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**CHAPTER ONE**

**Memory**

**Hacks 1–12**

Memory is a crucial human capability. Without memory, your mind is nothing but bare awareness. Memory orients us in time and space, enables us to recognize our loved ones, provides us with the knowledge that running in front of cars is dangerous, and gives us the raw materials we need to do everything else we do as humans—hence its primary place in this book.

In a sense, many people have abandoned memory, not only to reading and writing, but also to newer technologies such as search engines. However, I hope this chapter will show that developing your memory can enrich your life, whether you need to defend your doctoral thesis, appear on *Jeopardy!*, or just cope with daily hassles.

**HACK #1**

**Remember 10 Things to Bring**

You need never forget your keys again. Always remember the top 10 things to bring when you leave your house.

Sure, thanks to the hacks in this chapter on memory, you'll be able to remember all the U.S. presidents and world capitals, but maybe you'll still forget your keys and your cell phone when you leave the house. What good are mnemonic tricks if you can't apply them to daily life?

You can make a practical difference in your preparedness for daily life and the efficiency with which you live it if you memorize a list of items *without which you never leave the house*. If you run through this checklist when leaving work, school, a restaurant, or a friend's house, you need never leave anything important behind wherever you go. You can also use this hack to get out of the house quickly in the morning, by ensuring that all of the items on the checklist are gathered in one place before you go to sleep.
In Action

For this hack, you'll need some kind of mnemonic skeleton that can contain about 10 items (or as many as are on your checklist). You can use a short journey [Hack #3], the 10 digits of the Dominic System [Hack #6], the number shape system [Hack #2], or anything else that you can remember effortlessly and when distracted. I use the first mnemonic system I ever learned, the number rhyme system, which my father taught me when I was a boy: "One is gun; two is shoe; three is tree," and so on. Ergo, for the first item on my list, I create a vivid image that contains the item and a gun; I remember the second item by associating it with a shoe; and so on down the list.

Compile your checklist and write the items next to the mnemonic skeleton. Put your most important items first in the list so that you'll remember to grab those even if you are interrupted and can't run through your entire list. As always, link the objects you want to remember to the places in the mnemonic skeleton using the most vivid images you can. Here is my actual list:

1 :: gun :: medication
   I never leave the house without this. I imagine a gun firing pills scattershot in all directions.

2 :: shoe :: keys
   I imagine the Old Woman Who Lived in a Shoe trying to open the front door of her giant shoe with her keys while dozens of her children are tugging on her skirt.

3 :: tree :: cell phone
   I imagine a tree with a 1920s-style varnished black telephone handset and mouthpiece protruding from it. A pair of bells on the tree ring loudly.

4 :: door :: notebook
   I imagine my Moleskine Mini notebook grown to enormous size. The front cover swings open like a door with a huge Inner Sanctum creak of hinges. (I never go anywhere without my catch [Hack #13].)

5 :: hive :: wallet
   I imagine opening my wallet and a swarm of bees flying out into my face. Argh!

6 :: sticks :: PDA
   I imagine using a scratchy wooden stick with leaves as a stylus to write on my PDA. (This also reminds me to bring a stylus, in case I forget in step 10.)

In Real Life

I can honestly say that in the year or two I have been using this technique, I have forgotten particular items on the list only once or twice, and that was merely because I didn't run through the whole list as I was packing up. There was, however, one incident, where my wife and I were late because I set my fully packed bag down momentarily and forgot to bring the whole kit with me!

I'm now so familiar with my list that 10 brings pen to mind immediately rather than hen, and so on. Therefore, it's been easy to add two more items without thinking of additional mnemonics for them: 11, my exoself [Hack #17], and 12, a good book to read. However, if I were going to extend my checklist any more, I would certainly add more mnemonic pegs.

See Also

- A murm [a.k.a. man purse], such as that which I carry all my gear in, is an essential mini-hack in itself. Of course, women reading this who've been carrying purses for years will think that men like me are a bit slow and wonder what business we have writing a book on mental performance. Still, the Slacker Manager blog has a great intro to the murmur concept; see http://www.slackermanager.com/slacker_manager/2004/11/my_murmer.html.
- It's also useful to stock bags for different purposes, such as school, work, and emergencies. These work as a kind of external memory; you can just grab them and go.
Use the Number-Shape System

Associate numbers with shapes and use the hunting and gathering faculties of your primitive ancestors to remember 21st-century data.

If you've learned how to remember 10 things to bring when you leave the house (Hack #1), you've already learned the number-rhyme system: associating numbers like 1 and 2 with words that rhyme with them, like gun and shoe, and using those associations as pegs on which to hang items you wish to remember.

The traditional number-shape system works in a similar way. Instead of visualizing images whose names rhyme with the names of numbers, however, you visualize shapes that look like the numerals in question. For example, the numeral 2 looks like a swan to many people, so you can use the image of a swan as a mnemonic peg.

In Action

Table 1-1 lists 10 digits, along with some shapes you can use to remember them. The Shape column illustrates the italic words in the Words column, to show how the associations arose.

Table 1-1. Corresponding numbers, words, and shapes

<table>
<thead>
<tr>
<th>Number</th>
<th>Words</th>
<th>Shape</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Black hole, donut, tire</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>Candle, pencil</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Swan</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>Butterfly, heart</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>Sailboat</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>Hook, pulley</td>
<td>5</td>
</tr>
</tbody>
</table>

Feel free to pick and choose, or devise your own shapes. It's most important to be consistent so that when you want to remember what you associated with the number 6, you don't waste time trying to remember whether your mnemonic shape is a pipe, a lasso, a golf club, or something totally different.

How It Works

Like the brains of all animals, the human brain has a lot more experience with concrete shapes than with abstract numbers. For example, the decimal digit 0 was not even discovered until about 300 BC. Our ancestors used their senses to learn more about the world, find food, escape predators, and perform many other essential tasks. These tasks were vital to our survival in an evolutionary sense, so the faculties involved in processing sensory information were well developed, and today our brains still process this kind of information thoroughly and efficiently.

Thus, by turning numbers into concrete shapes and making them even more imaginably vivid with motion, humor, sex, aggression, color, smell, touch, taste, and all the other features of the real world that our primate brains evolved to process, we're in effect wrapping the numbers with mental friction tape so that we can grasp them better.

Of course, it's possible to become intimately familiar with numbers in their own right (Hack #36), and doing so will help you not only to remember them, but also to get better at math.
In Real Life

Here is how you might use the number shape system to remember a list of five items to pick up at an office supply store. As is often the case with image-based memory systems, the more vivid the mental image you conjure, the easier it will be for you to remember.

1 :: candle :: a spindle of DVD-Rs
   Imagine a silvery DVD being played by a gramophone with an upside-down candle for a needle, dripping hot wax onto the disc.

2 :: swan :: index cards
   Imagine a white swan whose wing feathers are 3×5-inch index cards.

3 :: butterfly :: printer paper
   Imagine a multicolored butterfly getting stuck to a piece of white printer paper and going through your printer. When it emerges in the output tray, it peels away from the paper and flaps into the distance.

4 :: sailboat :: four-color pens
   Imagine a sailboat whose mast is a gigantic four-color ballpoint pen. As the sailboat tacks with the wind, the pen clicks and different colors emerge.

5 :: pulley :: manila envelopes
   Imagine a huge pulley in the warehouse at the back of the office supply store, swinging an enormous bundle of manila envelopes, bound together with manila twine.

I often use the number shape system to make a quick shopping list when I have to grab some groceries on the way home. If you learn this system, you’ll probably develop many applications of your own, such as taking notes on the points you need to address when it’s your turn to speak in a meeting.

End Notes


See Also

- The number shape system is also useful when remembering numbers with the Dominic System [Hack #6]. For example, you can remember a five-digit number the usual way you remember a four-digit number, but incorporate a shape for the fifth digit into the image.

Make Lots of Little Journeys

Making mental journeys (also known as “memory palaces”) is a useful way to remember sequential information. If you have several familiar short journeys handy, you can be ready to remember whatever you need to, at any time. Here’s how to start with the layout of your own house or apartment.

Practically every system of mnemonics relies on a series of pegs on which to hang information. For example, “Remember 10 Things to Bring” [Hack #1] associates the numbers 1 through 10 with rhyming objects (one = gun, two = shoe, three = tree, and so on) and then hangs the things to remember (such as medication, keys, and cell phone) on these mnemonic pegs by putting the peg objects and the things to remember in the same vivid mental picture.

An even older mnemonic technique—perhaps the oldest—uses places as memory pegs. By places, I mean ordinary, concrete places, such as the rooms of your house or apartment. If you mentally organize these places into a sequence that is the same every time, you will be able to walk through the places in your mind and retrieve the information you have stored there.

The Renaissance practitioners of the ancient ars memorativa (art of memory) referred to such journeys as memory palaces. Orators in classical times would prepare their speeches by stashing complex images that represented the things they wanted to talk about in the loci (places) of a remembered or imagined building, such as a palace. In fact, this practice is said to be the origin of today’s expressions “in the first place,” “in the second place,” and so on.

