to the profession.
- The profession is organized into one or more professional bodies.
- Members of the profession are expected to conduct their professional activities in accordance with codes of conduct laid down by the professional bodies and enforced by them.

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Professional body



- A professional body usually starts by a group of people coming together because of a shared interest in a particular type of activity.
- Eg:
 - The Chartered Institute for IT (BCS) was set up in 1957 as the British Computer Society by a group of people working in the new and expanding field of computers, who wanted the opportunity to exchange ideas.
 - The Institute of Electrical and Electronic Engineers (IEEE) is a professional engineering society based in the USA but with members and activities spread worldwide. It was under the aegis of the IEEE that the first professional society in the field of computing was founded in 1946.

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What is the computer technology community in Sri Lanka?

- The Computer Society of Sri Lanka (CSSL) is a professional body and learned society that represents those working in information technology (IT) and computer science in Sri Lanka. It was founded in 1976 and incorporated in 1986 under the Companies Act, No. 17 of 1982

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About CSSL



The Computer Society of Sri Lanka (CSSL) is the premier professional association for individuals and Organisations leading the Information Communication Technology (ICT) industry in Sri Lanka.

It is a rallying point for ICT professionals throughout the country and espouses the shared vision of over five thousand individuals ranging from over 300 CXOs, ICT practitioners, academics and policy makers to other professionals in diverse fields and members of the business community. Today, the CSSL is widely regarded as both the "voice" of this influential industry segment and a "key player" in ICT development, nationally.

The passion, vision and commitment of the CSSL founders, who foresaw the pivotal role ICT would eventually have in shaping and advancing human life, has left a lasting impression on the minds of Sri Lankan ICT professionals. This has also led to the broad basing of the society's scope and activities, which has enabled CSSL to become the fully-fledged and dynamic professional association that it is today. It is also an active member of the South East Asia Regional Computer Confederation (SEARCC) and the International Federation for Information Processing (IFIP). CSSL is a provisional signatory to the Seoul Accord, an internationally acclaimed degree accreditation program through which CSSL brings international standards on ICT related degrees to Sri Lanka.

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The primary objectives of the society are:

- To promote and develop the science of Information Technology and foster and maintain investigations and research into the best means and methods of developing and applying such science and to encourage, increase, disseminate and promote knowledge, education and training and the exchange of information and ideas in respect of all questions relating thereto or connected therewith:
To provide an Organization for professionals in Information Technology and by means of examinations and other methods of assessment to test the skills and knowledge of persons desiring to enter the profession.

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Activity

- Carefully read the professional code of conduct by those institutes and explain to others.
- Eg:
- IEEE
- BCS
- CSSL

Example -BCS

- Codes of conduct should not be confused with codes of practice, which are concerned with the way in which the professional activities should be carried out. BCS's Code of Conduct is currently divided into the following sections (please consult the BCS website for the latest version at www.bcs.org/codeofconduct):
1. The Public Interest
 2. Professional Competence and Integrity
 3. Duty to the Relevant Authority
 4. Duty to the Profession.

Professionalism of IT occupation

- IT is a complex and evolving field that is still at its early stages.
- IT profession is based on technology. As such it can be considered as a broad field as people can play different roles in the IT field. For example;
 - Designing software and hardware
 - Sell, maintain software and hardware
 - Documentation
 - Advice on security and maintenance
 - Internet service providers
 - Academics on computer science
 - Designing and maintaining web sites

But there are 2 evolving trends that we can identify within computing

- Computing as a skill:
 - Computing will be considered as a skill (like reading and writing) required for performing a job. Due to malleability in computing, it is used in different domains and fields. As such individuals will be identified based on that domain or field, rather than being considered as a computer professional.
 - For example, they will be considered as librarians, managers, engineers, teachers etc and not as computer professionals. They will be making use of word processors, email, and web browsers in their respective professions.
- Computing as degree programs:
 - New degree programs and curricula introduced in universities and in other educational institutes indicate how computing is evolving. Other than computer engineering and computer science degree programs, there are programs offered in business (Information Management, Management Information Systems) and in communication (Information Studies).



Characteristics of a professional

- Mastery of Esoteric Body of Knowledge
- Autonomy
- Formal organization
- Code of ethics
- Social Function

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IT as a profession based on 5 characteristics

1. Mastery of an Esoteric body of Knowledge

To identify as a profession, special body of knowledge should be identified. Now, different degree programs are offered than in early days and computer professionals must master esoteric computer knowledge to perform their jobs. Also, in computing profession there are 2 divisions as researchers and practitioners as in other professions.

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2. Autonomy

Computer professionals are not required to do things that normal people cannot do (less decision making). But there are different levels of autonomy based on the position and the place they work. Greater decision-making power will be available to people having their own private practice or having higher positions in the organizations.

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3 Formal organization

There is no single organization where all the professionals belonging to IT industry. There are several formal organizations like ACM and IEEE-CS (Institute for Electronics and Electrical Engineering Computer Society). Recently, they have started to work together to set curricula requirements for accreditation of degree programs in computing.

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4.Code of Ethics

There are responsibilities for computer professionals to follow, imposed by different computer professional organizations like ACM and IEEE. But there is no single code binding in all computer professionals together.

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5. Social Function

- Computing supports social functions like health, communication, transportation, safety etc. but are not itself a social function. This is like engineering though both are important parts of the society. By considering these facts we cannot clearly distinguish computing as a profession. But can be taken as very much closer to professional side rather than to nonprofessional side of the continuum.

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Activity

- Software engineering is an area of computing that is emerging as a distinct profession. Based on the 5 characteristics, suggest ways to professionalize software engineering.

- **Expertise in the particular area**
- **Team player, but can work alone as well**
- Obtain software developer certifications

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Skill

- Skill is the ability to translate knowledge into action to get the desired performance.

