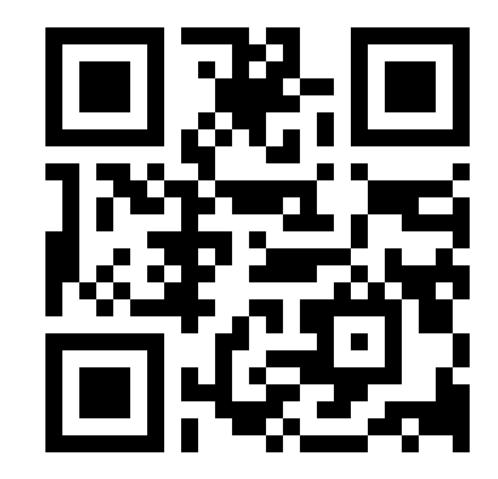


# Quality Management

Please provide us with your feedback regarding the Informatik 1 lecture!

https://qmsl.uzh.ch/de/XELN4 (DE) https://qmsl.uzh.ch/en/XELN4 (EN)

The links are also provided in the OLAT forum in the post "Course Evaluation".



# Informatik I HS 18 "Live Coding"

# Fallout 3 Word Puzzle

Carol Alexandru

Institut für Informatik

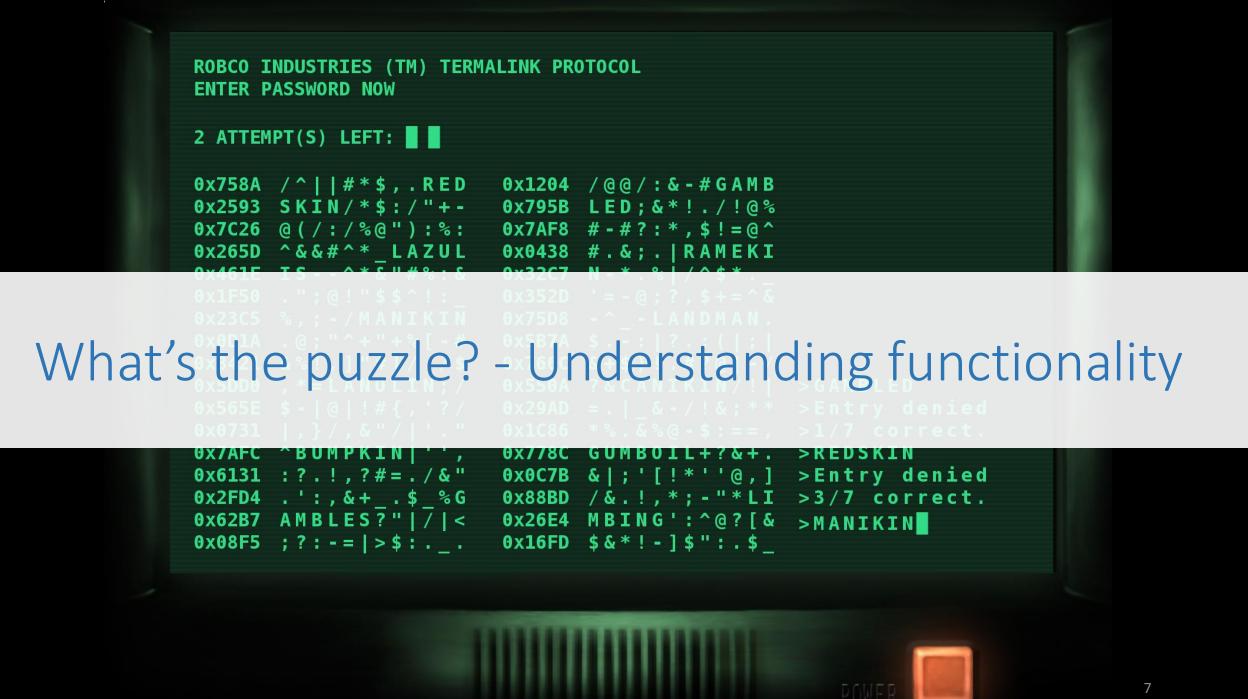
http://www.ifi.uzh.ch/seal/teaching/courses/info1.html





#### Demo

http://mitchellthompson.net/demos/terminal/



1. Display *n* possible passwords

	2 ATTEM	IPT(S) LEFT:			
	0x758A	/ l   # * \$ , . R E D	0x1204	/@@/: <b>&amp;-#GAMB</b>	
	0x2593	SKIN/*\$:/"+-	0x795B	LED;&*!./!@%	
$\mathbf{N}$	0x7C26	@(/:/%e/"):%:	0x7AF8	<b>#-#?:*,\$!=</b> @^	
	0x265D	^&&#^*_LAZUL	0x0438	#.&;. RAMEKI	
	6x461E	IS^*&"#%:&	0x32C7	N-*.%//^\$*.	
	0x.F50	.";@!"\$\$^!:_	0x352D	'=-@;?,\$+=^&	
	0x23C5	%,;-/MANIKIN	0x75D8	-^ -LANDMAN.	
	0x0D1.	.@;"^+"+%[-#	0x5B7A	\$: ?.:( ;	
	0x8421	&%!,]"# /./\$	0x766C	&+\$)!.#?@ -/	
	0x5DD0	<b>*</b> = LANOLIN; /	0x550A	?&CANIKIN/!	> G A M B L E D
	0x565E	\$ @   ! # { , ' ? /	0x29AD	=. _&-/!&;**	>Entry denied
	0x0731	,,,,/,&"/ '."	0x1C86	*%.&%@-\$:==,	>1/7 correct.
	0x7AFC	^BUMPKIN '',	0x778C	GUMBOIL+?&+.	> R E D S K I N
	0x6131	:?.!,?#=./&"	0x0C7B	& ;'[!*''@,]	>Entry denied
	0x2FD4	.':,&+\$_%G	0x88BD	/&.!,*;-"*LI	>3/7 correct.
	0x62B7	A M B L E S ? "   /   <	0x26E4	MBING':^@?[&	>MANIKIN
	0x08F5	;?:-= >\$:	0x16FD	\$&*!-]\$":.\$_	

- 1. Display *n* possible passwords
- 2. Allow the user to enter a password

2 ATTEMPT(S) LEFT:			
0x758A /     # * \$ , . R E D	0x1204	/@@/:&-#GAMB	
0x2593 SK1N/*\$:/"+-	0x795B	LED;&*!./!@%	
0x7C26 @(/:/%@"):%:	0x7AF8	#-#?:*,\$!=@^	
0x265D	0x0438	#.&;. RAMEKI	
0x461E IS^*&"#*:&	0x32C7	N-*.%//^\$*.	
0x1F50 .";@!"\$\$^!:	0x352D	'=-@;?,\$+=^&	
0x23C5 %,;-/MANIKIN	9x75D8	- ^ - LANDMAN.	
<b>0x0D1A</b> .@;"^+"+%[-#	0x587A	\$: ?.:( ;	
0x8421 &%!,]"# /./\$	0x766C	&+\$)!.#?@ -/	
0x5DD0 , * = LANOLIN; /	0x550A	· · · · · · · · · · · · · · · · · · ·	> G A M B L E D
0x565E \$- @ !#{,'?/	0x29AD	=. & - / ! & ; * *	>Entry denied
0x0731  ,}/,&"/ '."		*%.&%\$:==,	>1/7 correct.
Ox7AFC ^BUMPKIN '',	0x778C	G U M B O I L 2 & + .	> R E D S K I N
0x6131 :?.!,?#=./&"	0x0C7B	& ;'[!*''@_]	>Entry denied
0x2FD4 .':,&+\$_%G	0x88BD	/&.!,*;-"*L1	>3/7 correct.
0x62B7 AMBLES?" / <	0x26E4	MBING':^@?[&	
0x08F5 ; ? : - =   > \$ :	0x16FD	\$&*!-]\$":.\$_	_

- 1. Display *n* possible passwords
- 2. Allow the user to enter a password
- 3. Process the user-provided password and give feedback:
  - Access granted or denied —

2 ATTEMPT(S) LEFT:	
	0x1204 /@@/:&-#GAMB 0x795B LED;&*!./!@%
0x7C26 @(/:/%@"):%: 0x265D ^&&#^*_LAZUL	0x7AF8
0x461E IS^*&"#%:& 0x1F50 .";@!"\$\$^!:_ 0x23C5 %,;-/MANIKIN	0x32C7 N-*.% /^\$* 0x352D '=-@;?,\$+=^& 0x75D8 -^ -LANDMAN.
0x0D1A .@;"^+"+%[-# 0xCt21 &%!,]"# /./\$	0x5B7A \$: ?.:( ;  0x766C &+\$)!.#?@ -/
0x5DD0 ,*=: <u>ANOLIN;</u> / 0x565E \$- @ !#{, :/ 0x0731  ,}/,&"/ '."	$0x29AD = . _&-/!&;** > Entry denied$
0x7AFC ^BUMPKIN '', 0x6131 :?.!,?#=./&"	0x778C GUMB01::2&+. >REDSKIN 0x0C7B & ;'[!*''@,] >Entry denied
0x2FD4 .':,&+\$_%G 0x62B7 AMBLES?" / < 0x08F5 ;?:-= >\$:	0x26E4 MBING':^@?[& >MANIKIN

- 1. Display *n* possible passwords
- 2. Allow the user to enter a password
- 3. Process the user-provided password and give feedback:
  - Access granted or denied —
  - How many letters of the password match the correct password? (e.g. 2/5)

2 ATTEMPT(S) LEFT:		
2 ATTEMPT(S) LEFT:		
0x758A / ^     # * \$ , . R E D	Av120/	/@@/:&-#GAMB
0x2593 SKIN/*\$:/"+-		LED; &*!./!@%
0x7C26 @(/:/%@"):%:		# - # ? : * , \$ ! = @ ^
0x265D ^&&#^* LAZUL		#-#:.;;;=_@ #.&;. RAMEKI
0x461E IS ^ * & " # % : &	0x32C7	N - * . %   / ^ \$ * .
0x1F50 . ";@!"\$\$^!:		'=-@;?,\$+=^&
0x23C5 %,;-/MANIKIN		-^ - LANDMAN.
0x0D1A .@; "^+"+%[-#		\$: ?.:( ;
UXC121 &%!,]"# /./\$		&+\$)!.#?@ -/
0x5DD0 ,*=LANOLIN;/		?&CANIKIN/!  >GAMBLED
<b>6x565E</b> \$ -  @ !#{, :/		= .   & - / ! &; ** > Entry denied
0x0731 , ] / &" /   '."		$-1 - \frac{1}{2} -$
0x7AFC ^BUMPKIN  ,		GUMBOIL: 2&+. >REDSKIN
0x6131 :?.!,?#=./&"		<pre>&amp;;; [!*''@,] &gt;Entry denied</pre>
0x2FD4 . ':, &+ . \$ %G		/ $(, , , , , , , , , , , , , , , , , , ,$
0x62B7 AMBLES?" / <	0x26E4	
0x08F5 ;?:-= >\$:	0x16FD	MBING':^@?[& >MANIKIN \$&*!-]\$":.\$
	OVIOLD	

