

# Plan

— — —

- mit tastaturlayout
- hvordan I kan forbedre jeres brug af tastatur

# Plan

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- mit tastaturlayout
- hvordan I kan forbedre jeres brug af tastatur

gains



# Back in the days...

— — —

# Back in the days...

- danish qwerty:

§ ½	! 1	" 2	# 3	¤ 4	% 5	& 6	/ 7	( 8	) 9	= 0	? +	· 	← Backspace
Tab ↔	Q	W	E €	R	T	Y	U	I	O	P	Å	^ "	~ Enter
Caps Lock ↑	A	S	D	F	G	H	J	K	L	Æ	Ø	* ,	↵
Shift ⬆	> <	Z	X	C	V	B	N	M µ	;	:	- _	Shift ⬆	
Ctrl	Win Key	Alt								Alt Gr	Win Key	Menu	Ctrl

# Akademisk terminologi

— — —

- layer 1: no modifier
- layer 2: Shift (store bogstaver)
- layer 3: Alt Gr (et eller andet)
- layer 4: Shift + Alt Gr (???)

# Back in the days...

— — —

- danish qwerty:

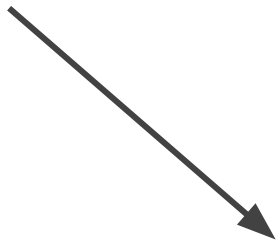
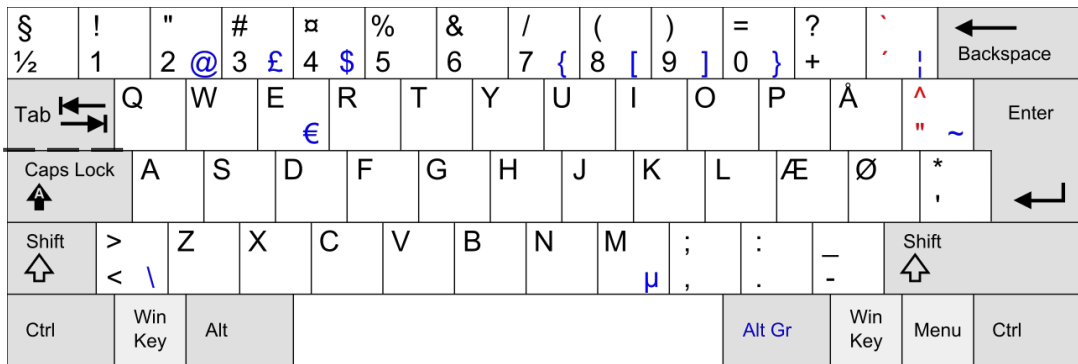
§ ½	! 1	" 2	# 3	¤ 4	% 5	& 6	/ 7	( 8	) 9	= 0	? +	· 	← Backspace
Tab ↔	Q	W	E €	R	T	Y	U	I	O	P	Å	^ "	~ Enter
Caps Lock ⬆	A	S	D —	F	G	H	J —	K	L	Æ	Ø	* ,	↵
Shift ⬆	> <	Z \	X	C	V	B	N	M μ	; ,	: .	- _	Shift ⬆	
Ctrl	Win Key	Alt							Alt Gr	Win Key	Menu	Ctrl	

# Back in the days...

- danish qwerty:

§ ½	! 1	" 2	# @	¤ £	% \$	& 5	/	(	)	=	?	· ,	← Backspace
Tab	Q	W	E €	R	T	Y	U	I	O	P	Å	^ "	Enter
Caps Lock ↑	A	S	D —	F	G	H	J —	K	L	Æ	Ø	* ,	↵
Shift ⬆	> <	Z \	X	C	V	B	N	M µ	;	:	- _	Shift ⬆	
Ctrl	Win Key	Alt							Alt Gr	Win Key	Menu	Ctrl	