PROFESSIONAL SKILLS

- Professional skills are capacities that help you function within a work environment and perform at your highest level.

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Professional skills for an IT

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How do we acquire professional skills

- Education (Formal and informal)
- On the job training
- Life experiences (good and bad)

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professional skills from Education (Formal and informal)

- **Research:** College education is a natural way to improve your research abilities.
- Communication
- Writing
- De-stress
- Sociability
- Planning



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On the job training

- On-the-job training (OJT) is a type of employee development that provides hands-on experience and learning opportunities while performing job duties.
- It is a valuable tool for organizations to enhance employee skills and improve productivity.

Skills -On the job training

Communication skills

- Communication refers to one's ability to convey information to others.
- These are important abilities in the workplace, no matter what your job. You need to be able to communicate with your employer, your colleagues, and your customers and clients.
 - Body Language
 - Listening
 - Literacy
 - Presentation Skills
 - Public Speaking
 - Verbal Communication

Cooperation

- Cooperation is especially important at work. You need to be able to work well and get along with others in meetings, on team projects, and in other collaborative settings.

- Conflict Management
- Emotional Intelligence
- Empathy
- Politeness
- Interpersonal
- Leadership
- Negotiating
- Teamwork
- Decision Making
- Creative Thinking
- Critical Thinking
- Flexibility
- Focus
- Organization
- Prioritization
- Problem Solving
- Time Management
- Timeliness



Time management

Time management is the process of planning and exercising conscious control of time spent on specific activities

1. **Organization** -Being well-organized might mean maintaining an up-to-date calendar, being able to locate certain documents easily, having a tidy environment and taking detailed, diligent notes.
2. **Prioritization**- Assessing each of your responsibilities for priority is key in being a good time manager.
3. **Goal –setting** - Setting both short and long-term goals can lead to success in your career.
4. **Planning**

Time management

- **Delegation** – assign a specific task to someone else and give them the authority to complete that task
- **Stress management**- Handling stress in a positive way can help you stay motivated and perform well when going through your schedule

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Handling Criticism

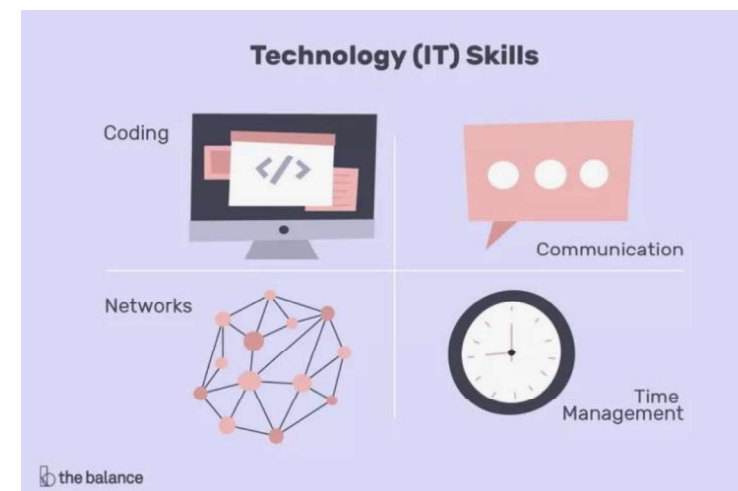
- In work, you will receive some negative feedback from your employer. It is important that a job candidate can thoughtfully and professionally receive criticism, and grow from it.
- Being able to handle criticism well takes a number of other life skills
 - Resilience
 - Self-awareness
 - Thoughtfulness
 - Willingness to Learn
- Apologizing
- Asking for Help
- Coping
- Giving and Receiving Feedback

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Basic technology skills

- Digital and technological literacy are important for nearly any job.
- It's helpful to have a working knowledge of word processing and using the internet for communication or locating information.
- Using basic computer equipment like printers, digital cameras and tablets is important too.

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IT Professional experience vs. Personal Experience

- Email Management
- Productivity Software
- Microsoft Office Suite
- Online Communication Software
- Smartphones
- Social Media Management
- Cloud Software
- Spreadsheets

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Experienced a solo trip



- Under budget (unexpected travel expenses)
- on-time with limited resources / staff (just myself/no help from anyone)
- Lacking the skills / experience (mountain driving on corrugated mountain roads for hundreds to thousands of KMs)

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- IT project with not enough staff or expertise to successfully complete it on time.
- Or
- unexpected and extremely complex problem with limited time & resources to resolve it.

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extensive off-road driving experience

- **Unexpected challengers** (my own driving skills were insufficient)

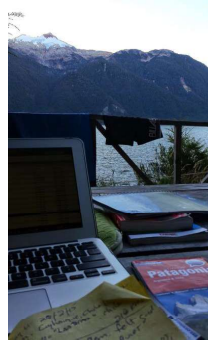
good planning,
hard work, focus
and perseverance
have paid off -
well

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Lesson from life experience example

- **Daily Planning** - beginning of day' quick planning session (simple 5 minute scrum between team member can open communications between otherwise very busy team members.)
- **Distant Warning Signs** - you can see and feel the risk all around you.

Mitigate the security risks



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Lesson from life experience....

- **Mistakes** - can happen to anyone...no matter how well prepared you are. Accept this as a fact of life. On project, don't get yourself down, this can happen to anyone. Get it fixed, and learn from it!
- **Support** - Luckily, like on a good IT project, good people are usually around and help you out when you're down and out. You should treat these people well as they are key members of your team!
- **Status** - When travelling in new lands where you're a temporary visitor (like Project Manager who's managing a difficult project on tight timeframes)

knowing the truth of your current state. This will help you plan out your tomorrow far more effectively.

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Lesson from life experience...

- **Disaster Planning** - Disaster planning is critical whether you're exploring remote areas of Earth with a ill-equipped vehicle or running IT security project. You need a plan in place just in case the worst case occurs.