In Action

When you create your mental images, make the impressions of the objects you want to remember as vivid as possible, to make the ideas you want to remember stick to the places of your journey. You can do this in many ways, such as by exaggerating them or using humor, sex, bright colors, motion, or anything else that holds your attention. (The word impression comes from yet another classical metaphor depicting memories as the marks left by a stylus on a wax tablet, the yellow legal pad of the day. When you make impressions on the wax tablet of your mind, press down hard.)

To assemble your first memory journey, use a place you know extremely well; your home is a good example. You can also use the shops along a street where you walk every day or the benches, brooks, and shady trees of your favorite park. Just make sure you can trace your journey from beginning to end in your mind’s eye before you try to use it as a mnemonic tool.
After you memorize one list of objects with your journey, you can “wipe the wax clean” and reuse the journey by mentally walking its length and visualizing the places as being empty of the objects you memorized. Blow up the objects with dynamite if you like.

You might want to create multiple journeys of different lengths, so you have one ready for any occasion. Then, if you need a journey longer than any you have memorized, you can link two or more journeys together by starting one where the last ended; imaginary journeys don’t need to obey real-world geography.

**In Real Life**

Here are the first 10 places on my first journey, with typical actions envisioned for each. This journey is based on my real-life apartment. Places 1–5 start on the right side of the apartment (as seen from the start of the journey). After place 5 (the porch), the journey makes a left turn into the living room and doubles back so that places 1–10 make a horseshoe shape.

1. **Bedroom**
   Where I start my day.
2. **Back bathroom**
   My first stop every morning.
3. **Front bathroom**
   Get some clothes out of the dryer.
4. **Computer room**
   Check my email.
5. **Porch**
   Get a breath of fresh air.
6. **Living room**
   Sit down on the couch.
7. **Dining room**
   Have breakfast.
8. **Kitchen**
   Grab coffee to go.
9. **Entry**
   Grab keys for the car.
10. **Outside**
    On to the next journey?

When I was reading the “Famous Forty” Oz books, starting with *The Wonderful Wizard of Oz* and running through the next 39 canonical books in the series, I used pegs 1–40 of the Dominic System [back #6] to memorize their titles. Let’s use my apartment journey to memorize the titles of Shakespeare’s 10 tragedies:

1. **Bedroom:** *Titus Andronicus*
   A drill sergeant standing on the bed, wearing pants much too small, is cursing Private Ronald Reagan roundly (*Tight-ass and Ronnie-cuss*).
2. **Back bathroom:** *Romeo and Juliet*
   A teenage boy and girl (guess who) are necking in a bright red Alfa Romeo sports car in the bathtub.
3. **Front bathroom:** *Julius Caesar*
   An ancient Roman man sits in the bathtub sipping an Orange Julius drink and eating a Caesar salad.
4. **Computer room:** *Hamlet*
   Piglet (the character from *Winnie-the-Pooh*) is stranded on the top of my computer monitor (Piglet = *Hamlet*).
5. **Porch:** *Othello*
   Two men in Shakespearean garb are seated and playing the board game *Othello* on the porch table.
6. **Living room:** *Timon of Athens*
   There is a tiny baseball *team* on the coffee table. They are *of Athens*: they have long white beards and are declaiming from scrolls.
7. **Dining room:** *King Lear*
   An old man in a crown (a *king*) is seated at the table. He is *leering* at me, elbowing me in the ribs, and winking.
8. **Kitchen:** *Macbeth*
   A gigantic Mac computer in the sink starts with a “bong!” sound and displays a beautiful picture of Queen Elizabeth I (*Beth*).
9. **Entry:** *Antony and Cleopatra*
   A woman in ancient Egyptian headgear (*Cleopatra*) sits in front of the door, wrinkling her nose and picking *anchovies* (Antony) off her pizza.
10. **Outside:** *Coriolanus*
    I find some bright green herbs on the ground. Feh! They’re *coriander* (cilantro), which I hate. I wash out my mouth with *anise* seed, which tastes like licorice.

Notice that I used images to remind me of specific words in the titles of the plays. Since I’m already familiar with the play titles, this should be enough to remind me of them. If you don’t already have a rough idea of the things you’re trying to memorize, you might need to make more detailed images that are less ambiguous, or piggyback another memory technique onto this one.
Stash Things in Nooks and Crannies

The images need not have a logical connection with the mental location where you place them, since the places in the journey are essentially arbitrary, just like the pegs in the number rhyme system [Hack #1]. For example, I don’t have a Macintosh in my kitchen sink, nor would I ever put one there. Actually, that very fact makes the placement of an imaginary Mac there all the more memorable. Absurdity is one of the many techniques used to make images vivid.

If you want to remember more play titles, simply add more places to the journey. For example, place 11 could be my car and could hold the first Shakespearean comedy, The Comedy of Errors. I could open my car door outside and find that the controls on my dashboard are backward and upside down, which makes me laugh.

Imaginary journeys can be extended indefinitely, so after you memorize all of Shakespeare’s plays, you can move on to the works of other authors, or anything else you want to remember.

Try this the next time you are shopping in a familiar place, such as the usual place you buy groceries: mentally plot an efficient path through the store as a memory journey, then pick up what you need and go directly to the cashier. If you normally browse and buy a little too much, this technique may suggest a different approach.

End Notes


See Also

- The Amazing Memory Kit (Duncan Baird) by Dominic O’Brien is a useful collection of interactive tools for training your memory. Amusingly, it also contains a sample memory journey for remembering Shakespeare’s 10 tragedies; I was unaware of the example while writing this hack.

Hack #4 Stash Things in Nooks and Crannies

Systematically place information in the corners and walls of rooms, and expand the capacity of your memory journeys up to tenfold.

“Make Lots of Little Journeys” [Hack #3] explains how to remember information by associating it with places along the way in an imaginary journey. (If you haven’t read that hack, please read it now.) But each place on a memory journey contains other places: rooms typically have four walls, four corners, a floor, and a ceiling, for a total of 10 sublocations. In other words, if you have already memorized a journey through a building, you can now make your memory journey hold 10 times as many pieces of information.1

In Action

Scott Hagwood, the U.S. Grandmaster of Memory, seems to have invented the nooks-and-cranries hack. He used it to break the world record for color-sequence memorization for the electronic game Simon. The previous record had been 14 sequences, but Scott was able to play an astonishing 31 sequences—all that the machine could offer. To do so, he used a memory journey and mentally stuffed the corners and walls of his places with items representing the colors he was trying to remember, such as a yellow sun or green bouncy balls.

Reconstructing Hagwood’s system from his interviews is simple enough.2,3 Hagwood’s map for each room looks something like Figure 1-1.

Figure 1-1. The nooks and crannies of Hagwood’s memory journey

The map in Figure 1-1 assigns numbers to the following places:

1. Near-left corner
2. Left wall
3. Far-left corner
4. Far wall
5. Far-right corner
6. Right wall
7. Near-right corner
8. Near wall/entrance to room

9. Floor
10. Ceiling

While this might not be Hagwood’s exact system, it’s the one we’ll use in this hack.

In Real Life

In “Make Lots of Little Journeys” [Hack #3], we used a memory journey to recall Shakespeare’s tragedies. Suppose you want to store more information about the plays in the same journey. You might associate the features of the plays with the features of the rooms in your memory journey in this way:

1. Near-left corner
   Plot event 1.
2. Left wall
   Plot event 2.
3. Far-left corner
   Plot event 3.
4. Far wall
   Plot event 4.
5. Far-right corner
   Plot event 5.
6. Right wall
   Plot event 6.
7. Near-right corner
   Plot event 7.
8. Near wall/entrance to room
   Plot event 8 (climax).
9. Floor
   Publication date.
10. Ceiling
   Related work. (Many later authors have based books or plays on Shakespeare, just as Shakespeare derived his work from earlier authors.)

You can think of the floor and the ceiling as special places within the room, so you can use them for special information about the play—in this case, the publication date and a related work. (The other eight places are all the same: slots for plot elements.) If you were memorizing the periodic table of elements, you might use the floor and ceiling for two key pieces of information: the alphabetic symbol of the element (such as Au for gold), and its atomic number (79). The rest of the places could then be used for other details.

