

Chapter 8

Ten Password Pointers: Building Strong Passwords

Solutions in this chapter:

- **Building Strong Passwords**

Introduction

Sometimes coming up with a good password can be difficult. When faced with choosing a password, many people seem to get some kind of tunnel vision and they suddenly cannot see beyond their own desk. At that point, all that comes to mind is a dog's name, a football team, or an item within immediate view. Most often, people simply use one of their favorite passwords—the ones they always use.

Building Strong Passwords

The secret to strong passwords is to not *choose* a password, but to *build* a password. Don't just think of some word and use that as your password. Use some specific technique to construct a complex password that is not only effective but easy to remember. Here are some of my favorite tips for building strong passwords that you yourself can use those times when you get stumped for ideas.



WARNING

I shouldn't have to say this, but unfortunately it must be said: please don't use any of the password examples you see in this book or any place else as your actual password. They are simply examples. In fact, you are best off not even using these exact passwords patterns, but to instead be creative and use them as models for your own ideas.

Three Words

A simple technique for increasing the strength of your password is to just use more than one word. Some people would call this a *pass phrase*, but this particular technique is somewhat different. The difference is that you select three or more words that are not necessarily grammatically related, but have something else in common.

The technique revolves around picking three words that are related enough for you to easily remember them, but if others knew one of the words, they couldn't easily guess the other words.

For example, you could pick three synonyms, three homonyms, three antonyms, three words that rhyme, or three words that have the same prefix. The key here is to provide enough randomness that your password is not predictable. Try to throw in numbers, capitals, punctuation, or other variants to make your password even stronger.

The following are some examples:

- 33 free trees
- Walking, talking, keyring
- Little-ladle-lady
- ChalkingChangeRange

Our minds remember bits, or chunks of information. This pattern lets you easily create passwords of 20 or more characters. Despite that, all your brain has to do is remember a few bits of information—the three words you selected.

The key to this particular technique is to have one common element in each word to help you remember the password and to assist you in thinking of unique words beyond things personal or in your environment. By choosing words related to each other in different ways, it forces you to be more creative. There are many ways to connect words beyond meaning alone.

Other Nyms

You have probably heard of synonyms and antonyms, but have you heard of an oronym? Here is a list of various nym words and their meanings:

- **Ambigram** A word or words that can be read in more than one direction, such as rotated or reflected (SWIMS, MOM).
- **Anagram** Letters from one word rearranged to form another word (act versus cat).
- **Anonym** A pseudonym made by reversing a name (James versus Semaj).
- **Antagonym** A single word that has conflicting meanings (dust, as in remove dust versus dust, to add dust, as in dusting for fingerprints).
- **Antonym** Two words with opposite or near opposite meanings (up versus down).
- **Autoantonym** Same as an antagonym.

Continued

- **Autonym** A word that describes itself (mispelled is mis-spelled; noun is a noun).
- **Capitonym** A word that changes meaning when capitalized (Polish versus polish).
- **Contronym, Contronym** Same as antonym.
- **Exonym** A place name that foreigners use instead of the name that locals use (Spain versus Espana).
- **Heteronym** Words that have the same spelling but different meanings or pronunciation (produce, read, convert).
- **Homographs** Same as heteronym.
- **Homonym** Words with the same pronunciation or spelling but different meanings (reign and rain).
- **Homophone** Words that are pronounced the same but spelled differently (flu versus flew).
- **Hypernym** The type of one word in relationship to another (bird is the hypernym of robin; animal is the hypernym of bird).
- **Hyponym** The specific type of one word in relationship to another (robin is a hyponym of bird; cat is the hyponym of animal).
- **Oronym** Similar to a homophone but made up of a series of words (ice cream versus I scream; kiss the sky versus kiss this guy).
- **Pseudoantonym** A word that appears to have a meaning opposite of its actual meaning (flammable, unloose).
- **Synonyms** Two words that have the same or nearly the same meaning (build and assemble).