"At the end of the day, firmly believe that true success is not a destination, but rather it's a journey where we continually learning from our past mistakes in order to help us achieve tomorrow's dreams.

That if we plan well, realize obvious risks/dangers and have realistic expectations that anything is possible to achieve.

After all the hard work, issues resolutions, planning and obstacle avoidance, the true sweet feeling of success is something that simply cannot be valued in dollars alone. "

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To identify your skills and decide what skills to develop, you could:

- think about what you do in your current job
- reflect on your past education and work experiences
- think about the skills you've gained in daily life
- talk to people who know you well outside of work, for a different perspective
- write down a list of strengths and areas you'd like to improve
- take our skills health check to see what strengths you have

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ACTIVITY

Roll play : Lack of skill effect your profession. (05 marks)

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3. New Trends in IT

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outsourcing

- IT outsourcing is the use of external service providers to effectively deliver IT-enabled business process, application service and infrastructure solutions for business outcomes.



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Reasons for outsourcing

- Companies often outsource as a way to lower costs
- Improve efficiencies and gain speed.
- Companies that decide to outsource rely on the third-party providers' expertise in performing the outsourced tasks to gain such benefits.
- The underlying principle is that because the third-party provider focuses on that particular task, it is able to do it better, faster and cheaper than the hiring company could.

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Types of outsourcing

- There are several ways to outsource a business process, and depending on the process, one may be preferable over another. Broadly there are a few different types based on the distance between the two members of the relationship. These types are:
 - Onshoring.** Relocating work or services to lower-cost location in the company's own country.
 - Offshoring.** Relocating work or services to third-party providers overseas.
 - Nearshoring.** Relocating work or services to people in nearby, often bordering regions and countries.

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Telecommuting



- Telecommuting (also known as teleworking) refers to the act of completing work assignments from a location other than an office via an internet and phone connection.
- Instead of commuting to work via some form of transportation, the idea is that the telecommuter can work from wherever they are located, generally from home, thanks to the internet.

What are the examples of telecommuting?

- Working remotely from home.
- Participating in online meetings and video conferencing.
- Using virtual office software and collaboration tools.
- Using cloud-based applications and services.
- Sending and receiving emails, texts, and instant messages.
- Participating in webinars, blogs, and other online forums.
- Working remotely from a remote office or coworking space.
- Using a VoIP or similar service for telephone communication.
- Uploading and downloading files to cloud-based storage systems.
- Accessing company databases and applications through a secure VPN.

What are the types of telecommuting?

- **Full-time telecommuting:** Employees work from home or another remote location full-time.
- **Part-time telecommuting:** Employees work from home or another remote location part-time.
- **Job sharing:** Two or more employees share the same job but work from separate locations.
- **Virtual teams:** Teams of employees work together online to collaborate on projects.
- **Flexible hours:** Employees have flexible hours that allow them to work outside of traditional office hours.
- **Compressed work week:** Employees work longer days with fewer days each week.
- **Travel-based telecommuting:** Employees travel to their jobs but work from their remote location.

What is the difference between working from home and telecommuting?

- Working from home refers to a situation in which an employee performs all of their work remotely from their home, while telecommuting refers to a situation in which an employee works remotely from any location, including their home, a coworking space, or a cafe. Telecommuting is typically a part-time or occasional basis while working from home is more often done full-time.



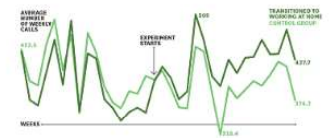
Financial impact

- Commuting time and cost
- Real estate costs
- Productivity loss from unscheduled absences

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- To the employer, the main benefits of allowing employees to telecommute at least part of the time can include:
 - Reduced workspace needs
 - Lower parking costs
 - Non-existent relocation expenses
 - Higher retention of valued employees

A Significant Improvement in Performance



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Disadvantages

- From the employees' perspective, telecommuting offers:
 - Less time spent commuting via car, train, or other means
 - Lower commuting costs (gas, tolls, subway pass, etc.)
 - Lower wardrobe expenses (from purchase and upkeep)
 - Greater scheduling flexibility (allowing doctor visits to occur without much disruption)
 - Greater work-life balance
 - Reduced chance of illness thanks to sick co-workers

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- While the upsides of telecommuting are numerous, there are still some disadvantages to be weighed:
 - More difficulty collaborating
 - Reduced opportunities for promotion (since employees are out of sight)
 - Greater potential for employees to work less
 - More employee isolation

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Activity

- IT industry in Sri Lanka
(10 Marks)
 - Top IT companies
 - Job opportunities
 - Covering areas
 - Request qualifications



ROLE MODEL



Role model

- A *role model* is someone others look to as a good example. A *role model* is someone who is worthy of imitation.



Role Model

- A role model is someone who others may emulate or admire because they're efficient or skilled in some way.
- Role models usually try to learn as much as they can to better themselves but remain humble and respectful to others.

Characteristic



1. Accountability

- Role models take responsibility for their actions and admit when they make mistakes.

2. Hard work

- Effective role models work hard when completing their tasks, and they may frequently complete more than what's expected of them.

3. Positivity

- An effective role model maintains a positive attitude, even when they experience challenges inside or outside of the workplace.

Characteristic

4. Persistence

- Role models persist in their work to achieve an effective outcome. They encounter difficulties with a sense of urgency and resolve. Others in the company and work environment can notice their dedication and strive to show the same effort and attitude.

5. Integrity

- Moral integrity serves as an important feature for role models. People in the workplace often admire them because they reflect honesty and follow their company's rules and guidelines.

6. Respect

- These professionals focus on treating employees, coworkers and customers with respect in every situation. A good way for role models to gain respect from others is to always show respect to them.

Benefits of role models

1. They increase employee morale

- Role models help boost morale by using their traits to make the workplace an environment that people enjoy. Their attitudes inspire others to perform optimally at all times.

