**Lecture 1 & 2**

**. Types of Rights:**

* **Negative Rights:**
  1. **Definition:** Rights requiring others to refrain from interfering with your freedom.

○ **Example:**

■ **Right to Personal Security:** If someone attacks you on the street, they violate your negative right to be safe. Laws against assault protect this right.

■ **Right to Privacy:** If someone unauthorized accesses your personal emails, they violate your right to privacy.

* **Positive Rights:**
  1. **Definition:** Rights imposing a duty on others to assist or support the right-holder.

○ **Example:**

■ **Right to Education:** Society has a responsibility to provide access to education for all children. For instance, public schools must offer free education.

■ **Right to Healthcare:** If someone is seriously ill, hospitals have an obligation to provide medical care, which may be guaranteed by law in many countries.

1. **Legal vs. Moral Rights:**
   * **Legal Rights:**
     1. **Definition:** Rights codified in law, enforceable by penalties.

○ **Example:**

■ **Anti-Discrimination Laws:** If a company refuses to hire someone solely based on their gender, they can face legal action under employment discrimination laws.

* + **Moral Rights:**
    1. **Definition:** Rights based on societal norms, which may lack legal enforcement.

○ **Example:**

■ **Helping Others:** If you see an elderly person struggling to cross the street, the moral expectation is to assist them. While there's no law requiring you to help, not doing so could lead to social disapproval.

* **Moral status** leads to let you decide on the base of good or bad consciousness, religious training, manners etc. Although it does not involve penalty in violating such rights but a feeling of guilt is always there too follow.
* **Legal status** enforces your deeds on the grounds of defined law and has a penalty or punishment for those violating such rights or laws.

1. **Case Studies for Comparison:**
   * **Polluting the Environment:**
     1. **Moral Example:** If you see someone throwing trash on the ground, you might remind them not to litter because it harms local wildlife and ecosystems.

○ **Legal Example:** Many cities have laws that fine individuals $200 for littering, deterring pollution through legal penalties.

* + **Elderly Seats in a Bus:**
    1. **Moral Example:** When a bus is crowded, it’s a common expectation for younger passengers to offer their seats to elderly individuals for their comfort and safety.

○ **Legal Example:** In some cities, there are specific seats marked for the elderly, and failure to give up such a seat when requested can result in a $50 fine.

* **Password privacy in an organization**
  + **Moral status:** No one is supposed to share their password else their data can be tampered, stolen etc..
  + **Legal status:** If any one leaks his/her password he/she should pay a fine and suspended for a day.

1. **Employment Law Overview for IT Professionals:**
   * **Key Issues:**
     1. **Discrimination:** A software company cannot refuse to hire a qualified candidate simply because of their age, as it violates equal opportunity laws.

○ **Data Privacy:** IT professionals must ensure that client data is kept secure, as breaches can lead to legal consequences under data protection laws.

○ **Intellectual Property Rights:** If a developer creates a unique application while employed, the company may own the rights to that application, depending on the employment contract.

○ **Whistleblower Protections:** If an IT worker reports unethical data practices within their company, they are protected from retaliation, such as wrongful termination.

1. **If Your Rights Are Violated:**
   * **Document the violation:** Keep detailed records, like emails or messages, showing what happened and any relevant dates.
   * **Review contracts and policies:** Check your employment agreement for clauses on discrimination or harassment.
   * **Report internally:** Bring the issue to your manager or HR, providing them with the evidence you've collected.
   * **Seek legal counsel or file a complaint:** If the issue isn't resolved internally, consider talking to a lawyer or filing a complaint with a labor board or equal opportunity agency.

**Lecture 3 & 4**

**Profession vs. Occupation:**

1. **Definitions:**
   * **Profession:**
     1. Involves specialized knowledge, extensive training, and adherence to a code of ethics.

○ **Example:** Doctors and lawyers require years of education, training, and must follow strict ethical guidelines in their practice.

* + **Occupation:**
    1. Requires fewer qualifications and does not typically involve specialized knowledge.

○ **Example:** A cashier or retail associate may not need formal education or specialized training to perform their job.

