Logic Tutorial 1

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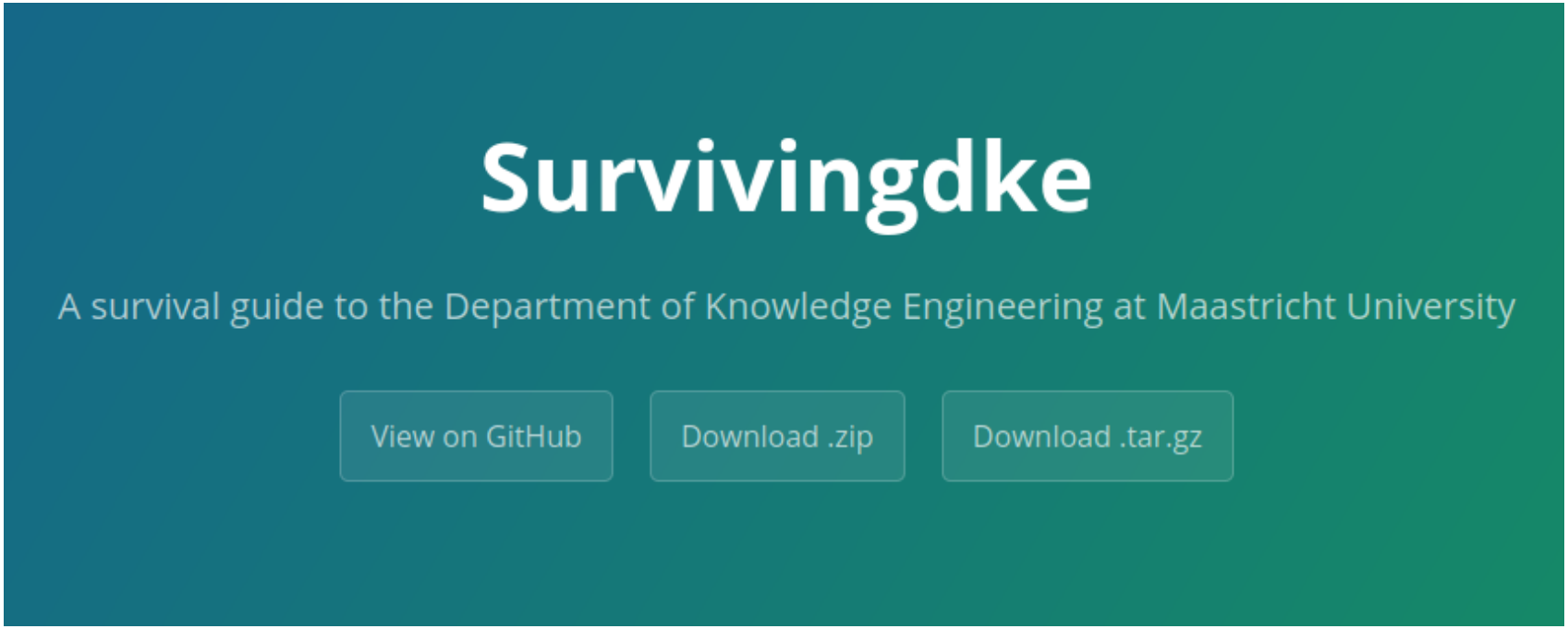
Overview

- 16:00 How to learn
- 16:10 Recap
- 16:20 **Q&A**
- 16:50 Quiz
- 17:00 **Q&A**
- 18:00 Feierabend

How to learn (0/3)