Let’s try the nooks-and-cranies hack to memorize the details of Shakespeare’s second tragedy, Romeo and Juliet. In “Make Lots of Little Journeys” [Hack #3], I associated this play with the back bathroom of my apartment. Now I will associate the features of the play with the features of this room, in detail:

1. The Montagues and Capulets brawl (in the dogs’ water dish).
2. Paris convinces Juliet’s parents to let her marry him (mopping his brow with my towel).
3. Romeo falls in love with Juliet at a masked ball. (Their hair is sudsy with shampoo.)
4. Romeo and Juliet declare their love in the balcony scene and secretly marry (in the bathtub).
5. A duel ensues in the street, in which Tybalt kills Mercutio, and Romeo then kills Tybalt. (The guards wash away the blood with water from the shower.)
7. Juliet takes a sleeping potion to feign death. (She falls facedown into the sink.)
8. Climax: Romeo discovers the drugged Juliet in a tomb; he kills Paris, who is mourning her; he poisons himself; she awakes and stabs herself. (All of this occurs in the doorway.)
9. Published in 1594. (Image: Albert Einstein (AE = 15), standing on my bathroom rug, walks into a red sandstone building with a thud (Nick Danger = ND = 94).)
10. The musical West Side Story. (Image: a miniature version of the scene from the movie in which the dancers split into many different colors, in the light of the heat lamp.)

The mnemonic for the publication date is worked out using the Dominic system [Hack #6]. The plot events should not be hard to visualize if you’ve seen the play; otherwise, you can use mnemonic tricks, such as representing Paris with a miniature Eiffel Tower, Mercutio with winged sandals like those of the god Mercury, and so on.

You can use the nooks-and-cranies hack to memorize any information that can be presented serially, from the digits of π, to the telephone area codes of the U.S. and Canada, to the nations of the world in alphabetical order. And if all of these examples leave you unimpressed, does the word Vegas suggest anything more to your taste?
End Notes

Hack #5
Use the Major System
The Major System is the most commonly used set of mnemonics. This custom Major System will help you memorize lists of up to 100 items, as well as credit card PINs, phone numbers, and the other numeric trivia of daily life.

The Major System was introduced in the 17th century by Stanislaus Mink von Wennsshein and was improved in the 18th century by Dr. Richard Grey.1 While the Major System is probably the most established mnemonic schema, I prefer the Dominic System [Hack #2], invented by Dominic O’Brien in the 20th century. Nevertheless, you might find that the Major System works well for you, and knowing something about it will contribute to your understanding of advanced mnemonic techniques.

In Action
The Major System uses peg words just like the number-rhyme system [Hack #1] and number-shape system [Hack #2]. Instead of associating numbers with peg words based on rhymes or shapes, however, it assigns each digit a basic consonantal sound and builds up peg words from combinations of those consonants. For example, the digit 3 is linked to the consonant M, and the digit 2 is linked to the consonant N, so our Major System list suggests moon for 32.

The consonant assignments are fairly arbitrary—Lewis Carroll came up with an alternate set [Hack #9] that’s probably just as good—but Table 1-2 shows a standard set of mnemonics you can use for these associations until they become second nature.

Table 1-2. Number/letter associations (continued)

<table>
<thead>
<tr>
<th>Number</th>
<th>Letter</th>
<th>Association</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>N</td>
<td>The letter N has two downward strokes; it also looks like the numeral 2 rotated 90 degrees.</td>
</tr>
<tr>
<td>3</td>
<td>M</td>
<td>The letter M has three downstrokes; it also looks like the numeral 3 rotated 90 degrees.</td>
</tr>
<tr>
<td>4</td>
<td>R</td>
<td>The letter R is the last letter in four.</td>
</tr>
<tr>
<td>5</td>
<td>L</td>
<td>L is the Roman numeral for 50; also, a human hand with its thumb stuck out looks like an L.</td>
</tr>
<tr>
<td>6</td>
<td>J, SH, DG, soft G, CH as in cheese</td>
<td>J looks like 6 backward.</td>
</tr>
<tr>
<td>7</td>
<td>K, hard C, hard G, QU, CH as in loch</td>
<td>You can draw a K with two 7 characters.</td>
</tr>
<tr>
<td>8</td>
<td>F, V</td>
<td>A cursive, lowercase f looks like an 8.</td>
</tr>
<tr>
<td>9</td>
<td>B, P</td>
<td>A b looks like a 9 rotated 180 degrees; a P looks like a backward 9.</td>
</tr>
</tbody>
</table>

Table 1-3 shows the Major System peg word list for the numbers 1 to 100. If you don’t like the words I use, you can use your own. Since your list will use your own mental connections, it might be even more effective for you. Just be consistent, so you don’t have to grope to remember the peg word for a particular number.

Table 1-3. Number/word associations

<table>
<thead>
<tr>
<th>Number</th>
<th>Word</th>
<th>Number</th>
<th>Word</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Tea, Tie</td>
<td>51</td>
<td>LaD, LiD</td>
</tr>
<tr>
<td>2</td>
<td>Noah</td>
<td>52</td>
<td>LioN</td>
</tr>
<tr>
<td>3</td>
<td>Ma</td>
<td>53</td>
<td>LamB</td>
</tr>
<tr>
<td>4</td>
<td>eaR, heRo, oaR, Rye</td>
<td>54</td>
<td>LuRe</td>
</tr>
<tr>
<td>5</td>
<td>Law</td>
<td>55</td>
<td>Lily</td>
</tr>
<tr>
<td>6</td>
<td>Shoe</td>
<td>56</td>
<td>LaSh, LeaSh, LeCh</td>
</tr>
<tr>
<td>7</td>
<td>Key</td>
<td>57</td>
<td>LaKe, LOCK, LoG</td>
</tr>
<tr>
<td>8</td>
<td>iVY</td>
<td>58</td>
<td>LaVa, LeaF</td>
</tr>
<tr>
<td>9</td>
<td>Bee, Pie</td>
<td>59</td>
<td>LiP</td>
</tr>
<tr>
<td>10</td>
<td>DiCe, ToeS</td>
<td>60</td>
<td>CheeSe</td>
</tr>
<tr>
<td>11</td>
<td>DaD, ToaD, ToT</td>
<td>61</td>
<td>SheeT</td>
</tr>
<tr>
<td>12</td>
<td>TiN</td>
<td>62</td>
<td>ChaiN</td>
</tr>
<tr>
<td>13</td>
<td>DaM, ToMb</td>
<td>63</td>
<td>ChiMe</td>
</tr>
<tr>
<td>14</td>
<td>TiRe</td>
<td>64</td>
<td>ChaiR, CheRry</td>
</tr>
<tr>
<td>15</td>
<td>Tail, ToweL</td>
<td>65</td>
<td>JaiL</td>
</tr>
</tbody>
</table>
When you’re converting numbers to peg words and back, there are some simple rules to follow:

- Ignore vowels.
- Ignore the second consonant in double-consonant sounds. For example, *mummy* is 33, not 333, because the *mm* is counted as a single *m*.
- Ignore silent consonants. For example, *neck* is 27, not 277, because the *c* does not contribute to the *K* sound.

To make these rules more obvious, Table 1-3 capitalizes only the consonants being used to form the peg word. For example, the peg word for 32 is listed as *MooN*.

Since there are only a limited number of possible words in English for each number, the mnemonic lists for the Major System in most memory books tend to be similar. I consulted three of the books in my collection to compile this list, taking the best from each and adding my own words (such as 42 = *RaDio* and 81 = *VaT*) when it seemed useful. I followed several guidelines, which might interest you if you want to customize it:

- I preferred nouns to verbs and adjectives, because they are more easily visualized.
- I preferred concrete objects to abstract objects for the same reason.
- I preferred more active, versatile objects (49 = *RoPe*, not *RuBy*), ditto.
- I tried not to interfere with other memory systems in this book (for example, deleting 99 = *PiPe* because it might interfere with 6 = *pipe* in the number shape system) or other Major System items (for example, 95 = *BeLL* interfered with 63 = *ChI*).

### In Real Life

If you have a credit card with the number 4880 6630 6767 7584 (these digits were generated at random with the dice-rolling application on my PDA), you might remember them with the words shown in Table 1-4.

<table>
<thead>
<tr>
<th>Number</th>
<th>Word</th>
</tr>
</thead>
<tbody>
<tr>
<td>48</td>
<td>Roof</td>
</tr>
<tr>
<td>60</td>
<td>Vase</td>
</tr>
<tr>
<td>66</td>
<td>Choo-choo</td>
</tr>
<tr>
<td>30</td>
<td>Moose</td>
</tr>
</tbody>
</table>

---

<table>
<thead>
<tr>
<th>Table 1-3. Number/word associations (continued)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
</tr>
<tr>
<td>--------</td>
</tr>
<tr>
<td>16</td>
</tr>
<tr>
<td>17</td>
</tr>
<tr>
<td>18</td>
</tr>
<tr>
<td>19</td>
</tr>
<tr>
<td>20</td>
</tr>
<tr>
<td>21</td>
</tr>
<tr>
<td>22</td>
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<td>23</td>
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<td>24</td>
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<tr>
<td>25</td>
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<tr>
<td>26</td>
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<tr>
<td>27</td>
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<tr>
<td>28</td>
</tr>
<tr>
<td>29</td>
</tr>
<tr>
<td>30</td>
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<tr>
<td>31</td>
</tr>
<tr>
<td>32</td>
</tr>
<tr>
<td>33</td>
</tr>
<tr>
<td>34</td>
</tr>
<tr>
<td>35</td>
</tr>
<tr>
<td>36</td>
</tr>
<tr>
<td>37</td>
</tr>
<tr>
<td>38</td>
</tr>
<tr>
<td>39</td>
</tr>
<tr>
<td>40</td>
</tr>
<tr>
<td>41</td>
</tr>
<tr>
<td>42</td>
</tr>
<tr>
<td>43</td>
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<tr>
<td>44</td>
</tr>
<tr>
<td>45</td>
</tr>
<tr>
<td>46</td>
</tr>
<tr>
<td>47</td>
</tr>
<tr>
<td>48</td>
</tr>
<tr>
<td>49</td>
</tr>
<tr>
<td>50</td>
</tr>
</tbody>
</table>
Table 1.4. Associations for a credit card number (continued)

<table>
<thead>
<tr>
<th>Number</th>
<th>Word</th>
</tr>
</thead>
<tbody>
<tr>
<td>67</td>
<td>Chalk</td>
</tr>
<tr>
<td>67</td>
<td>Chalk</td>
</tr>
<tr>
<td>75</td>
<td>Coal</td>
</tr>
<tr>
<td>84</td>
<td>Fur</td>
</tr>
</tbody>
</table>

But now you have a new problem: how are you going to remember this arbitrary list of words, especially the two sequential instances of chalk?