- 1. Display *n* possible passwords
- 2. Allow the user to enter a password
- 3. Process the user-provided password and give feedback:
  - Access granted or denied
  - How many letters of the password match the correct password? (e.g. 2/5)
- 4. End the program if
  - No more tries left
  - Correct password found  $\checkmark$

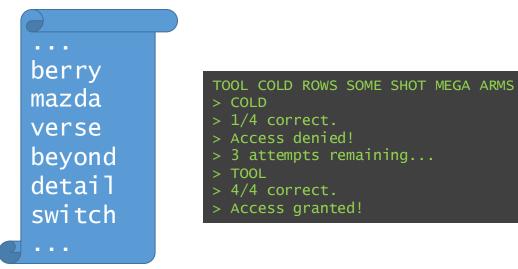
2 ATTEMPT(S) LEFT	: • •		
0x758A / ^     # * \$ 0x2593 SKIN / * \$ 0x7C26 @ ( / : / % @ 0x265D ^ & & # ^ * 0x461E IS ^ * & 0x1F50 . "; @ ! " \$ 0x23C5 %,; - / M A 0x0D1A . @; " ^ + " 0x8421 & % !, ] " # 0x5DD0 , * = LANO	:/"+- 0x795B "):%: 0x7AF8 LAZUL 0x0438 "#%:& 0x32C7 \$^!: 0x352D NIKIN 0x75D8 +%[-# 0x5B7A  /./\$ 0x766C	#.&;. RAMEKI N-*.% /^\$*. '=-@;?,\$+=^&	> G A M B L E D
0x565E       \$ -  @ !#         0x0731        , } /, & "         0x7AFC       ^ B U M P K I         0x6131       : ? . ! , ? #         0x2FD4       . ' : , & +         0x62B7       A M B L E S ?         0x08F5       ; ? : - =   >	<pre>{,'?/ 0x29AD / '." 0x1C86 N '', 0x778C =./&amp;" 0x0C7B .\$_%G 0x88BD " / &lt; 0x26E4</pre>	=. _&-/!&;** *%.&%@-\$:==, GUMBOIL+?&+. & ;'[!*''@,] /&.!,*;-"*LI MBING':^@?[& \$&*!-]\$":.\$_	<pre>&gt;Entry denied &gt;1/7 correct. &gt;REDSKIN &gt;Entry denied &gt;3/7 correct. &gt;MANIKIN</pre>

- 1. Display *n* possible passwords
- 2. Allow the user to enter a password
- 3. Process the user-provided password and give feedback:
  - Access granted or denied
  - How many letters of the password match the correct password? (e.g. 2/5)
- 4. End the program if
  - No more tries left
  - Correct password found

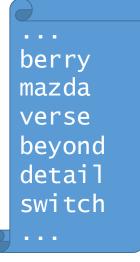
2 ATTEMPT(S) LEFT:			
0x758A / ^     # * \$ , . R E D	0x1204	/@@/ <b>:&amp;-#GAMB</b>	
0x2593 SKIN/*\$:/"+-	0x795B	LED;&*!./!@%	
<b>0</b> x7C26 @(/:/%@"):%:	0x7AF8	<b>#-#?:*,\$!=</b> @^	
0x265D	0x0438	#.&;. RAMEKI	
0x461E IS^*&"#%:&	0x32C7	N-*.% /^\$*	
0x1F50 .";@!"\$\$^!:_	0x352D	'=-@;?,\$+=^&	
0x23C5 %,;-/MANIKIN	0x75D8	-^LANDMAN.	
<b>0x0D1A</b> .@;"^+"+%[-#	0x5B7A	\$: ?.:( ;	
0x8421 &%!,]"# /./\$	0x766C	&+\$)!.#?@ -/	
0x5DD0 , * = LANOLIN; /	0x550A	?&CANIKIN/!	> G A M B L E D
0x565E \$- @ !#{,'?/	0x29AD	=. _&-/!&;**	>Entry denied
0x0731  ,}/,&"/ '."	0x1C86	*%.&%@-\$:==,	>1/7 correct.
0x7AFC ^BUMPKIN '',	0x778C	GUMBOIL+?&+.	> R E D S K I N
0x6131 :?.!,?#=./&"	0x0C7B	& ;'[!*''@,]	>Entry denied
0x2FD4 .':,&+\$_%G	0x88BD	/&.!,*;-"*LI	>3/7 correct.
0x62B7 A M B L E S ? "   7   <	0x26E4	MBING':^@?[&	
0x08F5 ;?:-= >\$:	0x16FD	\$&*!-]\$":.\$_	

... berry mazda verse beyond detail switch

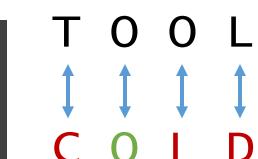
> Word list from Internet



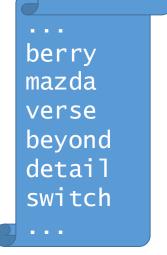
Word list	Game logic	
from	Processing input and giving feedback	
Internet	Exiting the program eventually	



TOOL COLD ROWS SOME SHOT MEGA ARMS
> COLD
> 1/4 correct.
> Access denied!
> 3 attempts remaining...
> TOOL
> 4/4 correct.
> Access granted!

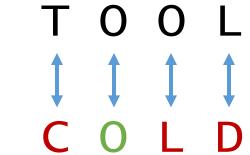


Word list from Internet Game logic Processing input and giving feedback Exiting the program eventually Comparing characters of the solution



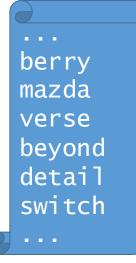
TOOL COLD ROWS SOME SHOT MEGA ARMS
> COLD
> 1/4 correct.
> Access denied!
> 3 attempts remaining...
> TOOL
> 4/4 correct.

> Access granted!



Word list from Internet Game logic Processing input and giving feedback Exiting the program eventually Comparing characters of the solution

Functionality



TOOL COLD ROWS SOME SHOT MEGA ARMS
> COLD
> 1/4 correct.
> Access denied!
> 3 attempts remaining...
> TOOL
> 4/4 correct.

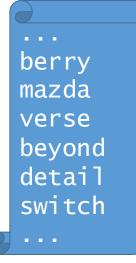
> Access granted!

т	0	0	L
1	1	1	1
С	0	L	D

ROBCO INDUSTRIES (TM) TERMALINK PROTOCOL ENTER PASSWORD NOW					
2 ATTEMPT(S) LEFT:					
0x758A /^  #*\$,.RED 0x2593 SKIN/*\$:/"+- 0x7C26 @(/:/%"_L2*%" 0x461E IS^*&"#%:& 0x461E IS^*&"#%:& 0x1550 .";0!"\$\$^!:_ 0x23C5 %;:/MANIKIN 0x0D1A .@;"^+"*%[-# 0x8421 &%",]"#!/./\$ 0x5D00 .*=LANOLIN;/ 0x505E \$-[@]!#{{,'?/ 0x565E \$-[@]!#{{,'?/ 0x0731 ],}/,&"/!"." 0x7AFC BUMPKIN!''." 0x7AFC BUMPKIN!''."	0x1204       /@@/:&#GA         0x795B       LED;&*!./!         0x7478       #-#?:*,\$!=         0x0438          0x0438          0x32C7       N-*.% /^\$*         0x325D          0x75D8          0x75D8          0x75D8          0x75D8          0x75D8          0x75D8          0x76C6          0x5507          0x5508          0x5040          0x5080          0x1806          0x1806          0x1806          0x7805          0x7806          0x7806          0x7807          0x7807          0x9000          0x7785          0x9007          0x9007          0x9007          0x9007          0x9007          0x900	@% @^ KI -/ -/ >GAMBLED ** >Entry denied =, >1/7 correct. +. >REDSKIN -, ] >Entry denied			
0x2FD4 .':,&+\$_%G 0x62B7 AMBLES?" / < 0x08F5 ;?:-= >\$:	0x88BD /&.!,*;-"* 0x26E4 MBING':^@? 0x16FD \$&*!-]\$":.	[& >MANIKIN			

Word list from Internet Game logic Processing input and giving feedback Exiting the program eventually Comparing characters of the solution Decorative components Random characters History formatting

Functionality



TOOL COLD ROWS SOME SHOT MEGA ARMS
> COLD
> 1/4 correct.
> Access denied!
> 3 attempts remaining...
> TOOL
> 4/4 correct.

> Access granted!