msvincognito.github.io/survivingdke



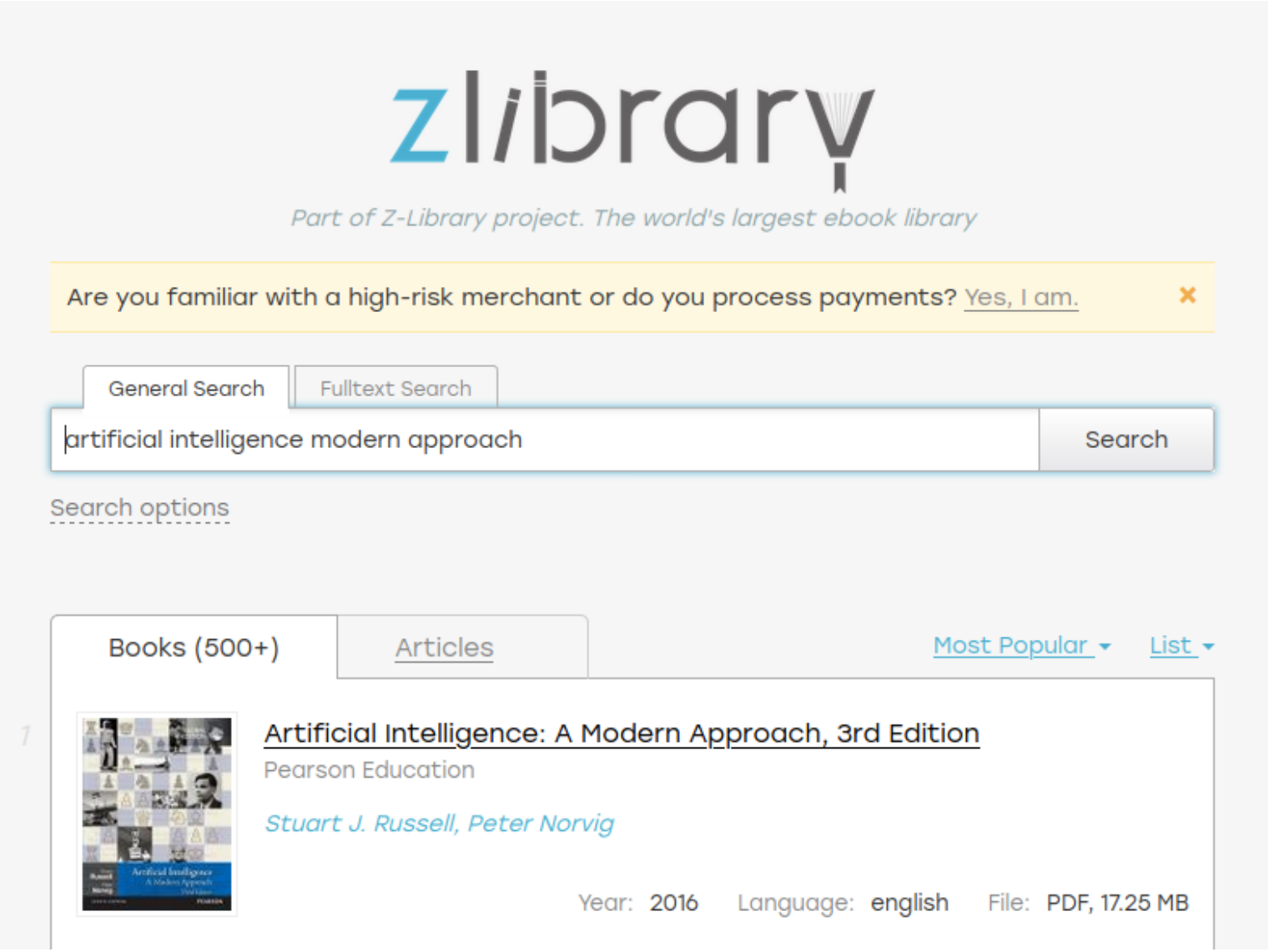
How to learn (1/3): Exercise

msvincognito.nl/wiki

- logic_answersexam1-2006.zip (2020/11/14 22:49 900.2 KB)
- logic_exam2004-answers.zip (2020/11/14 22:49 818.2 KB)
- logic_exam2005-answers.zip (2020/11/14 22:49 408.4 KB)
- logic_exam2007-1-answers.zip (2020/11/14 22:49 887.5 KB)
- logic_exam2007-2-answers.zip (2020/11/14 22:49 908.2 KB)
- logic_exam2008-1-answers.zip (2020/11/14 22:49 950 KB)
- logic_exam2008-2-answers.zip (2020/11/14 22:49 890.2 KB)
- logic_exam_2004.pdf (2020/11/14 22:49 104.8 KB)
- logic_exam_2005-06-03.pdf (2020/11/14 22:49 81.4 KB)
- logic_exam_2006-05-31.pdf (2020/11/14 22:49 81.7 KB)
- logic_exam_2007-05-30.pdf (2020/11/14 22:49 102.6 KB)
- logic_exam_2007-06-29.pdf (2020/11/14 22:49 105.2 KB)
- logic_exam_2008-06-04.pdf (2020/11/14 22:49 36.3 KB)
- logic_exam_2008-07-02.pdf (2020/11/14 22:49 35.5 KB)
- logic_mockexam_2016.pdf (2020/11/14 22:49 209.7 KB)