You can use the following little story—a kind of memory journey [Hack #3]—to string them together:

A shingle falls off your roof and breaks a vase. A choo-choo of the sort in a kiddie amusement park chugs up and the conductor gets out. He's a moose! He scolds you and tries to write you up with a piece of chalk, but his slate is also made of chalk. (How weird.) He bellows in frustration and begins shoveling coal to leave, but he gets sooty, and abashedly asks you to brush off his fur.

With just a few mental rehearsals of this story (or the equivalent for your own card), you just might never forget your credit card number again. If you actually recall the number a few times in the bustle of real life, you'll begin to remember the number directly and let the story fade naturally.

End Notes
2. Ibid.

Use the Dominic System

The Dominic System, invented by World Memory Champion Dominic O’Brien, is an easier alternative to the Major System of mnemonics found in most memory books.

Dominic O’Brien, World Memory Champion, can memorize the order of a full deck of playing cards in less than a minute. To help him achieve amazing memory feats like this, he created the Dominic System of mnemonics. Some people who find the Major System [Hack #6] espoused by most memory experts to be too dry and restrictive find they can stick with the Dominic System.

In Action

The Dominic System uses an easy-to-remember number-to-letter conversion and the initials of memorable people, as well as journeys that are like memory palaces [Hack #3]. As many mnemonic systems do, the Dominic System requires some bootstrapping for you to reach its full potential.

You will have to spend a little time and work to memorize the structure of the system, and that might seem a little tedious. Your work will be rewarded, however, because this basic work will enable you to harness the system's full power for yourself. It's a little like starting slow on the treadmill at the gym if you want to work up to taking long hikes in the mountains.

The number-to-letter correspondences run as follows:1

<table>
<thead>
<tr>
<th>Digit</th>
<th>Letter</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>A</td>
</tr>
<tr>
<td>2</td>
<td>B</td>
</tr>
<tr>
<td>3</td>
<td>C</td>
</tr>
<tr>
<td>4</td>
<td>D</td>
</tr>
<tr>
<td>5</td>
<td>E</td>
</tr>
<tr>
<td>6</td>
<td>F</td>
</tr>
<tr>
<td>7</td>
<td>G</td>
</tr>
<tr>
<td>8</td>
<td>H</td>
</tr>
<tr>
<td>9</td>
<td>I</td>
</tr>
<tr>
<td>0</td>
<td>J</td>
</tr>
</tbody>
</table>

You can remember the numbers 00 to 99 by linking them to famous people and actions that are characteristic of them. For example, the number 15 becomes AE. You might mentally connect the initials AE with Albert Einstein and assign writing on a blackboard as Einstein's characteristic action. Similarly, 80 = HO = Santa Claus, laughing and holding his belly (HO, HO, HO!). You can use my list2 or O'Brien's list, but the system will work best if you use the associations that are already in your own mind.3

After you have the two-digit associations firmly in your mind, you can remember four-digit numbers by combining the person associated with the first two digits and the action associated with the second two digits. Thus, 8013 can translate to HOAE, which can be broken down to HO and AE. To remember it, think of Santa Claus (HO) with Albert Einstein's action (AE): Santa Claus writing on a blackboard.
Use the Dominic System

You can remember five-digit numbers by adding a symbol from the number-shape system [Hack #2] to the image, so that 80152 might be represented by Santa writing on a blackboard with a swan (2) tucked under one arm. You can remember longer sequences of numbers (such as memorizing the digits of π), or sequences of any kind, by chunking them [Hack #1] and committing them to the places of a memory journey.

Here’s an example of how to memorize a 12-digit number: the month table used to calculate weekdays [Hack #43]. I will use my personal associations for the letter combinations and fill in from other sources when my mnemonics are too idiosyncratic to make sense to most people.

First, make one long list of the month numbers. Since none of them is larger than 6, they are all one digit long, so we obtain a 12-digit number:

0336 1462 5035

Next, break up this list (i.e., chunk it) into three four-digit numbers:

0336 1462 5035

Four-digit numbers are easy to memorize in the Dominic System. Besides, it’s a fairly natural division; for example, all the months that end in -ber form the last group.

Now, apply the Dominic System mnemonics:

1. 0336 = OCCS = Oliver Cromwell/C.S. Lewis
2. 1462 = ADSB = Jesus (AD)/Sandra Bullock in the movie Speed
3. 5035 = ECE = Eeyore/Clint Eastwood

Next, make an imaginary journey [Hack #3] by using the first character associated with each number performing the action associated with the second character:

Oliver Cromwell (OC) steps into the magic wardrobe and ends up in the land of Narnia (CS). He wanders through the snow until he comes to the lamppost, where he meets Jesus (AD), who leaps into a bus and starts driving away like crazy (SB). Jesus doesn’t get far, however, because Eeyore (EO) appears from behind a bush and lassos him like Clint Eastwood (CE).

Did you find this little journey offensive or surreal? Strong emotional reactions help people remember things, so outlandish mental images can actually be more effective to use. Again, you should make your own list of characters for your own version of the Dominic System, and then you can tune your list to suit yourself.

How It Works

The Dominic System is a combination of the innovative (easier mnemonic alphabet, using people rather than inanimate objects because people are easier to remember, etc.) and the tried-and-true (memory palaces, which go back to classical times). It has a couple of advantages over the Major System and its derivatives:

- The 1 = A, 2 = B, 3 = C, and so on, Dominic System is easier to learn than the Major System’s more arbitrary 1 = T/D/TH, 2 = M, 3 = M, etc. There is circumstantial evidence that the Dominic System is also faster and more powerful: Dominic O’Brien became World Memory Champion using his system, a title that includes competitions for speed in memorization.
- The famous people of the Dominic System are combined with their characteristic actions in an easy, natural way, making numbers up to four digits long easy to memorize with a single image.
- If you can memorize a four-digit number with the Dominic System, you can memorize 10,000 pieces of information, from 0000 to 9999 [Hack #7].

In Real Life

As my first test of the Dominic System, I used the subset of numbers from 01 to 40 to memorize the titles of a favorite series of books, the so-called Famous Forty by L. Frank Baum and his successors, set in the Marvelous Land of Oz. For example, book 23 is Jack Pumpkinhead of Oz. The number 23 corresponds to BC in my personal Dominic System, for which the person/action pair was Thor, the character from the comic strip B.C., riding his stone unicycle. Thus, the image I used to remember this book was Jack Pumpkinhead riding a stone unicycle.

Memorizing the titles of the Famous Forty took about 45 minutes, approximately a title a minute. A minute is about as long as it takes Dominic O’Brien to memorize an entire shuffled deck of cards, so at that point I had a lot of room for improvement. These days, I can memorize items several times faster than I could at the beginning—still not as fast as a World Memory Champion, but improving.

As it happened, I made a fruitful mistake with this test. I was already familiar with the more common Major System, and I thought that the Dominic System's numbers from 00 to 99 were meant to be used as mnemonic pegs or places [Hack #3], just like the numbers in the Major System. In fact, the numbers are mainly used to encode numeric information; Dominic himself would probably memorize the Famous Forty with a memory journey.
I'm glad I made my initial mistake, though, because it led me to build on the Dominic System to construct the Hotel Dominic [Hack #7], which theoretically enables you to memorize 10,000 items or more of information.

End Notes
2. A file containing my personal mnemonic pegs is available at http://ron.ludism.org/mnemonics_public.txt, including my version of the Dominic System for numbers 00–99. Use this only as an example, since many of the names in the list are idiosyncratic. Some of them refer to friends and family, and I have simply removed them in the public version and replaced them with the word PERSONAL.

