

Professional Practices

Topic no 1

Professional Practices:

Professional practices play a vital role in introducing professional practices being used in different organizations.

In this course, the main objective is how to work in this environment of organization to achieve a future destination or success.

Expected Outcomes:

In which, we will be able to understand:

1. Role and responsibility of a professional.
2. Structure of the organization/Software Houses.
3. How this organization works?
4. Organization financial practices & HRM techniques.
5. It related issues (Computer Misuse, Hacking, Risk management, Social Networking).

Profession:

A paid occupation, especially one that involves prolonged training and a formal qualification.

A **formal education** is one where you would go to a college or university for an actual degree.

An **informal education** is simply learning a trade from someone else. It's possible to have a formal education and an informal education.

The **formal education** is what **most employers would prefer** to see **because it is easier to prove**.

Having a degree in a specific field will mean that you have certain knowledge that will translate into a better paying job and the company that's employing you getting a qualified person for the job. An informal education is what many people end up having. You work under someone who has a degree or has been doing it for enough years to be knowledgeable about the subject.

Many car mechanics and other "**trade**" skills usually have an informal education as to what they're doing.

Informal education can also be referred to as life experience. After going through life for so many years, you'll naturally acquire some knowledge about different things that you may not even learn after going through a formal education.

Topic no 2

Profession, Professionals and Professionalism:

Profession: It is a way of earning. A paid occupation, especially one of the times with their qualification. **e.g.** Doctor, Nurse, etc.

Professionals: Any person who earns their living from a specified professional activity. It is a member of the profession. In which we will describe the education standard and some training activities are involved, through this knowledge & skills, they perform their specific role within that profession. **e.g.** Doctors, Engineers & developers are professionals and that person performs some jobs related to their profession that is professionals.

Professionalism: It is a way of thinking and living rather than the knowledge that we learn from university.

Features of Profession:

Any type of profession must have four features. **i.e**

1. Having special skills to perform various activities e.g Doctor has skills to inject injections etc.

2. Social centric motivation
3. Personal standards of excellence (Good vs Bad)
4. Giving back to society (to give respect back to them)

Features/Characteristics of Professional	Features of Profession
Seriousness	Positive attitude
Waiting to do better	Emotional control.
Communication skills	Skill development
Passion	Giving back to society
Helpfulness	Specialized knowledge
Cool under Pressure	Professional appearance
Remains Focused	Great responsibility

Professional behaves Ethically:

- **Ethics:** mean something more than Law and Morals. It comes "Rightness".
- **Law:** Governing bodies involve (Right or Not).
- **Morals:** Community defines, Religion defines, Society.

Breaks the law, Moral, Ethics:

1. **Law:** Can earn a fine or jail.
2. **Morals:** Can ruin your reputation.
3. **Ethics:** Can ruin your awareness. e.g. to make a line in a bank may become a bigger issue if breaking the rules and regulations.

Features/Characteristics of Professional:

Being a professional, must have these features in it.

1. Seriousness
2. Waiting to do better
3. Dealing with the unexpected
4. Communication skills
5. Passion
6. Helpfulness
7. Taking an Initiative
8. Cool under Pressure
9. Remains Focused

Topic no 3

Professional Ethics & Code of Ethics:

- **Law:** Limitation of living is the best society that will be applied through governing activities or laws.
- **Morals:** Religion and society define your attitude toward a particular group.
- **Ethics:** Define social behaviors that means What kind of efforts you made for the social life.

Code of Ethics: When we are talking about any professional organization, if we do our work with the limitation of ethics then the organization will grow in a positive way to progress. The organization has some rules and regulations that define it and apply it.

OR

Ethical Guidelines:

Ethical guidelines are like a rulebook that helps us understand how to behave properly in our professional or personal lives. Following these guidelines ensures that we act in a way that is fair, honest, and respectful towards others. It's like having a compass that guides us to make the right decisions and treat others with kindness and integrity

Code of Ethics Goals: When we make decisions individually then have some goals to achieve them **i.e.** Privacy, Professional quality, fairness, Liability, Confidentiality, Software risks, Conflicts with the internet, and Unauthorized access to computer systems.

IEEE Code of Ethics:

IEEE, pronounced "**Eye-triple-E**" stands for the **Institute of Electrical and Electronics Engineers**.

1. **Actions:** wise ethics may have two ways **i.e.** Public & Client and employer.
 - **Public:** The software Engineer shall act must be in the public interest.
 - **Client & employer:** Software Engineer acts in a manner that the client and employer must be satisfied.
2. **Product:** Software Engineer shall ensure that their product will be professional and higher standard quality.
3. **Hierarchy(ranking):** Hierarchy is based in two ways **i.e.** Judgment and Management.
 - **Judgment:** In your work, no influence or burden of any parties to do best judgment without the influence of any political parties or any other as well.
 - **Management:** SE management parties should attain the approach of ethical to develop the software development and maintenance.
4. **Peers:** It must be based on profession and Colleagues.
 - 1. Software Engineer must be fair with their colleagues, and clients and must be consistent value with the public as well.

