

Record of Important Things

If found, please return to:

Simply, people can no longer remember passwords good enough to reliably defend against dictionary attacks, and are much more secure if they choose a password too complicated to remember and then write it down. We're all good at securing small pieces of paper. I recommend that people write their passwords down on a small piece of paper, and keep it with their other valuable small pieces of paper: in their wallet.

Bruce Schneier

Contents

1. Secure passphrases with Diceware

2. EFF word list short version v2.0

7. 15.

8. 16.

9. 17.

10. 18.

11. 19.

12. 20.

13. 21.

14. 22.

23. Security questions

SCENE – I

Two women sit in a dark room in front of a computer.

MARGARET This information needs to stay secret.

HARRIET Calm down, it's encrypted with a password nobody can guess: r 4 b @ b 1 t \$

MARGARET A simple word with substitutions and insertions? You've got to be kidding me, Harriet, a twelve-year-old computer could break that in milliseconds.

HARRIET Then you make the password.

MARGARET (*grabs four dice*) I'll make a Diceware passphrase.

MARGARET *rolls the dice*

MARGARET 1 6 6 6; that's *cognitive*.

She rolls the dice again

MARGARET 5 1 5 6; that's *poetic*.

HARRIET What's a passphrase?

MARGARET A password made from words stuck together. And with enough words chosen randomly, reasonably secure.

MARGARET *rolls the dice three more times*

HARRIET How obscure; I'll never remember these numbers.

MARGARET 5 3 5 6 3 2 2 3 5 6 2 6; your passphrase is *cognitive poetic ribbon garlic smelliness*.

HARRIET I won't call that poetic, but I can probably remember it. Thanks, Marge.

What is a Diceware passphrase?

A passphrase is a list of words that you type into your computer to let it know for sure that *the person typing is you*. Passphrases differ from passwords only in length.

Diceware is a method for picking passphrases which uses dice to select words at random from a special list. Each word in the list is preceded by a four digit number. All the digits are between one and six, allowing you to use the outcomes of four dice rolls to select a word from the list.

Directions

- 1 Decide how many words you want in your passphrase. A five-word passphrase provides a level of security *much* higher than the passwords most people use. For NSA-proof security, use seven words.
- 2 Roll all four dice at once and write the results down, reading from left to right, on a scrap of paper. Make as many of these four-digit groups as you want words in your passphrase.
- 3 Flip to the word list and look up the corresponding word next to each four-digit number.
- 4 The words you have found are your new passphrase!
- 5 Come up with a way to remember your phrase. It might be a story, mental picture, or sentence that will remind you of the phrase you generated.

Your passphrase is one of the 3,656,158,440,062,976 (6^{20}) alternatives that could have been chosen by this method.