See Also
- Matt Vance has created a page (http://www.minezone.org/wiki/MVance/DominicSystem) that lists multiple possible characters for each number from 00–99. This is a good place to start when you construct your own list.
- “Visit the Hotel Dominic” [Hack #7].

Visit the Hotel Dominic

You might need to memorize a table or list with more than 100 elements, such as the periodic table of elements, but find that you can’t do it with only the 100 numbered items of the Dominic System [Hack #6]. You could use a memory journey [Hack #3], but how are you going to remember that element 52 is tellurium without visiting the 51 previous rooms first?

This memory hack, which I call the Hotel Dominic (in honor of Dominic O’Brien, the inventor of the Dominic System of mnemonics upon which it’s based), is both random access (like a CD, as opposed to a cassette tape) and indexed by number, making it ideal for remembering long, numbered lists and tables, or many smaller lists, or both: up to 10,000 basic items. Each basic item can, in effect, be elaborated with nooks and crannies [Hack #4], creating the potential for many more than 10,000 items.

In Action
You can think of the Hotel Dominic as a building with 100 floors, numbered from 00 to 99, each containing 100 rooms, also numbered from 00 to 99. In short, it’s like a grid with 100 rows and 100 columns. The first room on Floor 95 would thus be numbered 9500. The next room along the hall would be 9501, then 9502, and so on. Figure 1-2 shows the first few rooms from the bottom floors of the Hotel Dominic, starting with the first floor, Floor 00. The hotel continues both up and to the right.

Figure 1-2. A few rooms in the Hotel Dominic

If you need to memorize a list with more than 100 numbered items, allocate an empty section of the matrix to that list. For example, to memorize the periodic table of elements, you could arbitrarily allocate rooms 8001 to 8116. Room 8001 would contain information about the first element, hydrogen, and 8116 would contain information about the element with the highest known atomic number, ununhexium (element 116).1

If you have memorized the 100 people/action pegs of the Dominic System, you already have everything you need to memorize the 10,000 rooms of the hotel. Room 8001 in the Hotel Dominic would be represented by whatever combination of person and action you have designated for HOOA. Four-digit numbers are easily memorized with the Dominic System, so all you need to do is associate hydrogen with the Dominic mnemonic for this number.2

In Real Life
Here’s an example of how to memorize the first element in the periodic table, hydrogen.
As mentioned in the previous section, place hydrogen in Room 8001 of the Hotel Dominic (in other words, Floor 80, Room 01). The number 80, as mentioned in “Use the Dominic System” [Hack #6], is represented by Santa Claus (80 = HO, which reminds us of Santa’s HO, HO, HO). In my personal list, 01 is that guy on the oatmeal box (01 = 0A = oats), and his characteristic action is offering a bowl of oatmeal. Thus, 8001 is represented by Santa Claus offering me a bowl of oatmeal.

To link hydrogen to the picture, I imagine that the oatmeal is bubbling, and little bubbles of hydrogen gas are escaping from it and bursting into flame. It’s then easy to remember other information about the element, such as its chemical symbol, H. I visualize a shiny H on Santa’s forehead, as on the forehead of the “holographic” character Rimmer in the TV series Red Dwarf. I imagine that the shiny H reflects the flames from the exploding hydrogen bubbles, making it vivid and easier to remember.

Other features of the character, the character’s action, and the room could be used to store other information about hydrogen, such as its atomic weight (1.008) and the year it was discovered (1766), both of which are four-digit numbers and also easily encoded with the Dominic System.

It’s not as easy as playing foosball or watching a DVD, and experience shows that you’ll need to refresh your memory periodically. However, “Dominate Your Memory” [Hack #8] provides a script to print up chunks of your personal memory hotel for easy review, and if you’re studying for your chemistry exam or going on Jeopardy!, a mnemonic technique like the Hotel Dominic beats rote drill techniques and makes them cry.

You can use the Hotel Dominic to memorize lists shorter than 100 items, too. For instance, you can tack the Universal Declaration of Human Rights (which has 30 articles) into rooms 8171–8200 and still leave plenty of room for new chemical elements to be discovered.

End Notes


2. This is similar to the way you would use Tony Buzan’s SEM³ (Self-Enhancing Master Memory Matrix) system to memorize the periodic table. In fact, the Hotel Dominic is an attempt to do with the Dominic System what Buzan has done with the Major System [Hack #5] in SEM³; http://www.ludism.org/mental/SemCubed. However, the Hotel Dominic is nonproprietary and arguably easier to use.

See Also

- For more information on SEM³, consult Tony Buzan’s books, especially Master Your Memory.

**Dominate Your Memory**

Use a Perl script to formulate items that match the 10,000 room numbers of the Hotel Dominic. Then, print the list as an aid for memorization and review.

“Visit the Hotel Dominic” [Hack #7] mentions a Perl script that will make memorizing large chunks of information with the Hotel Dominic method much easier and will also help you refresh your memory periodically. This hack contains that script.

With this new script, dominate, you will be able to print out as large a swath of the Hotel Dominic as you wish—hundreds or thousands of rooms—and mark it up with a pen or pencil, assigning each item you want to remember to a room. Then you will be able to review your marked-up version of the hotel at leisure and commit the items to memory.

**The Code**

Place the following Perl script in a text file called dominate:

```perl
#!/usr/bin/perl -w

$in_file = $ARGV[0];
$domstart = $ARGV[1];
$domend = $ARGV[2];

if ($domstart > $domend)
  die "Start number not less than or equal to end number\n";

open (IN_FILE, "< $in_file")
  or die "Couldn't open input file: $\n";

$index = 0;
while (defined ($line = <IN_FILE>))
  { $line = "$line;\n";
    $domarray[$index][0] = $1;
    $domarray[$index][1] = $2;
    $index++;
  }

close IN_FILE;
```
for ($domnum = $domstart; $domnum < $domend; $domnum++)
{
    $domstring = sprintf "%0004.0d", $domnum;
    print "$domstring: ";
    $domstring =~ /[\d\D]/g;
    print "$domarray[0][1]\$domarray[2][1]\n\n";
}

You will need to create your own datafile that contains your personal characters and actions that match the numbers in the Dominic System [Hack #6]. It must start with the character and action for 00 and continue through the character and action for 99. Each line must contain the character name, followed by a colon, then a space, and then the character's typical action. Colons must be used only to separate characters and actions; they cannot appear anywhere else in the file. If your text editor has a line number feature, you can use it to keep track of where you are in the file, such as line 1, which should contain the mnemonic for 00, or line 100, which should contain the mnemonic for 99.

Here are the last 29 lines of my dominate datafile, *dominic.dat*, corresponding to items 71–99:

```
$ tail -29 dominic.dat

Ray Charles: playing piano and singing ("Georgia"
George W. Bush: clearing brush in Crawford, TX
Graham Chapman: throwing open windows and exposing himself (scene from _The Life of Brian_)
Gandhi: spinning on a wheel
General Electric (a robot in uniform): saluting
Smeagol-Gollum (_The Lord of the Rings_): falling into lava with the One Ring
Gandalf the Grey (_The Lord of the Rings_): barring the way with staff
George Harrison: tapping foot and playing guitar
Ignotius Loyola: flinging himself (_Quo Th Prayer_)
Santa Claus: laughing until belly shakes (HD HO HO)
Julia Sweeney: dressing gender-ambiguously (_God Said HA_)
Humphrey Bogart: pulling the rim of his hat low
Hagbard Celine (_Illuminatus_): piloting golden submarine
Howard Dean: whooping
Isaac Newton (long white wig): releasing helium balloons (Newtonmas, H E H E)
Homer Simpson (_The Simpsons_): releasing donuts
Mercury (Greek god): flying with winged sandals (HG = chemical symbol for mercury)
Hermann Hesse (author of _The Glass Bead Game_): telling beads
Han Solo (_Star Wars_): firing blaster
Dr. No: manipulating controls in his secret headquarters
Neil Armstrong: stepping onto Moon
Norman Bates: stabbing someone repeatedly
```

David Sedaris (author): chasing rolling coins down the street (North Carolina)
Nick Danger ( Firesign Theatre, Phil Proctor): walking into a red sandstone building (pool)
Neelix (_Star Trek_): cooking alien food
Hiro Protagonist (_Snow Crash_): cutting someone to bits with a katana (Neal Stephenson, author)
Morpheus (_The Sandman_): strewning sand (Neil Gaiman, author)
Nathaniel Hawthorne: tearing open his shirt to reveal a scarlet letter
Nick Nolte: falling into pool (scene from _Down and Out in Beverly Hills_)

Running the Hack

In “Visit the Hotel Dominic” [Hack #7], I suggested memorizing the Universal Declaration of Human Rights1 by placing it after the periodic table of elements in the Hotel Dominic. That hack placed the periodic table of elements in the hotel running from 8001 to 8170, with the 30 articles of the declaration running from rooms 8171 to 8200.

However, since Santa (80 = H01) is easier for most people to visualize than Julia Sweeney (81 = HAI), for purposes of illustration only, we’ll place the 30 articles in rooms 8071 to 8100. (Of course, you can place them anywhere you wish.)