- 2. The profession of our work must be fair and consistent with their clients.

5. Self: Software Engineer will perform professional tasks along with learning and practice will also continue that will promote your ethical approach in the profession.

Principles of IEEE Code of Ethics:

"Above all eight points fall in the principles of the IEEE Code of Ethics".

ACM Code of Ethics:

ACM Stands for **Association for Computing Machinery**. Have another organization (ACM) computing point of view. This organization defines the rules and regulations as computing point of view.

General: ACM member then we will do,

1. Contribute to society and human well-being.
2. Avoid harm to others.
3. Be honest and trustworthy.
4. Be fair and take action not to discriminate.
5. Honest property rights including copyright and product
6. Respect the privacy of others.

Specific: ACM member then we will do,

1. Solve to achieve the highest quality.
2. Maintain professional competence.
3. Know and respect existing laws regarding professional work.
4. Accept and provide appropriate professional review.
5. Respect contracts, agreements, and assigned responsibilities.
6. Include public understanding of computing.

Organization: ACM member then we will do,

1. Manage the personal and resources to design and build information systems that enhance the quality of working life.
2. To fulfill the requirements of the users that it's needed.

3. To support policies that protect the dignity of users affected by the computing system.
4. Create an opportunity for the members of the organization to learn the principles and limitations of computing system.

Compliance: ACM member then we will do,

1. Uphold and promote the principles of this code.
2. Treat violations of this code as consistent with membership in the ACM

Topic no 4

ORGANIZATION STRUCTURE

We live in a civilized society and have a close relationship with large organizations i.e. Schools, University, Government, Commercial companies and so on.

The legal form of an organization:

Incorporation (A large company or group of companies that is controlled together as a single organization):

This means which companies or the organization have a legal existence than its incorporation e.g. Public or Private companies (**Act 1985 & 1989**).

Law recognizes individuals (The law acknowledges individuals' rights and responsibilities in a way that everyone can understand):

We all are under the provision of law bodies. If we break it then we are doing it against the law & charged with it.

Types of Commercial Organization:

1. **Sole trader:** Don't need a legal ship of law. e.g. Local shop, Plumber (Single person)
2. **Partnership:** All will be at risk. It consists of two or more persons. e.g Doctors, Lawyers, Accountants

3. Limited Company: It may be Private or public.

Limited	Unlimited
Exist, if debt occur shareholder pay fix amount	Mostly un exist because on debt all the investment will be on hand on shareholder

COMPANY

There are two types of company:

1. Public company
2. Private company

Public limited company (PLC):

1. Trades shares to the public.
2. Can sell share publicly.
3. Not limited by Guarantee (Charities are not involves).
4. Dependence existence.
5. Unlimited by share.

Company limited (Co. Ltd):private Company

1. Trades cannot be shared with the public.
2. Can sell share privately.
3. Limited by share (Commercial companies).
4. Limited by Guarantee (Charities involves).
5. Independence existence.

Company Divided:

Company divided into “Shareholders” and “members” of company.

- Normally > 1 shareholders.
- 1992 act allows single member.

Company Constitution (کمپنی کا آئین):

1. Share Capital
2. Company Constitution
3. Director's responsibilities

1. Share Capital Share capital is the total value of all the shares issued by a company.

- Shareholders own company
- At the start of company
- Say 100 share @ \$10 If debt > assets Shareholders lose share.

2. Company Constitution

- A. Memorandum of association**
 - a. Controls External Relations
- B. Articles of association**
 - b. Controls Internal Relations
- C. Shareholders Agreements**

A. Memorandum of Association:

1. Company name e.g Restrictions.
2. Country of Registration e.g Pakistan, India, UK, Scotland
3. Objects of Company
4. Companies act 1989 allows general commercial company
5. A Liability Clause
6. Liability of member is limited
7. Authorized share value
8. Normal share value and number

B. Articles of Association:

1. Rules of Share capital
2. Transfer of Shares
3. Meetings of Members

4. Rules Governing Directors' Appointments
5. Power of Directors
6. Dividends and Reserves

C. Shareholders Agreements:

1. Protect interests of minor shareholders
2. Article of Association
3. Changed at General Meeting
4. Needs 75% majority
5. Agreement Between Shareholders
6. All must sign

3. Director's responsibilities:

1. Directors Elected by Shareholders
2. Act In the best interest of the Company
3. Honest
4. Declare Interests
5. Aware of the Company's Trading Position
6. Executive & Non-Executive Directors
7. Company Secretary
8. Could be Director

FUNCTIONAL UNITS OF AN ORGANIZATION

Five groups of functions exist in almost any organization:

1. **Production:** Activities that directly contribute to creating the products or services that the company sells.
2. **Quality management:** Quality activities are necessary to ensure that the quality of the products and services produced is maintained at the agreed level.