1111	aardvark	1324	aquamarine	1541	buddhist	2154	cuticle
1112	abandoned	1325	arachnid	1542	buffalo	2155	cybernetic
1113	abbreviate	1326	arbitrate	1543	bullfrog	2156	cyclist
1114	abdomen	1331	ardently	1544	bunny	2161	cylinder
1115	abhorrence	1332	arena	1545	busboy	2162	cymbal
1116	abiding	1333	argument	1546	buzzard	2163	cynicism
1121	abnormal	1334	aristocrat	1551	cabin	2164	cypress
1122	abrasion	1335	armchair	1552	cactus	2165	cytoplasm
1123	absorbing	1336	aromatic	1553	cadillac	2166	dachshund
1124	abundant	1341	arrowhead	1554	cafeteria	2211	daffodil
1125	abyss	1342	arsonist	1555	cage	2212	dagger
1126	academy	1343	artichoke	1556	cahoots	2213	dairy
1131	accountant	1344	asbestos	1561	cajoling	2214	dalmatian
1132	acetone	1345	ascend	1562	cakewalk	2215	dandelion
1133	achiness	1346	aseptic	1563	calculator	2216	dartboard
1134	acid	1351	ashamed	1564	camera	2221	dastardly
1135	acoustics	1352	asinine	1565	canister	2222	datebook
1136	acquire	1353	asleep	1566	capsule	2223	daughter
1141	acrobat	1354	asocial	1611	carrot	2224	dawn
1142	actress	1355	asparagus	1612	cashew	2225	daytime
1143	acuteness	1356	astronaut	1613	cathedral	2226	dazzler
1144	aerosol	1361	asymmetric	1614	caucasian	2231	dealer
1145	aesthetic	1362	atlas	1615	caviar	2232	debris
1146	affidavit	1363	atmosphere	1616	ceasefire	2233	decal
1151	afloat	1364	atom	1621	cedar	2234	dedicate
1152	afraid	1365	atrocious	1622	celery	2235	deepness
1153	aftershave	1366	attic	1623	cement	2236	defrost
1154	again	1411	atypical	1624	census	2241	degree
1155	agency	1412	auctioneer	1625	ceramics	2242	dehydrator
1156	aggressor	1413	auditorium	1626	cesspool	2243	deliverer
1161	aghost	1414	augmented	1631	chalkboard	2244	democrat
1162	agitate	1415	auspicious	1632	cheese cake	2245	dentist
1163	agnostic	1416	automobile	1633	chimney	2246	deodorant
1164	agonizing	1421	auxiliary	1634	chlorine	2251	depot
1165	agreeing	1422	avalanche	1635	chopsticks	2252	deranged
1166	aidless	1423	avenue	1636	chrome	2253	desktop
1211	aimlessly	1424	aviator	1641	chute	2254	detergent
1212	ajar	1425	avocado	1642	cilantro	2255	device
1213	alarmclock	1426	awareness	1643	cinnamon	2256	dexterity
1214	albatross	1431	awhile	1644	circle	2261	diamond
1215	alchemy	1432	awkward	1645	cityscape	2262	dibs
1216	alfalfa	1433	awning	1646	civilian	2263	dictionary
1221	algae	1434	awoke	1651	clay	2264	diffuser
1222	aliens	1435	axially	1652	clergyman	2265	digit
1223	alkaline	1436	azalea	1653	clipboard	2266	dilated
1224	almanac	1441	babbling	1654	clock	2311	dimple
1225	alongside	1442	backpack	1655	clubhouse	2312	dinnerware
1226	alphabet	1443	badass	1656	coathanger	2313	dioxide
1231	already	1444	bagpipe	1661	cobweb	2314	diploma
1232	also	1445	bakery	1662	coconut	2315	directory
1233	altitude	1446	balancing	1663	codeword	2316	dishcloth
1234	aluminum	1451	bamboo	1664	coexistent	2321	ditto
1235	always	1452	banana	1665	coffecake	2322	dividers
1236	amazingly	1453	barracuda	1666	cognitive	2323	dizziness
1241	ambulance	1454	basket	2111	cohabitate	2324	doctor
1242	amentment	1455	bathrobe	2112	collarbone	2325	dodge
1243	amiable	1456	bazooka	2113	computer	2326	doll
1244	ammunition	1461	blade	2114	confetti	2331	dominoes
1245	amnesty	1462	blender	2115	copier	2332	donut
1246	amoeba	1463	blimp	2116	cornea	2333	doorstep
1251	amplifier	1464	blouse	2121	cosmetics	2334	dorsal
1252	amuser	1465	blurred	2122	cotton	2335	double
1253	anagram	1466	boatyard	2123	couch	2336	downstairs
1254	anchor	1511	bobcat	2124	coverless	2341	dozed
1255	android	1512	body	2125	coyote	2342	drainpipe
1256	anesthesia	1513	bogusness	2126	coziness	2343	dresser
1261	angelfish	1514	bohemian	2131	crawfish	2344	driftwood
1262	animal	1515	boiler	2132	crewmember	2345	droppings
1263	anklet	1516	bonnet	2133	crib	2346	drum
1264	announcer	1521	boots	2134	croissant	2351	dryer
1265	anonymous	1522	borough	2135	crumble	2352	duobiously
1266	answer	1523	bossiness	2136	crystal	2353	duckling
1311	antelope	1524	bottle	2141	cubical	2354	duffel
1312	anxiety	1525	bouquet	2142	cucumber	2355	dugout
1313	anyplace	1526	boxlike	2143	cuddly	2356	dumpester
1314	aorta	1531	breath	2144	cufflink	2361	duplex
1315	apartment	1532	briefcase	2145	cuisine	2362	durable
1316	apnea	1533	broom	2146	culprit	2363	dustpan
1321	apostrophe	1534	brushes	2151	cup	2364	ditiful
1322	apple	1535	bubblegum	2152	curry	2365	duvet
1323	apricot	1536	buckle	2153	cushion	2366	dwarfism