2. They inspire healthy competition

- Top performers and role models inspire healthy competition in the workplace.
- Those who work with them notice how well they perform, and it may inspire them to produce work on the same level or above their level.
- The quality and performance of a role model give others an objective to work toward achieving.
- For example, a role model may sell products at a company at twice the normal rate of the average employee and receive recognition for their work, and their coworkers may feel positive pressure to keep up and sell more.

3. They create a positive atmosphere

- An effective role model attempts to maintain an attitude of positivity in the workplace.
- They encourage optimism and try to implement ideas that contribute to a more positive environment.
- For example, a role model may write a weekly positive quote on a workplace whiteboard in a break room or in another common area to give their colleagues something nice to consider during the week.

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4. They motivate others

- Role models can coach and train others by doing more than providing individuals with the necessary information.
 - They also motivate their teams to do their best to excel at work.
- example.
- For instance, a role model may notice that an employee seems frustrated with a recent project deadline. The role model can take the time to figure out the employee's concerns and assist them by providing examples of work they've done in the past that met strict deadlines. This motivates the employee by showing them how they can meet their deadline and can even offer tips for improving their work.

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5. They communicate openly

- Role models share their ideas and offer innovations to assist with industry goals.
- They provide honest and consistent feedback and offer constructive input.
- They communicate with employees and coworkers about how they became skilled and successful in their job roles.



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Bill Gates as a role model

- Gates is the co-founder of Microsoft, one of the largest and most influential technology companies in the world. He is known for his business savvy, philanthropy, and visionary leadership.



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"If you can't make it good, make it look good." - Bill Gates

It's important for me to dedicate myself to find the right career for myself, and to make sure I make smart and rewarding decisions. I want to be a business person and I want to be a successful entrepreneur. I believe that I can effect positive change in my country, and in the world through business, since, Business helps countries to grow. To be a successful business person I have to follow a business person who is a great leader.

I selected Bill Gates as my role model for this assignment because he is a very important person today, and I didn't know much about him other than he was the richest man in the world. I wanted to know how or why he became so successful. Also, he is ...[show more content...](#)

Gates was fascinated by the machine and how it would always execute software code perfectly. At age 17, Gates formed a venture with Allen, called Traf-O-Data, to make traffic counters based on the Intel 8008 processor.

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examples

- Steve Jobs: Jobs was the co-founder of Apple, one of the most innovative and iconic technology companies of all time. He was known for his creative vision, attention to detail, and unwavering commitment to quality.
- Elon Musk: Musk is the founder of several influential technology companies, including Tesla (electric cars), SpaceX (space exploration), and The Boring Company (tunneling and transportation). He is known for his ambitious vision, bold ideas, and willingness to take risks.
- Mark Zuckerberg: Zuckerberg is the co-founder and CEO of Facebook, the world's largest social networking platform. He is known for his innovative thinking, entrepreneurial spirit, and commitment to creating new opportunities for social interaction and communication.
- Jeff Bezos: Bezos is the founder and CEO of Amazon, one of the largest and most successful e-commerce companies in the world. He is known for his business acumen, strategic thinking, and relentless focus on customer satisfaction.

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4. Ethical foundations and theories

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Ethics

- **Ethics or moral philosophy** is the philosophical study of moral phenomena.
- It investigates normative questions about what people ought to do or which behavior is morally right.
- It is usually divided into three major fields:
 - normative ethics
 - applied ethics
 - metaethics.

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Normative ethics

- Normative ethics discovers and justifies universal principles that govern how people should act in any situation.
- According to consequentialists, an act is right if it leads to the best consequences.

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Applied ethics

- Applied ethics examines concrete ethical problems in real-life situations, for example, by exploring the moral implications of the universal principles discovered in normative ethics within a specific domain.

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Bioethics

- Bioethics studies moral issues associated with living organisms including humans, animals, and plants.
- Business ethics investigates how ethical principles apply to corporations, while professional ethics focuses on what is morally required of members of different professions..

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1. What Is Utilitarianism?

- Utilitarianism is a theory of morality that advocates actions that foster happiness or pleasure and oppose actions that cause unhappiness or harm.
- When directed toward making social, economic, or political decisions, a utilitarian philosophy would aim for the betterment of society as a whole.

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Jeremy Bentham

Utilitarianism is a tradition of ethical philosophy that is associated with Jeremy Bentham (1747-1832) and John Stuart Mill (1806-1873), two late 18th- and 19th-century British philosophers, economists, and political thinkers.

UTILITARIANISM PROMOTES "THE GREATEST AMOUNT OF GOOD FOR THE GREATEST NUMBER OF PEOPLE."

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The 3 Generally Accepted Principles of Utilitarianism State That

- **Pleasure, or happiness, is the only thing that has intrinsic value.**
- **Actions are right if they promote happiness, and wrong if they promote unhappiness.**
- **Everyone's happiness counts equally.** (Bentham's principle of equality makes the government responsible for creating policies that would benefit all equally, not just the elite.)

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In the Corporate Workplace

- Most companies have a formal or informal code of ethics, which is shaped by their corporate culture, values, and regional laws.
- Consumers are looking for companies that they can trust, and employees work better when there is a solid model of ethics in place.
- On an individual level, if you make morally correct decisions at work, then everyone's happiness will increase. However, if you choose to do something morally wrong—even if legal—then your happiness and that of your colleagues, will decrease.

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The Limitations of Utilitarianism

1. That it tends to create a black-and-white construct of morality. In utilitarian ethics, there are no shades of gray—either something is wrong or it is right.
2. Utilitarianism also cannot predict with certainty whether the consequences of our actions will be good or bad—the results of our actions happen in the future.
3. Utilitarianism also has trouble accounting for values like justice and individual rights.

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Utilitarian Ethics

1. "Rule" Utilitarian Ethics

- An example of rule utilitarianism in business is tiered pricing for a product or service for different types of customers.