- 3. Sales and Marketing:** Sales is concerned directly with selling the product, while marketing is concerned with establishing the environment in which the product is sold (e.g. through advertising) and with deciding how the range of products sold by the company should develop.
- 4. Finance and Administration (finance and management):** To pay bills, to look after its funds, Allcentral services.
- 5. Research and development:** How can the company do better the things that it already Does and **what other things might it profitably be doing?**

GEOGRAPHICAL ORGANIZATION

An organization operates in more than one country. The most obvious examples are in the field of food and drink. **e.g.** KFC.

Centralization	Decentralization
In a centralized organization , the detailed operational decisions are taken at the center.	In a decentralized organization , as many details as possible are settled at the local level

MANAGEMENT

- 1.** Managers of an organization can be project managers, production managers, general managers, or corporate managers.
- 2.** The goal of project managers is to produce systems that meet the users' needs, on time and within budget.
- 3.** Their main concerns are therefore planning progress.
- 4.** Monitoring allocation of resources, and quality control.
- 5.** The tools of their trade are bar charts, activity networks, critical path analysis, and so on.

Types of Managers:

- 1. Production Manager:** Production management is concerned with productivity, efficiency, and maintenance of quality.
- 2. General Manager:** General or corporate management deals with the management of the organization as a whole.
- 3. Corporate Manager:** Corporate managers are responsible for the long-term strategy of the organization.

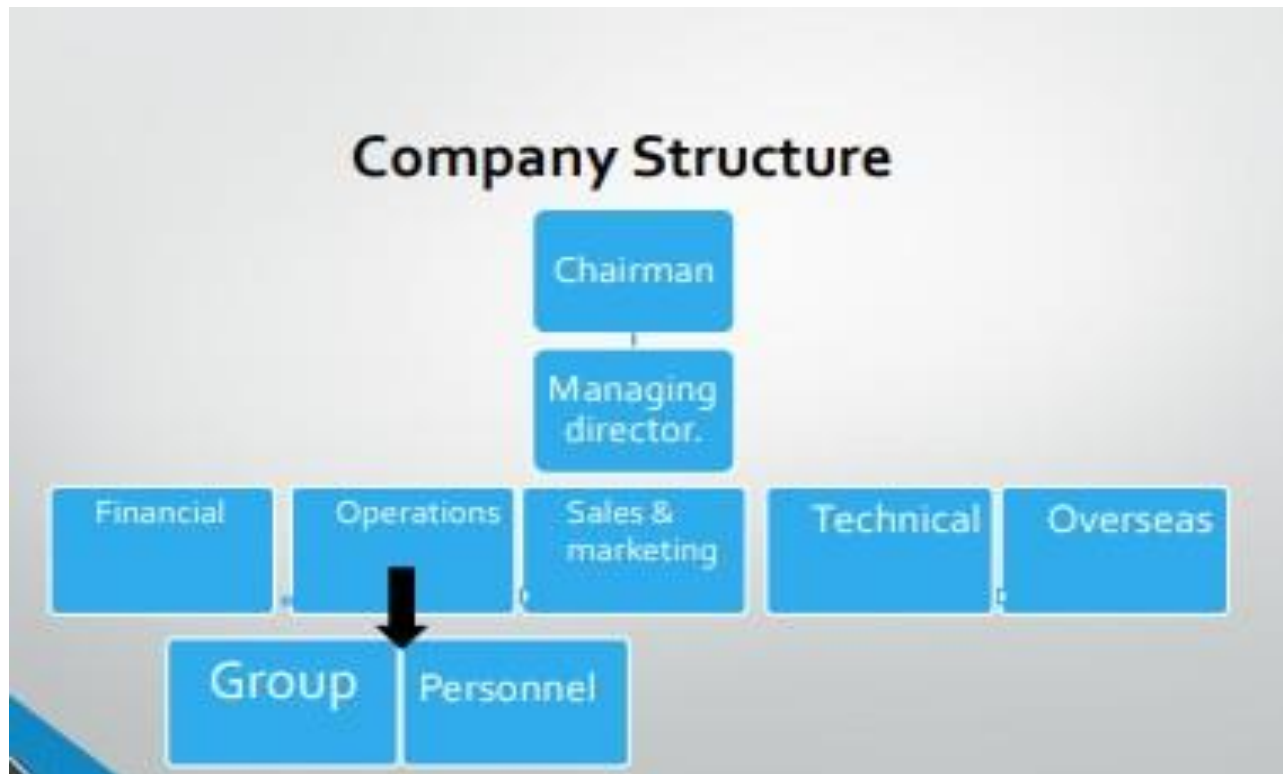
“Monitor the overall performance of the organization and be prepared to handle serious problems that arise anywhere in the organization”.