2411 dwelling	2624 evacuation	3241 gesture	3454 hygienist
2412 dwindling	2625 evergreen	3242 getaway	3455 hypnotist
2413 dynamite	2626 evidence	3243 geyser	3456 ibuprofen
2414 dyslexia	2631 evolution	3244 ghoulishly	3461 icepack
2415 eagerness	2632 exam	3245 gibberish	3462 icing
2416 earlobe	2633 excerpt	3246 giddiness	3463 iconic
2421 easel	2634 exerciser	3251 giftshop	3464 identical
2422 eavesdrop	2635 exfoliate	3252 gigabyte	3465 idiocy
2423 ebook	2636 exhale	3253 gimmick	3466 idly
2424 eccentric	2641 exist	3254 giraffe	3511 igloo
2425 echoless	2642 exorcist	3255 giveaway	3512 ignition
2426 eclipse	2643 explode	3256 gizmo	3513 iguana
2431 ecosystem	2644 exquisite	3261 glasses	3514 illuminate
2432 ecstasy	2645 exterior	3262 gleeful	3515 imaging
2433 edged	2646 exuberant	3263 glisten	3516 imbecile
2434 editor	2651 fabric	3264 glove	3521 imitator
2435 educator	2652 factory	3265 glucose	3522 immigrant
2436 eelworm	2653 faded	3266 glycerin	3523 imprint
2441 eerie	2654 failsafe	3311 gnarly	3524 iodine
2442 effects	2655 falcon	3312 gonish	3525 ionosphere
2443 eggnog	2656 family	3313 goatskin	3526 ipad
2444 egomaniac	2661 fanfare	3314 goggles	3531 iphone
2445 ejection	2662 fasten	3315 goldfish	3532 iridescent
2446 elastic	2663 faucet	3316 gong	3533 irksome
2451 elbow	2664 favorite	3321 gooeey	3534 iron
2452 elderly	2665 feasibly	3322 gorgeous	3535 irrigation
2453 elephant	2666 february	3323 gosling	3536 island
2454 elfishly	3111 federal	3324 gothic	3541 isotope
2455 eliminator	3112 feedback	3325 gourmet	3542 issueless
2456 elk	3113 feigned	3326 governor	3543 italicize
2461 elliptical	3114 feline	3331 grape	3544 itemizer
2462 elongated	3115 femur	3332 greyhound	3545 itinerary
2463 elsewhere	3116 fence	3333 grill	3546 itunes
2464 elusive	3121 ferret	3334 groundhog	3551 ivory
2465 elves	3122 festival	3335 grumbling	3552 jabbering
2466 emancipate	3123 fettuccine	3336 guacamole	3553 jackrabbit
2511 embroidery	3124 feudalism	3341 guerrilla	3554 jaguar
2512 emcee	3125 feverish	3342 guitar	3555 jailhouse
2513 emerald	3126 fiberglass	3343 gullible	3556 jalapeno
2514 emission	3131 fictitious	3344 gumdrop	3561 jamboree
2515 emoticon	3132 fiddle	3345 gurgling	3562 janitor
