Anki User Manual

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Table of Contents

Introduction

Anki is a program which makes remembering things easy. Because it is a lot more efficient than traditional study methods, you can either greatly decrease your time spent studying, or greatly increase the amount you learn.

Anyone who needs to remember things in their daily life can benefit from Anki. Since it is content-agnostic and supports images, audio, videos and scientific markup (via LaTeX), the possibilities are endless. For example:

- learning a language
- studying for medical and law exams
- memorizing people's names and faces
- brushing up on geography
- mastering long poems
- even practicing guitar chords!

There are two simple concepts behind Anki: *active recall testing* and

spaced repetition. They are not known to most learners, despite having been written about in the scientific literature for many years. Understanding how they work will make you a more effective learner.

Active Recall Testing

Active recall testing means being asked a question and trying to remember the answer. This is in contrast to *passive study*, where we read, watch or listen to something without pausing to consider if we known the answer. Research has shown that active recall testing is far more effective at building strong memories than passive study. There are two reasons for this:

- The act of recalling something *strengthens* the memory, increasing the chances we'll be able to remember it again
- When we're unable to answer a question, it tells us we need to return to the material to review or relearn it

You have probably encountered active recall testing in your school years without even realizing it. When good teachers give you a series of questions to answer after reading an article, or make you take weekly progress-check tests, they are not doing it simply to see if you understood the material or not. By testing you, they are increasing the chances you will be able to remember the material in the future.

A good way to integrate active recall testing into your own studies is to use *flashcards*. With traditional paper flashcards, you write a question on one side of a card, and the answer on the other side. By not turning the card over until you've thought about the answer, you can learn things more effectively than passive observation allows.

Use It or Lose It

Our brains are efficient machines, and they rapidly discard information that doesn't seem useful. Chances are you don't remember what you had for dinner on Monday two weeks ago, because this information is not usually useful. If you went to a fantastic restaurant that day and spent the last two weeks telling people about how great it was, however, you're likely to still remember in vivid detail.

The brain's "use it or lose it" policy applies to everything we learn. If you spend an afternoon memorizing some science terms, and then don't think about that material for two weeks, you'll probably have forgotten most of it. In fact, studies show we forget about 75% of

material learnt within a 48 hour period. This can seem pretty depressing when you need to learn a lot of information.

The solution is simple, however: *review*. By reviewing newly-learnt information, we can greatly reduce forgetting.

The only problem is that traditionally review was not very practical. If you are using paper flashcards, it's easy to flick through all of them if you only have 30 of them to review, but as the number grows to 300 or 3000, it quickly becomes unwieldy.

Spaced Repetition

The *spacing effect* was reported by a German psychologist in 1885. He observed that we tend to remember things more effectively if we spread reviews out over time, instead of studying multiple times in one session. Since the 1930s there have been a number of proposals for utilizing the spacing effect to improve learning, in what has come to be called *spaced repetition*.

One example is in 1972, when a German scientist called Sebastian Leitner popularized a method of spaced repetition with paper flashcards. By separating the paper cards up into a series of boxes, and moving the cards to a different box on each successful or unsuccessful review, it was possible to see at a glance a rough estimate of how well a card was known and when it should be reviewed again. This was a great improvement over a single box of cards, and it has been widely adopted by computerized flashcard software. It is a rather rough approach however, as it can't give you an exact date on which you should review something again, and it doesn't cope very well with material of varying difficulty.

The biggest developments in the last 30 years have come from the authors of SuperMemo, a commercial flashcard program that implements spaced repetition. SuperMemo pioneered the concept of a system that keeps track of the ideal time to review material and optimizes itself based on the performance of the user.

In SuperMemo's spaced repetition system, every time you answer a question, you tell the program how well you were able to remember it - whether you forgot completely, made a small mistake, remembered with trouble, remembered easily, etc. The program uses this feedback to decide the optimal time to show you the question again. Since a memory gets stronger each time you successfully recall it, the time between reviews gets bigger and bigger - so you may see a question for the first time, then 3 days later, 15 days later, 45 days later, and so on.

This was a revolution in learning, as it meant material could be

learnt and retained with the absolute minimum amount of effort necessary. SuperMemo's slogan sums it up: with spaced repetition, you can *forget about forgetting*.

Why Anki?