See the “How to Run the Programming Hacks” section of the Preface if you need general instructions on running Perl scripts.

If you have Perl installed on your system, to print out the “inhabitants” of these 30 rooms, save the dominate script and the *dominic.dat* file in the same directory, and then run dominate by typing the following command within that directory. The first argument should be the name of the datafile (in this case, *dominic.dat*), the second argument should be the starting room (8071), and the third argument should be the ending room (8100):

```
perl dominate dominic.dat 8071 8100
```

If you’re on a Linux or Unix system, you might also be able to use the following shortcut:

```
./dominate dominic.dat 8071 8100
```

The following is a set of results from an actual dominate run:

```
$ ./dominate dominic.dat 8071 8100
8071: Santa Claus, playing piano and singing ("Georgia"
8072: Santa Claus, clearing brush in Crawford, TX
8073: Santa Claus, throwing open windows and exposing himself (scene from _The Life Of Brian_)
```

---

1. The Universal Declaration of Human Rights (UDHR) is a document adopted by the United Nations General Assembly on December 10, 1948, in Paris, France, as the Universal Declaration of Human Rights, which is a central normative instrument in international human rights law. It is the first international document in a general system of human rights universally agreed upon by the United Nations member states. The UDHR has been signed by all United Nations member states except for South Sudan, which has not yet signed it since its independence in 2011.
8074: Santa Claus, spinning on a wheel
8075: Santa Claus, saluting
8076: Santa Claus, falling into lava with the One Ring
8077: Santa Claus, barreling with staff
8078: Santa Claus, tapping foot and playing guitar
8079: Santa Claus, flogging himself (Ignatius)
8080: Santa Claus, laughing until belly shakes (HO HO HO!)
8081: Santa Claus, dressing gender-ambiguously (God Said HA!)
8082: Santa Claus, pulling the brim of his hat low
8083: Santa Claus, piloting golden submarine
8084: Santa Claus, whooping
8085: Santa Claus, releasing helium balloons (Newtonmas, HE HE HE!)
8086: Santa Claus, gobbling donuts
8087: Santa Claus, flying with winged sandals (Hg = chemical symbol for mercury)
8088: Santa Claus, telling beads
8089: Santa Claus, firing blaster
8090: Santa Claus, manipulating controls in his secret headquarters
8091: Santa Claus, stepping onto Moon
8092: Santa Claus, stabbing someone repeatedly
8093: Santa Claus, chasing rolling coins down the street (North Carolina)
8094: Santa Claus, walking into a red sandstone building (oof!)
8095: Santa Claus, cooking alien food
8096: Santa Claus, cutting someone to bits with a katana (Neal Stephenson, author)
8097: Santa Claus, strewing sand (Neil Gaiman, author)
8098: Santa Claus, tearing open his shirt to reveal a scarlet letter
8099: Santa Claus, falling into pool (scene from Down and Out in Beverly Hills)
8100: Julia Sweeney, knocking something over ("Oh Oh!")

Your *dominate* script will print a double-spaced list so that you have room to annotate it by hand.

In Real Life

To remember the first five articles of the Universal Declaration of Human Rights, you might annotate them as follows, with a detailed visualization and a paraphrase of the relevant article:

8071: *Santa Claus, playing piano and singing ("Georgia")*

Two identical Santas sit side by side on a piano bench, each playing half the piano and singing in chorus. (Article 1: All human beings are born free and equal, and they should act in a spirit of brotherhood.)

8072: *Santa Claus, clearing brush in Crawford, Texas*

Santa is clearing brush in Crawford, knocking down old fences dividing people. (Article 2: Everyone is entitled to all the rights and freedoms in the Declaration, without any kind of distinction.)

8073: *Santa Claus, throwing open windows and exposing himself (scene from The Life of Brian)*

Santa throws open his windows and exposes himself to a death squad. Rat-a-tat-tat! He slams the windows shut. Whee! The windows are armored. (Article 3: Everyone has the right to life, liberty, and security of person.)

8074: *Santa Claus, spinning on a wheel*

Santa is chained to a spinning wheel and forced to spin, but he breaks his chains triumphantly. (Article 4: No one shall be held in slavery.)

8075: *Santa Claus, saluting*

Santa is being tortured on the rack; one of his elves frees him, and he salutes his liberator. (Article 5: No one shall be tortured or subjected to cruel, inhuman, or degrading punishment.)

End Notes


See Also

- The *dominate* script will also work for Tony Buzan’s Major-System-based SEMO if you feed it the right data. For more information on SEMO, consult Tony Buzan’s books, especially *Master Your Memory* (David & Charles).

**Memorize Numbers with Carroll’s Couplets**

You can use a rhyming system of mnemonics by Lewis Carroll, author of the immortal “Alice” books and much nonsense poetry, to remember dates, phone numbers, and other numeric data.

In the 1870s, Lewis Carroll devised a mnemonic system for numbers that he called the *Memoria Technica*, after an earlier system. Carroll’s system is little remembered by us moderns. Like today’s more common Major System ([Hack #6]), it relies on converting numbers into consonants and filling them with vowels to make words; unlike the Major System, it uses rhyming couplets to help you remember the words that are created, instead of simply having you remember them “naked,” and in this sense it is an advance on the former.

If you already know the Major System consonants, you could probably substitute them for Carroll’s without too much trouble.
In Action

First, you need to memorize the number-to-consonant conversions shown in Table 1-5, which provides mnemonics for remembering the mnemonics.

Table 1-5. Number-to-consonant conversions

<table>
<thead>
<tr>
<th>Number</th>
<th>First consonant</th>
<th>Second consonant</th>
<th>Mnemonic</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>B</td>
<td>C</td>
<td>First two consonants in alphabet</td>
</tr>
<tr>
<td>2</td>
<td>D</td>
<td>W</td>
<td>Duo; TWo</td>
</tr>
<tr>
<td>3</td>
<td>T</td>
<td>J</td>
<td>Tres (Spanish); see following note for an explanation for J</td>
</tr>
<tr>
<td>4</td>
<td>F</td>
<td>Q</td>
<td>Four; Quattuor (Latin)</td>
</tr>
<tr>
<td>5</td>
<td>L</td>
<td>V</td>
<td>L stands for 50; V stands for 5 (Roman numerals)</td>
</tr>
<tr>
<td>6</td>
<td>S</td>
<td>X</td>
<td>SIX</td>
</tr>
<tr>
<td>7</td>
<td>P</td>
<td>M</td>
<td>sePteM (Latin)</td>
</tr>
<tr>
<td>8</td>
<td>H</td>
<td>K</td>
<td>Huit (French); oKto (Greek)</td>
</tr>
<tr>
<td>9</td>
<td>N</td>
<td>G</td>
<td>NiNe; g looks like 9</td>
</tr>
<tr>
<td>0</td>
<td>Z</td>
<td>R</td>
<td>ZaRo</td>
</tr>
</tbody>
</table>

Carroll said his intent was to provide one common and one uncommon consonant for each number. He was a polyglot, so many of the metamnemonics involve number words in other languages; however, the only one that really doesn’t make any sense is J for 3. Carroll said it was the only consonant left after he filled in the rest of the table.

The next step is to convert the numbers you are trying to remember to a word or words and to make them the last part of a rhyming couplet. Carroll gives the following example to remember 1492, the year Columbus first came to America.

First, drop the 1 from 1492; it’s obvious Columbus didn’t sail in 492 or 2492.

Next, convert 492 to a word using either of the pair of letters associated with each digit, like this:

<table>
<thead>
<tr>
<th>Numbers</th>
<th>4</th>
<th>9</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>First option</td>
<td>F</td>
<td>N</td>
<td>D</td>
</tr>
<tr>
<td>Second option</td>
<td>Q</td>
<td>G</td>
<td>W</td>
</tr>
</tbody>
</table>

As it happens, the letters in the second row (FND) will form the word found nicely, but some other combination might have been used, such as QND for queded (as in “The pawn was queded when it reached the eighth row”).

Carroll writes:

The poetic faculty must now be brought into play, and the following couplet will soon be evolved:—

“Columbus sailed the world around,
Until America was F O U N D.”

Presto! Convert FOUND back to FND by extracting the vowels; then convert that to 492, and you have it.

In Real Life

Carroll makes remembering numbers with rhyming couplets seem as easy as falling off a bicycle (they say you never forget how). But Carroll was an Oxford don, a mathematician, and a gifted poet. How easy is it for us to “bring our poetic faculties into play?”

I will now demonstrate the use of the method to remember the phone numbers of Powell’s City of Books in Portland, Oregon (my favorite bookstore; visit it if you get a chance) and the Seattle branch of IKEA (where I do have to go periodically).

