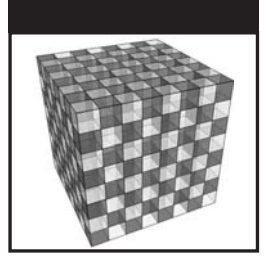


Ron Hale-Evans
Marty Hale-Evans
Bestselling authors of
Mind Performance Hacks

MINDHACKER

60 TIPS, TRICKS, AND
GAMES TO TAKE
YOUR MIND TO
THE NEXT LEVEL



Mindhacker

**60 Tips, Tricks, and Games to Take
Your Mind to the Next Level**

Ron Hale-Evans
Marty Hale-Evans



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To all the magical things patiently waiting for our wits to grow sharper – we're getting there as fast as we can.



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Ron can speak Esperanto, draw ambigrams, compile a kernel, ken a kenning, and locate a letterbox. He owns a copy of the *Codex Seraphinianus*, craves the acquaintance of a Curta calculator, believes deeply in the principles of jury nullification and calliagnosia, and passionately desires to go to Mars.

You can find Ron's projects and social networks at his home page (<http://ron.ludism.org>). To date, he has won four small game design competitions, both with and without Marty. He has also written a series of articles on game systems for *The Games Journal* that have received attention from gamers and academics.

Ron earns the upkeep on his personal Amazon bookstream as a technical writer, and is the only copyfighter and free and open-source software advocate he knows who has worked for the Free Software Foundation, the Linux Foundation, and Microsoft. He would enjoy hearing from you at mindhacker@ludism.org.

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Between professional gigs, Marty works on several nonprofessional projects. She is currently serving as chair of Foolscap, a local literary science fiction convention, which she has helped to produce for three years. She has worked with Peninsula Hands On Art, for whom she has served on the board of directors and researched, written, or taught several art lessons. She has designed and co-designed several award-winning board and card games, and plays weekly with Seattle Cosmic Game Night, which she co-founded with Ron in January 2000. This autumn, Marty plans to begin graduate school at the University of Washington School of Information, with the goal of earning her MLIS.

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Now Tim works as a web application developer in state government; in this role, he continues to learn a little about everything, supporting legacy applications as well as developing new ones.

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Marty would likewise thank Ron for pulling her onto this roller coaster again, even though she often makes herself tiresome company by complaining about standing in line and shouting curses on the drops instead of throwing her hands in the air with delight. She appreciates how many times Ron pulled his act together and Got It Done, because she knows just how hard that is for him sometimes. Thank you for keeping the vision when I get bogged down in practicalities. And, even after all these years, my dear — and, more important, my friend — thank you for continuing to be so damn interesting.



Contents at a Glance

Introduction	xvii
Chapter 1 Memory	1
Chapter 2 Learning	25
Chapter 3 Information Processing	63
Chapter 4 Time Management	95
Chapter 5 Creativity and Productivity	135
Chapter 6 Math and Logic	199
Chapter 7 Communication	263
Chapter 8 Mental Fitness	299
Chapter 9 Clarity	335
Appendix A The Unboxed Games Manifesto	367
Appendix B 3D Visualization	369
Index	373



Contents

Introduction	xvii
Chapter 1 Memory	1
Hack 1: Remember to Remember	1
Hack 2: Build a Memory Dungeon	6
Hack 3: Mix Up Your Facts	10
Hack 4: Space Your Repetitions	14
Hack 5: Recall Long-Ago Events	18
Chapter 2 Learning	25
Hack 6: Establish Your Canon	25
Hack 7: Write in Your Books	32
Hack 8: Read at Speed	44
Hack 9: Learn by Teaching	49
Hack 10: Play the Learning Game	52
Hack 11: Pretend You're a Grad Student	55
Hack 12: Study Kid Stuff	59
Chapter 3 Information Processing	63
Hack 13: Polyspecialize	63
Hack 14: Integrate Your Interests	67
Hack 15: Sift Your Ideas	72
Hack 16: Ask the Hive Mind	77
Hack 17: Write Magnificent Notes	83
Chapter 4 Time Management	95
Hack 18: Keep a Mental Datebook	95
Hack 19: Tell Time Who's Boss	99
Hack 20: Meet MET	106