2516 emperor	3133 figurine	3346 gusto	3563 jarring
2521 emulate	3134 fillet	3351 gutless	3564 jasmine
2522 enactment	3135 finalist	3352 gymnast	3565 jaundice
2523 enchilada	3136 fiscally	3353 gynecology	3566 jawbreaker
2524 endorphin	3141 fixture	3354 gyration	3611 jaywalker
2525 energy	3142 flashlight	3355 habitat	3612 jazz
2526 enforcer	3143 fleshiness	3356 hacking	3613 jealous
2531 engine	3144 flight	3361 haggard	3614 jeep
2532 enhance	3145 florist	3362 haiku	3615 jelly
2533 enigmatic	3146 flypaper	3363 halogen	3616 jeopardize
2534 enjoyably	3151 foamless	3364 hamburger	3621 jersey
2535 enlarged	3152 focus	3365 handgun	3622 jetski
2536 enormous	3153 foggy	3366 happiness	3623 jezebel
2541 enquirer	3154 folksong	3411 hardhat	3624 jiffy
2542 enrollment	3155 fondue	3412 hastily	3625 jigsaw
2543 ensemble	3156 footpath	3413 hatchling	3626 jingling
2544 entryway	3161 fossil	3414 haughty	3631 jobholder
2545 enunciate	3162 fountain	3415 hazelnut	3632 jockstrap
2546 envoy	3163 fox	3416 headband	3633 jogging
2551 enzyme	3164 fragment	3421 hedgehog	3634 john
2552 epidemic	3165 freeway	3422 hefty	3635 joinable
2553 equipment	3166 fridge	3423 heinously	3636 jokingly
2554 erasable	3211 frosting	3424 helmet	3641 journal
2555 ergonomic	3212 fruit	3425 hemoglobin	3642 jovial
2556 erratic	3213 fryingpan	3426 henceforth	3643 joystick
2561 eruption	3214 gadget	3431 herbs	3644 jubilant
2562 escalator	3215 gainfully	3432 hesitation	3645 judiciary
2563 eskimo	3216 gallstone	3433 hexagon	3646 juggle
2564 esophagus	3221 gamekeeper	3434 hubcap	3651 juice
2565 espresso	3222 gangway	3435 huddling	3652 juitsu
2566 essay	3223 garlic	3436 huff	3653 jukebox
2611 estrogen	3224 gaslight	3441 hugeness	3654 jumpiness
2612 etching	3225 gathering	3442 hullabaloo	3655 junkyard
2613 eternal	3226 gauntlet	3443 human	3656 juror
2614 ethics	3231 gearbox	3444 hunter	3661 justifying
2615 etiquette	3232 gecko	3445 hurricane	3662 juvenile
2616 eucalyptus	3233 gem	3446 hushing	3663 kabob
2621 eulogy	3234 generator	3451 hyacinth	3664 kamikaze
2622 euphemism	3235 geographer	3452 hybrid	3665 kangaroo
2623 euthanize	3236 gerbil	3453 hydrant	3666 karate