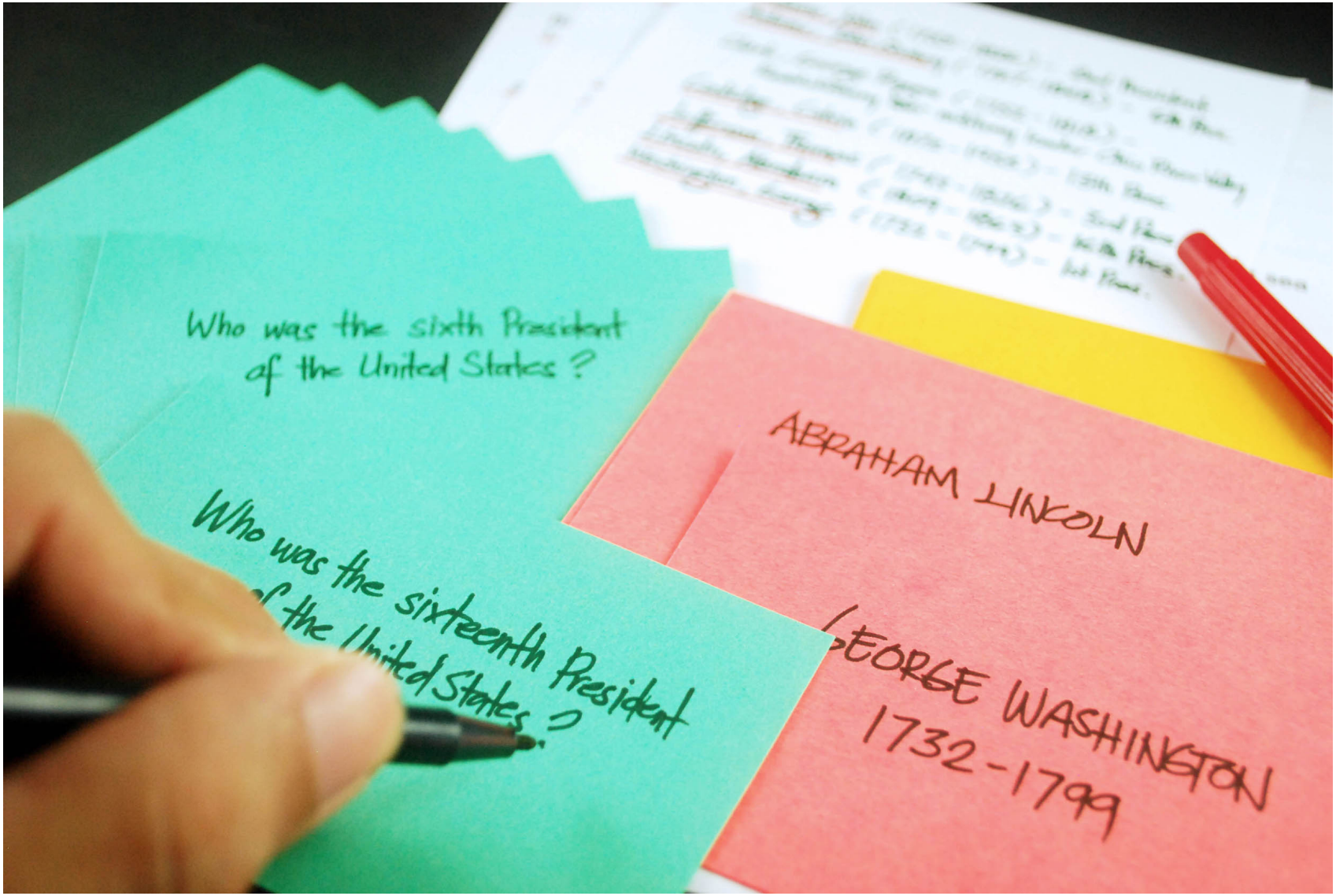
How to learn (2/3): Self-study

Z-Libary, Library Genesis

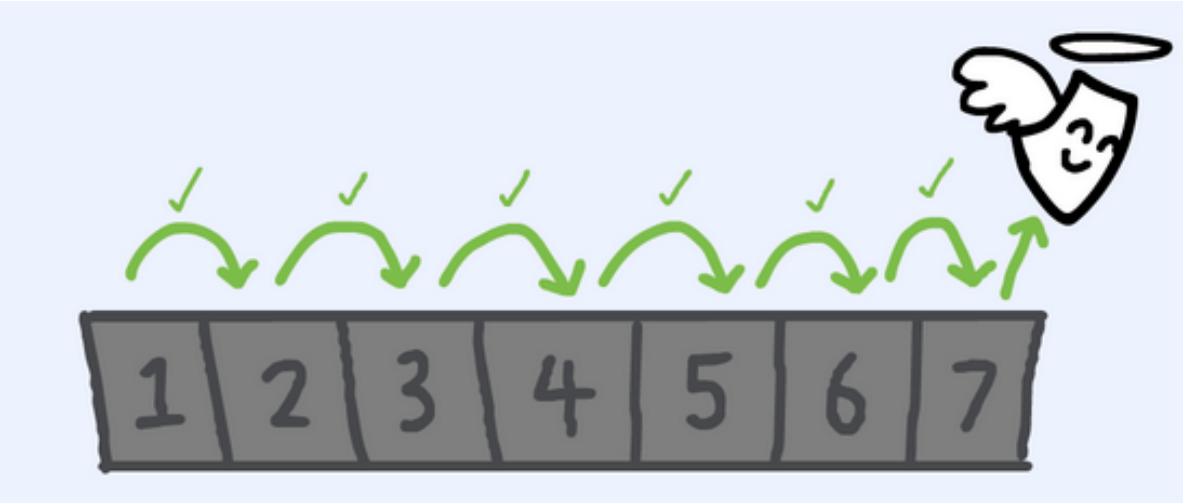


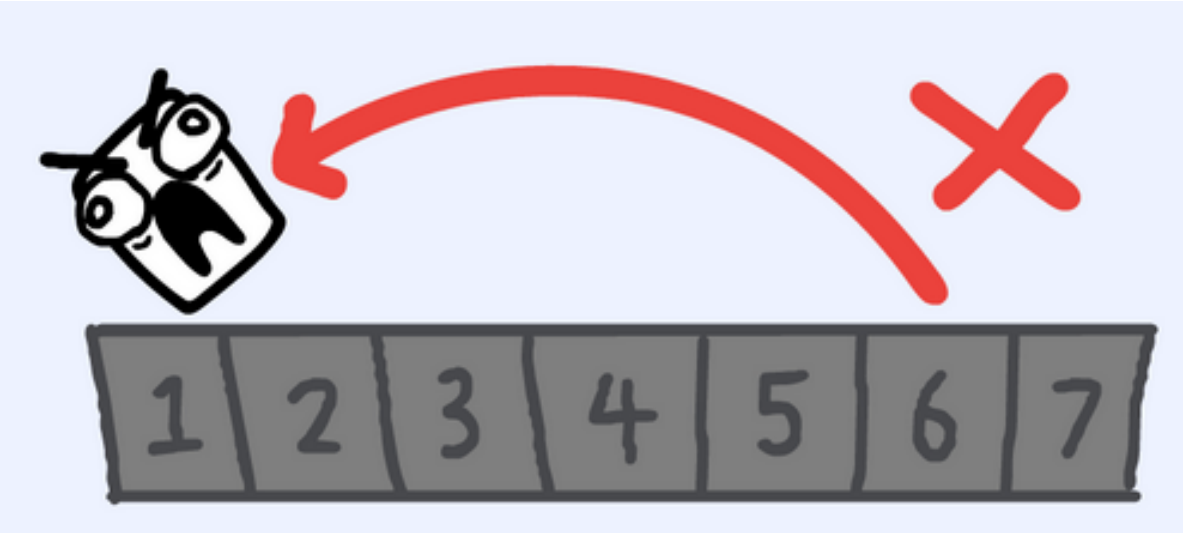
How to learn (2/3): Self-study

How to learn (3/3): Spaced repetition

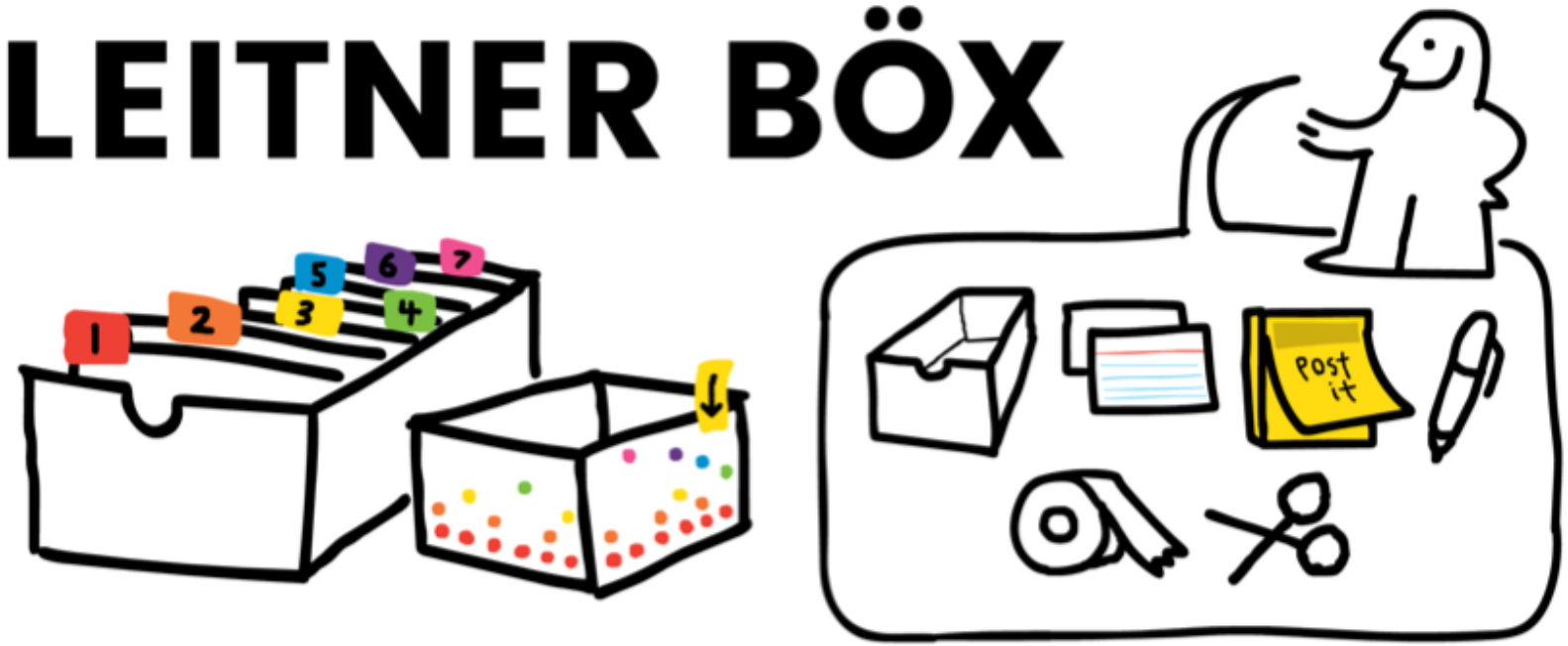


How to learn (3/3): Spaced repetition