	Hack 21: Get Control of Yourself	111
	Hack 22: Locate Lost Items	121
	Hack 23: Huffman-Code Your Life	126
	Hack 24: Knock Off Work	129
Chapter 5	Creativity and Productivity	135
	Hack 25: Manifest Yourself	135
	Hack 26: Woo the Muse of the Odd	138
	Hack 27: Seek Bad Examples	143
	Hack 28: Turn a Job into a Game	148
	Hack 29: Scrumble for Glory	160
	Hack 30: Salvage a Vintage Hack	167
	Hack 31: Mine the Future	174
	Hack 32: Dare to Do No Permanent Damage	179
	Hack 33: Make Happy Mistakes	182
	Hack 34: Don't Know What You're Doing	187
	Hack 35: Ratchet	195
Chapter 6	Math and Logic	199
	Hack 36: Roll the Mental Dice	200
	Hack 37: Abduct Your Conclusions	204
	Hack 38: Think Clearly about Simple Errors	209
	Hack 39: Notate Personally	215
	Hack 40: Notate Wisely	218
	Hack 41: Engineer Your Results	223
	Hack 42: Enter the Third Dimension	233
	Hack 43: Enter the Fourth Dimension	239
Chapter 7	Communication	263
	Hack 44: Spell It Out	264
	Hack 45: Read Lips	271
	Hack 46: Emote Precisely	275
	Hack 47: Streamline Your Shorthand	283
	Hack 48: Communicate Multimodally	287
	Hack 49: Mediate Your Environment	291
Chapter 8	Mental Fitness	299
	Hack 50: Acquire a Taste	300
	Hack 51: Try Something New Daily	305
	Hack 52: Metabehave Yourself	308
	Hack 53: Train Your Fluid Intelligence	315
	Hack 54: Think, Try, Learn	321
	Hack 55: Take the One-Question IQ Test	331
Chapter 9	Clarity	335
	Hack 56: Cultivate Beginner's Mind	336
	Hack 57: Take a Semantic Pause	340

	Contents	xv
Hack 58: Retreat and Reboot		350
Hack 59: Get Used to Losing		355
Hack 60: Trust Your Intelligence (and Everyone Else's)		359
Appendix A The Unboxed Games Manifesto		367
Appendix B 3D Visualization		369
Index		373



Introduction

When we bundled up *Mind Performance Hacks* and sent it out to make its way in the world, we suspected it wasn't the last we had to say about techniques for boosting your brain power. Like keeping a sourdough starter, we had a little bit of lively material still fermenting and bubbling away. Over time, by ourselves and talking to readers — some of whom became contributors — we found and mixed in more tasty ingredients, let them sit and expand, punched them around a little, shaped them and baked them up just so, and now we have a new treat to offer you, *Mindhacker*.

This book is informed by two fascinating ideals for human behavior from science fiction. They come from different sources (and we discuss them in more detail in Hack 31, “Mine the Future”), but briefly they are the *mentat* and the *asarya*. The *mentat* aspires to mimic and even replace computers by training to perform prodigious feats of cognitive and analytical skill. Obviously the inspiration for the Mentat Wiki, the *mentat* was also, to some extent, the spirit of *Mind Performance Hacks*, wherein many of the hacks have to do with acquiring and honing those kinds of skills. The *mentat* is still present in *Mindhacker*, but we've added a colleague, the *asarya*. If the *mentat* is a strongman, the *asarya* is an acrobat, focused on flexibility of mind. The *asarya* aims to hold all possibilities in mind at once, to “look upon the universe just as it is and affirm every aspect,” to say “yes” to all things. With the hacks in *Mindhacker*, we hope to help you amp up your mental skills, but also learn to bend and flex your viewpoint, to see things in new ways and focus your growing mental skills effectively. In the end, it's adding the right pipes and valves that turns a fountain into a fire hose.