INTRODUCTION OF ANATOMY OF A SOFTWARE HOUSE

The Company (Software House)

- A Hypothetical Company (based on possible ideas or situations rather than actual ones.)
- Syniad Software Ltd was founded some ten years ago by four friends. All four are members of the Board of Directors, along with two others who were recruited later.
- The company specializes in the production of bespoke software for clients who demand work of high quality.
- Syniad's head office is in London. Other offices are in Manchester, Delft, Netherlands.

Company Structure



Operations Director:

1. The Operations Director is responsible for all the revenue-earning operations of the company.
2. It is his job to ensure that all projects are completed satisfactorily
3. And resources are available to carry out the projects that the company wins.
4. The personnel reports to him.

Technical Director:

The Technical Director is responsible for:

1. Quality management.
2. Research and development.
3. Marketing at a technical level (e.g. arranging for staff to give papers at conferences)
4. Technical training (as opposed to training in, say, project management or presentational skills, which are the responsibility of the personnel function).

Syniad's Organizational Structure Type:

It shows elements of all three of the types of organizational structure.

1. Functional division of responsibilities
2. Geographical element (represented by the director responsible for overseas operations)
3. Centralization and decentralization have little meaning (Centralized policies and procedures are widely used but they have usually been developed within one part of the company and have been adopted by general consent.

MANAGEMENT OF STAFF

New employees (OUTSIDER) vs. old employees...

Staff Appraisals (judgment or sizing up) :

1. Employees' achievements and contributions to the company were properly recorded.
2. Staff knew what was expected of them and what they needed to achieve to gain promotion.
3. Proper plans for training and career development were made and regularly reviewed.

4. Employees were aware of the company's opinion of their performance

PRODUCING THE BUDGET

Staff in the company are broadly divided into

1. Technical or Revenue earning staff
2. Nonrevenue earning staff. (Both require different capital to work.)

Monitoring Financial Performance:

1. Monitoring Syniad's performance against the budget should, in principle, be straightforward.
2. Each month, the income and expenditure under the various heads are compared and, if significant deviations are observed, corrective action is taken.
3. In practice, this simple procedure presents many difficulties.

To monitor financial performance, the company focuses on

1. Cost & Revenue
2. Project costing
3. Sales

1. **Cost & Revenue:** A major problem is caused by random fluctuations, themselves the product of many individual factors. **e.g**

1. Annual Budget and Staff hiring
2. Large projects cause deviations in the Budget
3. Fixed Price Project Estimation

2. Project Costing:

1. Because of these difficulties in monitoring the overall performance of the company, Syniad also tries to monitor the financial performance of individual projects, through a project costing system.

2. The costs and revenue of each project are calculated each month and the cumulative gross margin (i.e. the difference between total costs and total revenue to date on the project) calculated as a percentage of the total revenue.

3. Sales:

1. The budgeted increase in revenue derives partly from increased charge rates, partly from better staff utilization, and partly from an increased number of staff.
 2. All these factors are influenced by the forward sales position, that is by the staff required and the rates earned on the work to which the company is committed in the coming months.
- Two reports are used for assessing and monitoring the sales position.
1. The **confirmed sales report** shows, for each grade, the number of staff in that grade who are committed to contracts in each of the following twelve months and the total expected revenue from that grade in each month.
 2. The **sales prospects report** shows, for each sales prospect, the potential value of the sale, its likelihood, and the likely start date.

Long Term Planning:

1. Strategic Planning for the Future.
2. The ability to plan strategically and to achieve strategic objectives is the hallmark of well-run, successful companies.
3. Strategic planning in Syniad has two related aspects.
4. The first is to identify appropriate long-term goals.
5. There were seconds to identify and formulate plans to work under the problems of the inhibiting process.

Long Term Planning involves

1. Expansion Plans
2. Company Image

3. Product mix (Fee based revenue vs. Package Software)
4. Finance (under-capitalization)

INTRODUCTION TO ORGANIZATIONAL FINANCIAL PRACTICES:

- However good the quality of its products or services, no organization can be successful for any length of time unless its finances are soundly managed.
- Many young software engineers are attracted by the idea of starting their own company.

Need of capital (Capital is a broad term for anything that gives its owner value or advantage, like a factory and its equipment, intellectual property like patents):

1. A group of new or recent graduates in computing decide to set up their own company to provide software services and their intention is typically to offer contract hire services
2. A client is unlikely to pay an invoice within less than one month of receiving it. Some large companies are notorious for not paying invoices for as much as six or even twelve months.
3. There will be a need to have some money with which to start the venture.
4. The group needs enough cash in hand to be able to live for at least three months. Additional money will be needed for the expenses of starting the company.
5. For large projects or packages, a much larger sum of money is likely to be needed while they are being developed because there will be no revenue coming into the company.