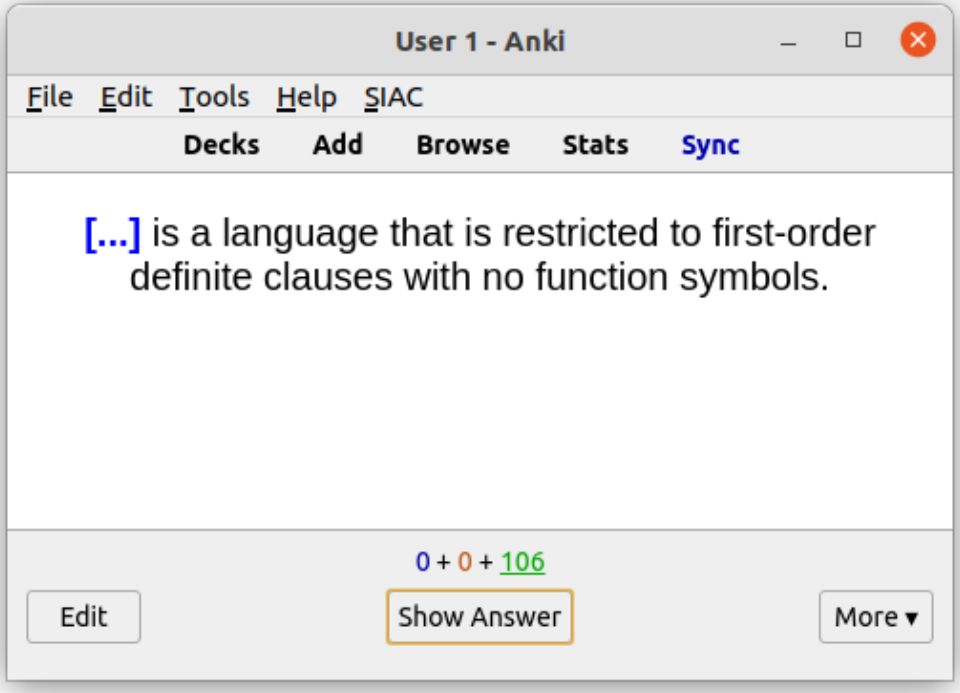


How to learn (3/3): Spaced repetition



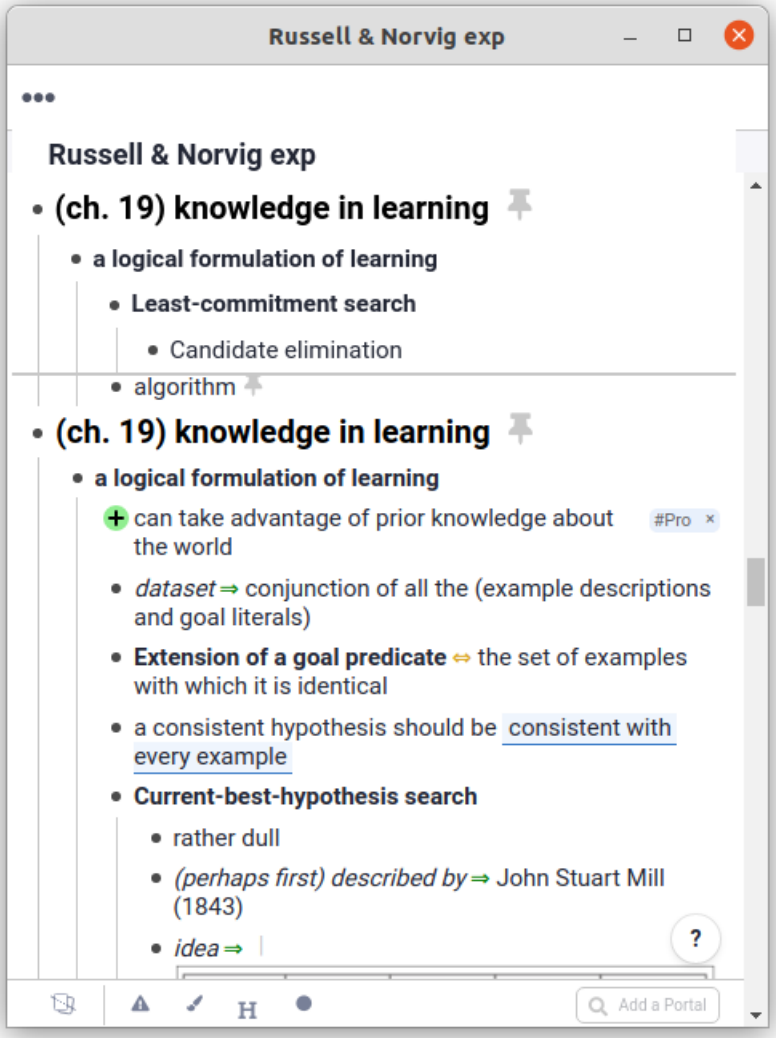
How to learn (3/3): Spaced repetition

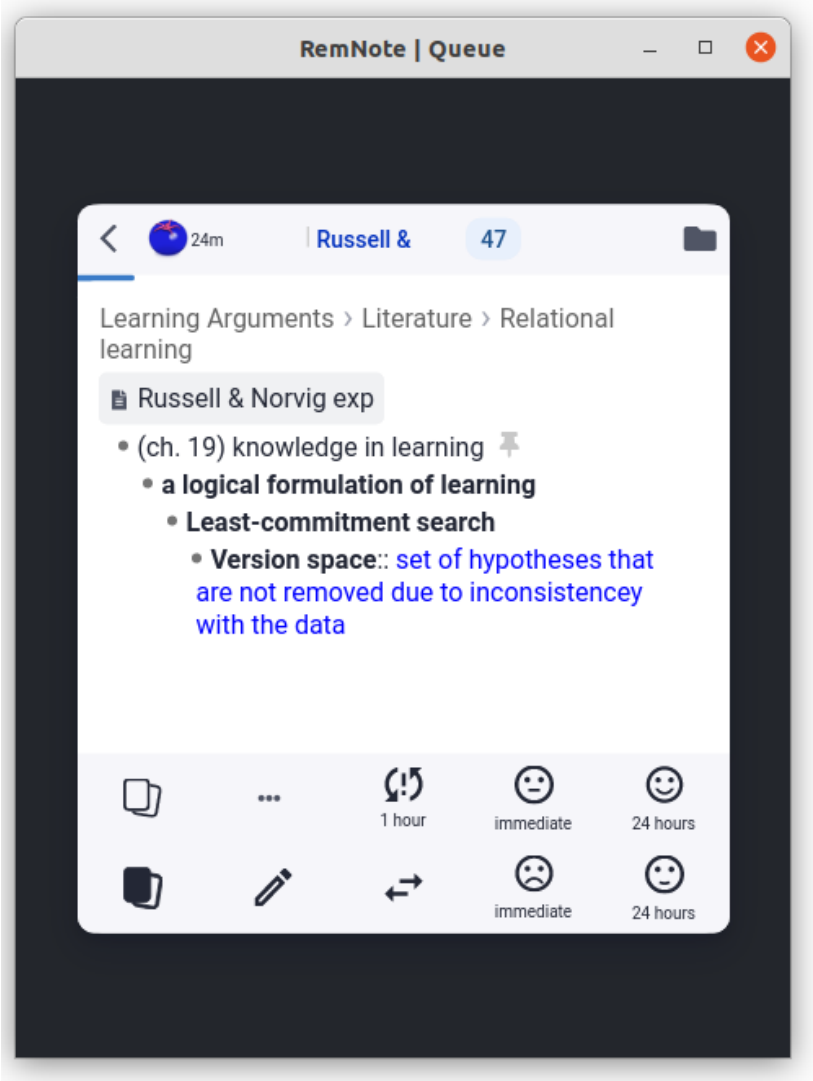
Anki



How to learn (3/3): Spaced repetition

RemNote





How to learn (3/3): Spaced repetition

ncase.me/remember

How to learn

1. Exercise
2. Self-study
3. Spaced repetition

Semantic Tableau

$\neg$	$\neg\varphi \circ$ $\circ \varphi$	$\circ \neg\varphi$ $\varphi \circ$
$\wedge$	$\varphi \wedge \psi \circ$ $\varphi, \psi \circ$	$\circ \varphi \wedge \psi$ $\circ \varphi \qquad \circ \psi$
$\vee$	$\varphi \vee \psi \circ$ $\varphi \circ \qquad \psi \circ$	$\circ \varphi \vee \psi$ $\circ \varphi, \psi$
$\rightarrow$	$\varphi \rightarrow \psi \circ$ $\circ \varphi \qquad \psi \circ$	$\circ \varphi \rightarrow \psi$ $\varphi \circ \psi$
$\leftrightarrow$	$\varphi \leftrightarrow \psi \circ$ $\varphi, \psi \circ \qquad \circ \varphi, \psi$	$\circ \varphi \leftrightarrow \psi$ $\varphi \circ \psi \qquad \psi \circ \varphi$