While there is no denying the huge impact SuperMemo has had on the field, it is not without its problems. The program is often criticized for being buggy and difficult to navigate. It only runs on Windows computers. It's proprietary software, meaning end-users can't extend it or access the raw data. And while very old versions are made available for free, they are quite limited for modern use.

Anki addresses these issues. There are free clients for Anki available on many platforms, so struggling students and teachers with budgetary constraints are not left out. It's open source, with an already flourishing library of plugins contributed by end-users. It's multi-platform, running on Windows, Mac OSX, Linux/FreeBSD, and some mobile devices. And it's considerably easier to use than SuperMemo.

Internally, Anki's spaced repetition system is based on an older version of the SuperMemo algorithm called SM2. Subsequent versions have managed to squeeze out a little more learning efficiency, but they come at the cost of greatly increased complexity, and they are more susceptible to scheduling errors in real-world use. For a more in-depth discussion of this and the differences in scheduling algorithms, see the bottom of Frequently Asked Questions.

The Basics

Before proceeding, you should download Anki from the Anki website.

It's also **highly recommended** that you check out the introductory videos on the website, as they will get you up and running quickly. There is a mirror of the videos on the Anki website for those who can't access Youtube.

Anki is basically an intelligent electronic flashcard program. You create or download sets of questions and answers, and Anki presents the questions to you at the optimium time to ensure you don't forget.

Cards

A question and answer pair is called a *card*. This is based on a paper flashcard with a question on one side an the answer on the back. In Anki a card doesn't actually look like a physical card, and when you

show the answer the question remains visible by default. For example, if you're studying basic chemistry, you might see a question like:

```
Q: Chemical symbol for oxygen?
```

After thinking about it, and deciding the answer is O, you click the show answer button, and Anki shows you:

```
Q: Chemical symbol for oxygen?
A: O
```

After checking you are correct, you can tell Anki how well you remembered, and Anki will choose a next time to show you again.

Decks

A *deck* is a file on your computer which contains cards. You can use different decks for different topics, or keep all your information in one deck.

Facts & Fields

Using paper flashcards or a traditional flashcard program, we might make the following cards:

```
Q: Chemical symbol for oxygen?
A: O
```

and

```
Q: Chemical number for oxygen?
A: 8
```

and

```
Q: Chemical name for O?
A: oxygen
```

There are a number of downsides to this traditional approach. A lot

of typing is involved. It's also easy to accidentally make mistakes, and if you later realize you spelt oxygen wrong, you have to edit each card in turn to correct it. You may also end up seeing one question right after the other, which isn't so useful.

To solve this, Anki allows you to enter *facts*. Facts are a collection of related information which is then used to create cards. Facts are made of a number of *fields* - in this case Name, Symbol and Number. To make the above questions, you might enter the following information into Anki:

```
Name: oxygen
Symbol: O
Number: 8
```

You can then tell Anki to generate one or more cards based on this information.

Templates

In Anki, instead of entering information directly on cards, you tell Anki what type of information you would like to appear on the front and back of the card, and Anki automatically fills it in for you. This blueprint for what should appear on the front and back is called a *template*, or *card template*.

For example, imagine we have the fact mentioned above, and we want a card that shows:

```
Q: Chemical symbol for oxygen?
A: O
```

To do this, we can set the template question and answer to:

```
Q: Chemical symbol for {{Name}}?
A: {{Symbol}}
```

By surrounding a field name in curly brackets, we tell Anki to replace that section with the actual information in the field. The information not surrounded by curly brackets remains the same on each card.

Now let's create two more templates:

```
Q: Chemical number for {{Name}}?
A: {{Number}}
```

and

```
Q: Chemical name for {{Symbol}}?
A: {{Name}}
```

Once a template has been created, every time you add a new fact, a card will be created based on that template. Templates make it easy to keep the formatting of your cards consistent, and can greatly reduce the amount of effort involved in adding information. They also mean Anki can ensure related cards don't appear too close to each other, and mean you can fix a typing mistake once and have all the related cards updated at once.

To add and edit templates, click the card layout button while adding items.

Models

Anki allows you to store different types of information within a single deck. To do this, it separates each type of information into a separate *model*. A model is a list of templates, and a list of fields to store in a fact. In the previous examples we might have a model called "Chemical Elements". It says we want three fields: Name, Symbol and Number, and three templates so that for each fact we enter, three cards will be created.

If we also wanted to study capital cities in the same deck, we might create a new model with the fields Country and Capital, and create one or more templates to quiz ourselves on.