For the starting period, cash will be needed for:

1. Salaries
2. rent rates, heating, and lighting of the premises used
3. equipment and consumables
4. costs of advertising and marketing the products

5. miscellaneous expenses, ranging from company stationery to traveling expenses

How does one set about raising this money?

The first step is to produce a **business plan**, It typically contains:

1. A description of what the company will be doing, together with information to show that it is technically feasible and that the founders of the company have the necessary expertise.
2. an assessment of the size of the market and the competition
3. a prediction of the financial performance of the company

Sources of Funds They can be grouped into:

1. Grants
2. Loans
3. Sale of Equity Grants

Grant:

1. A grant is a sum of money given to the company, while the company is obliged to demonstrate that it has been used for the purposes for which it was intended, it is not intended that the grant should ever be paid back to the organization which gave it.
2. The availability of grants and other help for new companies depends very much on where the company is located, how many people it expects to employ, and on government policy at the time.

LOANS:

1. A loan is a sum of money lent to the company; interest is payable on it, at a rate that may be fixed or variable, and the loan is usually for a fixed period.

2. The company is liable to pay back the loan and, if the company goes into liquidation, the lender is entitled to recover the loan from the sale of the assets of the company.
3. In most cases, security is required for the loan.

Equity capital:

1. Equity capital is money paid to the company in exchange for a share in the ownership of the company
2. Shareholders are at a much greater risk of getting a poor return on their capital or even losing it completely than lenders but, in compensation for this, they stand to make a greater profit than lenders if all goes well.

Budgeting & Monitoring:

1. A budget is a prediction of the future financial position of an organization covering, usually, the current or the next financial year
2. The ordinary manager in a company is, however, much more concerned with budgeting for income and expenditure
3. Budgeting is an iterative process
 - The first version of the budget is likely to show **expenditure exceeding** income since the operating managers will want to expand their operations, while the sales and marketing department will not wish to give hostages to fortune by being over-optimistic about the volume of sales it can generate. Adjustments will have to be made repeatedly until a situation is reached in which budgeted sales exceed budgeted expenditure with a reasonable profit margin; the **operational managers** are happy that they can service the predicted volume of sales with the budgeted staff levels: and the **salesmen** are confident that they can produce predicted sales.

Working Capital & Cash Flow:

1. A company can be consistently profitable and yet be unable to pay its bills
2. The value of work in progress
3. It is usual to negotiate stage payments rather than leave all payments until the work is completed.
4. Cash has therefore to be found to cover the gap between what a company has to pay out in cash and what it receives in cash working capital
5. A document "**cash flow prediction**" is the amount of cash expected to be received and disbursed in each of the next twelve months
6. The bank specifies the maximum that can be borrowed on an overdraft but interest is only payable on the amount actually owed.

Human Resource Management

Introduction

- It is a function in organizations designed to maximize employee performance in service of an employer's strategic objectives.
- Management of people, staff training, and development with a strategic approach suggest that human resource management is particularly appropriate for software work.

A Model of Human Resource Management

- A corresponding commitment to the organization is expected from employees. They are therefore independent in the sense of, to some degree, managing themselves.
- Human resource management is the responsibility of all managers
- Maximum utilization of human resources available to the enterprise.

1- Long Term Strategic and Proactive in Style

The problems associated with staff in an information technology environment require a disciplined approach to **establishing**

numbers of staff; the utilization of personnel; and the development and education of employees, together with the construction of comprehensive human resource management policies that are not only responsive to immediate needs but also are building blocks for the medium and long-term corporate requirements

2- Commitment to the Organization

- The real challenge is to shift employee attitudes from mere compliance with rules at work to commitment and self motivation
- This signifies a commitment to staff development as part of the **“learning organization”** and firm-specific skills that are less transferable between firms. Skills include attendance, flexibility, responsibility, discipline, identification with the company and, crucially work-rate.

3- Self Management

- Team working is a vital element
- Direct and regular face-to-face contact between managers and workers is emphasized. This builds trust and helps maintain motivation
- The trick is to reconcile motivating individuals with team building because it is teams, not individuals, who complete projects. Performance appraisal is central in **HRM** strategies.

4- unitary perspective

- The entire enterprise is regarded as equivalent to a team with one focus on loyalty and one focus on authority
- A crucial part of keeping effective workers content is a system where they can be promoted without having to become managers.
- At Microsoft, a talented software developer can stay just that and yet rise to the top tier of elite **"architects"**.

5- Maximum Utilization of Human Resources

- It's a difficult task, especially in the information technology environment.
- Management gets the impression that the project is going well and has no idea what's happening at the grassroots level. By the time they find out, it's too late.

6- Training and human resource management

- Despite universities establishing more IT and computing courses and applications rising strongly, the industry continues to generate more vacancies than capable recruits.
- Computing companies find that IT graduates often lack transferable or "people-handling" skills, such as communications, and a broader knowledge of how businesses work.