Perhaps we should also explain up front that, to us, “hacker” doesn't have the negative connotations it has for many people. It has nothing to do with unauthorized breaches by either software viruses or hatchets. Rather, we subscribe to the belief that hacking something means opening it up and tinkering around,

with the intention to make it better than it was, and possibly better than it was designed to be in the first place. It requires intelligence, skill, creativity, and work focused on improvement, not destruction. Nothing you can try in this book will harm you; the worst that will happen is that nothing will happen. With your brain, you don't even have to worry about violating a user agreement or warranty; you own it and you can make it as fast, tough, and agile as you want. We hope to lead the way and show you how — let's go!

Overview of the Book and Technology

The hacks in *Mindhacker* tend to be longer and less basic than those in similar books. However, they are firmly grounded. Some are grounded in contemporary neuroscience, as with Hack 53, “Train Your Fluid Intelligence,” which explains how to perform the “n-back” exercises that have recently been shown in laboratory trials to increase your intelligence. Others are grounded in time-tested mental techniques, as with Hack 2, “Build a Memory Dungeon,” which gives the classical mnemonic technique of the memory palace a twist that ought to appeal to video and role-playing gamers. All in all, we aim to include a variety of techniques based on a broad selection of sources that you'll also find interesting for their own sake.

A few hacks, but not all, require the use of a computer and some free software; see “Tools You Will Need.”

How This Book Is Organized

Chapter 1, “Memory,” covers mnemonics and other memory-enhancement techniques, including remembering to remember and recalling long-ago events. Bring your past along into the future!

Chapter 2, “Learning,” covers techniques for education and self-education, synthesizing memory and information into knowledge. Learn to learn by pretending you're a dog or a grad student.

Chapter 3, “Information Processing,” helps you manage both information and attention, so that you can choose among attractive options, catch the choicest informational fish with the Internet, and know what to do with them when you catch them.

Chapter 4, “Time Management,” will aid you in your efforts to marshal a resource as precious as air or water: time. Get control of your time with a mental datebook, new types of clocks and calendars, a step-by-step algorithm for finding lost objects, and more.

Chapter 5, “Creativity and Productivity,” will show you that making new stuff and getting work done go hand-in-hand. Work more productively by

playing games, mine ideas from the past and future, and dare to be creative while not worrying whether the results are a little odd.

Chapter 6, “Math and Logic,” will enable you to develop critical skill sets for clear thinking and solving real-world problems while having fun. Learn new mathematical notations, roll dice in your head, then visualize the third dimension — and the fourth!

Chapter 7, “Communication,” will improve the quality of your interaction with other people. Communicate and clarify (or conceal) delicate shades of emotion, compress your chat messages, and learn to read lips more quickly.

Chapter 8, “Mental Fitness,” will help you improve your “brain tone” so that you won’t mentally pant and wheeze when you try to solve a hard problem. It includes a method for actually increasing your intelligence, and teaches you to try new things and acquire new tastes that will keep your limbic system limber and your neocortex nimble.

Chapter 9, “Clarity,” works with the first eight chapters to wipe the smudges off the lens of your mind and focus your concentration into a narrow, powerful beam. You’ll also learn to rid yourself of long-standing misconceptions, and when to throw everything you think you know away and start over.

Who Should Read This Book

We assume you’re smart and you want to be smarter. It takes a fairly smart person to understand the need to be smarter; telling someone else that they need to be could lead to a shouting match or worse.

You don’t need to be able to get into Mensa before you read *Mindhacker*; this book is not meant to exclude anyone. As we argue in the final hack of the book, most people are functionally about as smart as one another, even if some people think faster than others or have more information bottled away in their liter or so of gray matter. If some of the hacks in this book look intimidating, you can still spend some time with them and learn to implement them in your own life, slower than some people, faster than others.

No matter how smart you are, or think you are, not every hack in this book will fit your personal needs. We hope, however, that almost anyone will find something useful and interesting within these pages.