- “there has to be another way” – Malte Thomsen ~april 2020



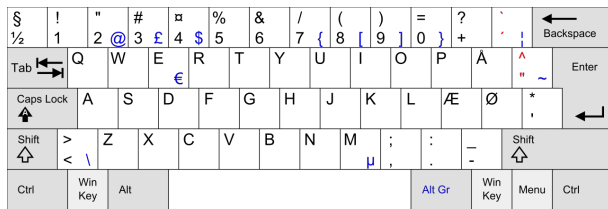


# gfk1/wokmok



uden gfkł

qwerty



med gfkł



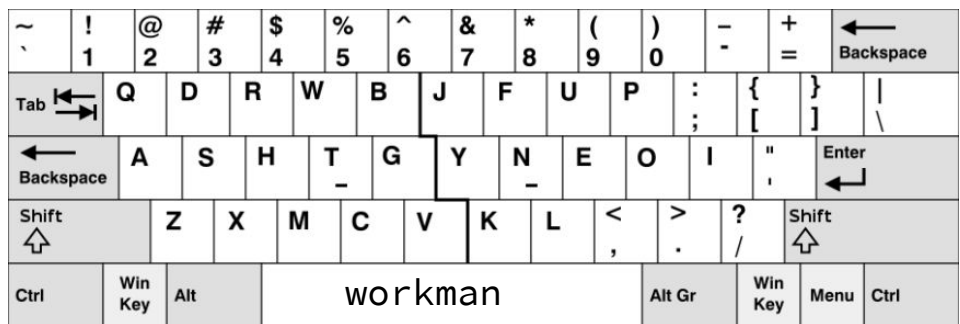
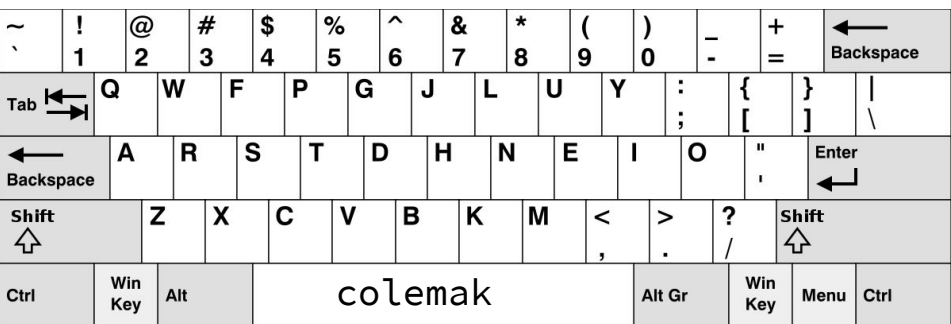
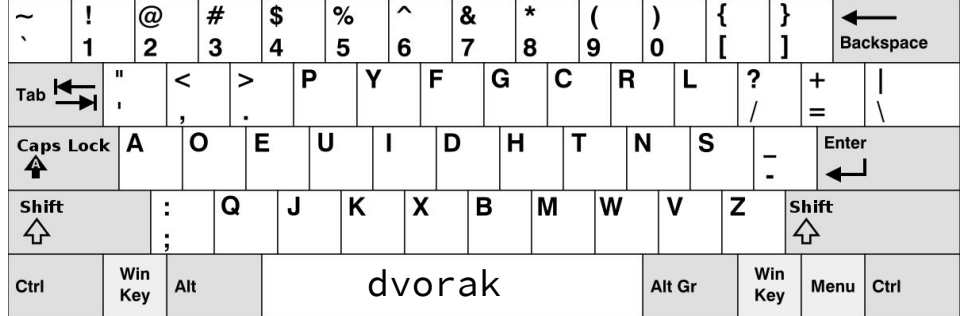
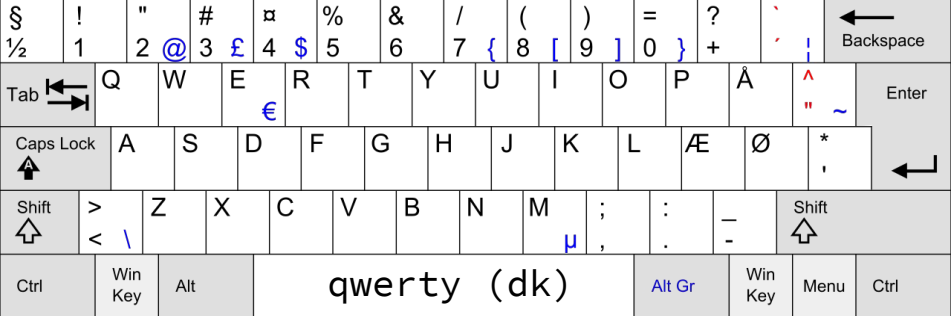
wokmok

missing.png



# gfk1/wokmok





^isrt^

wokmok>>



# gfk1/wokmok



# gfk1/wokmok AltGr not pressed



# gfkł/wokmok AltGr pressed



# Plan

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- mit tastaturlayout
- hvordan I kan forbedre jeres brug af tastatur

gains





# Liste over enkelte ting I kan gøre, for at forbedre jeres brug at tastaturet

— — —  
udgangspunkt:

§ ½	! 1	" 2	# 3	¤ 4	% 5	& 6	/ 7	( 8	) 9	= 0	? +	· 	← Backspace
Tab ↹	Q	W	E	R	T	Y	U	I	O	P	Å	^ "	Enter ↵
Caps Lock ⇧	A	S	D	F	G	H	J	K	L	Æ	Ø	* ,	↵
Shift ⇧	> <	Z	X	C	V	B	N	M	; μ	: .	- _	⇧	Shift ⇧
Ctrl	Win Key	Alt								Alt Gr	Win Key	Menu	Ctrl

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udgangspunkt:

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Tab ↹	Q	W	E	R	T	Y	U	I	O	P	Å	~ "	Enter ↵
Caps Lock ⇧	A	S	D	F	G	H	J	K	L	Æ	Ø	* ,	↵
Shift ⇧	> <	Z	X	C	V	B	N	M	; ,	: .	- _	⇧	Shift ⇧
Ctrl	Win Key	Alt								Alt Gr	Win Key	Menu	Ctrl

hvordan kvantificerer vi forbedre?

(hvad vil det sige at et layout er bedre end et andet)

# Hvad er meningen med livet?

— — —

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“livet handler om at opnå mest muligt

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“livet handler om at opnå mest muligt

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## Akademisk terminologi fortsat

- gains:
- effort:

# Hvad er meningen med livet?

---

“livet handler om at opnå mest muligt

... ved at lave mindst muligt” – Malte Thomsen ~2003

## Akademisk terminologi fortsat

- gains: hvor ens egen levestandard forbedres
- effort: hvor besværligt er det at opnå gains?



# Hvad er meningen med livet?

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“livet handler om at opnå mest muligt

... ved at lave mindst muligt” – Malte Thomsen ~2003

## Akademisk terminologi fortsat

- gains: hvor ens egen levestandard forbedres
- effort: hvor besværligt er det at opnå gains?

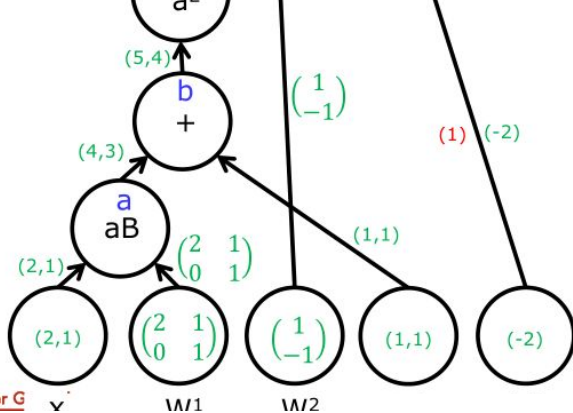
WHO har bekræftet at levestandard kan forbedres ved at gøre ens tastaturlayout bedre.

$$\frac{\partial f}{\partial f} = 1$$

$$\frac{\partial f}{\partial e} = \frac{\partial e}{\partial e} = 1$$

$$\frac{\partial f}{\partial d} = \frac{\partial f}{\partial e} \frac{\partial e}{\partial d} = 1 * \frac{\partial d+b^2}{\partial d} = 1$$

$$\frac{\partial f}{\partial b^2} = \frac{\partial f}{\partial e} \frac{\partial e}{\partial b^2} = 1 * \frac{\partial d+b^2}{\partial b^2} = 1$$



$$\nabla_x(l(x)) = \begin{pmatrix} \frac{\partial}{\partial x_1} l_1(x) & \cdots & \frac{\partial}{\partial x_d} l_1(x) \\ \vdots & \ddots & \vdots \\ \frac{\partial}{\partial x_1} l_k(x) & \cdots & \frac{\partial}{\partial x_d} l_k(x) \end{pmatrix}$$

$$\frac{\partial f}{\partial W^1} = \frac{\partial f}{\partial a} \frac{\partial a}{\partial W^1} = (10, -8)??$$