Natural deduction

$$\frac{\varphi\,,\ \varphi \to \psi}{\psi}\ \texttt{modus ponens}$$

$$\mathbf{E}_{\to}$$

$$\frac{\begin{array}{|l} \varphi \\ \hline \vdots \\ \psi \end{array}}{\varphi \to \psi}\ \texttt{deduction}$$

$$\mathbf{I}_{\to}$$

$$\frac{\varphi \wedge \psi}{\varphi} \qquad \frac{\varphi \wedge \psi}{\psi}$$

$$\mathbf{E}_{\wedge}$$

$$\frac{\varphi\,,\ \psi}{\varphi \wedge \psi}$$

$$\mathbf{I}_{\wedge}$$

$$\frac{\neg\varphi\,,\ \varphi}{\bot}$$

$$\mathbf{E}_{\neg}$$

$$\frac{\begin{array}{|l} \neg\varphi \\ \hline \vdots \\ \bot \end{array}}{\varphi}\ \texttt{refutation}$$

$$\mathbf{I}_{\neg}$$

$$\frac{\varphi \vee \psi\,,\ \begin{array}{|l} \varphi \\ \hline \vdots \\ \chi \end{array}\ ,\ \begin{array}{|l} \psi \\ \hline \vdots \\ \chi \end{array}}{\chi}$$

$$\mathbf{E}_{\vee}$$

$$\frac{\varphi}{\varphi \vee \psi} \qquad \frac{\psi}{\varphi \vee \psi}$$

$$\mathbf{I}_{\vee}$$

Q & A

excalidraw

Q & A

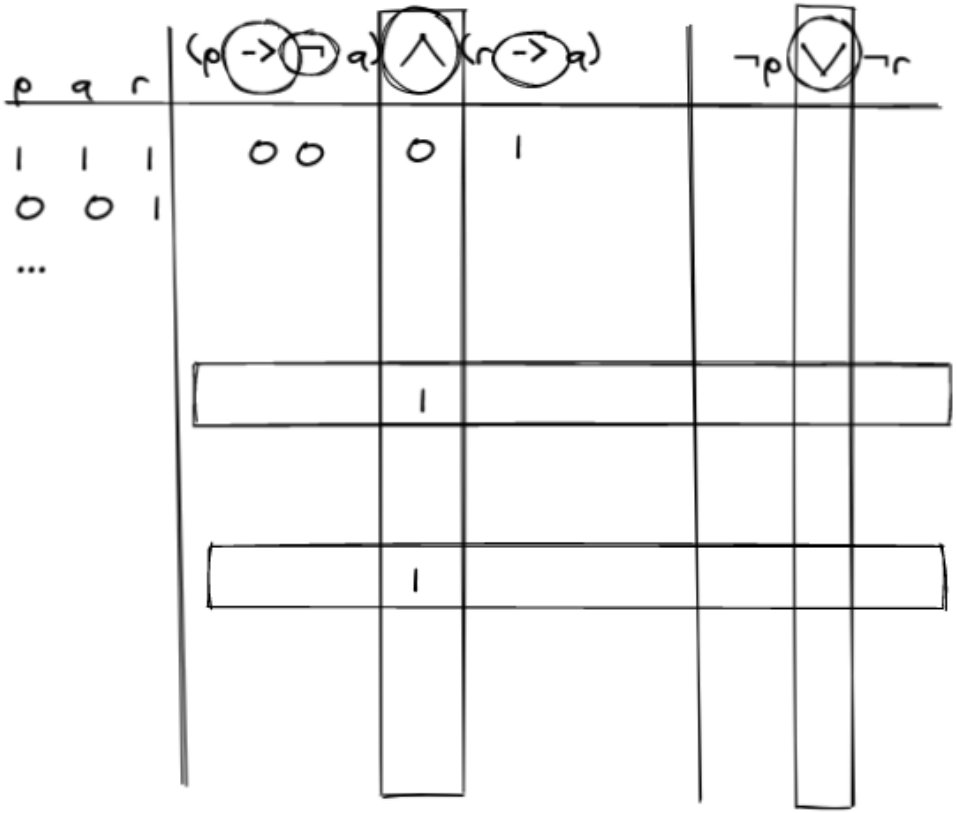
sound	~high precision
complete	~high recall