Tools You Will Need

For all hacks you will need

- Your brain, running an open mind
- Ordinary office supplies, such as pen, paper, and index cards

A few hacks have some extra requirements:

- A computer running Linux, Mac OS, or Windows
- A web browser, preferably Mozilla Firefox
- A version of the computer language Perl, either as preinstalled for Linux or Mac, or free from www.activestate.com/activeperl for Windows
- The scripts from the *Mindhacker* website (see “What’s on the Website”)

Many of the hacks that use Perl scripts contain instructions for running their scripts. The book’s website also contains documentation. In general, to run a Perl script, you must open a command line in the directory that contains the script, and then type `perl` and the name of the script. For example, to run a Perl script called `mindhacker.pl`, you would type this at the command line:

```
perl mindhacker.pl
```

There are also ways to run Perl scripts by double-clicking them or using various other shortcuts, but they vary according to your operating system and are outside the scope of this introduction. However, don’t be afraid to experiment; Perl rewards trying new things.

What’s on the Website

At Wiley’s website for *Mindhacker* (www.wiley.com/go/mindhacker) you can find the following items:

- Free, multiplatform software in Perl and JavaScript for the hacks that require it, as well as the accompanying data files
- Documentation explaining how to run the scripts
- Color versions of the monochrome images in some of the hacks, such as the Kilodeck cards in Hack 41, “Engineer Your Results”
- Errata, as they become available
- A few surprises

What’s Next?

The book is not designed to be read in order, although you can do that. Rather, we expect people to dip in wherever it looks interesting and follow the cross-references in most hacks as it suits them. Read what looks fun and useful now; tomorrow, you may have new needs that call for a different hack.

We hope you learn at least as much from reading this book as we did from writing it. If you want to share your ideas and experiences with our hacks, we’d love to hear about it at mindhacker@ludism.org.

Memory

In classical Greece, Mnemosyne — usually translated as “Memory” — was considered to be the mother of History, Music, Astronomy, and all the other Muses. Memory is fundamental to learning and knowledge, so we’ve placed our chapter of memory-enhancement techniques first. They include how to build memory on previously memorized environments (Hack 2, “Build a Memory Dungeon”), how to use technology to remember most efficiently (Hack 4, “Space Your Repetitions”), and how to draw old memories that you thought you had lost back to the surface (Hack 5, “Recall Long-Ago Events”).

Boosting your memory will help you both gather new information and track where you’ve been in your life, bringing your past with you into the future. Our goal is to help you hold onto all the intangible treasures your academic pursuits and life experience bring you.

Hack 1: Remember to Remember

Ever use a fancy mnemonic only to forget that you memorized anything at all? Prospective memory is remembering to do something in the future. Learn to cue your prospective memory in ways that go far beyond a string around your finger.

The traditional method to remind yourself that you need to remember something (and a staple of clip art collections) is a string tied around your finger, but

there are many ways you can improve your *prospective memory* – or remembering to remember. We'll explore two very different ways to cut that string while retaining its effectiveness, as well as how to harness the humble checklist and improve prospective memory in general.

In Action

The character Uncle Billy in the Frank Capra film *It's a Wonderful Life* is an example of someone using mnemonics (badly) for prospective memory. Not only does he have the stereotypical string tied around his finger, he seems to have dozens, and he can't tell them apart. It's no wonder that he forgets important things and gets flustered, and this drives the plot of the movie.

To avoid having dozens of identical strings tied to your fingers — metaphorically or literally — we've found there are two main paths to using physical memory cues to remember to remember: either *differentiate your cues* or *overload a single cue*.

Differentiating Cues

A memory cue, such as a string around your finger, is only one bit of information: It tells you either "Remember something!" (string on finger = 1) or "Nothing to remember here!" (no string = 0). Uncle Billy's problem is that he has a lot of strings on his fingers all shouting "Remember something!" — but none of them are telling him what it is he should remember.

The key is to associate each "string" with what it's supposed to make you remember, and to strengthen that association through repetition. For example, when Marty notices that the car is nearly out of gas, she puts a blank sticky note on the windshield over the dashboard. When she sees it in the morning, it reminds her to look at the dashboard, which indicates she is out of gas and needs to go to the gas station.

NOTE The sticky note on the dashboard is like a prospective memory hack you're probably familiar with: putting your briefcase or purse in front of your front door so you won't forget it in the morning. (This is the number one trick people are eager to share with Ron at parties when he tells them he writes books on memory.) What's interesting here is that Marty doesn't write a message on the sticky note, just as you probably don't write on your bag — the required information is conveyed by the proximity of the memory cue to what you're trying to remember.