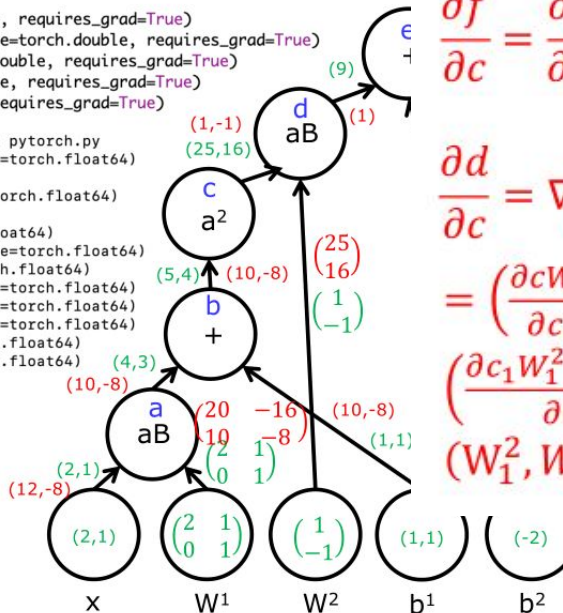
import torch

Kasper G

```
x = torch.tensor([2.0, 1.0], dtype=torch.double, requires_grad=True)
W1 = torch.tensor([[2.0, 1.0], [0.0, 1.0]], dtype=torch.double, requires_grad=True)
W2 = torch.tensor([[1.0], [-1.0]], dtype=torch.double, requires_grad=True)
b1 = torch.tensor([1.0, 1.0], dtype=torch.double, requires_grad=True)
b2 = torch.tensor([-2.0], dtype=torch.double, requires_grad=True)
```

```
a=x@W1
b=a+b1
c=b**2
d=c@W2
e=d+b2
f=e
```

```
a.retain_grad()
b.retain_grad()
c.retain_grad()
d.retain_grad()
e.retain_grad()
f.backward()
print('df_dx', x.grad)
print('df_dW1', W1.grad)
print('df_dW2', W2.grad)
print('df_db1', b1.grad)
print('df_db2', b2.grad)
print('df_da', a.grad)
print('df_db', b.grad)
print('df_dc', c.grad)
print('df_dd', d.grad)
print('df_de', e.grad)
```



$$\frac{\partial f}{\partial c} = \frac{\partial f}{\partial d} \frac{\partial d}{\partial c} = (1) \frac{\partial d}{\partial c}$$

$$\frac{\partial d}{\partial c} = \nabla_c d(c) = \left( \frac{\partial d}{\partial c_1}, \frac{\partial d}{\partial c_2} \right)$$

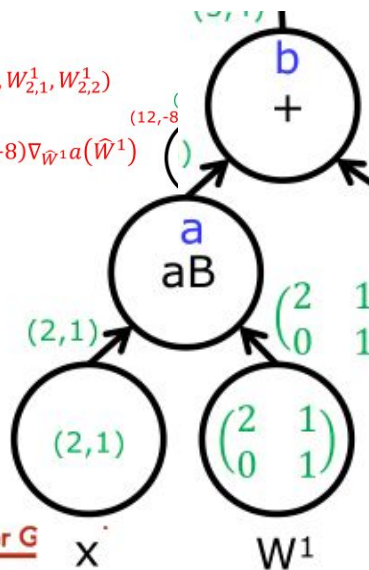
$$= \left( \frac{\partial c W^2}{\partial c_1}, \frac{\partial c W^2}{\partial c_2} \right) = \left( \frac{\partial c_1 W_1^2 + c_2 W_2^2}{\partial c_1}, \frac{\partial c_1 W_1^2 + c_2 W_2^2}{\partial c_2} \right) = (W_1^2, W_2^2) = (1, -1)$$

Kasper G

Flatten  $W^1$ :

$$\hat{W}^1 = (W_{1,1}^1, W_{1,2}^1, W_{2,1}^1, W_{2,2}^1)$$

$$\frac{\partial f}{\partial \hat{W}^1} = \frac{\partial f}{\partial a} \frac{\partial a}{\partial \hat{W}^1} = (10, -8) \nabla_{\hat{W}^1} a(\hat{W}^1)$$



# Om listen

— — —

- gains
  - effort
- 
- listen er lavet ud fra en kompleks matematisk sammenhæng mellem gains og effort

