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**Red Teaming, “lock picking”**

**1. Padlocks**

Padlocks are portable locks with a shackle that can be passed through an opening to prevent use, theft, or harm. They are not permanently attached to anything, making them convenient and versatile for temporary locking needs. Padlocks come in various sizes and strengths, from small luggage locks to heavy-duty industrial versions. They are typically made of hardened steel or brass. Keyed padlocks require a specific key, while combination padlocks use rotating dials. Some include shrouded shackles for added cut resistance. Smart padlocks can be unlocked via Bluetooth or fingerprint. Padlocks are commonly used for lockers, storage units, gates, and bikes. They offer a basic level of security, primarily useful for deterring opportunistic theft. However, they can often be bypassed using bolt cutters, shims, or lock-picking techniques.

**2. Deadbolts**

Deadbolts are high-security locks commonly used on exterior doors. Unlike spring bolt locks, deadbolts cannot be moved to the open position without rotating the lock cylinder, making them more resistant to forced entry. There are several types: single-cylinder (key outside, thumb turn inside), double-cylinder (key required on both sides), and lockable thumb turn (a hybrid offering internal locking). Deadbolts are typically made of hardened steel and offer strong resistance against kicking, drilling, and lock-picking. They are installed within the door, requiring a borehole and additional structure. Double-cylinder versions should be used cautiously in areas requiring emergency egress. Deadbolts are essential components in residential and commercial security systems. They may be used in conjunction with smart systems for remote monitoring and control.

**3. Knob Locks**

Knob locks are integrated into the door knob itself and are among the most common locks used in residential interior doors. These locks include a key cylinder on one side and a turn or push mechanism on the other. While convenient, knob locks are not highly secure as the locking mechanism is in the knob, making it easy to break off. They are often used for bedrooms, bathrooms, and closets. In terms of construction, they consist of a spindle, latch bolt, and two knobs. Their simple installation makes them popular, but they should not be relied upon for main entrances. Criminals can often bypass them with tools like pliers or even a strong twist. For better security, knob locks are often paired with deadbolts.

**4. Lever Handle Locks**

Lever handle locks use a lever instead of a knob to operate the latch. They are easier to operate than knob locks, making them ideal for people with disabilities and for use in commercial buildings. These locks are commonly found on interior office doors, restrooms, and sometimes residences. They can be keyed or keyless. Lever locks can be cylindrical or mortise types, depending on installation. Lever handles provide better ergonomics and comply with ADA (Americans with Disabilities Act) standards. They typically include a lock cylinder, latch bolt, and lever mechanism. While they offer convenience, they may be more susceptible to torque-based attacks compared to knobs. Reinforced versions help resist such attacks. They are often paired with electric or smart locking systems.

**5. Mortise Locks**

Mortise locks are robust and commonly used in commercial and high-end residential settings. Installed into a pocket (or mortise) within the door, these locks are known for their durability and resistance to tampering. The mortise lock system includes a lock body, strike plate, and often a keyed cylinder. These locks offer both latch and deadbolt functionalities in a single mechanism. Mortise locks can support various handle designs, such as knobs and levers. Their installation requires professional skills due to door modification. Available in different security grades, they are often compatible with high-security cylinders. Mortise locks are ideal for locations requiring frequent access control and enhanced security. They may include features such as occupancy indicators, deadlocking latches, and electric strike compatibility. Maintenance involves regular lubrication and keyway cleaning.

**6. Rim Locks**

Rim locks are mounted on the interior surface of the door rather than being embedded into it. They are considered traditional locks and were widely used in older homes. A rim lock typically consists of a lock body, a rim cylinder, and a surface-mounted keeper or strike. They are easier to install than mortise locks and don't require extensive modification to the door. Commonly used on wooden doors, they provide moderate security and are best suited for interior applications. Some rim locks feature latch and bolt combinations for dual functionality. Although not very secure by modern standards, they can still serve decorative or secondary purposes. Rim locks can be upgraded with electric or smart features. Their aesthetic appeal makes them popular in heritage renovations. They should not be used as the sole lock on an exterior door.