Marty has formed this habit over years, so now it's almost automatic. In this way, she is able to eke more than one meager bit of information out of the memory cue. Over time she has developed several such standard cues for herself,

and now she has access to a whole armory of differentiated memory cues that not only remind her to remember something, but remind her *what to remember*.

Overloading a Cue

Ron takes the opposite approach. Rather than have multiple memory cues, each of which provides a small amount of information, he makes one cue represent many items of information. He calls this *overloading*, not in the sense that the cue is carrying more than it can bear, but as in some computer languages like Java, where the “+” sign might mean addition in an arithmetic context, but something different — concatenation — in a string context.

For example, Ron wears a wristwatch, and like most people, he usually wears it with its face on the outside of his wrist. However, because it’s uncomfortable to wear a watch with the face on the inside of his wrist, doing so can be an irritant that serves as a memory cue. Thus, when Ron wants to remember something, he rotates his watch so that it is on the inside of his wrist.

But that’s still only one bit of information. To overload the cue, Ron uses an old mnemonic device called a *link system* (www.ludism.org/mentat/LinkSystem). Because it can be indefinitely extended, it’s usually sufficient to capture any information he needs to save while he’s momentarily without his notebook or voice recorder.

Here’s how the link system works. Let’s say Ron has a list of three items to remember while he’s driving: He has to buy gas on the way home (like Marty), he heard a review on NPR about a book he wants to check out, and he just remembered he has a meeting at work when he arrives. To remember these three items, he tells himself a connected story about what he has to remember, starting with his watch as an “anchor”:

- First, he imagines that a gasoline pump nozzle explodes through the glass on the front of his watch, spraying gas everywhere.
- Second, for the book, which let’s say is *The Hidden Reality: Parallel Universes and the Deep Laws of the Cosmos* by Brian Greene and is about cosmology — the Big Bang, multiverses, string theory, and the like — he imagines that the gasoline all over his car is ignited by a spark within the cabin and causes a new Big Bang. But he wants to remember the title is *The Hidden Reality*, so he imagines that the Big Bang is sucked into his back pocket, where it forms a hidden “pocket universe.”
- Finally, he wants to remember the meeting, so he imagines that the people who will be at the meeting decide to hold it in the pocket universe in his pants.

Absurd? Yes. But you’ll remember a story like this because it’s absurd, and the next time Ron checks his watch (such as when he gets to work) and he’s

somewhere he can write or type, he too will remember he has a list of items “attached to” his watch. He will then transcribe them promptly to his catch (Hack 3, “Mix Up Your Facts”), performing any to-do items immediately if he can, such as getting to that meeting.

Checklists

In his 2009 book *The Checklist Manifesto*¹, physician Atul Gawande describes how adopting the simple technique of creating and filling out checklists is revolutionizing medical treatment. Like flying aircraft or spacecraft (aerospace has used checklists for years), medical procedures have become too complex to rely on human memory alone.

Thus, in 2001, Peter Pronovost at Johns Hopkins Hospital made a list of steps for doctors to take before an operation that can help prevent infections (known as *central line infections*) from use of a catheter pushed through a vein into the heart. Many of the steps were as simple and obvious as the doctors’ washing their hands with soap. Pronovost asked nurses in his unit to observe the doctors and check the steps on the list; in more than a third of the cases, the doctors skipped at least one of these simple steps.

Pronovost then persuaded the hospital to allow nurses to stop doctors if they skipped one of the steps. He and his team followed the number of ten-day central line infections for a year. The rate went from 11 percent to zero, with similar results for the next 15 months. Gawande recounts how Pronovost’s team estimated that in slightly more than two years at Johns Hopkins, the checklist prevented 43 infections, saved 8 lives, and saved the hospital \$2 million dollars. Thus began the use of medical checklists at Johns Hopkins — and, as Pronovost taught others the technique, throughout the United States.

You can use checklists yourself to good effect. For example, as we’ve written elsewhere, Ron constantly used to leave the house without some item he needed and had to waste time doubling back to get it, or do without until he returned. But then he made a checklist of the 10 or so items he uses every day (medication, cell phone, and so on), and now he never leaves wherever he is without making sure he has these items. He also has a “PM checklist” for getting ready for bed, including such tasks as taking the dogs out one last time, turning off lights, and packing his 10 things to bring for the morning — nested checklists!