The E-Mail Address

People are usually surprised when they see me type in such long passwords and want to know how I remember these. It's simple: society has trained our brains to easily learn certain patterns, so I build passwords to mimic those patterns. These always make great passwords. One of my personal favorites is to pattern a password after a fake e-mail address. It is one of my favorites because it contains so many of the elements of a strong secret.

Here's how it works: first, think of a name of anything, fake or real. Then think of a symbolic, meaningful, funny, or ironic phrase related to that name. Finally, put those together, add a dot-com (or other extension), and you have an e-mail address password. Let me illustrate:

Pick a name:	Dr. Seuss
Choose a related phrase:	Green Eggs
Result:	Dr.Seuss@greeneggs.com

Pick a name:	Kermit
Choose a related phrase:	The Muppets
Result:	Kermit@themuppets.org

Pick a name:	Rover
Choose a related phrase:	Hates cats
Result:	rover22@rover-hates-cats.net

These passwords are effective because we add a couple punctuation symbols and it's easy to increase the length of your passwords without making them any harder to remember. This pattern is particularly flexible and the combinations are endless.

Here are some more examples illustrating variants of this pattern:

- Cat-Lover2005@aol.com
- Your-mama@uglystick.com
- yoda@strong-this-password-is.net
- Ben@dover.org
- e-mailme@home
- me@com.net.org.com

The URL

Similar to the e-mail address password is the URL password. We're constantly bombarded with WWW addresses, so why not take advantage of that and model your passwords after that pattern? Here are some examples:

- www.sendallyourmoney.irs.gov
- www.someone_smells.net
- ftp.droppedout.edu
- www.go.ahead.and.try.to.crack.this.password.com

TAKING IT FURTHER

There's no reason to stop with just one domain extension or even valid extensions. In the past, I've used extensions such as .com.net.com, .edu.sux, .gov.waste, and so on. The more you divert from the standards, the more opportunity you have to increase the *entropy* of the password, as explained in Chapter 3.

The Title

Sometimes you need to build a password and you're just stuck. No matter what you try, the system seems to reject it, saying that your password does not meet complexity requirements. Here's a simple pattern that should produce passwords that meet the requirements of even the strictest password system. This is how it works:

First, think of a title prefix.

Here's a list to choose from: Admiral, Baron, Brother, Capt., Captain, Chief, Colonel, Commander, Congressman, Count, Countess, Dame, Deacon, Deaconess, Doc, Doctor, Dr, Dr., Farmer, Father, Gen., General, Governor, Judge, Justice, King, Lady, Lieutenant, Lord, Madam, Madame, Mademoiselle, Major, Master, Mayor, Miss, Mister, Monsieur, Monsignor, Mother, Mr., Mrs., Ms., Officer, President, Prince, Princess, Private, Prof., Professor, Queen, Rabbi, Rev., Reverend, Sergeant, Seaman, Secretary, Senator, Sheikh, Sir, or Sister.

Next, think of a first name, male or female, or a surname.

Think of an adjective, something that describes a noun, such as cheerful, red, wet, and so on.

Finally, add a comma, and then an ordinal number, such as 1st, 2nd, 3rd, and so forth.

When you put these elements together, you should end up with passwords like these:

- President Pink, the 2nd
- Dr. Hurt, the 3rd
- Professor Pencil, the 1st
- 1st Lieutenant Lucky

The strength of this password pattern is that it produces long passwords and insures that you use capital letters, numbers, and usually punctuation symbols. Make sure you don't use your own name and this should meet just about any system complexity requirements. If the system still rejects your password, try leaving out the spaces.

In my own experience, the only times I have had this password rejected is when the system says my password is too long!

Number Rhymes

This pattern is another one of my personal favorites, but you need to be careful and creative because there are some limitations on how many unique passwords it will produce.