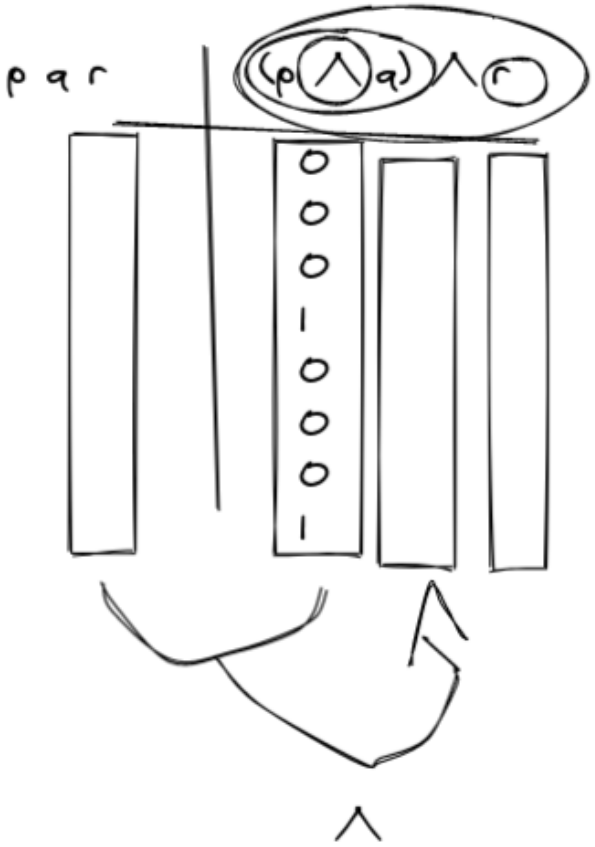
Q & A

a	b
0	0
0	1
1	0
1	1

d	a	b	c
0	0	0	0
0	0	0	1
0	0	1	0
0	0	1	1
0	1	0	0
0	1	0	1
0	1	1	0
0	1	1	1
1			
1			
1			
1			
...			

Q & A





Q & A - Mock exam 2016 (Incognito Wiki) - 3 a)

1	$p \to q$	
2	$(q \wedge r) \to s$	
3	$p \wedge r$	
4	p	$E\wedge$ (3)
5	q	$E\to$ (4, 1)
6	r	$E\wedge$ (3)
7	$q \wedge r$	$I\wedge$ (5, 6)
8	s	$E\to$ (7, 2)
9	$(p \wedge r) \to s$	$I\to$ (3, 8)

Q & A - Mock exam 2016 (Incognito Wiki) - 3 b)

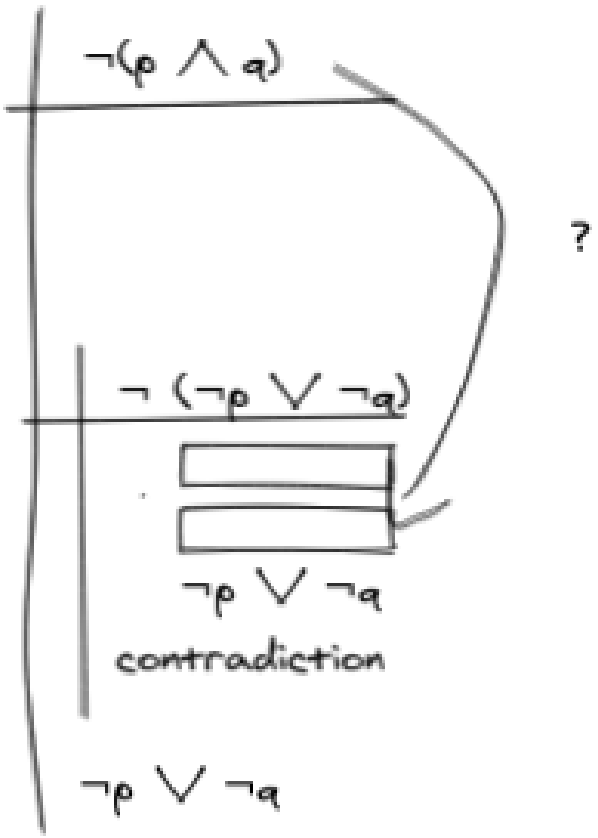
$(p \vee s) \rightarrow (q \vee r)$
$(q \vee s) \rightarrow r$

---

p

$p \vee s$	$I \vee (3)$
$q \vee r$	$E \rightarrow (1, 4)$
q	r
$q \vee s$	$[I \vee (6a)]$
r	$[I \rightarrow (7a, 2)$
r	$E \vee (5, 6b, 8a)$
$p \rightarrow r$	$I \rightarrow (3, 9)$

Q & A



Quiz

- Kahoot
- Tahook

Feedback

Anonymous feedback form:

- linktr.ee/davidpomerenke