Don’t forget, checklists can be surprisingly effective when you use them for procedures and routines that you think you know well but want to ensure you do correctly, or things that you want to do more effectively. Just like the Johns Hopkins doctors, you can easily forget the things that seem obvious, simply because you’re comfortable with them. It may seem silly to write them down, but you may be surprised at the benefits in the long run.

NOTE If you find the checklist technique useful, try combining it with Hack 20, “Meet MET.”

Planning

Here's something else we know about prospective memory that you can use to improve your chances of remembering to remember: *planning helps*. Try actually planning to do your to-dos, mentally walking through the steps before it's time to do them. If you *expect* to do something, and make a *commitment* to do it, you will remember it better than if you just expect to have to memorize it. It's especially useful to keep an eye on your clock or calendar as well.^{2,3,4}

Other than planning, external mnemonics (such as those described above) are generally considered more effective than internal ones for prospective memory.

How It Works

There is still some question about whether prospective memory is qualitatively different from the usual, retrospective kind. For example, why is remembering a list of things you must do in the future significantly different from remembering a list of things you've already done?⁵ However, given the flurry of research on prospective memory since the mid-1980s, as well as all the advances in neuroscience, brain imaging, and so on since then, we will probably have some answers soon.

Meanwhile, it shouldn't be too problematic for the *Mindhacker* reader. If it turns out that prospective memory is just like any other kind, we already have a library of proven mnemonic techniques developed over thousands of years. These should help.

If, conversely, prospective memory is different from any other kind, we soon ought to have a list of techniques that will improve it uniquely, such as the *implementation intentions* or planning described earlier.

See Also

- Atul Gawande, "The Checklist," *New Yorker*, December 10, 2007. The article that led to the book mentioned above, *The Checklist Manifesto*. Available online (www.newyorker.com/reporting/2007/12/10/071210fa_fact_gawande).

Notes

1. Atul Gawande, *The Checklist Manifesto: How to Get Things Right* (New York: Metropolitan Books, 2010).
2. Daniel Siu, *Planning for Success: Mnemonics for Prospective Memory* (master's thesis, The University of British Columbia, 2004).
3. Robert Tobias, "Changing behavior by memory aids: a social psychological model of prospective memory and habit development tested with dynamic field data," *Psychological Review*, Vol. 116 No. 2 (2009): 408–438.

4. Peter M. Gollwitzer and Veronika Brandstatter, "Implementation Intentions and Effective Goal Pursuit," *Journal of Personality and Social Psychology*, 73 (1997): 186–199.
5. Henry L. Roedinger III, "Prospective Memory and Episodic Memory," *Prospective Memory: Theory and Applications* (Mahwah, NJ, US: Lawrence Erlbaum Associates Publishers, 1996).

Hack 2: Build a Memory Dungeon

Paul L. Snyder

Memory palaces are one of the most ancient and reliable memory hacks, but it's not always easy to find a suitable real-life building for one. Today, role-playing games and video games offer rich, elaborate, and ready-made imaginary buildings and landscapes for use as "memory dungeons."

The classical art of memory lays out a system for using your established knowledge of physical locations as a *memory palace*, a framework to store and order memory images. Many authors have described this technique, in which you create concrete mental images of things you want to remember, then place these images in a mental landscape you know well in memory, such as your home. The idea is to harness your kinesthetic memory of moving through the familiar space and your predilection to notice changes in familiar surroundings, so that as you imagine moving through the space, you see the images you created in your mind's eye, which triggers you to remember the related information.

Most sources discuss using this technique with real places (such as your neighborhood or the inside of your house), but the places that you use need not exist in the real world at all. One of the earliest texts discussing mnemotechnics, the *Rhetorica ad Herennium* (http://penelope.uchicago.edu/Thayer/E/Roman/Texts/Rhetorica_ad_Herennium/home.html) suggests creating imaginary locations, but they do not need to be invented on your own. If you've spent a sizable amount of time playing video or role-playing games, you may have a ready source of prefabricated spaces available to you.