The phone number for Powell’s City of Books is (800) 878-7323. We’ll drop the toll-free 800 area code as being obvious, just as Carroll did with the 1 in 1492. That leaves 878-7323. Using the mnemonics shown in Table 1-5, we can convert the phone number to letters, like this:

<table>
<thead>
<tr>
<th>Numbers</th>
<th>8</th>
<th>7</th>
<th>8</th>
<th>7</th>
<th>3</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>First option</td>
<td>H</td>
<td>P</td>
<td>H</td>
<td>P</td>
<td>T</td>
<td>D</td>
<td>T</td>
</tr>
<tr>
<td>Second option</td>
<td>K</td>
<td>M</td>
<td>K</td>
<td>M</td>
<td>J</td>
<td>W</td>
<td>J</td>
</tr>
</tbody>
</table>

From these pairs of letters, we choose seven consonants that can form words:

H M K M T W T

And then the words themselves:

Hammock My Twit

Note that I’m treating MM as a single 7 and CK as just K. I learned this consonant-melding trick from the Major System [Hack #6]; Carroll doesn’t mention it. If you really do have a number with a double digit, such as 77 (MM), in it, either put a vowel between the consonants you use (as with MOM) or use two separate consonants (such as MP, as in lump).
Memorize Numbers with Carroll's Couplets

Also, note that I had half an idea of what the final rhyme would look like when I selected the letters; as soon as I saw HMK, I thought of myself coming home from Powell's with an armload of books and lying down in a hammock to read them. The final result?

Arms full of books, but you don't mind a bit?
Lie down and read in the HAMMOCK, MY TWIT!

Now, for the Ikea Seattle store, whose phone number is (425) 656-2980. Again, I can omit the area code, because I know where the store is and what its area code is likely to be. That leaves me with 656-2980. Again, using the mnemonics shown in Table 1-5, we can convert to letters, as shown here:

<table>
<thead>
<tr>
<th>Numbers</th>
<th>6</th>
<th>5</th>
<th>6</th>
<th>2</th>
<th>9</th>
<th>8</th>
<th>0</th>
</tr>
</thead>
<tbody>
<tr>
<td>First option</td>
<td>S</td>
<td>L</td>
<td>S</td>
<td>D</td>
<td>N</td>
<td>H</td>
<td>Z</td>
</tr>
<tr>
<td>Second option</td>
<td>X</td>
<td>V</td>
<td>X</td>
<td>W</td>
<td>G</td>
<td>K</td>
<td>R</td>
</tr>
</tbody>
</table>

From these pairs of letters, I select:

S V S W N K R
SAVES A WANKER

I thought about rhyming wanker with tanker, anchor, and Angkor—all suggestive of the global reach of Inter IKEA Systems BV—but all the couplets I came up with were too long. Eventually, though, I devised this ditty:

Look at all the cash and rancor
That Ikea SAVES A WANKER!

Rude, eh? Don’t worry; that makes it easier to remember.

Neither of these two rhymes took longer than a few minutes to create. However, they have stuck in my memory, suggesting that you use this method for data that's important to you, that you want to retain, and that you don't mind spending a little time learning. Carroll himself used his system to remember dates associated with various Oxford colleges, among other things; he would trot out the dates when showing guests around Oxford. Apparently, he used it to memorize logarithms as well.

A similar principle is at work in the mnemonic parody technique [Hack #10], which you can use to remember many more kinds of information than numbers.

End Notes
List songs simply put a series of information to music or rhythm. They can be tricky to learn, depending on your list, but they can also be incredibly effective. List songs may take some time to memorize, but you won’t soon forget them, and they are often faster to write than the other types. The keys to writing and learning a list song are rhyme and repetition.

In Action

To write a parody, begin with a topic you want to remember. Next, choose a popular song you know well and remember easily, or one that sounds like a word in your topic. This is best if you can transform the original lyrics into lyrics about your topic by changing only a few choice words. For example, if you’re writing a song about baboons, pick an original song about a balloon, saloon, or something else that rhymes. How about “Up, up, and away, with my beautiful baboon?” Making humorous or absurd mental images makes things easier to remember, and when you’re writing something funny, writing is a lot more fun. Often, once you start, the lyrics fall into place and you’re laughing as you think of the next line. Continue working your information or story into the song until you get everything in, adding more verses if necessary.

Writing a story song to an original tune takes a certain kind of talent that the average person may or may not feel comfortable with. It’s perfectly OK to use a traditional song here; it’s also fine if your original melody isn’t award-worthy, as long as you can remember it. If you choose a folk tune, you can either use the original lyrics as a base, as you would with a parody, or write your own from scratch. If you are using an original tune, you will have no base lyrics to work from, but coming up with your own lyrics can be half the fun. It can also make the memory stronger if you take time to craft all of the lyrics. Take the time to make it rhyme, too; rhyme and meter (meter is the rhythm of the words, as in poetry) are important to any song and will certainly help embed it into your mind. (Compare Lewis Carroll’s couplets [Hack #9], which use a similar principle.)

List songs are often the easiest to compose. First, write out a list of information you’d like to memorize. This will give you a ready list when you need to pick the right word to rhyme or fit the meter. Next, find a tune that has either verses or repetitive sections you can repeat enough times to include your entire list. Start to sing the tune for your chosen song, and instead of the words, sing the list. You will probably have to add connecting words here and there and maybe at the end of lines to help the rhyme. If you can make the words on your list fit into the rhyme, however, it’s more powerful. Making the list alphabetical can help you remember what comes next in the song. This works especially well if you have at least one word on your list for most letters of the alphabet (if not every one), such as the names of the states. You can also group information by geography (if you’re memorizing countries in Africa, for example) or any other way that makes sense; this will aid your memory, too.

In all cases, physically writing or typing your work will help stick the information in your mind. Also, the more familiar your framework song or poem is, the easier it will be to remember its new words.

In Real Life

Parodies are particularly effective for remembering a group of related information or a story. The following parody, written by teenage girls, is not a mnemonic, but it’s a good example of how to write a parody. “Negligeé” is the story of a woman who buys an unfortunate piece of lingerie. It uses the tune to the Beatles’ “Yesterday.”

Negligeé,
I look stupid in this negligé,
Cause my butt sticks out this funny way.
Oh, why’d I buy this negligé?

Yesterday,
All my troubles seemed so far away;
Now it looks as though they’re here to stay.
Oh, I believe in yesterday.

Negligeé,
I would like to take it back today,
But I threw the damn receipt away;
I’ll have to keep this negligé.

Yesterday,
Love was such an easy game to play,
Now I need a place to hide away.
Oh, I believe in yesterday.

If you were a child with access to a television in the ’70s or ’80s, you are probably familiar with Schoolhouse Rock. The producers of these animated shorts, which were shown between cartoons on network TV Saturday morning programming, knew well the teaching power of story songs. These songs, with accompanying animation, taught science, math, history, and English language skills to original catchy tunes, from “Conjunction Junction” to “My Hero Zero” to “The Preamble” (which set the preamble of the Declaration of Independence to music). Many other children’s TV shows have also used this technique, notably Sesame Street; its efficacy is well documented.

The contemporary band They Might Be Giants have recorded many story songs that teach topics including mammals, James K. Polk (the 11th president of the United States), and the sun. Their most recent contribution is an album to help kids learn the alphabet, called Here Come the ABCs. There are songs about the letters themselves, such as “Eats Everything,” and songs about the alphabet in general, such as “Alphabet of Nations” and “Who Put the Alphabet in Alphabetical Order?”
The following example was recorded by They Might Be Giants and released as a single. Both of the core members of this band learned this song as kids from an album put out by Singing Science Records and remembered it all through their lives. When they discovered they both knew it, they wanted to record and perform it. It was an underground hit. These are the first few lines from “Why Does the Sun Shine?”:

The Sun is a mass of incandescent gas,
A gigantic nuclear furnace!
Where hydrogen is made into helium
At a temperature of millions of degrees.

List songs have been recorded by many artists over the years, but all serve a similar purpose: to remember a long list that would otherwise be nearly impossible. List songs exist for memorizing the names of all the countries on Earth, the states of the U.S. and their capitals, and even the chemical elements. In “The Elements,” comedian and MIT professor Tom Lehrer cheerily lists every name on the periodic table of elements to the tune of “I Am the Very Model of a Modern Major-General” from Gilbert and Sullivan’s The Pirates of Penzance. Much like memorizing the digits of \( \pi \), memorizing “The Elements” is a geek rite of passage.

Probably inspired by this, I wrote a song as a freshman in high school to teach my science class about the alkaline and alkali earth metals from the periodic table. Using little facts I found during my research, I wove them into the lyrics, sung to the tune of “Yankee Doodle.” That was more than 15 years ago, and I can still remember it:

STRONTIUM turns the flame bright red
So does rubidium
Potassium turns the flame bright blue
And cesium does too!

Calcium is bright orange
Barium is green
Sodium is very bright and so it can be seen.

Radium is radioactive—
It gives you weird diseases.
Calcium is found in milk
And most of all hard cheeses...

See Also
- Ask MetaFilter thread on catchy educational songs; http://ask.metafilter.com/mefi/18731.