4111 kayak	4324 mammal	4541 obliterate	5154 pneumonia
4112 keepsake	4325 mango	4542 obnoxious	5155 podiatrist
4113 kennel	4326 mapmaker	4543 observer	5156 poetic
4114 kerosene	4331 marbles	4544 obtain	5161 pogo
4115 ketchup	4332 massager	4545 obvious	5162 poison
4116 khaki	4333 matchstick	4546 occupation	5163 poking
4121 kickstand	4334 maverick	4551 oceanic	5164 policeman
4122 kilogram	4335 maximum	4552 octopus	5165 poncho
4123 kimono	4336 mayonnaise	4553 ocular	5166 popcorn
4124 kingdom	4341 moaning	4554 office	5211 porcupine
4125 kiosk	4342 mobilize	4555 oftentimes	5212 postcard
4126 kissing	4343 moccasin	4556 oiliness	5213 poultry
4131 kite	4344 modify	4561 ointment	5214 powerboat
4132 kleenex	4345 moisture	4562 older	5215 prairie
4133 knapsack	4346 molecule	4563 olympics	5216 pretzel
4134 kneecap	4351 momentum	4564 omissible	5221 princess
4135 knickers	4352 monastery	4565 omnivorous	5222 propeller
4136 koala	4353 moonshine	4566 oncoming	5223 prune
4141 krypton	4354 mortuary	4611 onion	5224 pry
4142 laboratory	4355 mosquito	4612 onlooker	5225 pseudo
4143 ladder	4356 motorcycle	4613 onstage	5226 psychopath
4144 lakefront	4361 mousetrap	4614 onward	5231 publisher
4145 lantern	4362 movie	4615 onyx	5232 pucker
4146 laptop	4363 mower	4616 omph	5233 pueblo
4151 laryngitis	4364 mozzarella	4621 opaquely	5234 pulley
4152 lasagna	4365 muckiness	4622 opera	5235 pumpkin
4153 latch	4366 mudflow	4623 opium	5236 punchbowl
4154 laundry	4411 mugshot	4624 opossum	5241 puppy
4155 lavender	4412 mule	4625 opponent	5242 purse
4156 laxative	4413 mummy	4626 optical	5243 pushup
4161 lazybones	4414 mundane	4631 opulently	5244 putt
4162 lecturer	4415 muppet	4632 oscillator	5245 puzzle
4163 leftover	4416 mural	4633 osmosis	5246 pyramid
4164 leggings	4421 mustard	4634 ostrich	5251 python
4165 leisure	4422 mutation	4635 otherwise	5252 quarters
4166 lemon	4423 myriad	4636 ought	5253 quesadilla
4211 length	4424 myspace	4641 outhouse	5254 quilt
4212 leopard	4425 myth	4642 ovation	5255 quote
4213 leprechaun	4426 nail	4643 oven	5256 racoon
4214 lettuce	4431 namesake	4644 owlsh	5261 radish
4215 leukemia	4432 nanosecond	4645 oxford	5262 ragweed
4216 levers	4433 napkin	4646 oxidize	5263 railroad
4221 lewdness	4434 narrator	4651 oxygen	5264 rampantly
4222 liability	4435 nastiness	4652 oyster	5265 rancidity
4223 library	4436 natives	4653 ozone	5266 rarity
4224 licorice	4441 nautically	4654 pacemaker	5311 raspberry
4225 lifeboat	4442 navigate	4655 padlock	5312 ravishing
4226 lightbulb	4443 nearest	4656 pageant	5313 rearrange
4231 likewise	4444 nebula	4661 pajamas	5314 rebuilt
4232 lilac	4445 nectar	4662 palm	5315 receipt
4233 limousine	4446 nefarious	4663 pamphlet	5316 reentry
4234 lint	4451 negotiator	4664 pantyhose	5321 refinery
4235 lioness	4452 neither	4665 paprika	5322 register
4236 lipstick	4453 nemesis	4666 parakeet	5323 rehydrate
4241 liquid	4454 neoliberal	5111 passport	5324 reimburse
4242 listless	4455 nephew	5112 patio	5325 rejoicing
4243 litter	4456 nervously	5113 pauper	5326 rekindle
4244 liverwurst	4461 nest	5114 pavement	5331 relic
4245 lizard	4462 netting	5115 payphone	5332 remote
4246 llama	4463 neuron	5116 pebble	5333 renovator
4251 luau	4464 nevermore	5121 peculiarly	5334 reopen
4252 lubricant	4465 nextdoor	5122 pedometer	5335 reporter
4253 lucidity	4466 nicotine	5123 pegboard	5336 request
4254 ludicrous	4511 niece	5124 pelican	5341 rerun
4255 luggage	4512 nimbleness	5125 penguin	5342 reservoir
4256 lukewarm	4513 nintendo	5126 peony	5343 retriever
4261 lullaby	4514 nirvana	5131 pepperoni	5344 reunion
4262 lumberjack	4515 nuclear	5132 peroxide	5345 revolver
4263 lunchbox	4516 nugget	5133 pesticide	5346 rewrite
4264 luridness	4521 nuisance	5134 petroleum	5351 rhapsody
4265 luscious	4522 nullify	5135 pewter	5352 rhetoric
4266 luxurious	4523 numbing	5136 pharmacy	5353 rhino
4311 lyrics	4524 nuptials	5141 pheasant	5354 rhubarb
4312 macaroni	4525 nursery	5142 phonebook	5355 rhyme
4313 maestro	4526 nutcracker	5143 phrasing	5356 ribbon
4314 magazine	4531 nylon	5144 physician	5361 riches
4315 mahogany	4532 oasis	5145 plank	5362 ridden
4316 maimed	4533 oat	5146 pledge	5363 rigidity
4321 majority	4534 obediently	5151 plotted	5364 rimmed
4322 makeover	4535 obituary	5152 plug	5365 riptide
4323 malformed	4536 object	5153 plywood	5366 riskyly