In the airline industry, for example, many planes offer first-, business-, and economy-class seats. Customers who fly in first or business class pay a much higher rate than those in economy seats, but they also get more amenities—simultaneously, people who cannot afford upper-class seats benefit from the economy rates

- . This practice produces the highest good for the greatest number of people.
- And the airline benefits, too. The more expensive upper-class seats help to ease the financial burden that the airline created by making room for economy-class seats.

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2. "Act" Utilitarian Ethics

- An example of act utilitarianism could be when pharmaceutical companies release drugs that have been governmentally approved, but with known minor side effects because the drug is able to help more people than are bothered by the side effects.
- Act utilitarianism often demonstrates the concept that “the end justifies the means”—or it's worth it.

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2. Deontological ethics



Immanuel Kant

- **Deontological ethics**, in philosophy, ethical theories that place special emphasis on the relationship between duty and the morality of human actions.
- The term *deontology* is derived from the Greek *deon*, “duty,” and *logos*, “science.”

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- Kant’s ethics isn’t the only example of deontology.
- Any system involving a clear set of rules is a form of deontology, which is why some people call it a “rule-based ethic”. The *Ten Commandments* is an example, as is the *Universal Declaration of Human Rights*.

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Ethically constructive habits of mind and action

- Self- Reflection/Examination
- Looking for Moral Exemplars
- Exercising our Moral Imaginations
- Acknowledging Your Own Moral Strength
- Seeking the Company of Other Moral Persons

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What is an Ethical Dilemma?

- An ethical dilemma (ethical paradox or moral dilemma) is a problem in the decision-making process between two possible options, neither of which is absolutely acceptable from an ethical perspective.

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How to Solve an Ethical Dilemma?

- The following approaches to solve an ethical dilemma were deduced:
 1. **Refute the paradox (dilemma):**
 1. The situation must be carefully analyzed. In some cases, the existence of the dilemma can be logically refuted.
 2. **Value theory approach:**
 - Choose the alternative that offers the greater good or the lesser evil.
 3. **Find alternative solutions:**
 - In some cases, the problem can be reconsidered, and new alternative solutions may arise.

Ethical Dilemmas in Business

- Ethical dilemmas are especially significant in professional life, as they frequently occur in the workplace. Some companies and professional organizations (e.g., CFA) adhere to their own codes of conduct and ethical standards. Violation of the standards may lead to disciplinary sanctions.
- to solve ethical problems, companies and organizations should develop strict ethical standards for their employees.
- Every company must demonstrate its concerns regarding the ethical norms within the organization.

Business Ethics

- **Business ethics are the moral principles that act as guidelines for the way a business conducts itself and its transactions.**

Ethics in CSSL code of ethics

- Professionalism
- Professional Development
- Added Value to Sri Lanka
- Honesty
- Competence

Software Engineering Code of Ethics and Professional Practice (IEEE)

- PUBLIC - Software engineers shall act consistently with the public interest.
- CLIENT AND EMPLOYER - Software engineers shall act in a manner that is in the best interests of their client and employer, consistent with the public interest.
- PRODUCT - Software engineers shall ensure that their products and related modifications meet the highest professional standards possible.
- JUDGMENT - Software engineers shall maintain integrity and independence in their professional judgment.
- MANAGEMENT - Software engineering managers and leaders shall subscribe to and promote an ethical approach to the management of software development and maintenance.
- PROFESSION - Software engineers shall advance the integrity and reputation of the profession consistent with the public interest.
- COLLEAGUES - Software engineers shall be fair to and supportive of their colleagues.
- SELF - Software engineers shall participate in lifelong learning regarding the practice of their profession and shall promote an ethical approach to the practice of the profession.

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Digital disparity

What Is the Digital Divide?

- The digital divide is the gap created by unequal access to modern telecommunications technology among different demographic groups and regions. This can include inequalities in access to computers, smartphones, the Internet, or digital literacy

Reasons

- Inequalities in internet access for socioeconomic reasons
- Geographical differences in internet speed and access.
- Unequal access to 4G/5G networks for mobile internet
- Unequal access to computers/mobile devices
- Gaps in digital literacy, due to generation and/or education gaps.

Consequences of the Digital Divide

- **Lack of communication and isolation:** The COVID-19 pandemic has brought into sharp focus the isolation that people without internet access or skills can quickly experience. This can have serious concomitant effects—from not being able to secure appointments for vaccination against the coronavirus to limiting individuals' job prospects and affecting their mental health.
- **Barriers to education:** As education is increasingly delivered online, those without the resources to access the internet, including schoolchildren limited to remote learning during the pandemic, can be cut off from opportunities to develop their skills. As a result, children may have educational gaps, and adults may miss out on job opportunities or be unable to gain the basic skills necessary to contribute to their community.



These disparities stem from barriers in three areas: availability, affordability, and adoption

- 1. Availability:** digital infrastructure needed to access online services through alternative channels, such as wireless data plan, wired broadband, and fiber services.
- 2. Affordability:** to stay connected, individuals must pay for device acquisition and service subscriptions, which are continuous expenses.
- 3. Adoption:** people are prevented from utilizing the internet by knowledge hurdles, such as a lack of digital literacy or educational constraints.

Stakeholders



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Stakeholders

- Stakeholders are individuals or groups with an interest in the success of a business.
- This interest stems from the fact that they directly or indirectly influence the operations and objectives of the company.

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Stakeholders

- Stakeholders can range from
 - Owners
 - employees
 - investors,
 - suppliers
 - government agencies, and the local community

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Shareholder vs. stakeholder

- **Shareholders** are individuals or entities that own shares in a public company. They have a claim to part of the company's profits and can vote on decisions the company makes.
- **Business stakeholders** are a broader group. They include anyone affected by the company's operations and decisions. This includes employees, customers, suppliers, community members and shareholders.

