**COMPUTER CRIMES**Keeping IT systems safe is very important.

### **Why We Need Security:**

* Protect secret business information.
* Keep customer and employee data private.
* Stop hackers from stealing or causing problems.
* Balance security with other business needs.

The number of IT security problems is growing fast worldwide.

**Why Computer Problems Are So Common**

### **Main Reasons:**

1. **Complex Systems**: Computers are getting more complicated, with many parts that can break down.
2. **Many Entry Points**: With cloud computing and new tools, there are more ways for hackers to get in.
3. **Human Errors**: People make mistakes, like forgetting to check IDs or sharing weak passwords.
4. **Changing Systems**: Computers are connected to big networks, making it easy to share data but also risky.
5. **Software Issues**: Many programs have known flaws that hackers can use to attack, and fixing them takes time.
6. **Zero-Day Attacks**: Hackers can attack before a problem is even noticed or fixed.

Companies often depend on software with known issues, increasing the chance of incidents.

### **Types of Exploits**

Computers and smartphones often face different types of cyberattacks. Here’s a simple explanation of the most common ones:

#### **1. Viruses**

A virus is a harmful program that can damage your computer. It might look like a normal file or program, but when you open it, it can cause problems like deleting files or making your computer slower. Viruses spread when you open infected email attachments, download unsafe programs, or visit dangerous websites.

#### **2. Worms**

Worms are harmful software programs that live in a computer's memory. They are designed to spread themselves across networks without needing any action from users.

### **How Worms Spread**

* **Networks**: They move from one device to another by exploiting weak security settings.
* **Emails**: They can attach themselves to emails and infect devices when the email is opened.
* **File Sharing**: Downloading infected files from untrusted sources can spread worms.
* **USB Drives**: Worms can copy themselves to USB devices and spread when plugged into another computer.

#### **3. Trojan Horses**

Imagine someone knocks on your door holding a beautifully wrapped gift. It looks amazing, so you let them in, thinking they’re bringing something nice. But instead of a gift, they secretly let thieves into your house who start stealing your valuables.

A **Trojan Horse** works the same way in the digital world. It looks like a safe file, app, or game, so you download or open it. But hidden inside is harmful software that:

* Steals your data (like passwords or bank info).
* Gives hackers control of your computer.
* Installs more harmful programs.

**Trojan Horses** are harmful programs that look like safe or useful software, but they are created to cause damage or steal information.

Hackers fool people into downloading and running them by making them look harmless.

### **How Trojans Spread:**

1. **Email Attachments**: They might hide in files sent by email.
2. **Unsafe Downloads**: They can come from untrustworthy websites.
3. **USB Drives or Pirated Software**: They can be on infected USB drives or illegal copies of software.

### **Logic Bombs:**

These are special Trojans that stay hidden until something specific happens, like a certain date or a particular action. Then, they activate and cause harm.

Trojans are sneaky because they rely on tricking people into opening them

#### **4. Distributed Denial-of-Service (DDoS) Attacks**

In a DDoS attack (Distributed Denial of Service), a hacker takes control of many computers, called zombies. These computers form a group called a botnet. The botnet sends a lot of requests to a website or server at once, overwhelming it. This makes the website or server too busy to work for normal users. The hacker doesn't directly break into the system but causes it to be unavailable to others during the attack

#### **5. Rootkits**

* A rootkit is a type of software that gives a hacker full control of a computer or system. It works secretly and hides from the system to avoid detection. With a rootkit, hackers can access files, install other malicious software, and hide their actions. Some signs that a system might have a rootkit infection include slow performance, disappearing taskbars, changes to screensaver without the user doing it, and system crashes or freezes.

#### **6. Spam**

Spam refers to unwanted emails that are sent to many people at once, often to advertise suspicious products or scams. **The CAN-SPAM Act** allows spam emails as long as they follow certain rules, such as giving people the option to unsubscribe. **To fight spam, tools like CAPTCHA** are used, which are small tests to make sure the user is a real person and not a computer program (bot).

#### **7. Phishing**

* Phishing involves sending fake emails to trick users into sharing sensitive information, like passwords or credit card numbers.
* The emails often look official and lead users to counterfeit websites.
* Types of phishing:
  + **Spear-phishing**: Targets specific people or employees of an organization.
  + **Smishing**: Phishing done via text messages.
  + **Vishing**: Phishing done via voice messages or phone calls.