5411 ritzy	5624 slumbering	6241 trousers	6454 vertebrae
5412 riverboat	5625 smartphone	6242 trucks	6455 vestibule
5413 roamer	5626 smelliness	6243 tryout	6456 veteran
5414 robe	5631 smitten	6244 tubeless	6461 vexingly
5415 rocket	5632 smokestack	6245 tuesday	6462 vicinity
5416 romancer	5633 smudge	6246 tugboat	6463 videogame
5421 ropelike	5634 snapshot	6251 tulip	6464 viewfinder
5422 rotisserie	5635 sneezing	6252 tumbleweed	6465 vigilante
5423 roundtable	5636 sniff	6253 tupperware	6466 village
5424 royal	5641 snowsuit	6254 turtle	6511 vinegar
5425 rubber	5642 snugness	6255 tusk	6512 violin
5426 rudderless	5643 speakers	6256 tutorial	6513 viperfish
5431 rugby	5644 sphinx	6261 tuxedo	6514 virus
5432 ruined	5645 spider	6262 tweezers	6515 visor
5433 rulebook	5646 splashing	6263 twins	6516 vitamins
5434 rummage	5651 sponge	6264 tyrannical	6521 vivacious
5435 running	5652 sprout	6265 ultrasound	6522 vixen
5436 rupture	5653 spur	6266 umbrella	6523 vocalist
5441 rustproof	5654 spyglass	6311 umpire	6524 vogue
5442 sabotage	5655 squirrel	6312 unarmored	6525 voicemail
5443 sacrifice	5656 statue	6313 unbuttoned	6526 volleyball
5444 saddlebag	5661 steamboat	6314 uncle	6531 voucher
5445 saffron	5662 stingray	6315 underwear	6532 voyage
5446 sainthood	5663 stopwatch	6316 unevenness	6533 vulnerable
5451 saltshaker	5664 strawberry	6321 unflavored	6534 waffle
5452 samurai	5665 student	6322 ungloved	6535 wagon
5453 sandworm	5666 stylus	6323 unhinge	6536 wakeup
5454 sapphire	6111 suave	6324 unicycle	6541 walrus
5455 sardine	6112 subway	6325 unjustly	6542 wanderer
5456 sassy	6113 suction	6326 unknown	6543 wasp
5461 satchel	6114 suds	6331 unlocking	6544 water
5462 sauna	6115 suffocate	6332 unmarked	6545 waving
5463 savage	6116 sugar	6333 unnoticed	6546 wheat
5464 saxophone	6121 suitcase	6334 unopened	6551 whisper
5465 scarf	6122 sulphur	6335 unpaved	6552 wholesaler
5466 scenario	6123 superstore	6336 unquenched	6553 wick
5511 schoolbook	6124 surfer	6341 unroll	6554 widow
5512 scientist	6125 sushi	6342 unscrewing	6555 wielder
5513 scooter	6126 swan	6343 untied	6556 wifeless
5514 scrapbook	6131 sweatshirt	6344 unusual	6561 wikipedia