—Meredith Hale

Consume Your Information in Chunks

Improve your short-term memory, your information processing, and your long-term memory by grouping the bits of data you come across into chunks.

Psychologist George A. Miller concluded in a classic 1956 experimental survey that human short-term memory can hold only seven items at a time, plus or minus two.\(^1\) Short-term memory bears the same relation to long-term memory in humans that RAM does to mass storage in a computer: short-term memory, which is temporary, is the gateway to human long-term memory, which is semi-permanent. Short-term memory is also where information that is currently being processed is stored (such as a phone number you’re calling). Thus, it’s important for not only short-term memory itself, but also long-term memory and information processing, to maximize the ability to use short-term memory.

Recent research suggests the magic number that short-term memory can hold might be somewhat lower than seven, at least for intellectually demanding tasks. Researchers at the University of Queensland found that 30 academics given a task of analyzing statistical interactions among variables—a task at which they were already expert—did not perform better than chance at analyzing interactions of five variables in timed tests. Also, they were not only worse at analyzing four-variable interactions than interactions involving three or two variables, but less confident of their answers as well.\(^2\)

Whether the magic number is five or seven, people normally find it hard to remember more than a few small bits of information. If they recode the bits by clustering them into larger, more meaningful chunks, however, they can remember many more of the bits. In the next section, we will show that you can remember a large number of literal bits (binary digits) by grouping them into more meaningful and comprehensible numeric chunks.

In Action

Here are 40 random binary digits. Examine them and spend as much time as you want memorizing them, then look away from this book and try to write
them down. The only rule is that you may not convert them to another base, count them, restructure them, or use any other mnemonic trick to memorize them. You must memorize them by rote as you see them on the page. Are you ready? Go!

00111101111101111110000010000010000011

How did you do? Probably not too well. If you did well, either you’re a mutant with frontal lobes the size of a soccer ball, or you couldn’t help but notice (for example) that the third group of 1s is seven bits long and is followed by six zeroes, then a 1 with five zeroes, and another 1 with five zeroes. In other words, you chunked them, you cheater!

Now, assuming you understand how to convert between binary (base two) and decimal [Hack #40], you can group these bits into bytes to produce five groups of eight bits, which you can recode to five decimal numbers, like this:

00111101 11110111 11110000 00100000 10000011
61 247 240 32 131

Look away from the book again. Try to write down the five decimal numbers and then convert them to their original binary form. Go!

How did you do at remembering the binary numbers? Probably better this time. While writing this hack, I noticed that I was spontaneously able to recall all five decimal numbers hours later without any formal mnemonic tricks. Chunking is simply a superior way for humans to process data! Miller writes:

It is a little dramatic to watch a person get 40 binary digits in a row and then repeat them back without error. However, if you think of this merely as a mnemonic trick for exceeding the memory span, you will miss the important point that is implicit in nearly all such mnemonic devices. The point is that recoding is an extremely powerful weapon for increasing the amount of information that we can deal with. In one form or another, we use recoding constantly in our daily behavior; the kind of linguistic recoding that people do seems to me to be the very lifeblood of the thought processes.

Chunking is certainly central to many mnemonic hacks in this book, such as the Dominic System [Hack #8].

How It Works

The basis for the whole hack is recoding many small items that are difficult to distinguish (such as 40 bits) into a few distinct items (such as five decimal numbers). Five decimal numbers, even if they are not immediately meaningful to you, are few enough to retain in short-term memory. If some of them are meaningful to you, so much the better.

Rest assured that the technique applies to many phenomena other than binary numbers. Suppose you had a big pile of Scrabble tiles to memorize—say, 200 or so. If you could form them into words first, and then form the words into a sentence or paragraph, you’d have a much better chance of remembering the letters on the tiles.

In Real Life

When I was a broke psychology student, I often participated as a guinea pig in experiments at the Yale psychology and linguistics labs to earn pocket money. I had a few memorable experiences.

One experiment was designed to test the capacity of human short-term memory. A computer would flash strings of decimal digits rapidly on the screen, and the subject was supposed to type as many as she could back in. Although this was before I had made any serious study of mnemonic techniques, I instinctively chunked the digits into groups of two and three, effectively into numbers that I had made friends with [Hack #36]. I was able to beat the magic number of seven by about a factor of two without breaking a mental sweat. The experimenters seemed surprised and questioned me closely, apparently to determine whether duplicity was involved. I told them what I was doing, and they visibly relaxed; obviously, they knew about chunking, but apparently no one else who had participated in the experiment had used it.

End Notes


This experience, in which a memory seems to be “on the tip of the tongue,” is exasperating if you’re trying to remember a particular fact, but intriguing if you’re interested in how memory works.

One of the most fascinating things about the tip-of-the-tongue state is that it demonstrates how sometimes we know that we know something, without actually being able to recall it. This is part of what psychologists call metacognition, which allows us to realize that we should keep trying even though our memories might be failing us at a particular moment. Much research has focused on metacognition and memory, because experiences like the tip-of-the-tongue state are relatively common in everyday life.

Studies have shown that tip-of-the-tongue states happen about once per week on average and get more common as we get older. Other research has focused on conditions that affect the likelihood of successful recall, suggesting some good techniques for overcoming tip-of-the-tongue when it occurs.

In Action

When people fall into a tip-of-the-tongue state, they commonly focus on the few relevant things that they can remember, hoping that the elusive fact will pop into their mind after the effort of increased concentration. A more successful technique is to try to recall as much information about the topic as possible, no matter how loosely it is related.

For example, in the situation described in the previous section, I might try to remember the plots and details of other movies I know the performer has been in, as well as what I was doing when I saw the original version of the film and who I was with. I could also try to remember what music was in the film, whether the actress has any brothers or sisters, and even which of my friends said she gave a good performance last time we talked about her.

If I could recall some aspect of the name (such as the number of syllables, or perhaps some of the sounds in the name), I could also try recalling words that sound similar, regardless of whether they are related in meaning to the thing I’m trying to remember.

As you work through these techniques, one of them will likely help you to recall the fact you are hoping to retrieve (in our example, the name of the woman in the movie). If you have other people to bounce ideas off, all the better, because it increases the chance that someone will be able to remember the answer.

You can use similar priming techniques to remember where you left misplaced objects.

How It Works

Memory is thought to rely heavily on a network of related mental concepts. The technique given here takes advantage of this network to make it easier to recall fact more accessible to consciousness by activating as many related concepts in the network as possible.

One of the key concepts in psychology is priming, in which experiencing or thinking about one concept makes related concepts more readily available to the mind. For example, if the word dinner is shown to people in an experiment, they will react more quickly to words like spoon and vegetable than to words like airplane and paper, because words associated with food and dining are probably more closely and highly interconnected.

By thinking of as many related concepts as possible, you are increasing the activation in the area of memory that your target fact is connected to, thereby making it easier for your mind to lift the fact into consciousness.

The psychologist Endel Tulving proposed a related theory called the encoding specificity principle, which states that successful recall relies on the overlap between the thing you are trying to remember and the situation in which you first encountered it, and the cues or prompts that are available when you are trying to recall it.1 The technique given here allows you to manipulate the context in your own mind to increase the chances of recall.

Just remembering related facts is only part of the process, however. Research has shown that hearing, reading, or thinking of similar-sounding words can also help overcome the tip-of-the-tongue state.2 Models of language and memory suggest that meaning and word structure are stored separately, leading to the experience of remembering facts without being able to recall the word associated with them. In some cases, word structure is only partially remembered, so first letters or syllables are recalled, but nothing else. Priming seems to work as well for sounds as it does for facts and concepts, which is why you can remember the target word more easily by remembering words that sound like it.
I

See Also

- Priming tutorial from Harvey G. Shulman; http://www.psy.ohio-state.edu/psy312/priming.html.

—Vaughan Bell

Although memory is a core human faculty, and developing it will reward you well, as a literate human you still need to process recorded information, whether books full of text or digital files full of audiovisual data. How can you cope with the hurricane of information that pounds your eyes and ears every day?

This chapter will show you how to capture the best of the informational flood quickly, whether it comes from outside or inside your skull. It also will show you how to sort that information, structure it, and ultimately discard it from your life when you no longer need it.

**Catch Your Ideas**

Good thoughts can come at any time. By recording them, you can bring them together and encourage your brain to give you more.

Interesting thoughts can come to you at any time. Perhaps you’re getting groceries, in aisle A4, and suddenly you have an idea for a program you’re writing. Or you’re driving, and a point in an argument comes to you. Or you’re in the shower, and you realize something about life.

But later, you simply forget. The very next day, you’re tasked with writing that program, or giving your side in the argument, and you ask yourself, “Now what was it I was thinking?” Perhaps you are stuck living the same day over and over again. “Didn’t I have a thought about a different way I could think and live?”

In this hack, you’re going to collect your thoughts using a catch. This is not a simple diary; this is an advanced system for collecting every thought, from everywhere in your life, and bringing them together.