The pattern is simple: pick a number, preferably more than two digits, and then add on a word or phrase that rhymes with that number. You should end up with passwords like the following:

- 23 Strawberry!
- 209 Canadian Pine!
- Number 8, Armor Plate
- 425 Take a Drive!
- Number Two, Oh Phew!

To help you out with rhyming words we have included some basic rhyme lists in the next few sections of this chapter. For more help in finding rhyming words, check out <http://www.rhymezone.com>.

The following mini-sections offer some words that rhyme with numbers.

Rhymes with One

Bun, Bunn, Done, Fun, Hun, None, Nun, Pun, Run, Shun, Son, Spun, Stun, Sun, Ton, Tonne, Won, Bank Run, Bon Ton, Bull Run, Cross Bun, Dry Run, End Run, Fowl Run, Gross Ton, Homerun, Home Run, Long Run, Long Ton, Make Fun, Mean Sun, Net Ton, Outdone, Outrun, Pit Run, Redone, Rerun, Short Ton, Ski Run, Undone, Chicken Run, Honey Bun, Hotdog Bun, Hot Cross Bun, Metric Ton, Midnight Sun, Overdone, Caramel Bun, Cinnamon Bun, Favorite Son, Frankfurter Bun, Hamburger Bun, In The Long Run.

Rhymes with Two

Bleu, Blew, Blue, Boo, Brew, Chew, Choo, Clue, Coup, Coups, Crew, Cue, Deux, Dew, Do, Doo, Drew, Ewe, Few, Flew, Flu, Foo, Glue, Gnu, Goo, Grew, Hue, Knew, New, Phew, Rue, Shoe, Shoo, Skew, Slew, Spew, Stew, Threw, Through, Thru, Too, You, And You, Bamboo, Beef Stew, Canoe, Dark Blue, Go Through, Go To, Ground Crew, Gym Shoe, Make Do, Not Due, Ooze Through, Slice Through, Soak Through, Speak To, Squeak Through, Stage Crew, Steel Blue, Thank You, Withdrew, Appeal To, Attach To, Cheese Fondue, Chicken Stew, Cobalt Blue, Grow Into, Hitherto, What Are You, Long-Overdue, Blink 182, Chicken Cordon Bleu, Critical Review, Giant Kangaroo, Outrigger Canoe, With Reference To, Capital Of Peru, Giant Timber Bamboo, Literary Review, Security Review.

Rhymes with Three

At Sea, Banshee, Bay Tree, Beach Flea, Beach Pea, Bead Tree, Bean Tree, Black Pea, Black Sea, Black Tea, Debris, Decree, Deedee, Degree, Dundee, Fig Tree, Herb Tea, High Sea, Abductee, Absentee, Addressee, Christmas Tree, Detainee, Entrance Fee, Escapee, German Bee, Middle C, Third Degree, Vitamin B, Vitamin C, Vitamin D, Vitamin E, Vitamin G, Vitamin P, To The Lowest Degree, Africanized Honey Bee, Battle Of The Bismarck Sea, Capital Of Tennessee, Mediterranean Sea.

Rhymes with Four

Boar, Bore, Chore, Core, Corps, Door, Drawer, For, Fore, Gore, More, Pour, Roar, Wore, Explore, Fall For, Front Door, Lead Ore, No More, Offshore, Price War, Restore, What For, Wild Boar, World War, Account For, Allow For, Anymore, Know The Score, Liquor Store, Sliding Door, Computer Store, Convenience Store, Department Store, Prisoner Of War, Responsible For, Uranium Ore, American Civil War.

Rhymes with Five

Clive, Clyve, Dive, Drive, Hive, I've, Jive, Live, Shive, Strive, Thrive, Alive, Arrive, C5, Connive, Contrive, Crash Dive, Deprive, Derive, Disc Drive, Disk Drive, Hard Drive, Let Drive, Line Drive, M5, Nose Dive, Revive, Survive, Swan Dive, Tape Drive, Test Drive, Backhand Drive, CD Drive, Come Alive, Fluid Drive, Forehand Drive, Power Dive, Take A Dive, External Drive, Internal Drive, Winchester Drive, Automatic Drive.