1. **Key Differences:**
   * **Autonomy:**
     1. **Professionals** often work independently and have the freedom to make decisions (e.g., a surgeon deciding on the best approach for an operation).

○ **Occupations** generally involve more supervision and less independence (e.g., an assembly line worker follows strict instructions).

* + **Responsibility:**
    1. Professionals carry significant responsibility for their work’s outcome (e.g., lawyers ensuring fair representation).

○ Occupations may have less personal accountability (e.g., a data entry clerk’s errors may be corrected by a supervisor).

* + **Ethical Codes:**
    1. Professionals adhere to established ethical guidelines (e.g., a teacher following a code of conduct regarding student interactions).

○ Occupations may not have formal ethical codes, relying instead on general workplace policies.

1. **Characteristics of a Profession:**
   * **Esoteric Knowledge:**
     1. Professionals master a specialized body of knowledge.

○ **Example:** Engineers must understand complex principles of physics and mathematics to design safe structures.

* + **Autonomy:**
    1. Professionals set their own standards of practice.

○ **Example:** An architect has the freedom to choose design elements based on client needs and safety regulations.

* + **Formal Organization:**
    1. Many professions are regulated by organizations controlling standards and licensing.

○ **Example:** The American Medical Association regulates doctors and sets standards for medical practice.

* + **Code of Ethics:**
    1. Professionals follow ethical guidelines and often take formal oaths.

○ **Example:** Nurses take an oath to prioritize patient welfare and confidentiality.

* + **Social Function:**
    1. Professions contribute significantly to society.

○ **Example:** Lawyers advocate for justice, while teachers educate the next generation.

1. **Professional Bodies:**
   * **Definition:** Organizations that regulate professions, set codes of conduct, and oversee disciplinary actions.
   * **Functions:**
     1. Set educational standards for entry into the profession (e.g., the Bar Association for lawyers).

○ Provide guidance to governments on regulatory issues.

1. **Reservation of Title and Function:**

An example where both reservation of title and reservation of function apply is veterinary surgery. Under the Veterinary Surgeons Act 1966, you are not allowed to call yourself a veterinary surgeon unless you are registered with the Royal College of Veterinary Surgeons (RCVS); in order to be registered, you must have the proper qualifications. And, subject to certain limitations, it is a criminal offence to carry out surgical procedures on animals unless you are registered with the RCVS

* + **Reservation of Title:**
    1. Only qualified individuals can use specific professional titles.

○ **Example:** Only licensed doctors can call themselves "physicians." ● **Reservation of Function:**

○ Certain activities are restricted to those with appropriate qualifications.

○ **Example:** Only licensed architects can sign off on building plans.

1. **Is Computing a Profession?**
   * **Mastery of Knowledge:**
     1. Computing professionals possess specialized skills, though the field is diverse.

○ **Example:** A cybersecurity expert has in-depth knowledge of network security protocols.

* + **Autonomy:**
    1. Autonomy varies by role; there is no single governing body for all computing professionals.

○ **Example:** A freelance software developer has significant independence compared to a developer working in a corporate environment.

* + **Social Contribution:**
    1. Computing professionals support various societal functions.

○ **Example:** Programmers develop software that enhances communication and efficiency in businesses.

1. **Software Engineering:**
   * Recognized as a distinct professional field within computing, requiring unique qualifications and standards.
   * **Example:** In Texas, software engineers can obtain licenses, similar to traditional engineers.
2. **Engineering and Software Development:**
   * Software development shares traits with traditional engineering, including design constraints like functionality, performance, and budget.
   * **Example:** A software engineer must ensure that an application meets user requirements while remaining within budget and timeline constraints.
   * In some countries, the title of "engineer" and related tasks are legally restricted to those with specific qualifications (e.g., licensed civil engineers must oversee construction projects).

# Lecture 5

## Washington Accord and Related Agreements

* **Washington Accord (1989)**:
  1. **Purpose**: Ensures that engineering qualifications (typically 4-year programs) in signatory countries are substantially equivalent.