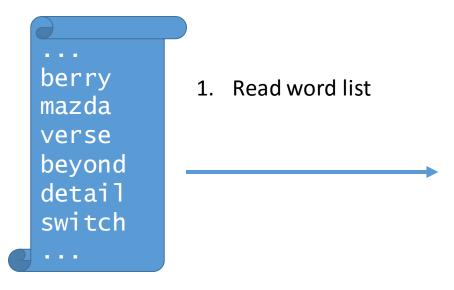
Т	0	0	L
1	1	1	1
С	0	L	D

2 ATTEMPT(S) LEFT: ■ 0x758A /^  #*\$RED 0x2593 SKIN/*\$:/"+- 0x7626 @(/:/%@"):%: 0x7458 #-#?:*,5!=@^ 0x265D ^&&&*^* LAZUL 0x461E IS^*& W*%:& 0x352D ^&=,' /*&" 0x352D '=-@;?,\$+=^& 0x352D '=-@;?,\$+=^&; 0x76C C *\$!!.#?;0!-/ 0x50D0 ,*=LANOLIN;/ 0x76C CANIKIN/!! >GAMBLED 0x6131 ;?!,?,*='=',\$''' 0x76C GUMBOIL+?&+. >REDSKIN 0x62F4 .':,\$+=,\$*&; 0x8421 & 0x76C '=,\$*;''*LI >3/7 corre	ROBCO INDUSTRIES (TM) TERMALINK PROTOCOL Enter password now					
6x2593       SKİŅ/*\$;/"+-       6x7958       LĒD;&!.!/!@%         0x7C26       @(/:/%@"):%:       0x7AF8       #-#?:*,\$!=@^         0x265D       ^&&#/*       0x0438       #.#?:*,\$!=@^         0x265D       ^&&#/*       0x0438       #.#?:*,\$!=@^         0x265D       ^&&#/*       0x0438       #.#?:*,\$!       @         0x461E       IS^*&#"#%:&       0x32C7       N-*.%!/^\$*       @         0x1F50       .";@!"\$\$^!!       @x352D'!=_@?'       @       @         0x32C5       %;-/HANIKIN       0x75D8       -^_ILANDMAN.       @         0x8421       &%!.]"#!//.*       @X766C       &\$!!.!#?"!/!"       @         0x8421       &%!.]"#!//.*       @X766C       &\$!!.!#?"!!       >GAMBLED         0x8525       \$-[@]!!#{,'?'       @X2504       ?       >Entry den         0x6055       \$-[@]!!#{,'?'       @X263       &&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&</th><th></th></tr><tr><th>dx7C26       @(/:/%@''):%:       cx7AF8       #-#?:*,\$!=@^^         0x265D       ^6&#^*       LAZUL       0x0438       #.6;. RAMEKI         0x461E       IS^*&''#%:&       0x32C7       N-*.% /`\$*.         0x1F50       .';@!'\$\$^!:       0x32C7       N-*.% /`\$*.         0x23C5       %;.'/MANTKIN       0x352D       '=-@;?,\$+=^&         0x23C5       %;.'/MANTKIN       0x7508      LANDMAN.         0x01A       @;''+'**%[-'#       0x766C       &+\$!!."?@ -'         0x50D0       *=LANOLIN;/       0x256A       \$: ?.:[];?]         0x655E       \$-[@]!#{,'?'       0x166C       &*&\$!=         0x7AFC       BUMPKIN ''.       0x1626       &&&\$!=         0x1611       ;?!       0x267B       \$.[!"*'         0x7AFC       BUMPKIN ''.       0x766C       BUMBOL+7&+         0x1613       :?        %CANIKIN/!       >Entry dem         0x2614        :        %CANBELD       >Entry dem</th><th></th></tr><tr><td>0x265D       \$</td><td></td></tr><tr><td>0x461E       IS ^ + \$\vec{k}\$ + # \$\vec{k}\$; /td><td></td></tr><tr><td>0x1F50       .";@!"\$\$^!:       0x352D       '= -@;?,\$+=^&         0x2525       %;;-/MANIKIN       0x75D8       -^LANDMAN.         0x0D1A@;"^++*%[-#       0x5B7A       :-!?.:[?:[];         0x8421       &%!,]"# /./\$       0x5B7A       :-!?.:[?:[];         0x5452       \$<.][#]</td>       /.\$       0x756C       \$<.]!?.#?@]-/</td>         0x5555       \$<.][@]!#[/:.?/</td>       0x29AD       :[].*/*[.**]       >GAMBLED         0x5651       \$<.][@]!#[/:.?/</td>       0x29AD       :[].*/*[.**]       >Entry den         0x6131       :?.!/.*       0x76C       GUMBOTL+?&+       >REDSKIN         0x2FD4       .'.!, &*/[*]       0x028D       \$<</td>       >Entry den         0x2FD4       .'</td><td></td></tr><tr><td>0x2525       %,;/MANIKIN       0x75D8       -^_LANDMAN.         0x0D1A       .@;"^+"+%[-#       0x75B7A       \$: ?.:( ;          0x8421       &&ks1.]"# /./\$       0x766C       &&s.[].# /.          0x50500       ,*=LANOLIN;/       0x766C       &&s.[].# /.          0x5555       \$- @ !#{, '?/       0x29AD       =. _&-/!&;**       >Entry dem         0x765C       \$&l@.]*               0x1686       *%.&@       >Entry dem         0x767C       \$BUMPKIN ''.       0x778C       GUMBOIL+?&+.       >REDSKIN         0x6131       :?.!, ?#=./&"       0x06C78       &[:"!"!"."       >Entry dem         0x2F04       .'.; &_+\$       G       0x88D       &[:"!"!"."       >Entry dem</td><td></td></tr><tr><td>0x001A .@;"^+"+%[-#       0x587A \$: ?.:( ;          0x8421 &%!.]"# /./\$       0x766C &+\$)!.#?@ -/         0x5D00 .*=LANOLIN;/       0x558A ?&CANIKIN/!  >GAMBLED         0x655E \$-[@]!#(,'?/       0x250A =.[_&-/!&;** >Entry den         0x7AFC ^BUMPKIN '',       0x7163C GUMBOIL+?&.         0x7AFC ^BUMPKIN '',       0x766C &:=, >1/7 corre         0x2613 :?.!, '</td><td></td></tr><tr><td>0x8421       & %: ,]"# /./\$       0x766C       & +\$)!.#?@!-/\$         0x50D0       ,*=LANOLIN;/       0x556A       ?&CANIKIN/!       >GAMBLED         0x555E       \$- @ !#(,'?/       0x29AD         >Entry dem         0x7671        , }, & "/ '."       0x1286       *%. & %@ - \$:==, >1/7 corre         0x6131       :?.!, ?#=./&"       0x0775       GUMBOIL+?&+.       >REDSKIN         0x26141       :'.!, & */&"       0x0678       &  ; !!*''@,] > Entry dem         0x2FD4       .'.; & *</td><td></td></tr><tr><td>0x5000       ,*=LANOLIN;/       0x5568       ?       &CANIKIN/!       >       >       SAMBLED         0x565E       \$- @ !#{,'?/       0x29AD       =. _&-/!&;**       >       >       Entry den         0x0731        , }/,&'' '."       0x1268       %.&@'', ':==, >.1/7 corre       ox1266       %.&@'', ':==, >.1/7 corre         0x7AFC       ^BUMPKIN '.       0x7265       GUMBOIL+?&+.       >       REDSKIN         0x6131       ?.!,?#=./&"       0x06C78       & ;'[!*''@,]       >       >       >         0x2F04       .':,&_+\$%G       0x88D       /&.'.,*, -**LI       >       >       ></td><td></td></tr><tr><td>0x565E       \$- @ !#{,'?/       0x29AD       =. _&-/!&;**       >Entry dem         0x0731        ,}/,&'' '."       0x1C86       *%.&%@-\$:==, >1/7 corre         0x7AFC       ^BUMPKIN '',       0x778C       GUMBOIL+?&+.       >REDSKIN         0x6131       :?.!,?#=./&"       0x04C7B       §;'[!*'']       >Brty dem         0x5121       :?.!,?#=./&"       0x04C7B       §;'[!*'']       >3/7 corre         0x2FD4       .':,&+\$_%G       0x88BD /&.!,*;-''*LI       >3/7 corre</td><td></td></tr><tr><td>0x0731  ,}/,&"/ '." 0x1C86 *%.&%@-\$:==, >1/7 corre 0x7AFC ^BUMPKIN '', 0x778C GUMB0IL+?&+. >REDSKIN 0x6131 :?.!,?#=./&" 0x0C7B & ;'[!*''@] >Entry dem 0x2FD4 .':,&+\$_%G 0x88BD /&.!,*;-"*LI >3/7 corre</td><td></td></tr><tr><td>8x7AFC ^BŮMÞKIN '', 8x778C GUMB0ĨL+7&+. >REDSKIN 8x6131 :?.!,?#=./&" 8x067B &[;'[!*''@,] >Entry den 6x2FD4 .':,&+\$_%G 8x88D /&.!,*,-"*LI >3/7 corre</td><td></td></tr><tr><td>0x6131 :?.!,?#=.̈́/&̈́ 0x0C7B & ;'[!*''@,] >Entry dem 0x2FD4 .':,&+\$_%G 0x88BD /&.!,*;-"*LI >3/7 corre</td><td>ect</td></tr><tr><td>0x2FD4 .':,&+\$_%G 0x88BD /&.!,*;-"*LI >3/7 corre</td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td>ect</td></tr><tr><td>0x62B7 AMBLES?" / < 0x26E4 MBING':^@?[& >MANIKIN 0x08F5 ;?:-= >\$: 0x16FD \$&*!-]\$":.\$</td><td></td></tr></tbody></table>						

Word list from Internet Game logic Processing input and giving feedback Exiting the program eventually Comparing characters of the solution Decorative components Random characters History formatting

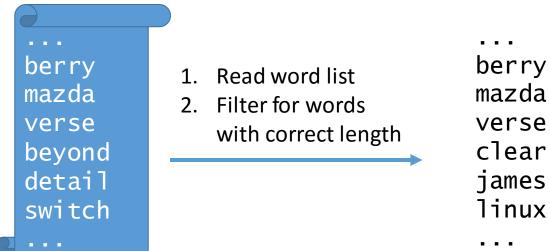
Functionality

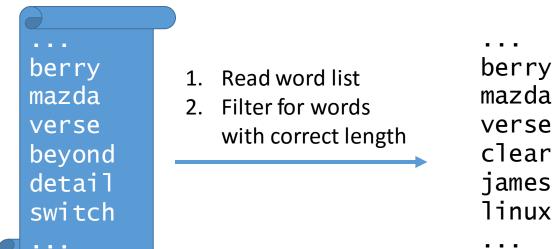
User Interface



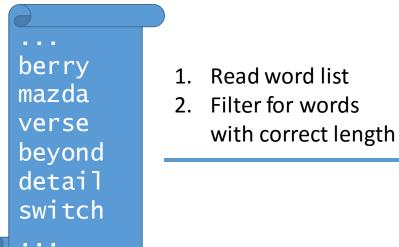
berry mazda verse beyond detail switch

- 1. Read word list
- 2. Filter for words with correct length





ry da	3. Pick <i>n</i> words to show	berry mazda
se		verse
ar		clear
es		

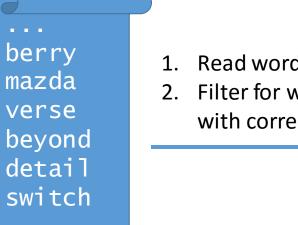


berry
mazda
verse
clear
james
linux

. . .

3.	Pick <i>n</i> words to show
4.	Pick one of these to
	be the password

berry mazda verse clear



Read word list
ilter for words
vith correct length

berry mazda verse clear james linux

. . .

3.	Pick <i>n</i> words to show
4.	Pick one of these to
	be the password

berry mazda verse clear



#### Functionality, Part 2: Basic interaction

TOOL COLD ROWS SOME SHOT MEGA ARMS

- > COLD
- > Access denied!
- > 3 attempts remaining...
- > T00L
- > Access granted!

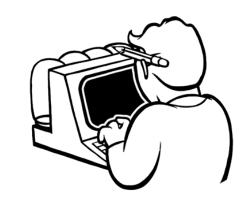
- Show choices
- While attempts is not 0:
  - 1. Reading user input
  - 2. Check if password is correct
  - 3. Exit program if password correct

## Functionality, Part 2: Basic interaction

TOOL COLD ROWS SOME SHOT MEGA ARMS

- > COLD
- > Access denied!
- > 3 attempts remaining...
- > T00L
- > Access granted!

- Show choices
- While attempts is not 0:
  - 1. Reading user input
  - 2. Check if password is correct
  - 3. Exit program if password correct



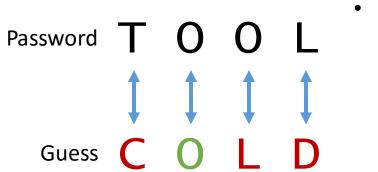
# Functionality, Part 2: More feedback!

TOOL COLD ROWS SOME SHOT MEGA ARMS

- > COLD
- > 1/4 correct.
- > Access denied!
- > 3 attempts remaining...
- > T00L
- > 4/4 correct.
- > Access granted!