Rhymes with Six

Bix, Bricks, Brix, Chicks, Clicks, Cliques, Dix, Fickes, Fix, Flicks, Fricks, Frix, Hicks, Hix, Ickes, Kicks, Knicks, Licks, Mix, Nick's, Nicks, Nikk's, Nix, Nyx, Picks, Pix, Rick's, Ricks, Rix, Slicks, Styx, Ticks, Tics, Tricks, Vic's, Vicks, Wickes, Wicks, Wix, Affix, Cake Mix, Conflicts, Depicts, Inflicts, Predicts, Quick Fix, Transfix, Bag Of Tricks, Brownie Mix, Captain Hicks, Intermix, River Styx, Row Of Bricks, Lemonade Mix.

Rhymes with Seven

Bevan, Beven, Devan, Devon, Evan, Evon, Heaven, Kevan, Leaven, Levan, Previn, Eleven, Mcgrevin, Mcnevin, Seventh Heaven, Tree Of Heaven, Vault Of Heaven, Manna From Heaven , Kevin, 7-Eleven, , Momevin, Geven, Deven, Beven, Weven, Pevin, Feven, Geven, Jeven, Zeven, Meven, Breven, Toobeven.

Rhymes with Eight

Ate, Bait, Freightgate, Great, Hate, Late, Mate, Bank Rate, Baud Rate, Clean Slate, Collate, Crime Rate, Debate, Deflate, Dictate, Dilate, Kuwait, Lightweight, Lose Weight, Postdate, Steel Plate, Figure Skate, Mental State, Overrate, Overweight, Payment Rate, Police State, Procreate, Quarter Plate, Real Estate, Recreate, Reinstate, Roller Skate, Running Mate, Underrate,

Watergate, Collection Plate, Junior Lightweight, Prime Interest Rate, Public Debate, Recriminate, Remunerate, Repayment Rate, Reporting Weight, Second Estate, Turnover Rate, Vacancy Rate, Department Of State, Emotional State, Equivalent Weight, Maturity Date, Unemployment Rate, Alexander The Great, Capital Of Kuwait, Secretary Of State.

Rhymes with Nine

Brine, Dine, Fine, Line, Mine, Pine, Shine, Shrine, Twine, Vine, Whine, Wine, Blood Line, Blush Wine, Bread Line, Bus Line, Chalk Line, Chow Line, Combine, Confine, Consign, Hot Line, Incline, Malign, Nut Pine, Plumb Line, Plus Sign, Rail Line, Street Sign, Tree Line, Trend Line, White Pine, Chorus Line, Command Line, Copper Mine, Credit Line, Dollar Sign, Draw A Line, Draw The Line, Drop A Line, Equal Sign, Fishing Line, Melon Vine, Minus Sign, Opening Line, Percentage Sign, Telephone Line, Top Of The Line, Unemployment Line, Personal Credit Line.

Get to the Point

What makes a password predictable is not just the meaning of your password, but also the actual words you use. One way to circumvent this problem is to say something in a roundabout way. For example, rather than using the password *my sister*, put it this way: *my mother's husband's daughter*. Instead of using the password *stapler*, instead use the password *staple contortion device*. Get the point?

Some examples:

- Lap-based computing device
- The circular filing cabinet
- Armpit odor prevention system

A variant of this technique is to take any word, phrase, or job title and make it sound politically correct:

- Waste collection engineer
- Follicle deprived

Yet another variant of this technique is to use a Jeopardy-like style where you use the answer as your password instead of the question. It doesn't really matter what the answer is, you're just using the actual question to make a strong password.

- What is the color of your car?
- Who was the first person to travel to Jupiter?