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Why are stakeholders important?

- 1. Operational efficiency:** internal stakeholders like employees and managers directly influence the daily operations of a company through decision-making and performing their duties well.
- 2. Customer relations:** positive interactions with customers impact customer loyalty and influence revenue.
- 3. Supply chain management:** suppliers and vendors affect the reliability and quality of products the company needs to fulfil their customers' demands.
- 4. Feedback and innovation:** regular feedback from various stakeholders can lead to improvements and innovations in products, services and processes.

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Responsibility



Types of stakeholders in a business or organization

Internal stakeholders

- 1. Employees**
- 2. Management**
- 3. Executives**
- 4. HR department**
- 5. Union representatives**

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External stakeholders

- **Customers**
- **Suppliers/vendors**
- **Investors**
- **Government agencies (regulatory bodies)**
- **Local communities**
- **Media outlets:**
- **Industry associations**

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How to manage stakeholders in the workplace

1. **Regularly update stakeholders** on progress and developments, to maintain their trust and support.
2. **Involve stakeholders** in the decision-making process, to make them feel heard and positively engaged in the outcome.
3. **Be responsive to stakeholder feedback** and adapt the strategy or project, to let stakeholders know their input is valued even if it isn't being actioned.

- **Power imbalances**
- Power dynamics play a significant role in stakeholder management. Senior stakeholders can sway the direction of a project and create unexpected delays. Recognizing where delays like this might occur can help when scoping out a project timeline.
- **Resistance to change**
- Some stakeholders may be resistant to adapt to the changes brought about by a project. Sometimes this can be due to fear of the unknown or comfort with the status quo. Addressing these fears and providing support during the transition can help.
- **Lack of equal effort**
- In some cases, certain stakeholders may not contribute equally to a project, though they stand to benefit from its success. This can create resentment among other stakeholders.

Potential challenges to stakeholder management at work

- **Communication breakdown**
- Communication breakdowns can lead to missed milestones, small issues growing into big problems, and confusion among stakeholders. Maintaining clear and consistent communication is vital for keeping all stakeholders engaged and on the same page.
- **Clashing priorities**
- Stakeholders often come with different goals and priorities, which can sometimes conflict. Part of a project manager's job is to mediate and smooth over any clashes in order to keep the project on track. Finding common ground and aligning stakeholder interests with project objectives requires skillful negotiation and compromise.

[1.] What is Ethics?

Study of what it means to “do the right thing”

[2.] Notes on Ethical rules:

We could view ethical rules as **fundamental** (rules we make up, like the **rules of baseball**) and **universal** (like **laws of science**) to provide a framework to interact with other people in a peaceful, productive way.

Ethics: Inventing Right and Wrong (fundamental)

Ethics: Discovering Right and Wrong (universal)

[3.] What is the importance of ethical theory?

Ethical theory assumes that people are rational (with reason or logic) and make free choices. One of these conditions is not always and absolutely true. People act emotionally, and they make mistakes. (A person is not making a free choice when someone else is pointing a gun at him.)

However, free choice and use of rational judgment are capacities and characteristics of human beings; the individual is (in most situations) responsible for his or her actions.

[4.] What are 3 ethical views and explain each of them?

Ethical Views:

- i. Deontological: Ethical theory concerned with **duties** and **rights**. Whether they lead to good or ill consequences.

E.g. Do not lie. An act is ethical if it complies with ethical rules and you chose it for that reason.

How people achieve their goals is usually (or always) **more important than what people achieve.**

- ii. Utilitarianism: greatest good for the greatest number.

E.g. There are 10 people on a boat and everyone will die unless one gets thrown off. A utilitarian would throw someone off the boat - probably the weakest/oldest one.

- iii. Natural rights: theory of universal rights that are seen as inherent in the nature of people and not dependent on human actions or beliefs

[5.] What are the two types of rights explain it with examples?

- a. Negative rights (or liberties) are **rights to act without interference**. The only obligation they force on others is **not to prevent you from acting**.

*E.g. right to **life**, the right to be **free from assault**, the right to use your **property**, **freedom of speech** and **religion**, the right to use your **labor**, **skills**, and **mind** to create goods and services.*

- b. Positive rights (claim-rights) Forces an obligation of some people to provide certain things for others.

E.g. a positive right to life means that some people are forced to pay for food or medical care for others who cannot pay for them.

[6.] What comes to your mind when someone says “New developments”

- a. Blogs
- b. Video Sharing
- c. Cell Phones
- d. Social Networking
- e. Collaboration
- f. E-commerce and Free Stuff
- g. Artificial Intelligence (AI), Robotics, and Motion
- h. Tools for Disabled People

[7.] Weblog is **publicly accessible online personal journal/diary** i.e. listing of text, images, or other web objects that are arranged in a chronological order.

[8.] Video Sharing is one of the fastest growing activities online and **involves the process of uploading, publishing and sharing video clips online.**

[9.] **Amateur:** a person who does something (e.g. a job, study, sport, or other activity) for pleasure rather than for financial benefit.

[10.] Social networking websites allow users to be **part of a virtual community**, after creating profile; users can share their lives with other people **without needing to develop and publish their own home pages.**

[11.] **E-commerce** the buying and selling of goods and services via electronic channels, primarily the Internet without using any paper documents and **Free stuffs for computer**-we can get free email programs and email accounts, browsers, filters, firewalls, encryption software, word processors, spreadsheets, software for viewing documents, software to manipulate photos and video, home inventory software, anti spam software, antivirus software, antispymware software, and software for many other specialized

[12.] What is AI?

When the intelligence of a machine matches or exceeds the intelligence of a human then the machine said to have “Artificial Intelligence”, is also branch of Computer science.

[13.] Robotics: The Study, design, construction, operation, and application of robots.

[14.] Robots: Where AI meets the real world.

- a. Or

- b. Robots are special-purpose devices, and may require AI to function.