○ **Significance**: Graduates from accredited programs in one country are recognized as professionals in other member countries, enhancing mobility.

* **Sydney Accord (2001)**:
  1. **Scope**: Focuses on recognizing engineering technology qualifications, typically 3-year programs.

○ **Relevance**: While not as high-level as the Washington Accord, it ensures that technologists can work internationally.

* **Dublin Accord (2002)**:
  1. **Focus**: Deals with technician engineering programs, usually of 2-year duration.

○ **Implication**: Encourages mutual recognition of technician qualifications, promoting skilled labor mobility.

## Professional Bodies in Computing

* **1946 - IEEE (Institute of Electrical and Electronic Engineers)**:
  1. One of the oldest and largest professional organizations.

○ **IEEE-CS (Computer Society)** is a key part of the IEEE, providing resources like conferences, publications, and certifications for computing professionals.

* **1947 - ACM (Association for Computing Machinery)**:
  1. Pioneered the creation of influential conferences, journals, and resources like the ACM Digital Library.

○ Strong focus on advancing computing as a science and profession.

* **1957 - BCS (British Computer Society)**:
  1. Started as a standard professional body in the UK.

○ Became the **Chartered Institute of IT** in 2009, focusing on promoting high professional standards, education, and networking for IT professionals globally.

* **Other notable bodies**:
  1. **IEE (Institution of Electrical Engineers, 1871)**: With over 130,000 members, focuses on electrical engineering but has significant overlap with computing disciplines.

○ **Computer Society of India (1965)**: Played a major role in the growth of IT professionals in India.

○ **German Informatics Society (1969)**: Focuses on promoting computer science and technology innovation in Germany.

## Code of Conduct (BCS)

**Key Sections:**

1. **The Public Interest**:
   1. IT professionals should prioritize public health, safety, and privacy.

○ They should avoid bias and promote **equal access** to IT for all, helping bridge the digital divide.

○ Emphasis on ensuring the **security and wellbeing** of systems used by the public.

1. **Duty to the Relevant Authority**:
   1. **Confidentiality**: Don’t disclose private or sensitive information without proper consent.

○ **Conflicts of interest**: Avoid personal or financial conflicts that might compromise professional judgment.

○ Example: When working on a project for a client, IT professionals must not misuse their knowledge for personal gain.

1. **Duty to the Profession**:
   1. **Professional standards**: Act in ways that reflect positively on the IT profession.

○ **Support**: Engage in activities that promote the profession, such as mentoring, sharing knowledge, or participating in professional development initiatives.

1. **Professional Competence and Integrity**:
   1. **Competence**: Only undertake tasks for which you are properly qualified.

○ **Continuous learning**: Keep updating your knowledge, especially in a fast-evolving field like IT.

○ **Ethical integrity**: Reject bribery, and avoid making misleading or exaggerated claims about your qualifications or capabilities.

○ Example: Professionals must respect intellectual property laws and avoid actions like plagiarism.

**Lecture 6**

## BCS and Education

* **Professional Examinations**:
  1. Introduced in **1973** to recognize professional skills, with three stages: **Certificate, Diploma, and Professional Graduate Diploma**.
* **Accreditation and Exemption**:
  1. Accredited courses meet educational requirements, and may qualify students for exemptions from higher education qualifications.

○ Students on accredited courses can achieve professional membership after relevant experience and training.

* **Short Courses**:
  1. BCS offers a wide range of qualifications through short courses tailored for industry professionals.

## Continuing Professional Development (CPD)

* **Definition**: CPD is the systematic maintenance and improvement of knowledge and skills throughout a professional’s career.
* **BCS Services**:

○ Provides CPD services to individual members and industries, such as **career development** and keeping members updated on the latest in computing.

## Advancement of Knowledge

● **The Computer Journal**:

○ First published in **1958**, it’s a significant publication in computing, with six issues annually, showcasing cutting-edge research.