Each of these attacks can cause serious harm. To stay safe, always verify the source of files, emails, and links before interacting with them, and keep your software updated with the latest security patches.

**Perpetrators** are people who do harmful or illegal things, especially in IT security. They are the ones behind cyberattacks, hacking, or other bad actions. They harm systems, steal data, or cause problems for services. Examples of **perpetrators** include **hackers** who break into systems, **cybercriminals** who steal personal or financial data, **malicious insiders** who abuse their access, and **terrorists** who use technology to cause destruction. In simple terms, **perpetrators** are the "bad actors" behind harmful activities.

**TYPES OF PERPETRATORS**

**Hackers**:  
Hackers are people who test how far a system can go, often out of curiosity or to learn. There are different types of hackers:

* **Talented Hackers**: Skilled people who understand technology well.
* **Script Kiddies**: People who use tools made by others without much skill or understanding.

**Crackers**:  
Crackers are hackers who do illegal things on purpose. They cause harm, like breaking into systems or stealing information.

**Malicious Insiders**:  
These are people inside an organization (like workers or contractors) who misuse their access. Some may work with outsiders to commit fraud. Even careless workers can accidentally cause harm.

**Cybercriminals**:  
Cybercriminals steal data or commit fraud by attacking company computers. They cause financial losses and damage trust.

**Hacktivists**:  
Hacktivists are hackers who do it for political or social reasons. They hack to spread messages or support a cause.

**Cyberterrorists**:  
Cyberterrorists attack systems to hurt governments or organizations. They aim to destroy, not just spread messages

**Time Management**

**Time Management: Why It Matters**

Time management is the skill of organizing and planning how to divide your time between activities. Here’s why it’s important:

### **Why Time Management is Important**

* Poor time management can lead to **stress** and overwhelm.
* Many people feel they face a “time famine,” always short of time for tasks.
* Managing your time well helps you achieve success, not the other way around.

### **The Problem of Wasting Time**

People waste up to **2 hours daily**. Signs of poor time management include:

* A messy desk or unorganized files.
* Frequently losing items or documents.
* Missing appointments or being unprepared for meetings.
* Taking on tasks that others should handle.
* Feeling tired and struggling to focus.

### **Key Advice**

To succeed, focus on managing time effectively. Success comes from good habits, not luck.

### **Set Goals and Priorities**

When starting a task, ask yourself:

1. **Why am I doing this?** (Purpose)
2. **What is the goal?** (Outcome)
3. **Why will I succeed?** (Confidence)
4. **What happens if I don’t do it?** (Consequences)

Clear priorities and thoughtful planning are essential for making the best use of your time.

### **The 80/20 Rule**

The **80/20 Rule** (also called the Pareto Principle) says you should focus on the most important tasks that give the biggest results, instead of wasting time on less important ones.

Trust yourself and believe in the choices you make.

Wisdom comes from learning over time—both from things that go well and from mistakes.

* Good decisions come from experience.
* Experience often comes from making mistakes and learning from them.
* **80% of the results (output)** come from **20% of the efforts (input)**.
* Focus on the small number of tasks or activities (20%) that give you the biggest results (80%).

For example:

* In work: 20% of your tasks produce 80% of your success.
* In learning: 20% of study topics cover 80% of the exam.

It’s about **working smarter**, not harder, by identifying and prioritizing the most impactful actions.

### **Inspiration**

* “If you can dream it, you can do it.” – **Walt Disney**
* Example: Disneyland was built in just **366 days**, showing the power of vision and determination.

### **Planning**

* “Failing to plan is planning to fail.”
* **Plan regularly**:
  + Each day, week, and semester.
* Plans can be adjusted, but you need one to guide you in the first place.

Planning helps you stay focused, use time wisely, and achieve your goals!

### **To-Do Lists**

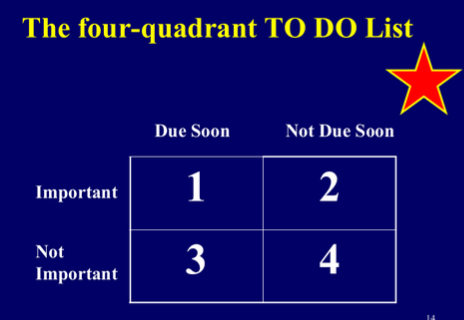
1. **Break tasks into small steps**:
   * Tackle big tasks by dividing them into manageable parts, just like a child cleans a messy room step by step.
2. **Do the ugliest thing first**:
   * Start with the most difficult or unpleasant task to get it out of the way. This makes the rest of your day easier.