[15.] **Motion sensing devices** are used to give robots the ability to walk, trigger airbags in a crash and cushion laptops when dropped.

[16.] List some tools for disabled people

- a. Screen readers and scanners
- b. Speech recognition tools
- c. **Prosthetic devices** (are **artificial components** used to **replace part of the human body**) and motion sensors.
- d. Medical bracelets (A medical identification tag, emblem , neck chain, or on the clothing bearing a message that the wearer has an important medical condition that might require immediate care)

[17.] What are the IT development issues?

- i. Unemployment
- ii. Alienation(Emotional isolation) and customer service
- iii. Crime
- iv. Loss of privacy
- v. Errors

[18.] What is Privacy?

Claim of individuals, groups or institutions to determine when, how and to what extent information about them is communicated to others.

[19.] State the key aspects of privacy

- a. Freedom from intrusion (being left alone)
- b. Control of information about oneself
- c. Freedom from surveillance (being tracked, followed, watched)

[20.] List out Principles for Data Collection and Use.

- a. Informed consent
- b. Opt-in and opt-out policies
- c. Fair Information Principles (or Practices)
- d. Data retention

[21.] What are Opt-in and opt-out policies explain?

After informing people about personal information organization uses two most common forms for providing privacy policy are **opt out** and **opt in**.

The term **opt-out** refers to methods by which individuals can avoid company to use the personal information, if the person does not take action; the default is that the organization *may use* the information.

Opt-in is a term used when someone is given the option to the company to use the personal information. The default is that the organization *may not use* the information.

[22.] Define “informed consent”

Information about a particular treatment or test to decide whether or not you wish to undergo such treatment or test

[23.] Write down Fair Information Principles:

- a. Inform people when you collect information about them, what you collect, and how you use it.
- b. Collect only the data needed.
- c. Offer a way for people to opt out from features and services that expose personal information.
- d. Keep data only as long as needed.
- e. Maintain accuracy of data. (Provide a way to access and correct data stored about them.)
- f. Protect security of data (from theft and from accidental leaks).
- g. Develop policies for responding to law enforcement requests for data.

[24.] How to protect privacy?

a. **Technology & Markets:**

- i. **Encryption:** is a technology, implemented in software that transforms data into a form that is meaningless to anyone who might view it.
- ii. **Policies for protecting personal data:** The businesses, organizations, and government agencies that collect and store personal data have an ethical responsibility to protect it from misuse. (*audit trail, privacy audits etc*)

b. **Rights and Law:**

i. **Theories**

1. *Warren and Brandeis*

People have the right to prohibit publication of facts about themselves and photographs of themselves.

2. *Judith Jarvis Thomson*

Right to privacy: Suppose you own a copy of a magazine. Your property rights include the right to refuse to allow others to read, destroy, or even see your magazine.

ii. **Transactions**

How to apply privacy to transactions, which involve more than one person

Two viewpoints on the regulation about consumer transactions:

The **free market view** and the **consumer protection view**.

A free market view for collection and use of personal information emphasizes informed consent: Organizations collecting personal data should clearly inform the

person providing the information (if they will not keep it confidential and how they will use it.)

Consumer protection view: to protect consumers against abuses and carelessness by businesses and against their own lack of knowledge, judgment, or interest

iii. **Ownership of personal data**

Giving people property rights in information about themselves.

[25.] List Supreme Court principles and guidelines?

- a. Advocating illegal acts is legal
- b. Does not protect libel and direct, specific threats
- c. stimulating violence is illegal
- d. Allows some restrictions on advertising
- e. Protect anonymous speech

[26.] Write down Censorship on the Global Net and impact on free speech?

- a. Tools for **Communication**, Tools for **Oppression**
- b. Aiding Foreign Censors and Repressive Regimes
 - i. **Providing services, obeying local laws**
 - ii. **Selling surveillance tools**
- c. Shutting Down Communications in Free Countries

[27.] What is Intellectual Property?

It is the ownership of dream, an idea, an improvement, or an emotion that we can touch, see, hear, and feel.

[28.] **What is copyright?**

Rights given by law to the creators for their literary & artistic works

[29.] What are the two forms of **copyright**?

- a. *Economic rights*: include the right to reproduce, sell, rent, distribute, communicate to the public, translate etc
- b. *Moral rights*: cover the right to claim the authorship and oppose distortion (alteration) or mutilation (denial) of the work.

[30.] What are the services offered by NPO?

Protection for

- a. Copy rights
- b. Patents
- c. Marks
- d. Industrial Designs

[31.] Define **Trade/Service Mark**?

A mark is a visible sign that is capable of distinguishing the goods or services from other enterprises

[32.] Explain two kind of marks.

- a. Certification marks: mark which meets a defined standard of the goods or services as certified by the owner
- b. Collective marks: mark to differentiate the origin or any other common characteristic of goods or services of different enterprises

[33.] What exclusive rights a Copyright holder have?

- a. **To make copies**
- b. **To produce derivative works**, such as translations into other languages or movies based on books
- c. **To distribute copies**
- d. **To perform the work in public** (e.g. music, plays)
- e. **To display the work in public** (e.g. artwork, movies, computer games, video on a Web site)

[34.] What is patent?

A patent is a **right granted** to the owner of **an invention** that **prevents others from making, using, importing or selling** the invention **for** a period of **20 years** without his permission.

[35.] Define anonymity

Anonymity is the ability to do something without being caught.

[36.] How to catch or identify hacker?