In Action

While you've been using video games, either to reduce your reaction time or just for fun, you've also been building up a supply of locales for your memory dungeon. Any number of games may provide suitable fodder, but some are better than others. Some games (such as *Doom*, *Quake*, or other first-person shooters) have multiple levels, not all of which will be ideal. A good choice of game will have a clear flow through its space; you should be able to choose a logical path that you can reproduce repeatedly without confusion. It's also better if the game space is visually varied, without many similar repeated areas or complicated mazes.

Unless you know the level very well, you may wish to refresh your memory of the level by playing through it several times. Disabling enemies so you can wander freely (if the game engine allows) will reduce distractions during this process.

When you have the layout of the level established clearly in your mind, pick a path through it. As you walk through this path in your mind, identify locations (called *loci* in the classical art) where you will place images. Pick out obvious locations (like corners) or distinctive features (like pillars or torches).

NOTE As an alternative, you could also use a strategy like the Nook and Cranny Method (www.ludism.org/mentat/NookAndCrannyMethod) to select a consistent pattern of locations in each room.

As you move through the route in your mind, create memory images for each item you are trying to remember and place them in successive locations. The images should incorporate multiple *hooks* to make the image as memorable as possible: exaggeration, sexual suggestiveness, humor (even bad jokes), and strong emotional associations all serve to add “stickiness.” Memory images need not relate to the game or its content; often, objects and people who are out of place are easier to remember.

Eventually, you may wish to clear out an area of your memory dungeon to store new images. It’s a good idea to do this intentionally, rather than hoping images will fade on their own. You could blow up your images with imagined dynamite, but many games offer a more exotic selection of implements of destruction.

In Real Life

For testing this hack, I chose a level that I’ve played many hundreds of times over the years, and remember better than some houses that I’ve lived in: the first mission of the original *Doom*. Figure 2-1 shows the layout of this level.

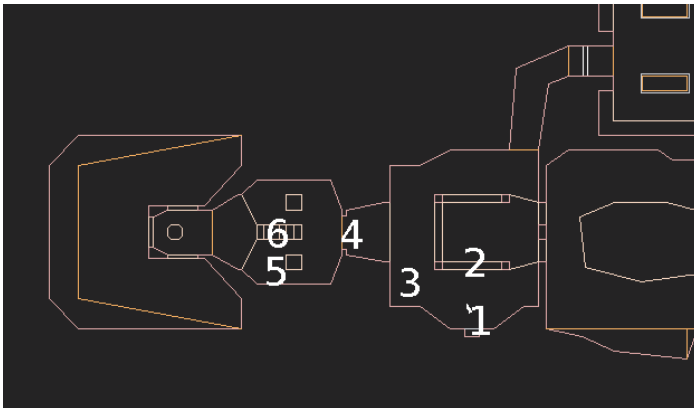


Figure 2-1: Doom level layout

While *Doom* was originally shareware, id Software released it as open source in 1997. You can install one of the many free versions of *Doom*. The version called *PrBoom* (<http://prboom.sourceforge.net>), for example, is licensed under the GNU General Public License and runs on Linux, Mac OS X, and Windows.

INSTALLING AND RUNNING PRBOOM

On Ubuntu Linux, *PrBoom* can be easily installed by running the following:

```
% sudo aptitude install prboom
```

You will also need the level data files for the first episode of *Doom*:

```
% sudo aptitude install doom-wad-shareware
```

For most versions of *Doom*, you can remove the distractions of being ambushed by demons using the `-nomonsters` command-line option, and you can jump to a specific level: `-warp <episode> <mission>`

On Ubuntu, with *PrBoom* and the data files installed, you can freely explore the first level with this command:

```
% prboom -iwad /usr/share/games/doom/doom1.wad -warp e1m1 -nomonsters
```

In this example, I chose to use the first two rooms of this level to remember the Julio-Claudian emperors of Rome. Here's how I did it:



Figure 2-2: Position 1

1. **Julius Caesar:** A man is leaning on the entry door to the level, wearing a laurel crown and the uniform of a Central American generalissimo. He is drinking an Orange Julius. (I want to remember that Caesar was