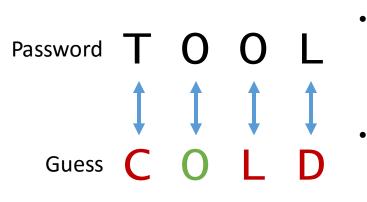
- Show choices
- While attempts is not 0:
  - 1. Reading user input
  - 2. Check if password is correct
  - 3. Show how many characters are correct
  - 4. Exit program if password correct

# Functionality, Part 2: Comparing characters?



- In English:
  - For every character index from 0 to *how long the password is,* compare the characters in guess and password, and increment a counter if they match

# Functionality, Part 2: Comparing characters?

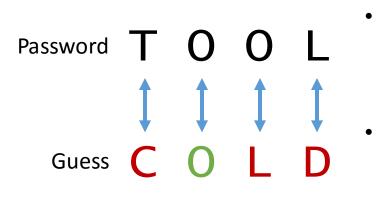


- In English:
  - For every character index from 0 to how long the password is, compare the characters in guess and password, and increment a counter if they match

```
• In python:
    matching = 0
    for i in range(length):
        if guess[i] == password[i]: matching += 1
```

# Functionality, Part 2: Comparing characters?

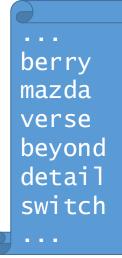




- In English:
  - For every character index from 0 to how long the password is, compare the characters in guess and password, and increment a counter if they match

```
• In python:
    matching = 0
    for i in range(length):
        if guess[i] == password[i]: matching += 1
```

#### Functionality: done!

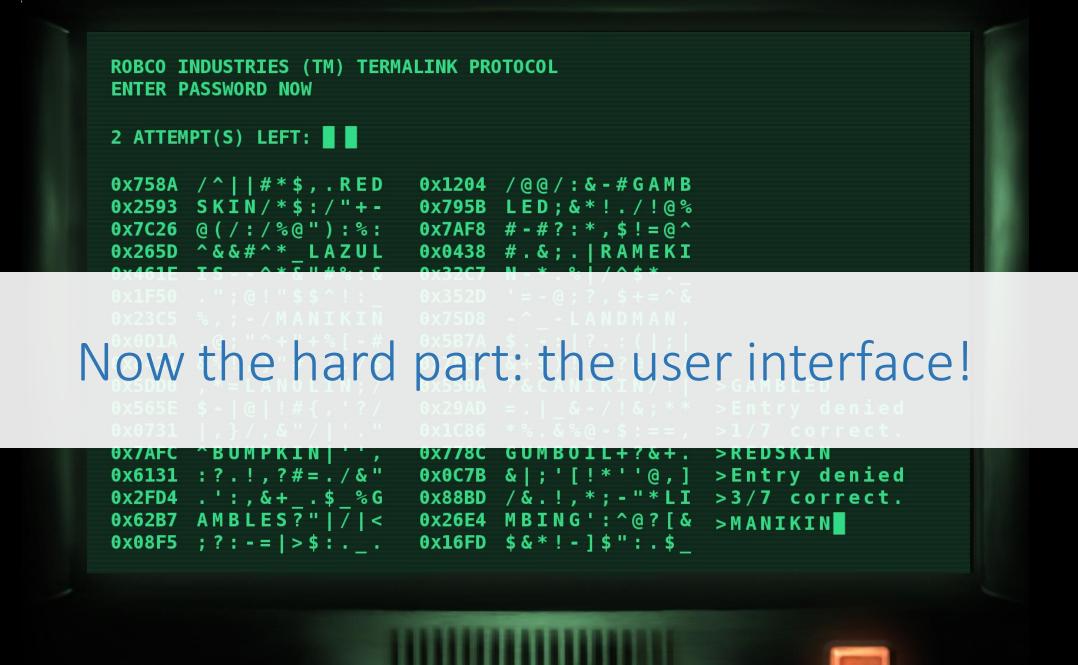


TOOL COLD ROWS SOME SHOT MEGA ARMS
> COLD
> 1/4 correct.
> Access denied!
> 3 attempts remaining...
> TOOL
> 4/4 correct.
> Access granted!

Word list from Internet Game logic Processing input and giving feedback Exiting the program eventually T O O L 1 1 1 1 C O L D

> Comparing characters of the solution





#### Fallout 3 Word Puzzle: UI

1. Header text —	ROBCO INDUSTRIES (TM) TERMALINK PROTOCOL ENTER PASSWORD NOW 2 ATTEMPT(S) LEFT:			
	0x758A / ^     # * \$ , . R E D 0x1204 / @ @ / : & - # G A M B			
	0x2593 SKIN/*\$:/"+- 0x795B LED;&*!./!@% 0x7C26 @(/:/%@"):%: 0x7AF8 #-#?:*,\$!=@^			
	0x265D			
	0x1F50 .";@!"\$\$^!:_ 0x352D '=-@;?,\$+=^& 0x23C5 %,;-/MANIKIN 0x75D8 - ^ -LANDMAN.			
	0x0D1A .@;"^+"+%[-# 0x5B7A \$: ?.:( ;			
	0x8421 &%!,]"# /./\$ 0x766C &+\$)!.#?@ -/ 0x5DD0 ,*=LANOLIN;/ 0x550A ?&CANIKIN/!  >GAMBLED			
	0x565E \$- @ !#{,'?/ 0x29AD =. _&-/!&;** >Entry denied 0x0731  ,}/,&"/ '." 0x1C86 *%.&%@-\$:==, >1/7 correct.			
	0x7AFC ^BUMPKIN '', 0x778C GUMBOIL+?&+. >REDSKIN 0x6131 :?.!,?#=./&" 0x0C7B & ;'[!*''@,] >Entry denied			
	0x2FD4 .':,&+\$_%G 0x88BD /&.!,*;-"*LI >3/7 correct. 0x62B7 AMBLES?" / < 0x26E4 MBING':^@?[& >MANIKIN			
	0x08F5 ;?:-= >\$: 0x16FD \$&*!-]\$":.\$			

## Fallout 3 Word Puzzle: UI

1. Header text	ROBCO INDUSTRIES (TM) TERMALINK PROTOCOL Enter Password Now			
2. Attempts counter	2 ATTEMPT(S) LEFT:			
	0x758A       /^  #*\$,.RED       0x1204       /@@/:&-#GAMB         0x2593       SKIN/*\$:/"+-       0x795B       LED;&*!./!@%         0x7C26       @(/:/%@"):%:       0x7AF8       #-#?:*,\$!=@^         0x265D       ^&&#^*       LAZUL       0x0438       #.&;. RAMEKI         0x461E       IS^*&W"#%:&       0x32C7       N - *.% /^\$*.       0x32C7         0x1F50       ";@!"\$\$^!:       0x352D       '= -@;?,\$+=^&         0x23C5       %;;-/MANIKIN       0x75D8       -^         0x701A       .@; "^+"+%[-#       0x766C       &+\$)!.#?@ -/         0x8421       &%!,]"# /./\$       0x766C       &+\$)!.#?@ -/         0x550A       ?&CANIKIN/!        >GAMBLED         0x555E       \$- @ !#{,'?/       0x29AD       =. _&-/!&;**         0x7AFC       BUMPKIN '',       0x766C       \$%.&%@-\$:==,         0x766131       :?.!,?#=./&"       0x766C       \$%.&%@-\$:==,         >1/7       correct.       0x778C       GUMBOIL+?&+.       >REDSKIN			
	0x2FD4       .':,&+\$_%G       0x88BD       /&.!,*;-"*LI       >3/7       correct.         0x62B7       AMBLES?" /        0x26E4       MBING':^@?[& >MANIKIN         0x08F5       ;?:-= >\$:       0x16FD       \$&*!-]\$":.\$_			

#### Fallout 3 Word Puzzle: UI

- 1. Header text
- 2. Attempts counter
- 3. Random 'hex codes' —

	ROBCO INDUSTRIES (TM) TERMALINK PROTOCOL Enter Password Now					
	2 ATTEM	PT(S) LEFT:				
		/ ^     # * \$ , . R E D S K I N / * \$ : / " + -		/@@/:&-#GAMB LED;&*!./!@%		
<b>→</b>	0x7C26	@(/:/%@"):%: ^&&#^* LAZUL	0x7AF8	#-#?:*,\$!=@^ #.&;. RAMEKI		
	0x461E	IS^*&"#%:& .";@!"\$\$^!:_	0x32C7	N - * . %   / ^ \$ * ' = - @ ; ? , \$ + = ^ &		
	0x23C5	%,;-/MANIKIN .@;"^+"+%[-#	0x75D8	- ^ LANDMAN . \$ :   ? . : (   ;		
	0x5DD0	& %!,]'' #   / . / \$ ,* = L A N O L I N; /	0x550A	&+\$)!.#?@ -/ ?&CANIKIN/!	> G A M B L E D	
	0x0731	\$- @ !#{,'?/  ,}/,&"/ '."	0x1C86	= .   _& - / !&;** *%.&%@-\$:==,	>1/7 correct.	
	0x6131	^BUMPKIN '', :?.!,?#=./&"	0x0C7B	GUMBOIL+?&+. & ;'[!*''@,]	>Entry denied	
	0x62B7	. ' : , & + \$ _ % G A M B L E S ? "   /   <	0x26E4	/&.!,*;-"*LI MBING':^@?[&	>3// correct.	
	UXUOF5	;?:-= >\$:	0x16FD	\$&*!-]\$":.\$_		

- 1. Header text
- 2. Attempts counter
- 3. Random 'hex codes'
- 4. Passwords embedded in random 'garbage' text

	ROBCO INDUSTRIES (TM) TERMALINK PROTOCOL ENTER PASSWORD NOW 2 ATTEMPT(S) LEFT:				
om	0x758A       / ^     # * \$ , . R         0x2593       SKIN / * \$ : / "         0x7C26       @ ( / : / % @ " ) :         0x265D       ^ & & # ^ * LAZ         0x461E       IS ^ * & " # %         0x1F50       . " ; @ ! " \$ \$ ^ !         0x23C5       % , ; - / MANIK	+- 0x795B %: 0x7AF8 UL 0x0438 :& 0x32C7 :_ 0x352D IN 0x75D8	/@@/:&-#GAMB LED;&*!./!@% #-#?:*,\$!=@^ #.&;. RAMEKI N-*.% /^\$* '=-@;?,\$+=^& -^LANDMAN.		
	0x8421       .@; "^+"+%[         0x8421       &%!,]"# /.         0x50D0       ,*=LANOLIN         0x565E       \$- @ !#{,'         0x0731        ,}/,&"/ '         0x7AFC       ^BUMPKIN '         0x6131       :?.!,?#=./         0x62B7       AMBLES?" /         0x08F5       ;?:-= >\$:.	<pre>/\$ 0x766C ;/ 0x550A ?/ 0x29AD ." 0x1C86 ', 0x778C &amp;" 0x0C7B %G 0x88BD  &lt; 0x26E4</pre>	*%.&%@-\$:==, GUMBOIL+?&+. & ;'[!*''@,] /&.!,*;-"*LI	>Entry denied >1/7 correct. >REDSKIN >Entry denied >3/7 correct.	