## BCS Membership Grades

* **Affiliate**: Open to anyone with an interest in computing.
* **Companion**: For members of other professional bodies with at least 5 years of IT experience.
* **Student**: For individuals pursuing IT qualifications.
* **Associate**: For those with less than 5 years of experience or holding non-accredited degrees.
* **Membership (Professional Grade)**: Requires a BCS Professional Graduate Diploma, an honors degree, or 5 years of IT experience.
* **Fellow (Senior Grade)**: For IT professionals with at least 5 years of senior experience in the field.
* **Chartered Professional Grades**: Members or Fellows holding the BCS Professional Graduate Diploma and relevant professional experience can apply for this esteemed status.

# Lecture 7

**What is an Organization?**

* **Definition**: A group of people working together in a formal way with legal existence.
* **Examples**:

○ **Schools and Colleges**: Teachers, administration, and support staff work together.

○ **Hospitals**: Doctors, nurses, and staff collaborate to provide healthcare services.

○ **Banks**: Financial advisors, managers, and tellers organize to manage financial services.

○ **Private Company**: E.g., a local bakery run by one or more individuals.

○ **Government Department**: E.g., the postal service where employees provide public services.

* **Key Concept**: Organizations operate with a formal structure, which separates them from informal groups. Even a jail can be seen as an organization where officers and administrators have specific roles.

**Extra Thought:**

* A sports team could be considered an organization if formally registered (e.g., a football club).

## Commercial Organizations

* **Definition**: Groups formed with the purpose of making a profit by pooling skills and resources.
* **Examples**:

○ **Apple Inc.**: Technology company driven by profit.

○ **Starbucks**: A commercial coffee chain where various individuals work toward profit goals.

## Sole Trader

* **Definition**: An unincorporated business owned and managed by one person.
* **Examples**:
  1. **Local freelance designer**: They manage projects, clients, and profits alone.

○ **Independent shopkeeper**: Runs a small retail store without any formal partners.

* **Advantages**:
  1. Full control and simple to set up.

○ Flexibility in decision-making.

* **Disadvantages**:
  1. **Unlimited Liability**: Personal assets like a family home are at risk if debts are incurred.

○ **Example**: If a freelance web designer is sued by a client for breach of contract, their personal savings could be used to cover legal damages.

**Extra Tip:**

* For sole traders, keep in mind that they often operate small businesses that rely heavily on personal effort.

## Partnership

* **Definition**: A business owned by two or more individuals with shared responsibility.
* **Examples**:
  1. **Law firms**: Many operate as partnerships, with several lawyers sharing ownership and profits.

○ **Medical practices**: Some private clinics are run by doctors who form a partnership.

* **Key Issue**: Partners share liability and profits.
  1. **Example**: Two accountants form a partnership to handle clients' finances. They both contribute, but if one partner mishandles a client's account, both are legally responsible.

**Real-life Example:**

* **Ben & Jerry's** started as a partnership between Ben Cohen and Jerry Greenfield before growing into a major corporation.

## Cooperatives

* **Definition**: A member-owned business with at least five shareholders where all members have equal voting rights.
* **Examples**:
  1. **Agricultural cooperatives**: Farmers pool their resources to buy equipment and sell products (e.g., dairy cooperatives like **Amul** in India).

○ **Credit unions**: Member-owned financial cooperatives providing banking services.

* **Advantages**:
  1. Equal say in decision-making regardless of investment.

○ Limited responsibility for debts unless reckless.

* **Disadvantages**:
  1. Hard to attract members focused solely on financial gain.

○ **Example**: A food cooperative where members manage the store together. Even if one member invests more time or money, they still get only one vote, which might discourage some investors.

**Extra Tip:**

* Cooperatives are especially popular in rural or underdeveloped areas where community support is essential.

## Limited Companies

* **Definition**: A separate legal entity owned by shareholders.
* **Examples**:
  1. **Private Limited Company**: A small business like a family-owned construction firm.

○ **Public Limited Company (PLC)**: Large corporations like **Coca-Cola** or **BP**, which issue shares to the public.

* **Key Concepts**:
  1. **Corporate Identity**: The company is treated as its own "person" under the law.

○ **Limited Liability**: Shareholders can only lose what they’ve invested.