**7. Cam Locks**

Cam locks are small cylindrical locks used in cabinets, drawers, mailboxes, lockers, and other low-security applications. They consist of a metal plate (the cam) attached to the core of the lock, which rotates when the correct key is inserted. Cam locks are simple to operate and install. Depending on their design, they can rotate 90 to 180 degrees. They are commonly used in enclosures where security is less critical, focusing more on preventing unauthorized access. Cam locks come in keyed-alike or keyed-different formats. They can be easily picked with basic tools, so they aren’t recommended for high-security needs. Despite this, their cost-effectiveness and simplicity make them a preferred choice for basic locking functions. More advanced versions may offer tubular keys for better security.

**8. Euro Cylinder Locks**

Euro cylinder locks are widely used in doors across Europe and increasingly around the world due to their modular design. These locks are named for their standard European profile and are easily replaceable, making them ideal for both residential and commercial use. The cylinder mechanism operates the lock bolt, and the key engages the cylinder to unlock or lock the door. They come in several types: single cylinder (keyed on one side), double cylinder (keyed on both sides), and thumb turn (keyed outside, thumb turn inside). These locks are vulnerable to several attacks such as snapping, bumping, and drilling unless fitted with anti-snap, anti-pick, and anti-drill technology. Euro cylinders are often used in uPVC and composite doors. They are valued for their flexibility, as the cylinder can be swapped without changing the entire lock mechanism. Higher-security versions meet standards like BS EN 1303 or TS 007. Proper sizing and professional installation are important for maximum effectiveness.

**9. Magnetic Locks**

Magnetic locks, or maglocks, use electromagnets to secure a door. They are widely used in access control systems for commercial and institutional buildings. When the electromagnetic plate is energized, it creates a powerful magnetic force that holds the armature plate on the door, keeping it locked. These locks are fail-safe, meaning they unlock when power is lost, making them ideal for emergency exits. However, this feature also makes them vulnerable to power failures. Maglocks do not have traditional keyholes and are instead controlled by electronic means such as keypads, RFID cards, or biometrics. They are tamper-resistant and allow for remote access control integration. Installation requires a power supply and often a backup system. They provide strong holding force—ranging from 600 to 1,200 pounds—but are better suited for internal security due to their reliance on electricity.

**10. Keycard Locks**

Keycard locks are electronic locking systems commonly found in hotels, offices, and restricted-access areas. Users are given a plastic keycard embedded with a magnetic strip, RFID chip, or smart chip. When inserted or tapped against the reader, the system verifies the card's credentials and unlocks the door. Keycard systems allow administrators to grant or revoke access easily. These locks can record entry data, helping monitor access logs. One major advantage is that lost or stolen cards can be deactivated remotely without replacing the entire lock. Keycard locks are integrated with security systems for layered control. They require power and periodic software updates to remain secure. Their reliability depends on the reader’s durability and the quality of the card. Some versions now include mobile credentials via smartphones.

**11. Smart Locks**

Smart locks are technologically advanced locking systems that enable access via digital means such as smartphones, biometrics, or wireless signals. These locks often connect to home automation systems and can be controlled remotely. Common features include keyless entry, temporary access codes, audit trails, and integration with virtual assistants like Alexa or Google Assistant. Some smart locks still retain traditional key access for backup. There are different types of smart locks, including fingerprint locks, Bluetooth/Wi-Fi locks, and voice-activated locks. Security depends on encryption protocols and physical lock quality. Installation may require Wi-Fi connectivity, power, and a smartphone app. Regular firmware updates are essential to mitigate hacking risks. While convenient, smart locks may be susceptible to digital attacks, making hybrid systems a more secure option.

**12. Chain Locks**

Chain locks consist of a length of chain combined with a locking mechanism, typically used for bicycles, motorcycles, and gates. The chain is usually made of hardened steel links, resistant to cutting and sawing. Chain locks offer flexibility, allowing users to secure objects to various fixed structures. The lock may be a padlock or an integrated mechanism. While they provide visible deterrence, they can be heavy and cumbersome to carry. The security level depends on link thickness, material hardness, and lock type. High-end chain locks feature anti-drill and anti-pick features. They are not ideal for portable use where weight is a concern. Regular inspection is important to ensure the chain hasn’t been compromised.