- 1. Header text
- 2. Attempts counter
- 3. Random 'hex codes'
- 4. Passwords embedded in random 'garbage' text

5. History \_\_\_\_\_

	ROBCO INDUSTRIES (TM) TERM ENTER PASSWORD NOW	ALINK PROTOCOL	
	2 ATTEMPT(S) LEFT:		
٦	<pre>0x758A / ^     # * \$ , . R E D 0x2593 SKIN / * \$ : / " + - 0x7C26 @ ( / : / % @ " ) : % : 0x265D ^ &amp; &amp; # ^ * LAZUL 0x461E IS ^ * &amp; " # % : &amp; 0x1F50 . "; @ ! " \$ \$ ^ ! : 0x23C5 % , ; - / MANIKIN 0x0D1A . @; " ^ + " + % [ - # 0x8421 &amp; % ! , ] " #   / . / \$ 0x5DD0 , * = LANOLIN; / 0x565E \$ - 1 @ 1 4 # { ' 2 /</pre>	0x75D8       - ^ LANDMAN.         0x5B7A       \$ :   ? . : ( ;           0x766C       &+\$) ! . # ?@  - /         0x550A       ? & CANIKIN / !	
	0x0731        , } /, & " /   '."         0x7AFC       ^ BUMPKIN   '',         0x6131       :?.!, ?#=./&"         0x2FD4       .':, & + \$ _%G         0x62B7       AMBLES?"   /   <         0x08F5       ;?:-=   > \$:	0x1C86 *%.&%@-\$:==,	>REDSKIN >Entry denied

- 1. Header text
- 2. Attempts counter
- 3. Random 'hex codes'
- 4. Passwords embedded in random 'garbage' text
- 5. History, including:
  - 1. Previously entered guesses

```
ROBCO INDUSTRIES (TM) TERMALINK PROTOCOL
ENTER PASSWORD NOW
2 ATTEMPT(S) LEFT:
                        0x1204 / @ @ / : & - # G A M B
0x758A / ^ | | # * $ , . R E D
0x2593 SKIN/*$:/"+-
                        0x795B LED; &*!./!@%
0x7C26 @(/:/%@"):%:
                        0x7AF8 # - # ? : * , $ ! = @ ^
                        0x0438 #.&;.|RAMEKI
0x32C7 N - * . % | / ^ $ * .
      IS--^*&"#%:&
0x461E
0x1F50
      .";@!"$$^!:
                        0x352D '= - @; ?, $ + = ^ &
                        0x75D8 - ^ - LANDMAN
0x23C5 %,;-/MANIKIN
     0x5B7A $.-:|?.:(|;
0x0D1A
0x8421 &%!,]"#|/./$
                        0x766C & + $) ! . # ? @ | - ,
                         0x550A ? & C A N I K I N / ! / > G A M B L E D
0x5DD0
      , * = LANOLIN; /
                         A \times 20AD = . [ \& - / ! \& ; *
                                                >Entry denied
       $ - | @ | ! # { .
                        0x1C86 *%.&%@-$:==,
                                                 >1/7 correct.
0x6131 :?.!.?#=./&"
                        0x0C7B & [;'[!*''@,]
                                                >Entry denied
                        0x88BD /&.!,*;-"*LI >3/7 correct.
0x2FD4 .':,&+ .$ %G
                        0x26E4 MBING':^@?[& >MANIKIN
0x62B7 AMBLES?" | / | <
0x08F5 ;?:-=|>$:. .
                        0x16FD $&*!-]$":.$
```

- 1. Header text
- 2. Attempts counter
- 3. Random 'hex codes'
- 4. Passwords embedded in random 'garbage' text
- 5. History, including:
  - 1. Previously entered guesses
  - 2. Access denied/granted

```
ROBCO INDUSTRIES (TM) TERMALINK PROTOCOL
ENTER PASSWORD NOW
2 ATTEMPT(S) LEFT:
                        0x1204 / @ @ / : & - # G A M B
0x758A / ^ | | # * $ , . R E D
0x2593 SKIN/*$:/"+-
                        0x795B LED; &*!./!@%
0x7C26 @(/:/%@"):%:
                        0x7AF8 # - # ? : * , $ ! = @ ^
                        0x0438 #.&;.|RAMEKI
0x32C7 N - * . % | / ^ $ * .
      IS--^*&"#%:&
0x461E
0x1F50
      .";@!"$$^!:_
                        0x352D
                              '=-@;?,$+=^&
                        0x75D8 - ^ - LANDMAN
0x23C5 %,;-/MANIKIN
0x0D1A . @; "^+"+%[-#
                        0x5B7A $.-:|?.:(|;
0x8421 &%!,]"#|/./$
                        0x766C & + $) ! . # ? @ | - ,
0x5DD0
      , * = LANOLIN; /
                         0x550A ?&CANIKIN/
                                                > G A M B L E D
                        0 \times 29 AD = . | \& - / ! \& : * *
                                               >Entry denied
0x565E
      $ - | @ | ! # { . ' ? /
                        >1/7 correct.
0x0731
                        ⊎x778C GUMBOIL+?&+.
                                                > R E D S K I N
0 \times 6131 = ? + ? = . / \&'
                        0x0C7B & |; '[!*''@_]> > Entry denied
                        vxxxBD /&.!,*;-"*LI >3/7 correct.
0x62B7 AMBLES?"|/|<
                        0x26E4 MBING':^@?[& >MANIKIN
0x08F5 ;?:-=|>$:. .
                        0x16FD $&*!-]$":.$
```

- 1. Header text
- 2. Attempts counter
- 3. Random 'hex codes'
- Passwords embedded in random 'garbage' text
- 5. History, including:
  - 1. Previously entered guesses
  - 2. Access denied/granted
  - 3. Feedback (x/y correct)

```
ROBCO INDUSTRIES (TM) TERMALINK PROTOCOL
ENTER PASSWORD NOW
2 ATTEMPT(S) LEFT:
                        0x1204 / @ @ / : & - # G A M B
0x758A / ^ | | # * $ , . R E D
0x2593 SKIN/*$:/"+-
                        0x795B LED;&*!./!@%
                        0x7AF8 # - # ? : * , $ ! = @ ^
0x7C26 @(/:/%@"):%:
                        0x0438 #.&;.|RAMEKI
0x265D
      ^&&#^* LAZUL
                        0x32C7 N-*.%|/^$*.
0x461E
      IS--^*&"#%:&
0x1F50
      .";@!"$$^!:
                               '=-@;?,$+=^&
                        0x352D
                        0x75D8 - ^ - LANDMAN
0x23C5 %,;-/MANIKIN
0x0D1A
      _.@;"^+"+%[=#
                        0x5B7A $.-:|?.:(|:
0x8421 &%!,]"#|/./$
                        0x766C & + $) ! . # ? @ | - ,
0x5DD0
      , * = LANOLIN; /
                         0x550A ?&CANIKIN/
                                                > G A M B L E D
                        0 \times 29 \text{AD} = . | \& - / ! \& ; *
                                                >Entry denied
0x565E
      $-|@|!#{,'?/
                        0x1C86
                              _*%.&%@-$:==→>1/7 correct.
0x0731
                        0 \times 778C GUMPOIL+?&+.
                                                2:0C/B & |; '[!
                                       *''@,]
                                                >Entry denied
0x6131 :?.!,?#=./&"
                        0x88BD /&.!,*;-"*↓↓ >3/7 correct.
0x2FD4 . ': . 5 % G
                        CX2CE4 MBING':^@?[& >MANIKIN
0x62D7 AMBLES?
A \times C = \{ > \} : . .
                        0x16FD $&*!-]$":.$
```

#### UI, Part 0: Separation of concerns

What if we want to use the same UI for a different but similar game? What if we want to play the same game but with a different UI?

#### UI, Part 0: Separation of concerns

What if we want to use the same UI for a different but similar game? What if we want to play the same game but with a different UI?

Game Logic

**User interaction** 

#### UI, Part O: Separation of concerns

What if we want to use the same UI for a different but similar game? What if we want to play the same game but with a different UI?

Game Logic	User interaction
Which words should be selected and displayed?	
Which is the correct password?	
How many attempts are left?	
How many characters were correctly guessed?	

#### UI, Part O: Separation of concerns

What if we want to use the same UI for a different but similar game? What if we want to play the same game but with a different UI?

Game Logic	User interaction
Which words should be selected and displayed?	Printing the words and feedback on screen
Which is the correct password?	Accepting user input
How many attempts are left?	Styling and Layout
How many characters were correctly guessed?	

#### UI, Part 0: Separation of concerns

What if we want to use the same UI for a different but similar game? What if we want to play the same game but with a different UI?

Game Logic	User interaction
Which words should be selected and displayed?	Printing the words and feedback on screen
Which is the correct password?	Accepting user input
How many attempts are left?	Styling and Layout
How many characters were correctly guessed?	

 $\rightarrow$  Let's refactor the existing code to go into 2 separate classes!



ROBCO INDUSTRIES (TM) TERMALINK PROTOCOL Enter Password Now					
2 ATTEMPT(S) LEFT:					
<pre>0x758A / ^     # * \$, . R E D</pre>	0x795B	LED;&*!./!@%	<pre>&gt;GAMBLED &gt;Entry denied &gt;1/7 correct. &gt;REDSKIN &gt;Entry denied &gt;3/7 correct.</pre>		
0x2593 SKIN / * \$ : / " + -	0x7AF8	#-#?:*,\$!=@^			
0x7C26 @ ( / : / % @ " ) : % :	0x0438	#.&;. RAMEKI			
0x265D ^ & & # ^ * LAZUL	0x32C7	N-*.% /^\$*			
0x461E IS ^ * & " # % : &	0x352D	'=-@;?,\$+=^&			
0x1F50 . "; @ ! " \$ \$ ^ ! :	0x75D8	-^LANDMAN.			
0x23C5 %, ; - / MANIKIN	0x5B7A	\$: ?.:( ;			
0x0D1A . @; " ^ + " + % [ - #	0x56C	&+\$)!.#?@ -/			
0x8421 & % !, ] " #   / . / \$	0x550A	?&CANIKIN/!			
0x50D0 , * = LANOLIN; /	0x29AD	=. _&-/!&;**			
0x565E \$ -   @   ! # {, '?/	0x1C86	*%.&%@-\$:==,			
0x7AFC ^ BUMPKIN   ' . "	0x778C	GUMBOIL+?&+.			
0x7AFC ^ BUMPKIN   ' .	0x0C7B	& ;'[!*''@,]			
0x2FD4 . ' : , & + \$ % G	0x88BD	/&.!,*;-"*LI			
0x62B7 AMBLES?" / <	0x26E4	MBING':^@?[&	>MANIKIN		
0x08F5 ;?:-= >\$:	0x16FD	\$&*!-]\$":.\$_			