Methods for catching or identifying hackers:

- a. Law enforcement agents **read hacker newsletters** and **participate in chat rooms** undercover
- b. They can often **track** a handle by looking **through newsgroup archives**
- c. Security professionals set up '**honey pots**' which are Web sites that attract hackers, to record and study
- d. Computer forensics is used to retrieve evidence from computers

[37.] Explain 3 types of hackers

- a. White hat hackers use their skills to **demonstrate** system **vulnerabilities** and **improve security**.
- b. A person who breaks into a computer system with the **purpose of damaging or stealing data**.
- c. A grey hat hacker is a **combination of a black hat** and a **white hat hacker**. He may surf the internet and hack into a computer system for the **purpose of notifying** the administrator that their system has a **security defect**, for example. Then they may offer to correct the defect **for a fee**.

[38.] Write down the techniques used to steal personal and financial information

- a. Phishing – is a fraudulent attempt, usually made through email, to steal your personal information [*smishing* -for text messaging) or *vishing*-for voice phishing]
- b. Pharming – false web sites that collect personal and financial information by setting false URLs in Domain Name Servers
- c. Online resumes and job hunting sites may expose SSNs, work history, birth dates and other information that can be used in identity theft

[39.] List down the techniques used to protect personal and financial information

- a. Activation for new credit cards
- b. Retailers do not print the full card number and expiration date on receipts
- c. Software detects unusual spending activities and will prompt retailers to ask for identifying information
- d. Services, like PayPal, act as third party allowing a customer to make a purchase without exposing their credit card information to a stranger(unfamiliar person)

[40.] The introduction of computers in the workplace generated many fears; what are those?

- a. **Mass unemployment** due to increased efficiency
- b. The need for **increased skill and training** widens the earning gap
- c. **Offshoring**(*The practice of moving business processes or services to another country, to reduce costs*) **of jobs** will lead to mass unemployment
- d. Employers use of **technology to monitor** their employee

[41.] Give Job Dispersal and Telecommuting (work from home) benefits and problems.

Benefits:

- a. **Reduces overhead** for employers
- b. **Reduces** need for **large offices**
- c. Employees are **more productive, satisfied, and loyal**
- d. **Reduces traffic** congestion, **pollution, gasoline use**, and stress
- e. **Reduces expenses** for commuting and money spent **on work clothes**
- f. **Allows work** to continue **after snowstorm, storms**, etc.

Problems:

- a. Employers see, **who** have to **work at the office treated unfairly**
- b. For some telecommuting employees, **corporation loyalty weakens**
- c. **Odd work hours**
- d. **Cost for office space** has shifted to the employee
- e. Security risks when **work** and **personal activities** exist **on the same computer**

[42.] Employee monitoring in Data Entry, Phone Work, Retail and Location:

Data entry

- a. Key stroke quotas
- b. Encourage competition
- c. Beep when workers pause

Phone work

- a. Number and duration of calls
- b. Idle time between calls
- c. Randomly listen in on calls

Retail

- a. Surveillance to reduce theft by employees

Location:

- a. Cards and badges used as increased security but track employee movements
- b. GPS tracks an employee's location
- c. Used in some hospitals to track nurse locations for emergency purposes, also shows where they are at lunch or when they use the bathroom
- d. Used to track long-haul trucks to reduce theft and optimize delivery schedules, also detects driving speeds and duration of rest breaks
- e. Employees often complain of loss of privacy

[43.] Define “digital divide”

The term *digital divide* refers to the fact that some groups of people enjoy access to and use the various forms of modern information technology, while others do not.

[44.] Why models may not be accurate?

- a. We might **not have complete knowledge** of the system we are modeling
- b. The data describing current conditions or characteristics may be incomplete or inaccurate
- c. Computing power may be inadequate for the complexity of the model
- d. It is difficult, if not impossible, to numerically quantify variables that represent human values and choice

[45.] Write short notes on-*Computer Crimes Act No. 24 of 2007*, and *Electronic Transactions Act No. 19 of 2006*.

Computer Crime: Any person who purposely does any act, in order to secure for himself or for any other person, access to any computer ; or any information held in any computer.

Computer Crime Act 24 of 2007

- It is a framework to prevent misuse of IT Systems

Three Broad Categories of Computer Crimes

- Computer Related crimes – Computers used as a tool for criminal activity such as theft, fraud etc
- Hacking – affects integrity, availability and confidentiality of a computer system or network (also includes Viruses, worms etc)
- Content related Cyber Crime – Computers with internet used to distribute illegal data. Eg;- Internet based pornography, Criminal copyright infringement

Electronic Transactions Act No. 19 of 2006

It is a framework for electronic business and sets guidelines on secure e-transactions & storage

Substantive(Important) Legal Issues

- ❖ Formation and validity of online Contracts
- ❖ Statutory(rule of a corporation) limitations relating to enforcement (writing and signature requirements, i.e Prevention of Frauds Ordinance of 1840)
- ❖ Proof – Evidentiary issues

Regulation of Service Providers (Facilitate the use of electronic signatures)

[46.] Evaluating information using expert information

We expect encyclopedias to be accurate and objective. Traditionally, expert scholars selected by editorial boards write encyclopedias. Volunteers, not carefully selected scholars, write and continually edit and update Wikipedia article.

[47.] What is Professional ethics?

Business/ professional ethics are **standards/special responsibilities** or **codes of conduct** set by **people in a specific profession** like Doctor, Engineer, Lawyer, Judges and Accountants.

[48.] Note down Failures and Errors in Computer Systems

- a. Most computer applications are so complex it is impossible to produce programs with no errors
- b. Billing errors
- c. Inaccurate and misinterpreted data in databases
- d. Lack of clear, well thought out goals and specifications
- e. Poor management and poor communication among customers, designers, programmers, etc.
- f. Pressures that encourage unrealistically low bids, low budget requests, and underestimates of time requirements
- g. Use of very new technology, with unknown reliability and problems
- h. Refusal to recognize or admit a project is in trouble

[49.] Define **Computer misuse**

A person knowingly causes a computer to perform any function **to access to any unauthorized program** or data held in any computer

[50.] Define **Computer fraud**

Handling a computer dishonestly in order **to obtain money, property** or services, or to cause loss