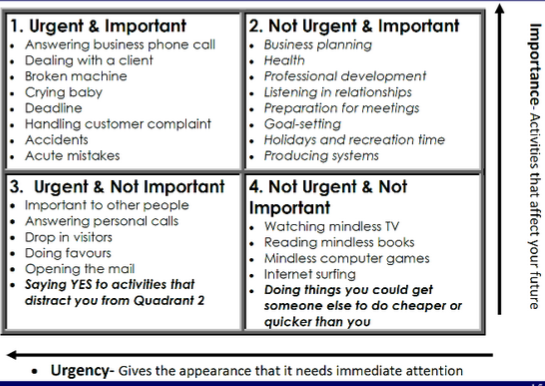
### **The Four-Quadrant To-Do List**

Organize tasks into these four categories based on urgency and importance:

1. **Urgent & Important**:
   * Tasks to do **immediately** (e.g., deadlines, emergencies).
2. **Not Urgent but Important**:
   * Tasks to **schedule and plan** (e.g., long-term goals, skill development).
3. **Urgent but Not Important**:
   * Tasks to **delegate** or handle quickly (e.g., interruptions, minor requests).
4. **Not Urgent & Not Important**:
   * Tasks to **eliminate** or avoid (e.g., distractions, time-wasters).

This system helps you focus on what truly matters while managing your time effectively!





### **Paperwork**

* **Clutter is death**: A cluttered desk or workspace leads to confusion and wasted time (thrashing).
* **Keep the desk clear**: Focus on one task at a time.
* **Good file system**: An organized filing system is essential to find what you need quickly.
* **Touch each piece of paper once**: When you handle paperwork, deal with it right away—file it, act on it, or discard it.
* **Inbox is not your to-do list**: Don’t treat your email inbox as a task list. Process emails efficiently and take action.

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### **Telephone**

* **Keep calls short**: Be concise. Stand during calls to stay alert.
* **Start by announcing goals**: Clearly state the purpose of the call so both parties stay focused.
* **Have something in view**: Always be aware of the next task you're jumping to after the call.
* **Get off when done**: Don't drag out calls. Politely end with something like, "I have students waiting."
* **Group outgoing calls**: Make calls at set times, like before lunch or at 5 p.m., to stay efficient.

### **Reading Pile**

* **Only read what's crucial**: Don't spend time on things that aren't important to your goals. Only read materials that are essential, like those you'd be penalized for not reading.

### **Office Logistics**

* **Make your office comfortable**: Create a space that suits your work style, but don’t get too comfortable (e.g., avoid overly soft chairs).
* **Keep the environment focused**: A more practical setup, like folding chairs, helps with focus.

### **Scheduling Yourself**

* **Make time for important things**: Don’t wait to "find" time for what matters; make time by prioritizing.
* **Everything is an opportunity cost**: Every decision to do something means you’re choosing not to do something else, so be mindful of your time.
* **Learn to say "No"**: Protect your time by saying no to tasks that don’t align with your goals.

**Gentle No's**

* **Offer alternatives**: If you can’t say yes, offer a gentle no like, “I’ll do it if nobody else steps forward,” or “I’ll be your fallback option, but keep searching for someone else.”

### **Everyone Has Good and Bad Times**

* **Find your creative time**: Identify when you're most focused and creative. Protect this time to work solo, maybe at home.
* **Schedule "dead time"**: Use your less productive hours (dead time) for meetings, phone calls, or mundane tasks.

### **Cutting Things Short**

* **Start with "I only have 5 minutes"**: Tell people you don’t have much time. You can always extend the conversation later.
* **Stand up and walk to the door**: When you start to wrap up a conversation, standing up and walking towards the door signals that you need to go.
* **Clock-watching**: Place a clock behind the person you’re talking to so you can keep track of time without being obvious.

### **Time Journals**

* **Track your time**: Write down what you do every 15 minutes for 3 days to 2 weeks. This will help you see where your time is going.
* **What you’ll learn**: You’ll find out what you’re doing that doesn’t need to be done or could be done in a better way.