○ **Example**: If a PLC goes bankrupt, the shareholders’ personal wealth remains protected, except for their shareholding.

**Memorandum of Association:**

* Lists details like the company's name, registered office, objectives, and share structure.
* **Example**: If a startup registers as a limited company, it needs a memorandum outlining its goals (e.g., developing a new app).

**Directors:**

* Have a duty to act in the best interest of the company and shareholders.
* **Example**: A director in a software company might be held accountable if they purchase equipment unsuitable for the company’s needs.

## Non-Commercial Bodies

* **Definition**: Organizations that operate without the goal of profit, usually focusing on charitable, educational, or social goals.
* **Examples**:
  1. **Red Cross**: A global humanitarian organization.

○ **UNICEF**: Focuses on children's welfare.

○ **Community centers**: Often run as non-commercial entities to support local activities.

* **Key Points**:
  1. Staff typically work for low pay or as volunteers.

○ The primary focus is on service rather than revenue generation.

## Setting Up a Company

* **Steps**:
  1. Agree on a business goal.
  2. Register the company legally (involve lawyers and accountants if needed).
  3. Optionally buy an "off-the-shelf" company.
* **Example**: A group of friends who want to start a digital marketing agency would first decide on financial contributions, register the business as a limited company, and start operations.

## Paying Taxes

* **Sole Traders**: Pay taxes on all profits reported in personal tax returns.
  1. **Example**: A freelance photographer declares both income and business expenses when filing their taxes.
* **Partners**: Report their share of the partnership’s income on personal tax returns.
  1. **Example**: Two restaurant owners split the profits and report them individually to tax authorities.

**Final Tips for Open-Book Exam:**

1. **Use Real-life Examples**: Having practical examples at hand can help clarify key points during the exam.
2. **Compare Business Types**: Know the pros and cons of sole traders, partnerships, and limited companies.
3. **Memorandum Details**: Familiarize yourself with the memorandum of association in the context of limited companies.

# Lecture 8

## Introduction

● New IT graduates often aim to set up their own companies, rather than working for others. This lecture focuses on the steps and challenges involved in starting a business.

## Why Capital is Needed

* **Capital** is essential for purchasing equipment, paying for staff salaries, and other operational costs while building products or services.
* Expenses include:

○ **Salaries** for founders and staff.

○ **Rent, utilities, advertising, and marketing**.

○ **Miscellaneous expenses**, including travel and stationery.

## The Business Plan

* A **business plan** is crucial to securing funding. It outlines the business idea, market potential, competition, and financial projections.
* **Contents of a Business Plan**:

○ Description of the business and its technical feasibility.

○ Market size, competition analysis.

○ Financial projections, including budgets and profit/loss accounts.

## Sources of Finance

* **Bootstrapping**: Using personal savings or funds from friends/family.
* **Angel Investors**: Wealthy individuals investing in early-stage startups.
* **Venture Capital**: Firms that invest in high-growth potential startups.
* **Crowdfunding**: Raising funds from a large number of people online.
* **Grants**: Financial assistance from government or non-profits that don’t need to be repaid.
* **Loans**: Borrowing money that must be repaid with interest.

## Types of Finance

1. **Grants**:
   1. Given by governments or charities, intended for capital investments.

○ Don’t need repayment but come with strict usage conditions.

1. **Loans**:
   1. Money borrowed with a fixed interest rate and repayment schedule.

○ Lenders can claim company assets if loans aren’t repaid.

1. **Equity Capital**:
   1. Money in exchange for ownership shares in the company.

○ Provided by **business angels** or **venture capitalists**.

## Gearing (Leverage)

* **Gearing** refers to the relationship between loan capital and equity capital.
* **Lenders** are at less risk compared to **shareholders**, who may lose their investment but can gain significantly if the business succeeds.

## Key Takeaways for Startups

* **Planning**: Developing a robust business plan is crucial for attracting investors and ensuring realistic goals.
* **Financing**: Understanding different sources of capital—loans, grants, and equity—helps founders make informed decisions on funding their ventures.
* **Gearing**: Managing the balance between equity and debt is essential for sustainable growth.