5515 sculpture	6132 swimwear	6345 unveiled	6562 wildcat
5516 scythe	6133 sword	6346 unwrinkled	6563 windmill
5521 secretary	6134 sycamore	6351 unyielding	6564 wipeout
5522 sedative	6135 syllable	6352 unzip	6565 wired
5523 segregator	6136 symphony	6353 upbeat	6566 wishbone
5524 seismology	6141 synagogue	6354 upcountry	6611 wizardry
5525 selected	6142 syringe	6355 update	6612 wobbliness
5526 semicolon	6143 systemize	6356 upfront	6613 wolverine
5531 senator	6144 tablespoon	6361 upgrade	6614 womb
5532 septum	6145 taco	6362 upholstery	6615 woolworker
5533 sequence	6146 tadpole	6363 upkeep	6616 workbasket
5534 serpent	6151 taekwondo	6364 upload	6621 wound
5535 sesame	6152 tagalong	6365 uppercut	6622 wrangle
5536 settler	6153 takeout	6366 upright	6623 wreckage
5541 severely	6154 tallness	6411 upstairs	6624 wristwatch
5542 shack	6155 tamale	6412 uptown	6625 wrongdoing
5543 shelf	6156 tanned	6413 upwind	6626 xerox
5544 shirt	6161 tapestry	6414 uranium	6631 xylophone
5545 shovel	6162 tarantula	6415 urban	6632 yacht
5546 shrimp	6163 tastebud	6416 urchin	6633 yahoo
5551 shuttle	6164 tattoo	6421 urethane	6634 yard
5552 shyness	6165 tavern	6422 urgent	6635 yearbook
5553 siamese	6166 thaw	6423 urologist	6636 yesterday
5554 sibling	6211 theater	6424 username	6641 yiddish
5555 siesta	6212 thimble	6425 usher	6642 yield
5556 silicon	6213 thorn	6426 utensil	6643 yoyo
5561 simmering	6214 throat	6431 utility	6644 yodel
5562 singles	6215 thumb	6432 utmost	6645 yogurt
5563 sisterhood	6216 thwarting	6433 utopia	6646 yuppie
5564 sitcom	6221 tiara	6434 utterance	6651 zealot
5565 sixfold	6222 tidbit	6435 vacuum	6652 zebra
5566 sizable	6223 tiebreaker	6436 vagrancy	6653 zeppelin
5611 skateboard	6224 tiger	6441 valuables	6654 zestfully
5612 skeleton	6225 timid	6442 vanquished	6655 zigzagged
5613 skies	6226 tinsel	6443 vaporizer	6656 zillion
5614 skulk	6231 tiptoeing	6444 varied	6661 zipping
5615 skylight	6232 tirade	6445 vaseline	6662 zirconium
5616 slapping	6233 tissue	6446 vegetable	6663 zodiac
5621 sled	6234 tractor	6451 vehicle	6664 zombie
5622 slingshot	6235 tree	6452 velcro	6665 zookeeper
5623 sloth	6236 tripod	6453 vendor	6666 zucchini