### **Procrastination**

**Procrastination** is the act of delaying or postponing tasks, even though you know it might cause problems later. It often happens when you avoid doing something you don’t want to do, even if you know it's important. For example, waiting until the last minute to study for a test or do your homework.

* **"Procrastination is the thief of time"**: Putting things off wastes time and makes things harder. This saying by Edward Young from 1742 is still true today.

### **Avoiding Procrastination**

* **Last-minute work is expensive**: Waiting until the last minute makes tasks harder and causes stress.
* **Deadlines are important**: Set deadlines for yourself so you don't keep putting things off.

### **Comfort Zones**

* **Find out why you’re avoiding tasks**: Are you afraid of making mistakes or failing? Knowing why you’re avoiding something helps you overcome it.
* **Push past your fear**: Don’t let fear stop you from doing what you need to do.

### **Delegation**

* **Delegation** means giving some of your tasks to other people to help you get more work done. It’s not just about passing off jobs—it’s important to make sure the person has what they need to do the task well. Be clear about what you want: explain the task, set clear goals, and give deadlines so they know exactly what to do.

### **Challenge People**

* **Give others challenging tasks**: When you challenge people, they grow and become better at what they do.
* **Communicate clearly**: Tell people what needs to be done and why it’s important, but let them figure out how to do it.

### **Sociology**

* **Don’t pass your tasks to others**: Be careful not to push your work onto your boss or others.
* **It’s okay not to know everything**: Sometimes, it's helpful to admit you don’t know something, like how to use a photocopier. It sets realistic expectations.

**Meetings**

* **Average time spent**: Executives spend more than 40% of their time in meetings.
* **Limit the time**: Keep meetings to a maximum of 1 hour.
* **Prepare in advance**: Always have an agenda for the meeting.
* **Meeting minutes**: Take quick, clear notes on what was decided, who is responsible for what, and by when.

### **Technology**

* **Laptop and docking station**: Having one computer for work is enough.
* **Digital Library**: You don’t need to visit a physical library when you have online resources like the ACM Digital Library.

### **Randy’s Magic E-Mail Tips**

* **Save everything**: Keep all your emails for reference.
* **Direct requests**: If you need someone to do something, send it to them alone. Otherwise, they may not feel responsible.
* **Set a clear request**: Be specific and give a deadline for the task.
* **CC someone important**: If you really need someone to act, copy a powerful person in the email.
* **Follow up**: If there’s no response in 48 hours, follow up. If no reply after that, they may never respond.

### **Care and Feeding of Advisors**

* **Use a planner**: Keep track of meetings, goals, and people to reach out to for help.
* **Advisors want results**: Focus on getting things done and showing progress.

### **Time Management Advice**

* **Vacation tips**: When on vacation, give people options for contact. If it’s urgent, provide an alternate contact, otherwise, ask them to wait until you return.
* **Vacations should be a break**: Don’t read work emails during your time off.

### **General Advice**

* **TV**: Limit your TV time if you want to achieve important goals like getting a degree or tenure.
* **Time vs. Money**: Focus on turning time into valuable experiences, especially if you have family commitments.
* **Self-care**: Eat, sleep, and exercise regularly; these are key to your well-being.

### **Additional General Advice**

* **Keep promises**: Don’t break promises, but renegotiate if necessary.
* **Pass/fail mindset**: Recognize that most things in life are either pass or fail; there’s no in-between.

### **The Seven Habits of Highly Effective People**

From Stephen Covey’s book:

1. **Be Proactive**: You are in charge of your life and decisions. Don’t blame others for what happens.
2. **Begin with the End in Mind**: Think about your future and how you want to be remembered. Use that to guide your daily choices.
3. **Put First Things First**: Focus on what matters most, not just urgent tasks. Balance your daily work with your future goals.
4. **Think Win/Win**: Try to find solutions that help everyone. Working together gives better results.
5. **Seek First to Understand, Then to Be Understood**: Listen to others first before sharing your own point of view.
6. **Synergize**: Work together with others. Different ideas can lead to the best solutions.
7. **Sharpen the Saw**: Take care of yourself in all ways—mentally, spiritually, socially, and physically.