## Lecture 9

### Financial Accounting Overview

● **Key Components of the Annual Report**:

1. **Balance Sheet** – Shows what the company owns (assets) and what it owes

(liabilities).

1. **Profit and Loss Account** – Displays the money received and spent over a given period (usually one financial year).
2. **Cash Flow Statement** – Demonstrates the movement of cash in and out of the company, linking the balance sheet and profit and loss account.

Together, these financial statements provide a complete picture of the business's financial health.

### Annual Report

* **Purpose**: Provides details about the company’s activities and financial performance during the preceding year.
* **Example**: In the UK, companies are required to submit this report to Companies House, while in Pakistan, it must be filed with the **SECP (Securities and Exchange Commission of Pakistan)**.

**Extra Tip:**

* Annual reports are a way for stakeholders to assess how well a company is performing and where improvements might be needed.

### Balance Sheet

* **Definition**: A snapshot of the company’s financial position at a specific moment, detailing assets (what the company owns) and liabilities (what it owes).
* **Key Components**:

○ **Current Assets**: These are short-term assets expected to be converted into cash within a year.

■ **Examples**: Cash, marketable securities, accounts receivable, inventory, prepaid expenses.

○ **Fixed Assets**: Long-term assets used in the company’s production process that last more than a year.

■ **Examples**: Vehicles, office furniture, machinery, buildings, land.

**Tangible vs. Intangible Assets:**

* **Tangible Assets**: Physical items (e.g., buildings, equipment).
* **Intangible Assets**: Non-physical assets that hold monetary value (e.g., patents, copyrights, brand names).

**Extra Clarification:**

* **Tangible Assets Example**: A company owning trucks for delivery.
* **Intangible Assets Example**: A software company holds copyrights to its products, which have value but aren't physically touchable.

### Liabilities

* **Current Liabilities**: Short-term debts expected to be settled within a year.
* **Non-Current Liabilities**: Long-term debts, lasting over a year.
* **Example**: A loan taken by a company due in five years would be a non-current liability, while monthly supplier payments are current liabilities.

**Stockholders' Equity:**

* **Definition:** Represents the capital that investors have contributed in exchange for stock, as well as retained earnings.
* **Formula:**

○ **Basic Formula:**

Stockholders’ Equity=Total Assets−Total Liabilities ○ **Alternative Formula:**

Stockholders’ Equity=Share Capital+Retained Earnings−Treasury Shares

### Profit and Loss Account

* **Definition**: Shows the company’s revenues and expenses over a specific period, leading to either profit or loss.
* **For Non-Profit Organizations**: It is referred to as an **Income and Expenditure Account**.
* **Turnover**: Refers to the volume or value of shares traded on a stock exchange during a set period (e.g., day, month, or year).

**Example:**

* A company selling goods will report its total sales as **revenue** and subtract costs (e.g., manufacturing, salaries) to arrive at the **net profit**.

### Cash Flow Statement

* **Purpose**: Tracks where the money is coming from (sources) and where it’s going

(destinations).

* **Explanation**: Much like how parents track children’s spending to understand cash flow, companies track their money through this statement. It ensures that the business has enough cash to meet obligations like paying salaries, bills, and debts.

**Relationship Between Financial Statements:**

* The balance sheet, profit and loss account, and cash flow statement should be understood together for a holistic view of the company’s financial condition.

**Key Questions:**

1. **Difference Between Current and Non-Current Assets?**

○ **Current Assets**: Converted to cash within a year (e.g., cash, inventory).

○ **Non-Current Assets**: Last more than a year (e.g., machinery, buildings).

1. **Where Can You Find Non-Current Assets?**

○ Non-current assets are found on the **balance sheet** under fixed assets.

1. **Where Does a Company Report Long-Term Debt?**
   1. Long-term debt is reported on the **balance sheet** under **non-current liabilities**.
2. **What Are Common Non-Current Assets?**
   1. **Examples**: Buildings, land, machinery, patents.