The Confession

One problem too many people have is sharing their passwords with others. It's just too easy when someone needs something that your password protects, to just hand the password over to them without thinking. Of course, as I explain in Chapter 12, this is not a good practice because a password should be a secret. You should *never* share your passwords with anyone else. So here's a trick to make yourself think twice before blurting out your password: make your password a confession—a real secret.

You could, for example, make your password *I pick my nose at stoplights*. Of course, this is just a made up confession, not something I am really admitting to. That would be disgusting. But suppose you yourself pick your nose at stoplights; this might be a good password for *you*. It certainly will help you keep your password to yourself.

So what secrets do you have? Do you dislike someone? Do you steal office supplies from your company? Wear a toupee? They're all great passwords.

The great thing about this password tip is that these passwords are also easy to remember. Whatever it is that popped into your head first is probably something you're self-conscious enough about to make you think of it first. Best of all, this might just be one of your best kept secrets. What better way to remember a password than by basing it on something that you already keep a secret?

The Elbow Mambo

You may have heard of dance moves called the pot stir, the duck walk, or the egg beater, but here's a chance to come up with your own dance move. Well, at least the name of it. There really isn't much to explain here, but maybe a few examples might get you started:

- The Puppy Hop
- The knee-dip-trip
- The Wild Boar
- The Larry King Shrug

Passwords based on these patterns are simple to remember, and probably easier than the dance moves themselves.

The Phone Number

I already mentioned using patterns our brains are accustomed to remembering. Another technique in this category is a password based on a phone number. When you think of these passwords, be sure to include numbers, punctuation, and letters.

The following are some examples:

- 1-800-Broken glasses
- (888) 888-eight eight
- 1-900-puppies
- (222) New-Shoe

This pattern usually works well; just be careful not to use an easily guessable number such as your own number or some commonly known number. Although, the pattern “(888) 888-eight eight” might seem repetitive and simple, the fact that we utilize spaces, -, (), and that it’s 22 characters long makes it a difficult password to crack.

Did You Know?

Approximately 1 out of every 110,000 people uses the password 8675309, from the 1982 Tommy Tutone hit single *Jenny*.

Letter Swapping

One principle of strong passwords is to avoid using dictionary words as your password. A simple way to avoid doing this is using a couple of words together, separated by a space or hyphen. For years, AOL has used this technique for generating passwords on their mass-mailed free offer CDs. On these CDs, you will frequently see passwords such as *ANTICS-ABSORB*, *HOLE-ROTS*, or *RAKED-GNOME*. The only problem with this technique is that as computing power increases, it would not be difficult for a hacker to try every combination of two words to discover the password. Even current technology makes that feasible.

This password technique is similar to the two-words method. The difference is that it takes it one step further by swapping the first one or two letters of each word to make it less likely they will appear on a dictionary or common password list.

This is what they look like:

- *Sour Grape* becomes *Gour Srape*
- *Ford Mustang* becomes *Mord Fustang*
- *Slurred Speech* becomes *Spurred Sleech*
- *Dog-Poo* becomes *Pog-Doo*
- *Big Ditch!* becomes *Dig Bitch!*

This pattern might help you to remember your password, given two new elements: humor and offensiveness. If something is funny, it's easier to remember. Same thing goes for offensive words. Sure, you might be offended by the password *Dig Bitch*, but chances are you probably will remember it. The only problem with that particular password is that by swapping letters it made two new words that are still dictionary words, so watch out for that.

Constructing a memorable password is easy if you take the time to learn some simple patterns such as those presented here. If you use these patterns or come up with your own, just be sure you don't make your passwords so similar that someone could guess many of your passwords just by seeing one of them. The goal is to make each and every password unique but still easy to remember.

Summary

By now, you should have a feel for the strategy here—follow patterns that are easy to remember but make your passwords less predictable. Think about building a password, rather than just choosing a password. Complex, multi-word passwords are much more difficult to crack and they can be just as easy to remember as a short password. Best of all, sometimes all you need to remember the password is just one of the words contained in it to trigger remembering the rest.