#### • UI drawing options:

- Redraw entire screen
  - Easy to program, inefficient

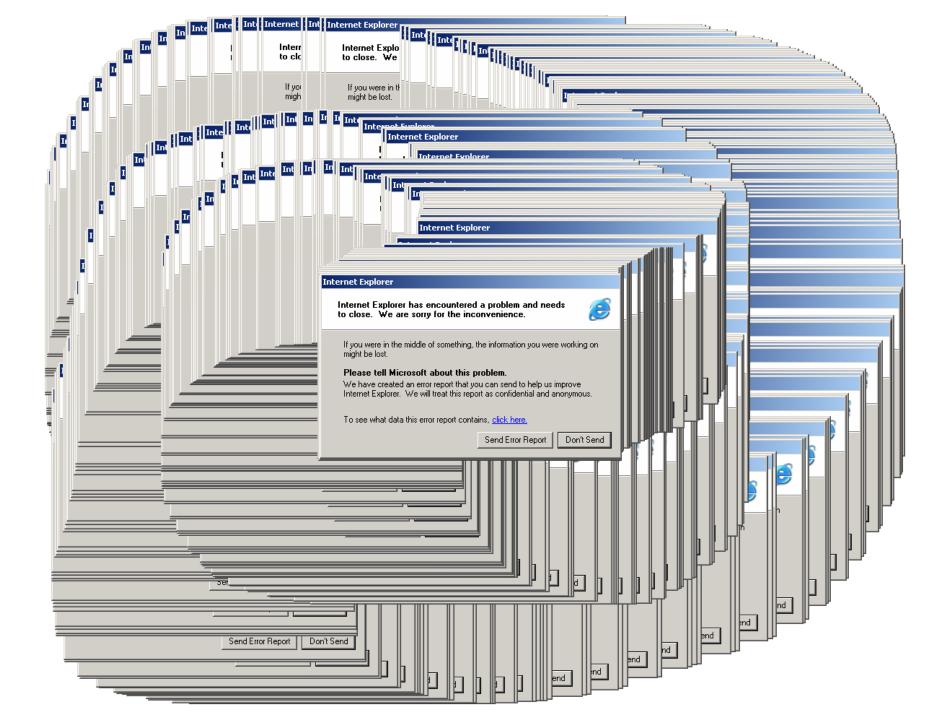
ROBCO INDUSTRIES (TM) TERMALINK PROTOCOL Enter Password Now					
2 ATTEMPT(S) LEFT:					
0x758A / ^     # * \$ , . R E D 0x2593 SKIN / * \$ : / " + - 0x7C26 @ ( / : / % @ " ) : % : 0x265D ^ & & # ^ * _ L A Z U L 0x461E IS ^ * & " # % : & 0x1F50 . " ; @ ! " \$ \$ ^ ! : 0x23C5 % , ; - / M A N I K I N 0x0D1A . @ ; " ^ + " + % [ - # 0x8421 & % ! , ] " #   / . / \$ 0x5DD0 , * = L A N O L I N ; /	0x1204       /@@/:&-#GA         0x795B       LED;&*!./!         0x7AF8       #-#?:*,\$!=         0x0438       #.&;. RAME         0x32C7       N-*.% /^\$*         0x352D       '=-@;?,\$+=         0x75D8       -^LANDMA         0x5B7A       \$: ?.:(          0x766C       &+\$)!.#?@	g % g ^ K I			
0x3565E       \$ -  @ !#{,'?/         0x0731        , }/, &"/ '."         0x7AFC       ^BUMPKIN ''.         0x6131       :?.!,?#=./&"         0x2FD4       .':, &+\$_%G         0x62B7       AMBLES?" /          0x08F5       ;?:-= >\$:	0x550A       ? & CANIKIN/         0x29AD       = .   _ & - / ! & ;         0x1C86       * % . & % @ - \$ : =         0x778C       GUMBOIL+? &         0x0C7B       &   ; ' [ ! * ' ' @         0x88BD       / & . ! , * ; - " *         0x26E4       MBING': ^ @ ?         0x16FD       \$ & * ! - ] \$ " : .	<pre>** &gt;Entry denied =, &gt;1/7 correct. +. &gt;REDSKIN ,] &gt;Entry denied LI &gt;3/7 correct. [&amp; &gt;MANIKIN</pre>			

• UI drawing options:

- Redraw entire screen
  - Easy to program, inefficient
- Redraw only parts that change
  - Hard to program, more efficient
- Typically a mix of both is applied

ROBCO INDUSTRIES (TM) TERMALINK PROTOCOL Enter Password Now					
2 ATTEMPT(S) LEFT:					
<pre>0x758A / ^     # * \$ , . R E D 0x2593 SKIN / * \$ : / " + - 0x7C26 @ ( / : / % @ " ) : % : 0x265D ^ &amp; &amp; # ^ * LAZUL 0x461E IS ^ * &amp; " # % : &amp; 0x1F50 . "; @ ! " \$ \$ ^ ! : 0x23C5 % ,; - / MANIKIN 0x0D1A . @; " ^ + " + % [ - # 0x8421 &amp; % ! , ] " #   / . / \$ 0x5DD0 , * = LANOLIN; / 0x565E \$ -   @   ! # { , ' ? / 0x0731   , } / , &amp; " /   ' . "</pre>	0x795B 0x7AF8 0x0438 0x32C7 0x352D 0x75D8 0x5B7A 0x766C 0x550A 0x29AD 0x1C86	= .   _& - / !&; * * *%.&%@-\$:==,	<pre>&gt;GAMBLED &gt;Entry denied &gt;1/7 correct.</pre>		
0x7AFC       ^ B U M P K I N   ' ',         0x6131       : ?. !, ? # = . / & "         0x2FD4       . ' :, & + \$ _ % G         0x62B7       A M B L E S ? "   /   <	0x778C 0x0C7B 0x88BD 0x26E4 0x16FD	GUMBOIL+?&+. & ;'[!*''@,] /&.!,*;-"*LI MBING':^@?[& \$&*!-]\$":.\$_	>REDSKIN >Entry denied >3/7 correct. >MANIKIN		

- UI drawing options:
  - Redraw entire screen
    - Easy to program, inefficient
  - Redraw only parts that change
    - Hard to program, more efficient
- Typically a mix of both is applied
- This is true for all UIs, e.g.
  - Web browser
  - 3D games
  - Mobile phone interface



- Call print\_screen() to:
  - 1. Print the header
  - 2. Print the attempts counter
  - 3. Print the hex codes and code lines
  - 4. Print the history
  - 5. Print a prompt

ROBCO INDUSTRIES (TM) TERMALINK PROTOCOL Enter password now					
2 ATTEMPT(S) LEFT:					
0x758A       / ^     #*\$, . RED         0x2593       SKIN/*\$:/"+-         0x7C26       @ ( / : / % @ " ) : %:         0x265D       ^&&#^* LAZUL         0x461E       IS ^*& " #%:&         0x1F50       ."; @ ! "\$\$^ !:         0x23C5       %;; - / MANIKIN         0x0D1A       .@; "^+"+%[-#         0x8421       &%!, ] "#   //\$	0x1204       /@@/:&-#GAMB         0x795B       LED;&*!./!@%         0x7AF8       -#?:*,\$!=@^         0x0438       *.&;. RAMEKI         0x32C7       N-*.% /^\$*         0x352D       '=-@;?,\$+=^&         0x75D8       -^LANDMAN.         0x5B7A       \$: ?.:( ;          0x766C       &+\$)!.#?@ -/				
0x5DD0 ,*=LANOLIN;/ 0x565E \$- @ !#{,'?/ 0x0731  ,}/,&"/ '."	0x550A ?&CANIKIN/!  0x29AD =. _&-/!&;** 0x1C86 *%.&%@-\$:==,	>1/7 correct.			
0x7AFC ^BUMPKIN '', 0x6131 :?.!,?#=./&" 0x2FD4 .':,&+\$_%G 0x62B7 AMBLES?" / < 0x08F5 ;?:-= >\$:.	0x778C GUMBOIL+?&+. 0x0C7B &  ;'[!*''@,] 0x88BD /&.!,*;-"*LI 0x26E4 MBING':^@?[& 0x16FD \$&*!-]\$":.\$	>Entry denied			

- Call print\_screen() to:
  - 1. Print the header
  - 2. Print the attempts counter
  - 3. Print the hex codes and code lines
  - 4. Print the history
  - 5. Print a prompt
- Wait for user input (ENTER/RETURN)

ROBCO INDUSTRIES (TM) TERMALINK PROTOCOL Enter Password Now							
2 ATTEMPT(S) LEFT:	2 ATTEMPT(S) LEFT:						
0x758A / ^     #*\$,.RED 0x2593 SKIN/*\$:/"+- 0x7C26 @(/:/%@"):%: 0x265D ^&&#^* LAZUL 0x461E IS^*&"#%:& 0x1F50 .";@!"\$\$^!: 0x23C5 %,;-/MANIKIN 0x0D1A .@;"^+"+%[-# 0x8421 &%!,]"# /./\$	0x1204       /@@/:&-#GAMB         0x795B       LED;&*!./!@%         0x7AF8       #-#?:*,\$!=@^         0x0438       #.&;. RAMEKI         0x32C7       N-*.% /^\$*.         0x352D       '=-@;?,\$+=^&         0x75D8       -^LANDMAN.         0x5B7A       \$: ?.:( ;          0x766C       &+\$)!.#?@ -/						
0x5DD0       ,*=LANOLIN;/         0x565E       \$- @ !#{,'?/         0x0731       ,}/,&"/ '."         0x7AFC       ^BUMPKIN '',         0x6131       :?.!,?#=./&"	0x550A       ? & CANIKIN / !           0x29AD       = .   _ & - / ! & ; * *         0x1C86       * % . & % @ - \$ ; = = ,         0x778C       GUMBOIL + ? & + .         0x0C7B       &   ; ' [ ! * ' ' @ , ]	>1/7 correct. >REDSKIN					
0x2FD4 .':,&+\$_%G 0x62B7 AMBLES?" // < 0x08F5 ;?:-= >\$:	0x88BD /&.!,*;-"*LI 0x26E4 MBING':^@?[& 0x16FD \$&*!-]\$":.\$_	>3/7 correct. >MANIKIN					

- Call print\_screen() to:
  - 1. Print the header
  - 2. Print the attempts counter
  - 3. Print the hex codes and code lines
  - 4. Print the history
  - 5. Print a prompt
- Wait for user input (ENTER/RETURN)
- Add the user input to history

ROBCO INDUSTRIES (TM) TERMALINK PROTOCOL Enter Password Now					
2 ATTEMPT(S) LEFT:					
0x758A / ^     # * \$ , . R E D 0x2593 SKIN / * \$ : / " + -	0x1204 /@@/:&-#GAMB 0x795B LED;&*!./!@%				
0x7C26 @(/:/%@"):%: 0x265D ^&&#^* LAZUL	0x7AF8 #-#?:*,\$!=@^ 0x0438 #.&;. RAMEKI				
0x461E IS^*&"#%:& 0x1F50 .";@!"\$\$^!:_	0x32C7 N-*.% /^\$*. 0x352D '=-@;?,\$+=^&				
0x23C5 %,;-/MANIKIN 0x0D1A .@;"^+"+%[-#	0x75D8 - ^ LANDMAN. 0x5B7A \$: ?.:( ;				
0x8421 &%!,]"# /./\$ 0x5DD0 ,*=LANOLIN;/	0x766C &+\$)!.#?@ -/ 0x550A ?&CANIKIN/!	> G A M B L E D			
0x565E \$ -  @ !#{,'?/ 0x0731  ,}/,&"/ '."	0x29AD = .   _& - / !&;** 0x1C86 *%.&%@-\$:==, 0x778C GUMB0IL+?&+.	>1/7 correct.			
0x7AFC ^BUMPKIN '', 0x6131 :?.!,?#=./&" 0x2FD4 .':,&+ .\$ %G	0x078C GUMBUIL+?&+. 0x0C7B & ;'[!*''@,] 0x88BD /&.!,*;-"*LI	>Entry denied			
0x62B7 AMBLES?" / < 0x08F5 ;?:-= >\$:	0x26E4 MBING':^@?[& 0x16FD \$&*!-]\$":.\$	>MANIKIN			