### **Tips for Working in Groups (by Randy Pausch)**

1. **Meet people properly**: Introduce yourself, share your contact details, and make sure you say names correctly.
2. **Find common ground**: Look for things you both like to build a connection.
3. **Create a good meeting environment**: Make sure the room is quiet, comfortable, and free from distractions.
4. **Let everyone speak**: Don’t interrupt; everyone’s opinion matters.
5. **Check egos at the door**: Focus on ideas, not who came up with them.
6. **Praise others**: Compliment each idea, even if it’s not perfect.
7. **Put it in writing**: Write down tasks and deadlines so everyone knows their responsibilities.
8. **Be open and honest**: If there’s a problem, discuss it with your group.
9. **Avoid conflict**: If there’s tension, take a break, apologize, and try again.
10. **Phrase alternatives as questions**: Instead of saying "We should do A," ask, "What if we did A instead of B?" to encourage discussion.

# **Philosophy of Ethics**

### **What is Ethics?**

Ethics is the study of what is "right" and "wrong" in different situations. It's about making good choices, especially when those choices affect other people.

### **Key Ideas:**

1. **We Control Technology:**Technology is made and used by people. It doesn’t control us. We can choose to use it for good or bad purposes.
2. **People Can Make Choices:**People can think and decide what is right or wrong. We have the power to make choices that affect ourselves and others.
3. **Rules for How We Act:**Ethics gives us rules for how we should behave. These rules help us avoid hurting others and make it easier for everyone to live peacefully together.
4. **Two Ways to Think About Ethical Rules:**

**Universal Rules:** Some people believe ethics is like science. The same rules apply to everyone, everywhere.

**Man-Made Rules:** Others believe ethics is like rules in a game. These rules are made by people to help us get along.

1. **Good Ethics Make Life Better:**When we follow good ethical rules, life becomes better for everyone. Doing the right thing helps people live happier and more peaceful lives.

### **Ethical Views:**

**Deontological Ethics (Non-Consequentialist Ethics)**

* **Main Idea:** Doing the right thing means following the rules no matter what happens.
* **Example:** "Don’t lie." Even if lying could help someone, it is still wrong.
* **Kant’s Rule:** Treat people as valuable, not as tools to get what you want. For example, if someone wants to harm another person and asks you where they are, you should not lie because lying is always wrong.
* **Reason and Logic:** Use careful thinking (reason) to decide what is right, not just emotions.
* In short, follow the rules, respect people, and use logic to make good choices.

#### **2. Utilitarianism:**

**Main Idea:** The right thing to do is what makes the most people happy or brings the most good.

**Example:** If telling a lie helps more people, then it might be the right thing to do.

**Types of Utilitarianism:**

* **Act Utilitarianism:** Look at each action. If it makes people happy right now, it is the right choice.
* **Rule Utilitarianism:** Follow rules that usually make everyone happier. For example, rules like "don’t steal" or "don’t kill" keep people safe and happy.

#### **3. Natural Rights:**

* **Main Idea:** Every person has basic rights just because they are human. These include the right to life, freedom, and property.
* Ethics means respecting and protecting these rights.

#### **4. Do Businesses Have Ethics?**

* Yes, businesses have ethics too. They should act responsibly by treating workers fairly, being honest with customers, and caring for the environment.

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### **Important Distinctions in Ethics:**

1. **Right, Wrong, and Okay:**
   * **Ethically Obligatory:** What you must do (e.g., helping someone in danger).
   * **Ethically Prohibited:** What you must not do (e.g., stealing or lying).
   * **Ethically Acceptable:** What you can do, but it’s not required (e.g., donating to charity).
2. **Difference Between Wrong and Harm:**Something can be wrong even if it does not cause harm. For example, breaking a promise may not hurt anyone, but it is still wrong because you did not keep your word.
3. **Separating Goals from Constraints:**
   * **Goals:** These are what you want to achieve, like helping others.
   * **Constraints:** These are limits on how you achieve your goals, such as not lying or hurting others while trying to help.
4. **Personal Preference and Ethics:**Personal preferences are about what you like or want. Ethics is about what is right or wrong for everyone, not just you. For example, liking ice cream is a preference, but helping someone in need is about ethics.
5. **Law and Ethics:**
   * **Law:** Rules made by society or government that you must follow.
   * **Ethics:** What is morally right or wrong based on principles, which may or may not match the law. For example, a law might allow something, but it may still feel wrong ethically.

In short, **ethics** helps us decide what is right or wrong. It involves following rules (like in **deontological ethics**) or choosing actions that bring the most happiness (like in **utilitarianism**). Ethics is also about respecting people's **natural rights** and treating others well, even in business.

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