**13. Barrel Bolt / Slide Bolt**

Barrel bolts, also known as slide bolts, are simple locking devices typically installed on interior doors, cabinets, and gates. They consist of a metal rod that slides into a catch or socket. Operating them requires manual sliding of the bolt into place. They offer minimal security and are best used for privacy rather than protection. Barrel bolts come in various sizes and finishes. Some include features like a padlock loop for added security. These locks are easy to install and cost-effective. However, they can be forced open with minimal effort. For enhanced security, heavy-duty versions or combinations with other locks are recommended.

**14. Disc Tumbler Locks**

Disc tumbler locks, also called disc detainer locks, are high-security locks often used in vending machines, storage units, and high-value safes. They use rotating discs instead of pins or levers. Each disc must be rotated to the correct angle using a specially cut key to align the notches and allow the sidebar to retract. These locks are highly resistant to picking, bumping, and drilling. They provide excellent durability and weather resistance, making them ideal for outdoor use. Keys for disc tumbler locks are usually flat with angled cuts, unique to this type of mechanism. Although harder to manipulate, skilled attackers may still use specialized tools to bypass them. Regular maintenance helps ensure smooth operation and prevents internal corrosion.

**15. T-Handle Locks**

T-handle locks are commonly used in vending machines, ATMs, and other secure enclosures. They have a T-shaped handle that operates a locking bar or cam when turned with the correct key. These locks are designed for environments requiring frequent access and medium to high security. T-handle locks are often tubular or disc detainer types, providing resistance to picking. The design ensures easy grip and torque, making it user-friendly. Many are made from high-grade steel or alloy to resist drilling and brute force attacks. Their keys are usually tubular and can be secured further with shielded keyways. Due to their exposed handle, physical force can be a concern if not reinforced. Maintenance involves checking alignment and ensuring the locking cam functions smoothly. They're widely used in commercial settings where fast and secure access is crucial.

**16. Wall Mounted Locks**

Wall-mounted locks are external lockboxes or safes affixed to walls, often used to hold spare keys, access cards, or small valuables. They are common in real estate, Airbnb rentals, and emergency access scenarios. These locks usually feature a combination dial or keypad for access. Constructed from durable materials, many include anti-tamper features and weather resistance. Some models offer smart integration with remote access capability. Installation requires anchoring into solid surfaces like concrete or brick. Security depends heavily on the combination complexity and physical robustness. Wall-mounted locks prevent the need to hide keys under doormats, offering a safer alternative. Periodic code changes are recommended for optimal security. Larger versions can store multiple keys or small tools.

**17. Furniture Locks**

Furniture locks are compact mechanisms used on cabinets, desks, drawers, and showcases. They are typically cam or bolt style and provide basic access control. These locks are often keyed alike for convenience in office environments. Furniture locks come in different forms: push locks, sliding locks, and plunger locks. While they offer minimal security, they prevent unauthorized tampering or access. They're easy to install and usually surface- or mortise-mounted. Made of zinc alloy or steel, they can be finished to match furniture aesthetics. Advanced versions may include RFID or electronic triggers for added security. They are commonly used in schools, workplaces, and retail displays. Regular inspection is key to avoid misalignment or jamming.

**18. Vending/Tubular Locks**

Tubular locks, often seen on vending machines, gaming machines, and coin-operated devices, are circular and use a tubular key. These locks provide more resistance to picking compared to standard pin tumbler locks. The unique shape of the key fits into a cylindrical plug with pins arranged in a circular pattern. Tubular locks are known for their compact design and ease of operation. However, they can be vulnerable to specific tools and methods like bumping or impressioning. Higher-end versions include anti-drill and pick-resistant features. Maintenance includes keeping the keyway clean and lubricated. Despite known bypass methods, they remain popular due to their balance of security and convenience. Key control is essential to prevent unauthorized duplicates.