- Call print\_screen() to:
  - 1. Print the header
  - 2. Print the attempts counter
  - 3. Print the hex codes and code lines
  - 4. Print the history
  - 5. Print a prompt
- Wait for user input (ENTER/RETURN)
- Add the user input to history
- Call the game logic to check the guess

ROBCO INDUSTRIES (TM) TERMALINK PROTOCOL Enter Password Now					
2 ATTEMPT(S) LEFT:					
0x758A / ^     # * \$ , . R E D	0x1204 / @@/:&-#GAME				
0x2593 SKIN/*\$:/"+- 0x7C26 @(/:/%@"):%:	0x795B LED;&*!./!@ <sup>9</sup> 0x7AF8 #-#?:*,\$!=@ <sup>4</sup>	×			
0x265D	0x0438 #.&;. RAMEKI 0x32C7 N-*.% /^\$*				
0x1F50 .";@!"\$\$^!:_ 0x23C5 %,;-/MANIKIN	0x352D '=-@;?,\$+=^& 0x75D8 -^ -LANDMAN	M			
0x0D1A .@;"^+"+%[-#	0x5B7A \$: ?.:( ;				
0x8421 &%!,]"# /./\$ 0x5DD0 ,*=LANOLIN;/	0x766C &+\$)!.#?@ -/ 0x550A ?&CANIKIN/!	> G A M B L E D			
0x565E \$- @ !#{,'?/ 0x0731  ,}/,&"/ '."	0x29AD = .   _& - / !&; ** 0x1C86 *%.&%@-\$:==,	-			
0x7AFC ^BUMPKIN '', 0x6131 :?.!,?#=./&"	0x778C GUMBOIL+?&+, 0x0C7B & ;'[!*''@,	. >REDSKIN   >Entry denied			
0x2FD4 .':,&+\$_%G	0x88BD /&.!,*;-"*L]	<pre>1 &gt;3/7 correct.</pre>			
0x62B7 AMBLES?" / < 0x08F5 ;?:-= >\$:	0x26E4 MBING':^@?[& 0x16FD \$&*!-]\$":.\$_				

- Call print\_screen() to:
  - 1. Print the header
  - 2. Print the attempts counter
  - 3. Print the hex codes and code lines
  - 4. Print the history
  - 5. Print a prompt
- Wait for user input (ENTER/RETURN)
- Add the user input to history
- Call the game logic to check the guess
- Add the logic feedback to history
- Exit if guess correct, else repeat...

ROBCO INDUSTRIES (TM) TERM		
ENTER PASSWORD NOW		
2 ATTEMPT(S) LEFT:		
	0-1204 / 0.0 / - C # C A N.D.	
0x758A / ^     # * \$ , . R E D	0x1204 /@@/:&-#GAMB	
0x2593 SKIN/*\$:/"+-	0x795B LED;&*!./!@%	
0x7C26 @(/:/%@"):%:	<b>0</b> x7AF8 # - # ? : * , \$ ! = @ ^	
0x265D	0x0438 #.&;. RAMEKI	
0x461E IS^*&"#%:&	0x32C7 N-*.% /^\$*	
0x1F50 .";@!"\$\$^!:_	0x352D '=-@;?,\$+=^&	
0x23C5 %,;-/MANIKIN	0x75D8 - ^ LANDMAN.	
0x0D1A .@;"^+"+%[-#	0x5B7A \$: ?.:( ;	
0x8421 &%!,]"# /./\$	0x766C &+\$)!.#?@ -/	
$\Theta \times 5DD\Theta$ , * = LANOLIN; /	0x550A ?&CANIKIN/!	> G A M B L E D
0x565E \$- @ !#{,'?/	0x29AD = .   & - / ! & ; * *	
0x0731  ,}/,&"/ '."	$0 \times 1C86 * \% \cdot \frac{1}{6} \% @ - $ := = ,$	
0x7AFC ^BUMPKIN '',	0x778C GUMB0IL+?&+.	
0x6131 :?.!,?#=./&"	0x0C7B &  ; '[!*''@,]	
0x2FD4 . ':, &+ . \$ %G	0x88BD /&.!,*;-"*LI	>3/7 correct.
0x62B7 AMBLES?" / <	0x26E4 MBING':^@?[&	
0x08F5 ;?:-= >\$:	0x16FD \$&*!-]\$":.\$	>MANIKIN
•••••••••••	OXTOID \$6 :-]\$\$	

- Call print\_screen() to:
  - 1. Print the header
  - 2. Print the attempts counter
  - 3. Print the hex codes and code lines
  - 4. Print the history
  - 5. Print a prompt
- Wait for user input (ENTER/RETURN)
- Add the user input to history
- Call the game logic to check the guess
- Add the logic feedback to history
- Exit if guess correct, else repeat...

ROBCO INDUSTRIES (TM) TERMALINK PROTOCOL Enter password now						
2 ATTEMPT(S) LEFT:						
0x758A       / ^     #*\$, . RED         0x2593       SKIN /*\$: / "+-         0x7C26       @ ( / : / % @ " ) : %:         0x265D       & & # ^* LAZUL         0x461E       IS ^* & "#%: &         0x1F50       "; @ ! "\$\$ ^!:         0x23C5       %; - / MANIKIN         0x401A       .@; " ^ + " + % [ - #         0x8421       & % !, ] "#   / . / \$         0x5DD0       , * = LANOLIN; /         0x565E       \$ -   @   !# {, '? /         0x0731        , } /, & " /   '. "         0x7AFC       ^ BUM PKIN   '',         0x6131       : ?. !, ?# = . / & "         0x2FD4       ''; & + \$ _% G         0x62B7       AMBLES ? "   /   <         0x08F5       ; ?: - =   > \$ : .	0x1204       /@@/:&-#GAMB         0x795B       LED;&*!./!@%         0x7AF8       #-#?:*,\$!=@^         0x7AF8       #.#?:*,\$!=@^         0x7AF8       #.#?:*,\$!=@^         0x0438       #.&;.         RAMEKI         0x32C7       N-*.% /^\$*.	>GAMBLED >Entry denied >1/7 correct. >REDSKIN >Entry denied >3/7 correct. >MANIKIN				



#### UI, Part 2: Generating hex codes

0x0731 , } /, & "/ '."0x1C86*%. &%@-\$:==, >1/7 corr0x7AFC^BUMPKIN '',0x778CGUMB0IL+?&+. >REDSKIN0x6131:?.!,?#=./&"0x0C7B& ;'[!*''@,] >Entry de0x2FD4.':,&+\$_%G0x88BD/&.!,*;-"*LI >3/7 corr	ROBCO INDUSTRIES (TM) TERMALINK PROTOCOL ENTER PASSWORD NOW					
0x2593       SKIN/*\$:/"+-       0x795B       LED;&*!./!@%         0x7C26       @(/:/%@"):%:       0x7AF8       #-#?:*,\$!=@^         0x265D       ^&&#^*_LAZUL       0x0438       #.&;. RAMEKI         0x461E       IS^*&"#%:&       0x32C7       N-*.% /^\$*         0x1F50       ";@!"\$\$^!       0x352D       '=-@;?,\$+=^&         0x23C5       %,;-/MANIKIN       0x75D8       -^LANDMAN.         0x0D1A       @;"^+"+%[-#       0x5B7A       \$:!]?.:( ;          0x5DD0       ,*=LANOLIN;/       0x766C       &+\$)!.#?@l-/         0x5556E       \$-[@]!#{,'?/       0x29AD       =.[_&-/!&;**       >Entry de         0x0731        ,}/,&"/ '."       0x1C86       *%.&%@c-\$:==,       >1/7 corr         0x7AFC       BUMPKIN '',       0x0778C       GUMBOIL+?&+       >REDSKIN         0x211       :, &+\$_%G       0x88BD       /&.!, *; -"*LI       >3/7 corr	2 ATTEMP	PT(S) LEFT:				
0x08F5 ;?:-= >\$: 0x16FD \$&*!-]\$":.\$_	0x2593 0x7C26 0x265D 0x461E 0x1F50 0x23C5 0x0D1A 0x8421 0x5DD0 0x565E 0x0731 0x7AFC 0x6131 0x2FD4 0x62B7	SKİN/*\$:/"+- @(/:/%@"):%: ^&&#^*_LAZUL IS^*&"#%:& .";@!"\$\$^!:_ %;;'/NANIKIN .@;'',ANIKIN .@;'']"# /./\$ .%?!,]"# /./\$ ,*=LANOLIN;/ \$- @ !#{,'?/  ,&"/ '." ^BUMPKIN '', :?.!,&+\$_%G AMBLES?" / <</th><th>0x795B 0x7AF8 0x0438 0x32C7 0x352D 0x75D8 0x557A 0x766C 0x550A 0x29AD 0x1C86 0x778C 0x0C7B 0x88BD 0x26E4</th><th>LED;&*!./!@% #-#?:*,\$!=@^ #.&;. RAMEKI N-*.% /^\$* '=-@;?,\$+=^& -^LANDMAN. \$: ?.:( ;  &+\$)!.#?@ -/ ?&CANIKIN/!! =. _&-/!&;** *%.&%@-\$:==, GUMBOIL+?&+. & ;'[!*''@,] /&.!,*;-"*LI MBING':^@?[&</th><th>>Entry denied >1/7 correct. >REDSKIN</th></tr></tbody></table>				

- What do we need?
  - "0x" every time
  - 4 digits after that
  - 17 rows, 2 columns = 34 in total

#### UI, Part 2: Generating hex codes

ROBCO INDUSTRIES (TM) TERMALINK PROTOCOL Enter Password Now					
2 ATTEMPT(S) LEFT:					
<pre>0x758A /^  #*\$,.RED 0x2593 SKIN/*\$:/"+- 0x7C26 @(/:/%@"):%: 0x265D ^&amp;&amp;#^*_LAZUL 0x461E IS^*&amp;"#%:&amp; 0x1F50 .";@!"\$\$^!: 0x23C5 %,;-/MANIKIN 0x0D1A .@;"^+"+%[-# 0x8421 &amp;%!,]"# /./\$ 0x8421 &amp;%!,]"# /./\$ 0x55DD0 ,*=LANOLIN;/ 0x565E \$- @ !#{,'?/ 0x0731  ,}/,&amp;"/ '." 0x7AFC ^BUMPKIN '', 0x6131 :?.!,?#=./&amp;" 0x2FD4 .':,&amp;+\$_%G 0x62B7 AMBLES?" / &lt; 0x08F5 ;?:-= &gt;\$:</pre>	<pre>0x75D8 - ^ LANDMAN. 0x5B7A \$: ?.:( ;  0x766C &amp;+\$)!.#?@ -/ 0x550A ?&amp;CANIKIN/!  &gt;GAMBLED 0x29AD =. _&amp;-/!&amp;;** &gt;Entry deni 0x1C86 *%.&amp;%@-\$:==, &gt;1/7 correct</pre>	t. .ed			