7- Health and Safety at Work

- Health and safety at work usually only hit the headlines when there is a major disaster
- In many high-risk areas, the safety systems themselves are often computer-controlled
- Around 200 employees each year still die as a result of accidents at work

8- Health and Safety act 1974

1. Premises, i.e. factory, office, etc.

(Employment is the only necessary criterion.)

2. Specific requirements

(General (and far-reaching) requirements)

3. No requirements on manufacturers or suppliers

(Creates comprehensive new duties for manufacturers and suppliers of articles and substances for use at work Health and Safety act 1974)

4. Regulations for specific industries and processes: rigorous but difficult to keep up to date in the face of rapidly changing

technology.

(Specific regulations but couched in general terms and supplemented by approved codes of practice that are more easily updated)

INTELLECTUAL PROPERTY RIGHTS

Introduction

Intellectual property rights are often the most valuable assets owned, used and developed by a software house.

Intellectual property rights include:-

- Confidential information
- Patents
- trade marks
- Designs
- Copyrights protecting computer programs
- They protect information stored by electronic means and all of the paperwork that accompanies a program, such as the user manual, plus any multimedia packages and most items on the Web.
- Great care should be taken to protect, exploit, and enforce intellectual property
- The name under which a product is sold may be registered as a **trademark**
- the hardware or a process used in its manufacture may be protected by a **patent**
- the look of the product may be registered in the Designs Registry
- software can be protected by **copyright**
- the know-how which goes into the development of the product may be protected as **confidential information**
- Unauthorized use of intellectual property can be stopped by injunction and damages may be sought for infringement of these rights
- The law is constantly changing with technological advances.
- General Agreement on Tariffs and Trade (GATT) concerned the protection of intellectual property rights in the face of widespread

piracy of software products

6 CONFIDENTIAL INFORMATION

- Information "which is not public property and public knowledge"
- Any category of information, from personal confidences, to trade secrets and sensitive government information, any or all of which a computer scientist might handle in the course of his or her work, or all or any of which a firm may want to protect against unauthorized use or disclosure by others.
- Information will be protected only if it is confidential. Nonconfidential information, unless protected, e.g. by copyright or a patent is deemed to be in the public domain and can be used by anyone.

Three conditions must be satisfied before an action for breach of confidence can succeed:

- 1- the information must be confidential
- 2- the information must have been disclosed in circumstances which gives rise to an obligation of confidence
- 3- there must be an actual or anticipated unauthorized use or disclosure of the information

8 PATENT

- A government authority conferring a right or title for a set period, especially the sole right to exclude others from making, using, or selling an invention.
- A patent gives an inventor a monopoly on an invention. This means that the inventor is given the exclusive right to use or exploit the invention for a defined period.
 - The monopoly granted by patent law is so strong, that the owner of a patent may even exclude independent inventors from the market
 - The better the patent and the more commercially desirable the breakthrough, the more likely it is to be challenged
 - For example, if competitors can produce a similar product or process, that is not covered by the patent, they will be free to market

it and to erode the commercial advantage of the patentee. If they can prove that the subject matter of the patent has been used or disclosed before, they can invalidate the patent.

- Patent Act merely sets out a number of criteria which must be satisfied before an invention can be patented

a patent may only be granted if:

- the invention is new
- it involves an inventive step
- it is capable of industrial application
- the subject matter of the invention does not fall within an excluded class
 - It is possible to patent something which is more than just a program something that can be called, for simplicity, a "program plus"
 - A computer program is not excluded from patentability if it produced, or is capable of producing, a further technical effect beyond the normal physical interaction between software and hardware, i.e. it is potentially patentable if it makes something else do something.

12 COPYRIGHT

- The exclusive legal right, given to an originator or an assignee to print, publish, perform material, and to authorize others to do the same
 - Copyright protects more items generated by businesses or by individuals than any other aspect of intellectual property law
 - It can protect business letters, manuals, diagrams, computer programs
 - Copyright owners face the specter of unlimited piracy through uncontrolled copying with the advent of the internet
 - What we will probably see over the next few years are stronger laws, more rights for copyright owners, widespread licensing schemes and greater use of technical anti-piracy or copymonitoring devices and electronic rights management systems

Copyright law gives six exclusive rights to the owner of copyright:

- copy the work
- issue copies to the public
- rent or lend the work to the public
- perform, play, or show the work in public
- broadcast the work or include it in a cable-programmed service
- adapt the work or to do any of the above with an adaptation
- The rights apply equally to published and unpublished works.

Acts permitted to copyright

Some acts are permitted under the 1988 Act, even though they would otherwise amount to breach of copyright.

- Fair dealing
- Making backup copies of computer programs
- Transfers of works in electronic form
- De-compilation for the purpose of interoperability
- Error correction
- Databases

Remedies for breach of Copyright

- A copyright owner has all the usual civil remedies of search, injunction, damages, and an action for an account of profits made in breach of copyright

- If it is shown that at the time of the infringement of copyright, the defendant did not know and had no reason to believe that copyright subsisted in the work, then the plaintiff is not entitled to damages against the defendant

- A copyright owner is also given an important power to enter premises without using force in order to seize infringing copies, or articles specifically designed or adapted for making copies

PLAGIARISM

the practice of taking someone else's work or ideas and passing them off as one's own.

