1. Copyrights

- **What they are:** Legal protection for the **expression of ideas**, like writing, software code, music, and artwork.
- **When they apply:** Automatically apply when an **original work is fixed in a tangible medium** (e.g., printed, recorded, stored).
- **Control Measures:** Use **© symbol**, register with the **Copyright Office**, and follow **fair use** rules for limited copying (e.g., for teaching or backups).

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2. Patents

- **What they are:** Protection for **new and useful inventions**, including processes, machines, or software techniques.
- **When they apply:** When an invention is **novel, non-obvious, and useful** and has gone through a **formal patent application process**.
- **Control Measures:** File with the **Patent Office**, clearly describe the invention, and **defend against all infringements** to maintain the patent.

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3. Trade Secrets

- **What they are:** Confidential business information (e.g., formulas, algorithms) that gives a **competitive advantage**.
- **When they apply:** Only if the information is **kept secret** (e.g., not disclosed, well-protected).
- **Control Measures:** Use **NDAs**, access control, **encryption**, and avoid distribution or reverse engineering.

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4. Special Cases

- **Computer Source/Object Code:** Can be protected by **copyright (for expression)** or **patent (for novel algorithms)**.
- **Web Content:** Protected under **copyright** (text, images, scripts).
- **Domain Names/URLs:** Protected by **trademarks**.
- **Challenge:** Copyright may protect code structure but not the **underlying idea/algorithm**.

Comparison Table

Feature	Copyright	Patent	Trade Secret
Protects	Expression of ideas	Inventions, processes	Confidential business information
Applies To	Code, music, art, literature	Machines, software algorithms, designs	Formulas, strategies, algorithms
Requirement	Original and tangible	Novel, non-obvious, and useful	Must be kept secret
Registration	Optional but recommended	Mandatory (through Patent Office)	No registration; protection via secrecy
Duration	Life of author + 70 years (in the US)	20 years from filing (usually)	As long as it remains secret
Protection Scope	Against copying of expression	Against use, even if independently made	Against unauthorized disclosure or theft
Risk of Expiry	Yes, after duration ends	Yes, fixed duration	Yes, if disclosed or reverse-engineered
Cost	Low (filing fee)	High (legal & filing costs)	Variable (depends on protection measures)

Module 5.2

1. **Laws vs Ethics:**
    - **Laws** are formal rules enforced by governments.
    - **Ethics** are personal or societal principles about right and wrong.
2. **Nature of Ethics:**
    - Ethics are **not universal**, vary by culture, background, and experience.
    - Ethics are **subjective** and **not enforceable** by legal systems.
    - Ethical reasoning helps decide what's right when laws are silent.
3. **Ethical Reasoning:**
   Steps for making ethical choices:
    - Understand the situation.
    - Know ethical theories.
    - List relevant principles.
    - Weigh which principles matter most.
    - Make and justify a decision.
4. **Ethical Theories:**
    - **Teleological (Consequence-Based):**
        - **Egoism:** Best for self.
        - **Utilitarianism:** Best for the greatest number.
    - **Deontological (Rule-Based):**
        - Some actions are inherently right or wrong.
        - Duties like **justice, honesty, beneficence**, etc.

5. **Applications in Computer Security:**
    - Decisions like disclosing a vulnerability, writing bad code, or protecting user data are **ethical dilemmas**.
    - Laws may not be clear or strict enough, so **ethical frameworks** help guide professionals.

Comparison: Law vs Ethics

Feature	Law	Ethics
Definition	Set of enforceable rules by a government	Personal or societal moral principles
Origin	Created by legislators	Derived from culture, religion, upbringing, experience
Applicability	Applies uniformly to all citizens	Varies from person to person
Enforcement	Enforced by courts and legal authorities	No formal enforcement; based on self-discipline
Resolution of Conflicts	Legal system determines precedence	Individuals decide based on values and judgment
Objective	Maintain social order and justice	Promote moral behavior and integrity
Flexibility	May be rigid or outdated	Flexible and adaptable to context
Example	Anti-hacking law, copyright law	Deciding not to exploit a discovered bug ethically

Law	Ethics
Described by formal, written documents	Described by unwritten principles
Interpreted by courts	Interpreted by each individual
Established by legislatures representing all people	Presented by philosophers, religions, professional groups
Applied to everyone	Chosen personally
Priority determined by courts if two laws conflict	Priority determined by an individual if two principles conflict
"Right" arbitrated finally by court	Not arbitrated externally
Enforced by police and courts	Enforced by intangibles such as principles and beliefs

Rights of Employees and Employers

- Ownership of a patent
  - An employer has the right to patent if the employee's job functions included inventing the product. Even if an employee patents something, the employer can argue for a right to use the invention if the employer contributed some resources
- Ownership of a copyright
  - Similar to patent
- Licenses
  - In return for a fee, a programmer grants a company a license to use her program. The license can include many factors, such as time period, number of users, number of systems, and so on
- Trade secret protection
  - A company owns the trade secrets of its business-confidential data. As with copyrights and patents, an employer can argue about having contributed to the development of trade secrets