Website

Login or Email address

Passwords used

Date

Notes

Website

Login or Email address

Passwords used

Date

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Login or Email address

Passwords used

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Security questions

Shouldn't I never write my password down?

In today's world, major corporations are hacked every week, and distributed cracking networks can break complex passwords in record time. It's safest to use a strong, unique password for each account you hold, but this makes memorization impractical.

Once, people were told not to write passwords down, ever, but the consensus among security professionals has evolved. You're better at protecting this book than corporations are at securing their password databases.

Can I just pick my own words from the list?

No. Humans are terrible at being unpredictable, and hackers are great at exploiting predictability. The primary reason that Diceware creates secure passwords is that you have no agency in the process.

Should I leave spaces between the words?

Yes. It makes your passphrase more secure, and easier to type.

How many words should I use in my passphrase?

The most important accounts, such as email, e-commerce and financial sites, should use at least five words.

Encrypted drives storing sensitive personal and financial documents should use seven words.

Less critical accounts, like social media, can use three words provided the passwords are unique.

My passphrase was rejected because it is too long, or because it lacks capitalization and numbers.

You may shorten words to no less than three letters without affecting the security of your passphrase. You may also replace words with their associated 4 digit number. You may *not* choose different words.

Capitalization adds a very small amount of security; if required, pick a memorable word to capitalize.

What if I lose this book?

The real purpose of this book is to provide you with the tools to generate strong, memorable passwords that are

unbreakable by the world's most powerful computers. It need not be the only place that you record them.

Are password managers like 1Password safe?

Yes, as long as the master password is strong & secure. For example, if Google Chrome is configured to store your password, make sure that you have a strong Google password, and don't leave your account logged in on computers or mobile devices that are not physically secure. The same is true of Safari and iCloud, Internet Explorer and Windows Live, etc.

Who invented Diceware?

Diceware was invented by Arnold G. Reinhold, a computer scientist in Cambridge, MA. It was first published to Usenet's *sci.crypt.research* on August 1st, 1995. For lots more information, visit <https://goo.gl/xobzeV>.

This book implements a simplified version developed by the Electronic Frontier Foundation (EFF) in 2016.

What is the danger in reusing a password?

Imagine that you used the same password for an online clothing store, and your email provider. Months later, the clothing store is hacked and your password is stolen. The hackers login to your email and find correspondence from your bank. They use the bank website to reset your online banking password, and intercept the confirmation email. Next, they use the bank website to order checks in your name, initiate transfers, etc.

This story illustrates why the security of your email ranks above others in importance: for hackers, it is the gateway to all your accounts.

How can I find out if my password has been stolen?

Visit haveibeenpwned.com, and type in your email address. This helpful site tracks the data leaks released by hackers, and maintains a database of email addresses hacked and what kind of data was stolen.

If your email tests positive, immediately change the password for the sites listed *and* any sites that might have shared the same password.

What is two-factor authentication?

Two-factor authentication enhances your password by sending a code to your phone or another device, which you must supply in order to be authorized. This ensures that even if someone has your password, they also need to have your phone.

It's a good idea to set up two-factor authentication on any account linked to your bank account or credit cards.

The US Government no longer recommends SMS for two-factor authentication, due to the ease with which text messages can be intercepted. Mobile apps like Google Authenticator are more secure.

What is phishing?

Phishing is when a hacker sends you an email message which appears to be from an organization you have a relationship with, but is actually a trap to make you give up your password.

Phishing emails typically warn you that something is wrong with your account, a delivery, or another kind of transaction, and urge you to open a document or log in via a link. They can be very realistic and insidious.

Always check the URL in any emailed links you click, and be sure that they take you to the site you expect.

What is social engineering?

Social engineering is when a hacker contacts a company you do business with and pretends to be you. Often this means telling customer service that you have lost your password, and trying to convince the representative to change it or otherwise unlock your account.

The best protection against social engineering is to avoid easily-guessed security questions, such as your mother's maiden name. When asked for such information, generate a Diceware password instead.

How can I stay safe online?

Above all, practice good operational security (*opsec*). Be suspicious and careful online.

Minimize the number of accounts you open, and always choose the best account security available. Keep track of the accounts you open, close unused accounts, and change passwords on active accounts regularly. Prefer to shop with businesses that have strong online safeguards, and take advantage of identity protection and online shopping protection services offered by reputable financial institutions.

What to do if I've been hacked?

The resources at crashoverridenetwork.com and at staysafeonline.org are a good starting point. They provide tools to help determine whether you have been hacked and can help you to regain control over your online accounts.

Record of Important Things

Compiled & edited by Wade Brainerd

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Diceware by Arnold G. Reinhold from:
<http://world.std.com/~reinhold/diceware.html>

Diceware word list by Joseph Bonneau from:
<https://www.eff.org/deeplinks/2016/07/new-wordlists-random-passphrases>
https://www.eff.org/files/2016/09/08/eff_short_wordlist_2_0.txt

The L^AT_EX source code for this book is located at:
<https://github.com/wadetb/dicebook>