**19. Switch Locks**

Switch locks are small locks that also serve as electrical switches. Commonly found in control panels, vending machines, and industrial equipment, they allow or prevent the operation of a device when locked or unlocked. These locks usually have a rotary mechanism, and turning the key completes or interrupts an electrical circuit. They provide both security and operational control. Switch locks come in various configurations, including momentary, maintained, and multi-position switches. They're built to withstand industrial environments with features like dust covers and water resistance. Their compact size allows integration in tight panels. Security depends on key control and tamper-proof mounting. They offer convenience in access-restricted areas and can be part of emergency stop systems. Proper installation ensures both physical and functional integrity.

**20. Interchangeable Core (IC) Locks**

Interchangeable core (IC) locks feature removable cores that can be replaced without changing the entire lock hardware. These locks are widely used in institutions like schools, hospitals, and offices where master key systems and quick rekeying are essential. The core can be removed with a special control key and swapped with another, instantly changing the lock combination. IC locks can be small format (SFIC) or large format (LFIC) depending on the brand and system. They offer flexibility and efficient key management. Construction is typically robust with options for high-security keyways. They integrate easily into access control systems. Maintenance is minimal but should include periodic checks for core alignment and wear. IC systems allow tiered access and enhanced administrative control.

**21. Latch Locks**

Latch locks are among the most common and basic types of locks, typically used on interior doors. They use a spring-loaded bolt that extends into the door frame's strike plate and retracts when the knob or handle is turned. These locks offer convenience rather than high security. Latch locks are found in bedrooms, bathrooms, and closets. They may include a privacy button or simple turn knob for locking. Construction is usually of steel or brass components. While easy to install and use, they can be bypassed with cards or shims. Enhanced versions include dead-latching mechanisms for better security. Maintenance involves checking the latch alignment and spring tension. They are often used in conjunction with deadbolts for entry doors.

**22. Combination Locks**

Combination locks use a sequence of numbers or symbols to unlock a mechanism without a key. These are common in lockers, safes, and briefcases. They can be mechanical with rotating dials or digital with push buttons. The security relies on the secrecy and length of the combination. Mechanical versions use internal cams that align when the correct sequence is input, releasing the lock. Digital variants may include time delays, incorrect attempt lockouts, or even biometric backup. They are portable, keyless, and convenient for shared access. However, they can be susceptible to brute force or decoding techniques. Resettable combinations add flexibility but should be changed regularly. They're best used in low to medium-security contexts where key management is a concern.

**23. Time Locks**

Time locks are specialized locks that only permit access during a programmed time period. Found in bank vaults and high-security safes, they prevent unauthorized opening outside of set hours. These locks are often used in conjunction with other locking mechanisms for added security. Time locks can be mechanical or electronic. Mechanical versions use wound timers that must run out before the lock releases, while electronic types can be programmed with schedules. They enhance security by preventing coercion or impulsive access. Maintenance involves battery replacement (in electronic versions) and regular timing checks. Time delays can be used for security measures during cash handling or access to sensitive areas. They’re essential for controlled, scheduled access in high-value environments.

**24. Biometric Locks**

Biometric locks use unique human traits—such as fingerprints, retinal patterns, or facial recognition—to grant access. These are commonly found in secure buildings, offices, and high-tech homes. Fingerprint locks are the most common and convenient type. They include a sensor, a control board, and a locking mechanism. Biometric systems offer high security, as physical characteristics are difficult to replicate. However, they require clean, functioning sensors and regular calibration. Modern systems often include backup access methods like PINs or physical keys. Biometric data is stored in encrypted form and may be susceptible to cyber threats if not properly managed. These locks are ideal for environments needing high access control with audit trail capability.