Models can be added and edited via the add items screen, the importing screen, or via Settings>Deck Properties.

Downloading Material

The easiest way to get started with Anki is to download a deck of cards someone has shared.

1. Open Anki.
2. Choose File→Download→Shared Deck, or click the Download button.

3. Type in a string to search for, or scroll through the list.

4. Select a deck you're interested in, and click OK. The deck will be downloaded and will open up.

Self-made versus pre-made

Creating your own deck is the most effective way to learn a complex subject. Subjects like languages and the sciences can't be understood simply by memorizing facts - they require explanation and context to learn effectively. Furthermore, inputting the information yourself forces you to decide what the key points are, and leads to a better understanding.

If you are a language learner you may be tempted to download a long list of words and their translations, but this won't teach you a language any more than memorizing scientific equations will teach you astrophysics. To learn properly, you need textbooks, teachers, or exposure to real-world sentences.

```
Do not learn if you do not understand.
-- SuperMemo
```

Most shared decks are created by people who are learning material outside of Anki - from textbooks, classes, TV, etc. They select the interesting points from what they learn and put them into Anki. They make no effort to add background information or explanations to the cards, because they already understand the material. But when someone else downloads their deck and tries to use it, they'll find it very difficult as the background information and explanations are missing.

That is not to say shared decks are useless - simply that for complex subjects, they should be used as a *supplement* to external material, not as a *replacement*. If you're studying textbook ABC and someone has shared a deck of ideas from ABC, that's a great way to save some time. And for simple subjects that are basically a list of facts, such as capital city names or pub quiz trivia, you probably don't need external material. But if you attempt to study complex subjects without external material, you will probably meet with disappointing results.

Creating Material

Please see the add items documentation.

Reviewing

When you have found a deck you like or entered some cards in, it's time to start reviewing. If the *Add Items* screen is still open, close it by clicking on close or pressing Esc. You should see a screen entitled *Study Options*. Documentation for this screen is available on a different page.

When you're ready, click *Start Reviewing*. You'll then see a screen like this:
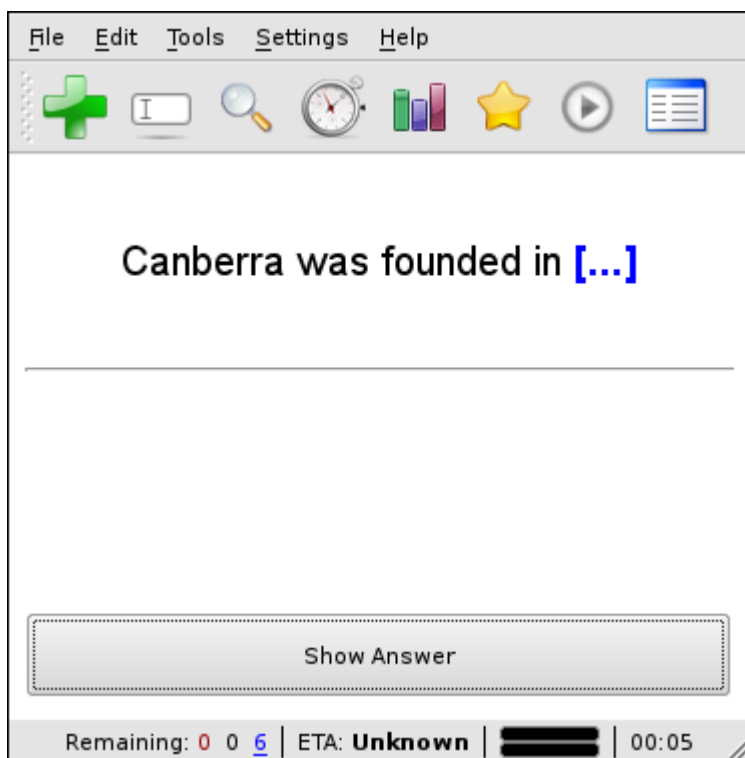
Here you need to look at the question and think about the answer. It can help to say the answer out loud, but that is not necessary. It's ok if it takes you a little while to recall the answer, but as a general rule if you can't answer within 10 seconds, you should just show the answer.