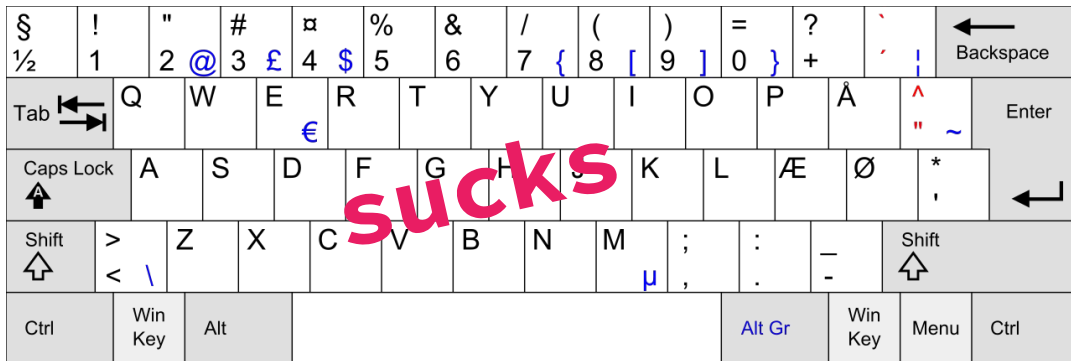
vi tager listen bagfra

## 6. Switch all the letters

§ ½	! 1	" 2	# 3	¤ 4	% 5	& 6	/ 7	( 8	) 9	= 0	? +	Backspace	
Tab	Q	W	E	R	T	Y	U	I	O	P	Å	Enter	
Caps Lock	A	S	D	F	G	H	J	K	L	Æ	Ø	*	
Shift	>	Z	X	C	V	B	N	M	;	:	-	Shift	
Ctrl	Win Key	Alt								Alt Gr	Win Key	Menu	Ctrl

- gains: 5
- effort: 4
  - wokmok, colemak, workman, isrt
  - no dvorak

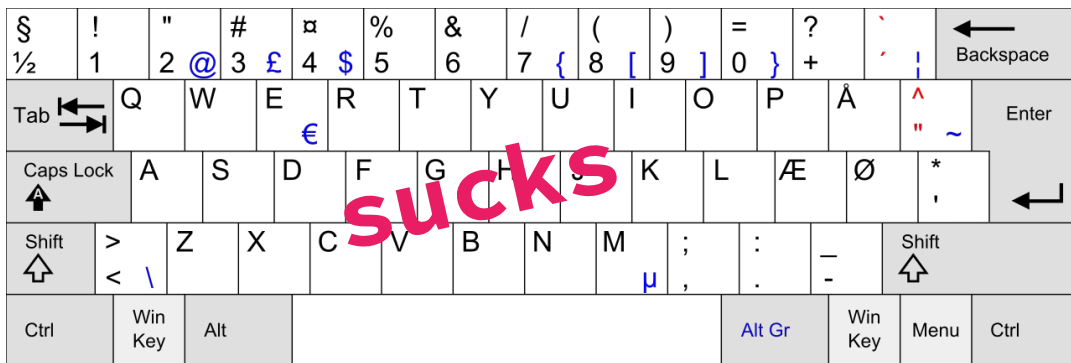
## 6. Switch all the letters



- gains: 5
- effort: 4
  - wokmok, colemak, workman, isrt
  - no dvorak

Exhaustive liste over valide argumenter for ikke at skifte:

## 6. Switch all the letters



- gains: 5
- effort: 4
  - wokmok, colemak, workman, isrt
  - no dvorak

Exhaustive liste over valide argumenter for ikke at skifte:

- “jeg har skriftlig eksamen i næste uge”

## 6. Switch all the letters

§ ½	!	"	#	¤	%	&	/	(	)	=	?	'	← Backspace	
1	2 @	3 £	4 \$	5	6	7 {	8 [	9 ]	0 }	+	,	~	↵ Enter	
Tab	Q	W	E	R	T	Y	U	I	O	P	Å	^	↵ Enter	
Caps Lock	A	S	D	F	G	H	J	K	L	Æ	Ø	*	↵ Enter	
Shift	>	Z	X	C	V	B	N	M	;	:	-	Shift	↵ Enter	
↑	<	\											↵ Enter	
Ctrl	Win Key	Alt									Alt Gr	Win Key	Menu	Ctrl

- gains: 5
- effort: 4
  - wokmok, colemak, workman, isrt
  - no dvorak

Exhaustive liste over valide argumenter for ikke at skifte:

- “jeg har skriftlig eksamen i næste uge”
- “jeg har egentlig ikke lyst”