**25. Electric Strike Locks**

Electric strike locks are access control devices installed in the door frame that work with mechanical locks. When activated electronically (e.g., via keypad, card reader, or remote), the strike releases and allows the door to open. They are often paired with mortise or cylindrical locks. Electric strikes can be fail-safe or fail-secure. Fail-safe unlocks during a power outage, while fail-secure remains locked. These locks allow for remote operation and are common in commercial access control systems. Installation requires electrical wiring and may need power backups. Security level depends on strike strength and integration. They offer convenience, especially in multi-user or monitored environments.

**26. Panic Bar / Crash Bar Locks**

Panic bars, or crash bars, are horizontal bars installed on doors to allow quick egress during emergencies. Commonly used in schools, hospitals, and public buildings, they allow exit without using a key or turning a knob. When pressed, they retract the latch mechanism to open the door instantly. Many models integrate alarms or lock-down features. Panic bars are mandated by safety regulations in many jurisdictions. They can be combined with electric strike systems or door alarms. While ideal for emergency exit, outside entry usually requires a keyed or electronic system. Proper maintenance includes checking spring tension, alignment, and bar integrity.

**27. RFID Locks**

RFID (Radio Frequency Identification) locks use radio waves to read access credentials stored in RFID tags or cards. Widely used in hotels, offices, and modern residential setups, they offer quick and contactless access. RFID locks consist of a reader, control board, and actuator. Cards can be programmed, reissued, or deactivated easily. These locks improve security by tracking access and integrating with security software. However, cloning and interference are potential vulnerabilities if encryption is weak. Some models integrate with smartphone apps or biometric verification. They are battery-powered or connected to electrical systems and require periodic firmware updates.

**28. Bluetooth Locks**

Bluetooth locks connect to a smartphone or Bluetooth-enabled device to unlock without physical contact. Common in smart homes, offices, and luggage, they provide convenience and remote management. These locks often support auto-unlock when the authorized device is nearby. They may include backup key access or PIN codes. Bluetooth locks rely on low-energy Bluetooth technology and often sync with mobile apps. Battery life and device compatibility are key factors. Advanced models offer access logs, temporary digital keys, and integration with home automation systems. Security depends on encryption protocols and mobile device protection. They’re best for tech-savvy users prioritizing ease of use.

**29. Vertical Deadbolt Locks**

Vertical deadbolt locks feature a bolt that moves vertically into a set of strike plates or brackets. They offer enhanced protection against prying and separation attacks. Often used on double doors or sliding gates, they provide a tight locking mechanism that resists horizontal force. These locks are usually key-operated and may include internal locking mechanisms. Installation is straightforward and often mounted on the surface. Vertical deadbolts are made from hardened steel and resist pulling or spreading tools. Some include anti-drill or anti-pick features. They're ideal for securing warehouse doors or storage units where strength is critical.

**30. Chain Door Lock**

Chain door locks are small, supplementary locks commonly installed on apartment or hotel room doors. They consist of a short metal chain anchored to the door and a track on the frame. When engaged, the door can open slightly while remaining secured. Chain locks offer visual and physical barriers, mainly for added security when answering the door. They are not high-security devices and can be bypassed with brute force or tools. Installation is simple and affordable. Some advanced versions include locking latches or smart chain systems. Best suited for residential use as an auxiliary security measure.

**31. Car Door Locks**

Car door locks are integrated into a vehicle’s locking system, typically controlled by key fobs or electronic signals. These locks can be manual or automatic. Central locking systems allow all doors to lock/unlock simultaneously. Advanced cars include keyless entry, biometric access, and even app-controlled features. Car locks use internal actuators, sensors, and relays to manage access. Physical keys are often included as backup. Anti-theft features like immobilizers, alarms, and remote disablement enhance security. These systems require regular battery and sensor maintenance. As cars become more computerized, cybersecurity becomes a concern.

**32. Steering Wheel Locks**

Steering wheel locks are anti-theft devices that clamp onto the steering wheel, preventing it from turning. Used as a physical deterrent, they are popular among car owners in high-theft areas. The lock is typically made of reinforced steel and may include alarm triggers. Designs vary from crossbars to U-locks. While not foolproof, they add a visible layer of protection that may deter casual thieves. Keys or combination codes are required to remove them. They are portable, easy to apply, and affordable. Advanced versions may resist sawing or freezing attacks.