When you're ready, click *Show Answer* or press the spacebar or enter key. You'll see something like the following:
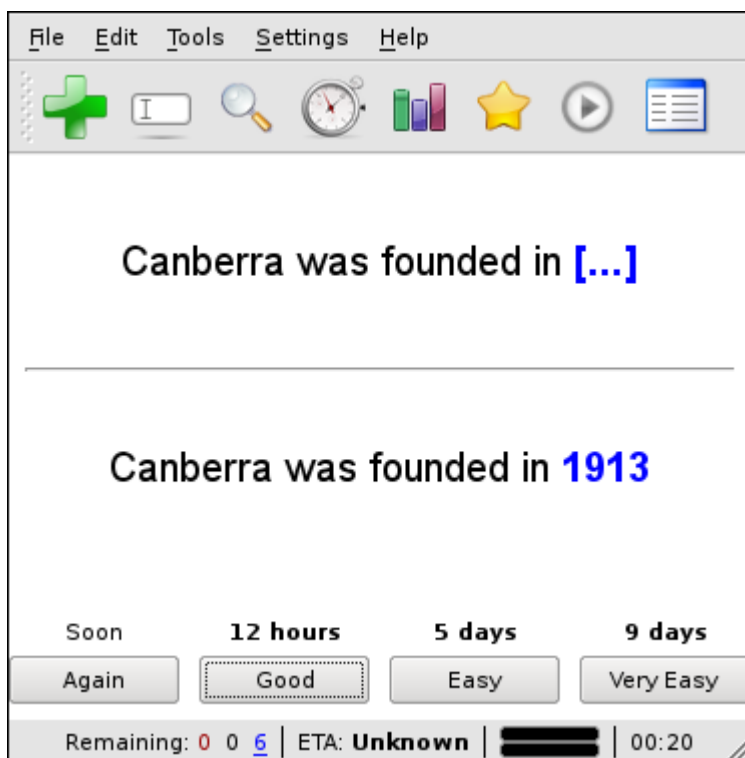
Now you need to decide how well you remembered.

Answer Buttons

Anki gives you four options. The labels on the buttons will change depending on whether you got the card right last time, but the behaviour is the same.

You can use 1 to 4 on the keyboard to choose a button. If you hit space, the default option (highlighted in green) will be used.

1: Again

> The card will be shown again shortly - within 10 minutes with the default settings. You can use this button if you've forgotten the answer, and you can also use it if you remembered, but felt it was too difficult and want to practice again. This button also marks a card as progressively more difficult, but only when the previous appearance was successfully answered. For this reason you can press *again* many times in a row while learning without the difficulty rating becoming exceedingly high.

2: Good / Hard

> Wait 1.2x longer than last time, and tell Anki to mark the card as progressively more difficult. As a card's difficulty rating rises, buttons 3 and 4 will result in smaller and smaller delay increases.

3: Easy / Good

> Tells Anki to increase a card's delay based on its difficulty rating. Answering 3 on a new card will give a delay 2.5x the previous

delay. Unlike the other buttons, button 3 does not adjust the difficulty level, so by using button 3 you are telling Anki that the current difficulty is appropriate. There is lower limit on the difficulty rating, meaning that pressing button 3 will always result in a delay 1.3x or more than the previous delay.

4: Very Easy / Easy

Tells Anki that the card is too easy. Anki will decrease the difficulty rating of the card, meaning that buttons 3 and 4 will give more aggressive delays in the future. The next delay is calculated by increasing the previous delay like button 3, and then adding an extra 30%. Because this button results in a big interval increase and tells Anki to use a bigger delay, you should only use it for cards that are extremely easy. In most cases you probably want to use button 3 instead.

Each time you answer a card with buttons 2, 3 or 4, the time before it is shown again will grow longer. Imagine a user has added two cards to their deck - one difficult one, and an easy one. The difficult one is displayed first, and the user presses 1. The easy card is shown next and the user already knows the answer, so they choose 3. The easy card will be shown again in 3-5 days. Next the difficult card is shown again, and this time the user remembers the answer, so they choose 2, in order to be able to see the card again the next day.

The next day the difficult card appears again, and the user still finds it a little difficult, so they choose 2 again. It will then be shown again in about 2-3 days.

After 3 days have passed, the easy card appears again. The user still finds it pretty easy, so they choose 3 again. The card will next be shown about 10 days in the future. If they continue to answer it correctly, the times will continue to grow.

The Rest

The rest of the documentation is currently available on separate pages. Many of these pages can also be reached by pressing the help button on the appropriate screen in Anki.

- Frequently Asked Questions
- Card Layout
- Editing Your Deck
- Importing Files
- Deck Properties

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