All of the following are considered plagiarism:

- turning in someone else's work as your own

- copying words or ideas from someone else without giving credit
- failing to put a quotation in quotation marks
- giving incorrect information about the source of a quotation
- changing words but copying the sentence structure of a source without giving credit
- for a computer program changing variable names only, or not changing the structure or flow of a program

Computer Contracts

Introduction

An agreement between two or more parties for doing or not doing of something specified

Contracts serve the following purpose:

- Set out agreement between the parties
- Set out the aims of parties
- Provide for matter arising the contract is running
- Ways of terminating contract and the consequences
- If the contracts are harsh or unfair causing any issue between parties to be unresolved, it is responsibility of contract laws to contemplate to the rules.
- There are almost never disputes over contracts which run perfectly.

Example marriage.

Example of a ship carrying a cargo.

- In order to avoid disputes and future difficulties it is better to draft document which sets out:
 - The terms on which both parties are to work
 - Methods of payments
 - Appropriate ways to terminate the contract-notice required
 - The contract should be clear, concise, and consistent. There should be no puzzle and the parties to the agreement should be left in no doubt as to their rights and duties.
 - Puzzle and doubts can lead to performance which is viewed as unsatisfactory. This can lead to disagreement and the waste of time, effort, and therefore in money, resolving the matter.

Contract for the Supply of Custom-Built Software at a Fixed Price

- Software suppliers try to use what are known standard form contracts, which are used or intended to be used many times

- Such a contract might consist of:
 - A short introductory section
 - A set of standard terms and conditions
 - A set of appendices
- It states that it is an agreement between the parties whose names and registered addresses are given.

- It is dated and signed by authorized representatives of the parties.
- It often begins with a set of definitions of terms used in the course of the agreement, set out either in alphabetical order, like a dictionary, or in the order in which they appear in the rest of the contract -The Company, The Client

Other parts

- Terms and conditions
 - Appendices must include any document stated like SRS. This is to avoid, for example, the situation in which statements made by an obsessive salesman while trying to win the business are claimed by the client to constitute part of the contract.

Issues dealt with standard terms & Conditions

- What is to be produced?
- What is to be delivered?
- Ownership of rights
- Payment terms
 - Calculating payments for delays and changes
- Penalty clauses
- Obligations of the client

Issues dealt with standard terms & Conditions

- Standards and methods of working
- Progress meetings
- Project Managers
- Acceptance procedure

- Warranty and maintenance
- Termination of the contract

Other types of software services contract

• There are four types of contractual arrangements which are widely used in connection with the provision of software services:

- fixed price
- contract hire
- time and materials
- consultancy

Contract Hire

- The supplier agrees to provide the services of one or more staff to work for the client
- The staff works under the direction of the client
- The supplier's responsibility is limited to providing suitable competent people and replace them if they become unavailable or said unsuitable by the client
- Payment is based on a fixed rate for each man day worked
- Issues such as delayed payments, acceptance tests

Time and Materials

- It is somewhere between a contract hire agreement and a fixed price contract.
- The supplier agrees to undertake the development of the software in much the same way as in a fixed-price contract but payment is made based on the costs run up, with labor charged in the same way as for contract hire
- The supplier is not committed to completing the work for a fixed price, although a maximum payment may be fixed beyond which the project may be reviewed

Consultancy Contracts

- Consultants are typically used to evaluate some aspect of an organization and to make proposals for improvements.
- The end product of a consultancy project is therefore usually a report or other document.

- Consultancy projects are usually undertaken for a fixed price but the form of contract is very much simpler

Introduction to Software safety Liability and practice

- We will explore areas of legal liability and mechanisms for regulating potentially hazardous activities as well as the factors which should be taken into account for safety related applications
- Nowadays, computer-controlled systems are to be found in a wide range of diverse applications such as:-
 - Industry: Manufacturing systems, robots etc.
 - Medicine: Intensive care monitoring, radiotherapy etc.
 - Transport: Railway signaling systems, aircraft, space shuttle etc.
 - Military and defense applications

Regulatory Issues

• Standards:

Use of appropriate standards is both a familiar and traditional technique for regulating hazardous activities and attempting to ensure the safety of a product

• Certification and licensing:

Certification requires that either the product or the practitioner conforms to some specified standard whereas licensing means that the product cannot go on the market at all, or the practitioner operate, unless the product is licensed or the practitioner in possession of the requisite license

• Professional codes of practice:

Professional and trade associations should devise codes of practice to govern their members

• Regulation by law:

The law may exert a regulatory effect either directly or by requiring compliance with other forms of regulation such as standards and licensing because of fears of litigation if safety standards are breached

Legal Liability

• Introduction

System designers and software engineers may have legal responsibilities under laws such as the Health and Safety

• Product Liability and the Consumer Protection Act 1987

Product liability is the area of law in which **manufacturers, distributors, suppliers**, and retailers are held responsible for any injuries products cause. Regardless of any contractual limitations of liability, if a product or any of its component parts are defective its manufacturer may be liable for damage under the **Consumer Protection Act (CPA)** or the common law of negligence

• Negligence

The manufacturer or system designer has failed to take due care in the construction or design of the system, and this lack of care has resulted in failure leading to injury

Competence, training and experience

• Competence means "knowledge and the ability to apply that knowledge"

• There is an understood assumption that all those engaged in the design and development of safety system software are competent to perform the necessary tasks

• Factors such as training and relevant experience are also considered important traits for a competent software engineer

Factors affecting system safety

- Hazard analysis
- Requirements and specification
- System Reliability and safety
- Design
- Testing and debugging
- Safety integrity analysis and risk assessment
- Documentation

Moral, social and ethical issues associated with internet

Definition: “The Use of internet by individuals and organizations has raised a number of issues that need to be considered”.

- Setting up websites containing incorrect information. People may rely on and use this information thinking it is correct.
- Bullying via email, text message, chat
- Inappropriate websites with illicit material
- Using e-mail to give bad news when explaining face to face would have been better
- Spreading rumors using the Internet.

Moral Issues

- Plagiarism
- Sending spam. (People waste time deleting spam if the spam filter allows it through)
- Companies monitoring staff use of the internet and e-mail
- Using someone's wireless internet connection without permission
- Using photo editing software to distort reality.

Ethical Issues

- The Internet has a lot of illicit materials. The availability of offensive, illegal or unethical material on the Internet
 - Privacy issues
 - Gambling addiction
 - Addiction to computer games
 - Widens the gaps between the haves and have nots (e.g. between rich and poor countries and individuals)
 - Organizations moving call centers abroad. The same service can be provided cheaply using the internet and internet phone links
 - Growth of e-commerce may mean shops have to close, leaving some city centers looking desolate
- Social Issues** Many countries in the world that are not democratic; they do not allow the free passage of info to or from other countries. They control on what their people can and cannot view.

Advantages and disadvantages of internet

The internet has both positive and negative effects on the users.

Effects on communities

Advantages:

- Blogs & chats for communities to discuss local issues –
- Housebound members of the community are less isolated as people contact them to check everything is ok
- Employment opportunities

Disadvantages:

Lack of social interaction

social networking,

computer games etc.

Local shops shutting (more orders for goods are placed using the internet so local shops close).

Regulation and control of personal information: data protection, defamation and related issues introduction

Introduction:

- We can not deny the dramatic impact which increasing computerization has had on the storage, processing, retention and release of information and data.
- Computerization has revolutionized the handling and processing of information to such an extent that the data itself has now become a commodity which possesses commercial value and can be traded on the market in the same way as any other commodity
- The value to businesses is also enhanced by the fact that how easily and safely data can be transferred around the globe.

Data Protection and Privacy

- Data protection refers to how your personal information is used by the organization or being an organization, how you would make sure to protect data of your customers, employees **etc.**
- Privacy refers to the privilege provided to an individual by law or

by the organizational policy where the individual can keep the information secret to or from a specific group.

The impact of the Internet

- The original challenge of data protection law was to provide a suitable mechanism for dealing with the perceived threat to individual privacy of large centralized data banks
- The development of global information networks has changed and intensified the character of the privacy protection problem
- The question which is inevitably being asked is whether the original formulation of data protection law is capable of controlling the amorphous decentralized activities which occur through the medium of the Internet and World Wide Web.

Factors affecting the regulation of data processing

- There is by no means a straightforward answer to this question, complicated as the issues are by rapidly advancing technology, the global nature of the activities to be regulated and the variety of possible regulatory approaches to be found in the various legal traditions within the world
- Formidable problems of policy and implementation are presented by the attempt to regulate systems and practices that are technologically advanced, widely professional issues in software engineering dispersed, rapidly changing and employed by powerful economic and government interests.

Convergence of Data Protection Practices

- It is an observed fact that, at the level of international agreements and national legislation, the requirements imposed by this particular type of technology have resulted in a convergence of the rules made to ensure good data management.

Defamation and Protection of Reputation

- Even without the cover of anonymity, the various methods available for the dissemination of information on computer networks provide fertile ground for the propagation of information about others

- What redress is available for those who feel that untrue and unwarranted statements have been circulated about them
- Publication of such material might attract an action for defamation. Such actions are not uncommon against newspapers and other sections of the media
- Although there may be some differences of degree and substance, most jurisdictions provide some form of remedy for injury to a person's integrity or reputation