**33. Trailer Hitch Lock**

Trailer hitch locks secure a trailer to a tow vehicle or prevent the hitch from being used when unattended. These locks fit into the hitch receiver or over the coupler. They are made of heavy-duty metals to resist cutting and tampering. There are different types: pin-style, latch-style, and coupler-style locks. Trailer hitch locks protect against theft of the trailer or its cargo. They often include weather-resistant features and key-retaining systems. Regular inspection and lubrication extend their lifespan. Best used in combination with wheel locks for enhanced security.

**34. Window Locks**

Window locks secure window sashes to prevent unauthorized opening. Types include latch locks, sliding bolts, keyed locks, and pin locks. They are essential for ground-level windows and vulnerable entry points. These locks are usually easy to install and made of metal or durable plastic. Some integrate with smart home systems for remote monitoring. They provide an added layer of protection in homes and businesses. Security films or bars can supplement them. Maintenance involves checking for corrosion and proper engagement. They also help in childproofing residential spaces.

**35. File Cabinet Locks**

File cabinet locks protect documents and files from unauthorized access. Found in offices and homes, they use cam or plunger mechanisms. Keys or electronic pads typically control access. High-security versions include anti-pick pins or RFID access. These locks are important for compliance with data protection and privacy laws. Locking bars can be added for lateral file cabinets. Installation is straightforward, though alignment is crucial. Maintenance includes keyway cleaning and ensuring proper latch operation. Digital models offer access logs and remote lockout.

**36. Drawer Locks**

Drawer locks are compact devices installed on furniture drawers to restrict access. Common in homes, offices, and retail spaces, they usually involve a cam lock or push-button mechanism. Drawer locks prevent theft or tampering with sensitive contents. Variants include keyed, combination, and electronic types. Easy to install, most are surface-mounted. Materials range from zinc alloy to stainless steel. They’re ideal for securing cash drawers, medical supplies, or personal belongings. Smart drawer locks now offer biometric access and mobile control.

**37. Bike Locks**

Bike locks secure bicycles against theft using chains, cables, U-locks, or folding bars. U-locks offer the most resistance to bolt cutters and prying tools. Chains provide flexibility and can wrap around larger structures. Cable locks are lightweight but less secure. Advanced locks feature smart sensors, GPS tracking, and alarms. The best practice is locking both the frame and wheels to a fixed object. Materials used include hardened steel and kevlar-reinforced cables. Lock maintenance includes lubrication and regular security checks. Theft-resistance ratings help users choose appropriate protection.

**38. Glass Door Locks**

Glass door locks are designed for frameless glass doors typically found in commercial and high-end residential spaces. Types include patch locks, floor locks, and clamp-style locks. They are either key-operated or electronically controlled. Installation must consider aesthetics and structure integrity. These locks are made of stainless steel or chrome-plated materials for both strength and appearance. Some offer smart access via keycards or biometrics. Rubber or silicone padding protects the glass from pressure. They are best used with tempered or laminated glass for maximum security.

**39. Gun Safe Locks**

Gun safe locks secure firearms against unauthorized access. They are either mechanical (dial locks), digital (keypad locks), or biometric (fingerprint scanners). Gun safes must comply with legal standards for firearm storage. High-quality locks include relocking mechanisms that trigger during tampering. Digital and biometric versions offer fast access in emergencies. Fireproof and waterproof ratings are common features. Regular maintenance includes battery replacement and dial calibration. Gun owners often prefer dual-locking options for added protection. Access logs and internal lighting improve usability.

**40. Hotel Door Locks**

Hotel door locks are part of centralized access control systems using keycards, RFID, or mobile apps. Each guest is assigned a unique access credential during check-in. Locks record entry times and can be reprogrammed between guests. Fail-safe mechanisms ensure compliance with fire safety laws. Integrated systems allow room access management, staff scheduling, and security auditing. Most systems include a manual override key. Smart locks now integrate with hotel apps for seamless guest experiences. Proper software updates and encryption ensure continued security.