## 5. Move numbers to home row

— — —

- gains: 6
- effort: 5





## 4. Move right hand once

- gains: 6.9
- effort: 4.8



### 3. Move lshift



- gains: 8
- effort: 2.9



## 2. Switch to US intl

- gains: 9.2
- effort: 1.3

§ ½	!	"	#	¤	%	&	/	(	)	=	?	'	← Backspace
Tab	Q	W	E	R	T	Y	U	I	O	P	Å	^	Enter
Caps Lock	A	S	D	F	G	H	J	K	L	Æ	Ø	*	↵
Shift	>	Z	X	C	V	B	N	M	;	:	-	Shift	
	<	\						µ	,	.	_	↵	
Ctrl	Win Key	Alt								Alt Gr	Win Key	Menu	Ctrl

sucks

~	! 1	@ 2	# 3	\$ 4	£ 5	% 6	^ 7	& 8	* 9	( 0	) 1	- 2	+ 3	÷ 4	← Backspace								
1	í	ü	ä	å	€	¼	½	¾	‘	’	‚	¥	=	×									
Tab	Q	Ä	W	Å	E	É	R	T	Þ	Y	Ü	U	Í	O	Ó	P	Ö	{	}		!		
						®												[	«	]	»	\	_
Caps Lock	A	Á	S	Š	D	Đ	F	Č	H	J	K	L	Ø	:	°	"	”	Enter					
				ß										;	¶	'	'	←					
Shift			Z	Æ	X		C	¢	V	B		N	Ñ	M	<	Ç	>	?	Shift				
							©							µ	,	.	/	¿	↑				
Ctrl	Win Key	Alt											Alt Gr	Win Key	Menu	Ctrl							

nice

## 2. Switch to US intl

§ ½	!	"	#	¤	%	&	/	(	)	=	?	'	←	Backspace
Tab	Q	W	E	R	T	Y	U	I	O	P	Å	^	Enter	
Caps Lock	A	S	D	F	G	H	J	K	L	Æ	Ø	*	↵	
Shift	>	Z	X	C	V	B	N	M	;	:	-	Shift	↵	
Ctrl	Win Key	Alt								Alt Gr	Win Key	Menu	Ctrl	

sucks

- gains: 9.2
- effort: 1.3

~	! 1	@ 2	# 3	\$ 4	£ 5	% 6	^ 7	& 8	* 9	( 0	) 1	- 2	+ 3	÷ 4	← Backspace								
1	¡	²	³	⁴	⁵	⁶	¼	½	¾	⁹	‘	’	-	¥	=	×							
Tab	Q	Ä	W	Å	E	É	R	T	Þ	Y	Ü	U	Ú	I	Í	O	Ó	P	Ö	{	}		!
Caps Lock	A	Á	S	§	D	Ð	F	Ó	H	J	K	L	Ø	:	°	"	"	Enter					
Shift		Z	Æ	X	C	¢	V	B	N	Ñ	M	<	Ç	>	?	Shift							
						©						μ	,	.	/	¿							
Ctrl	Win Key	Alt											Alt Gr	Win Key	Menu	Ctrl							

nice

Exhaustive liste:

- “jeg har egentlig ikke lyst”

# 1. Layer 5 (life changing)

— — —

- gains: 8974928439929
- effort: 0.013

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— — —

- gains: 8974928439929
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# 1. Layer 5 (life changing)

---

- gains: 8974928439929
- effort: 0.013

Alan var træt og deprimeret



# 1. Layer 5 (life changing)

---

- gains: 8974928439929
- effort: 0.013

Alan var træt og deprimeret

Så prøvede han layer 5





# 1. Layer 5 (life changing)

---

- gains: 8974928439929
- effort: 0.013

Alan var træt og deprimeret

Så prøvede han layer 5

Alan er ikke træt og deprimeret mere



# 1. Layer 5 (life changing)

---

???



- gains: 8974928439929
- effort: 0.013

# 1. Layer 5 (life changing)

---

???

- gains: 8974928439929
- effort: 0.013



# Fuld liste

— — —

1. Layer 5 (from caps)	effort: 0.013	gains: 8974928439929
2. Switch to US intl	effort: 1.3	gains: 9.2
3. Move lshift	effort: 2.9	gains: 8
4. Move right hand once	effort: 3.8	gains: 6.9
5. Move numbers to home row	effort: 5	gains: 6
6. Switch all the letters	effort: 4	gains: 5

# Links

— — —

- <https://github.com/malteafg/gfkl>
- <https://colemak.com/>
- <https://notgate.github.io/layout/> (isrt layout)
- <https://github.com/DreymaR/BigBagKbdTrixPKL>
- <https://www.autohotkey.com/>
- [https://wiki.archlinux.org/title/Xorg/Keyboard configuration](https://wiki.archlinux.org/title/Xorg/Keyboard_configuration)