- What do we need?
  - "0x" every time
  - 4 digits after that
  - 17 rows, 2 columns = 34 in total
- For simplicity, we will generate "0x0000" *columns\*rows* times

# UI, Part 2: Generating hex codes

ROBCO INDUSTRIES (TM) TERMALINK PROTOCOL Enter Password Now					
2 ATTEMPT(S) LEFT:					
0x758A /^  #*\$,.RED 0x2593 SKIN/*\$:/"+- 0x7C26 @(/:/%@"):%: 0x265D ^&&#^* LAZUL 0x461E IS^*&"#%:& 0x1F50 .";@!"\$\$^!: 0x23C5 %,;-/MANIKIN 0x0D1A .@;"^+"+%[-# 0x8421 &%!,]"# /./\$ 0x5DD0 ,*=LANOLIN;/ 0x565E \$- @ !#{,'?/ 0x565E \$- @ !#{,'?/ 0x731  ,}/,&"/ '." 0x7AFC ^BUMPKIN '', 0x2FD4 .':,&+\$_%G 0x62B7 AMBLES?" / < 0x08F5 ;?:-= >\$:.	0x1C86 *%.&%@-\$:==, >1/7 0x778C GUMB0IL+?&+. >REDSI 0x0C7B & ;'[!*''@,] >Entry	y denied correct. KIN y denied cor <u>r</u> ect.			



- What do we need?
  - "0x" every time
  - 4 digits after that
  - 17 rows, 2 columns = 34 in total
- For simplicity, we will generate "0x0000" columns\*rows times
- Generating random hex codes left as an exercise for you :)

- What do we need?
  - The words separated (padded) by random characters
  - Split into pieces

ROBCO INDUSTRIES (TM) TERMALINK PROTOCOL Enter Password Now						
2 ATTEMPT(S) LEFT:						
0x758A /^  #*\$,.RED 0x2593 SKIN/*\$:/"+- 0x7C26 @(/:/%@"):%: 0x265D ^&&#^*_LAZUL 0x461E IS^*&"#%:& 0x1F50 .";@!"\$\$^!:_ 0x23C5 %,;-/MANIKIN 0x0D1A .@;"^+"+%[-# 0x8421 &%!,]"# /./\$ 0x5DD0 ,*=LANOLIN;/ 0x565E \$- @ !#{,'?/ 0x731  ,}/,&"/ '." 0x7AFC ^BUMPKIN '', 0x6131 :?.!,?#=./&" 0x2FD4 .':,&+ .\$ %G	0x795B 0x7AF8 0x0438 0x32C7 0x352D 0x75D8 0x5B7A 0x766C 0x550A 0x29AD 0x1C86 0x778C 0x0C7B	' = - @; ?, \$ + = ^ & - ^ LANDMAN. \$ :   ?. : (   ;   & + \$) !. # ? @   - / ? & CANIKIN / !   = .   _ & - / ! & ; ** * %. & % @ - \$ :==,	<pre>&gt;GAMBLED &gt;Entry denied &gt;1/7 correct. &gt;REDSKIN &gt;Entry denied &gt;3/7 correct.</pre>			
0x62B7 AMBLES?" / < 0x08F5 ;?:-= >\$:	0x26E4 0x16FD	MBING':^@?[&	>MANIKIN			

- What do we need?
  - The words separated (padded) by random characters
  - Split into pieces
- Total size:
  - line width \* columns \* rows

	ROBCO INDUSTRIES (TM) TERMALINK PROTOCOL Enter Password Now				
2 ATTEM	IPT(S) LEFT:				
0x2593 0x7C26 0x265D 0x461E 0x1F50 0x23C5 0x0D1A 0x8421 0x5DD0 0x565E 0x0731 0x7AFC 0x6131	<pre>/ ^     # * \$ , . R E D S K I N / * \$ : / " + - @ ( / : / % @ " ) : % : ^ &amp; &amp; # ^ * _ L A Z U L I S ^ * &amp; " # % : &amp; . " ; @ ! " \$ \$ ^ ! : _ % , ; - / M A N I K I N . @ ; " ^ + " + % [ - # &amp; % ! , ] " #   / . / \$ , * = L A N O L I N ; / \$ -   @   ! # { , ' ? /   , } / , &amp; " /   ' . " ^ B U M P K I N   ' ' , : ? . ! , ? # = . / &amp; " . ' : , &amp; + . \$ % G</pre>	0x795B 0x7AF8 0x0438 0x32C7 0x352D 0x75D8 0x5B7A 0x766C 0x550A 0x29AD 0x1C86 0x778C 0x0C7B	/ @@ / : & - #GAMB LED; & * ! . / ! @% # - #? : * , \$ ! = @^ # . &; .   RAMEKI N - * . %   / ^ \$ * . ' = - @; ? , \$ + = ^ & - ^ LANDMAN. \$ :   ? . : (   ;   & + \$) ! . # ? @   - / ? & CANIKIN/!   = .   _& - / ! &; * * * % . & % @ - \$ := = , GUMBOIL+? & + . &   ; ' [ ! * ' ' @ , ] / & . ! , * ; - " * LI	>Entry denied >1/7 correct. >REDSKIN >Entry denied	
0x62B7	A M B L E S ? "   7   < ; ? : - =   > \$ :	0x26E4	MBING':^@?[& \$&*!-]\$":.\$_	>MANIKIN	

- What do we need?
  - The words separated (padded) by random characters
  - Split into pieces
- Total size:
  - line width \* columns \* rows
- Total padding size:
  - total length of words

ROBCO INDUSTRIES (TM) TERMALINK PROTOCOL Enter Password Now						
2 ATTEMPT(S) LEFT:						
0x758A / ^     # * \$ , . R E D	0x1204 /@@/:&-#GAMB					
0x2593 SKIN/*\$:/"+-	0x795B LED;&*!./!@%					
<b>0x7C26</b> @(/:/%@"):%:						
0x265D	0x0438 #.&;. RAMEKI					
0x461E IS ^ * & " # % : &	0x32C7 N - * . %   / ^ \$ *					
<b>0x1F50</b> . "; @ ! " \$ \$ ^ ! : _	$\Theta x 352D$ ' = - @ ; ? , \$ + = ^ &					
0x23C5 %,;-/MANIKIN	0x75D8 - ^ LANDMAN.					
<b>0x0D1A</b> . @; "^+"+%[-#	0x5B7A \$: ?.:( ;					
<b>0x8421</b> &%!,]"# /./\$	0x766C &+\$)!.#?@ -/					
$\Theta \times 5DD\Theta$ , * = LANOLIN; /	0x550A ?&CANIKIN/!	> G A M B L E D				
<b>0x565E</b> \$ -   @   ! # { , ' ? /	0x29AD = .   _& - / !&; **	>Entry denied				
0x0731  ,}/,&"/ '."	<b>0x1C86</b> *%.&%@-\$:==,	>1/7 correct.				
0x7AFC ^BUMPKIN '',	0x778C GUMBOIL+?&+.	> R E D S K I N				
<b>0x6131</b> : ? . ! , ? # = . / & "	0x0C7B & ;'[!*''@,]	>Entry denied				
0x2FD4 .':,&+\$_%G	0x88BD /&.!,*;-"*LI	>3/7 correct.				
<b>0x62B7</b> AMBLES?" // <	0x26E4 MBING : ^ @ ? [ &	> M A N I K I N				
<b>0</b> x08F5 ; ? : - =   > \$ :	<b>0x16FD</b> \$&*!-]\$":.\$_					

- What do we need?
  - The words separated (padded) by random characters
  - Split into pieces
- Total size:
  - line width \* columns \* rows
- Total padding size:
  - total length of words
- Individual padding size:
  - Total padding / #words + 1

ROBCO INDUSTRIES (TM) TERMALINK PROTOCOL Enter Password Now						
2 ATTEMPT(S) LEFT:	2 ATTEMPT(S) LEFT:					
0x758A /^    #*\$, RED 0x2593 SKIN/*\$:/"+- 0x7C26 @(/:/%@"):%: 0x265D ^&&#^* LAZUL 0x461E IS^*&"#%:& 0x1F50 .";@!"\$\$^!: 0x23C5 %,;-/MANIKIN 0x0D1A .@;"^+"+%[-# 0x8421 &%!,]"# /./\$ 0x5DD0 ,*=LANOLIN;/ 0x565E \$- @ !#{,'?/ 0x565E \$- @ !#{,'?/ 0x731  ,}/,&"/ '." 0x7AFC ^BUMPKIN '', 0x6131 :?.!,?#=./&"	0x0438       #.&;.   RAMEKI         0x32C7       N - *.%   / ^ \$*.         0x352D       ' = -@;?, \$ + = ^ &         0x75D8       - ^ LANDMAN.         0x5B7A       \$:   ?.: (   ;           0x766C       & + \$ ) !. #?@   - /         0x550A       ? & CANIKIN / !           0x29AD       =.   _ & - / ! & ; **         0x1C86       *%. & %@ - \$ := = ,         0x778C       GUMBOIL +? & +.	>GAMBLED >Entry denied >1/7 correct. >REDSKIN >Entry denied				
0x2FD4       .':,&+\$_%G         0x62B7       AMBLES?" / <         0x08F5       ;?:-= >\$:	<pre>0x88BD /&amp;.!,*;-"*LI 0x26E4 MBING':^@?[&amp; 0x16FD \$&amp;*!-]\$":.\$_</pre>	>3/7 correct. >MANIKIN				

- What do we need?
  - The words separated (padded) by random characters
  - Split into pieces
- Total size:
  - line width \* columns \* rows
- Total padding size:
  - total length of words
- Individual padding size:
  - Total padding / #words + 1

ROBCO INDUSTRIES (TM) TERMALINK PROTOCOL Enter Password Now						
2 ATTEMPT(S) LEFT:						
0x758A       /^   #*\$,.RED         0x2593       SKIN/*\$:/"+-         0x7C26       @(/:/%@"):%:         0x265D       ^&&#^*_LAZUL         0x461E       IS ^ * & "#%:&         0x1F50       .";@!"\$\$^!:         0x23C5       %,; - / MANIKIN         0x0D1A       .@; "^+"+%[-#	0x795B 0x7AF8 0x0438 0x32C7 0x352D 0x75D8	/@@/:&-#GAMB LED;&*!./!@% #-#?:*,\$!=@^ #.&;. RAMEKI N-*.% /^\$*. '=-@;?,\$+=^& -^LANDMAN. \$: ?.:( ;				
0x8421 &%!,]"# /./\$ 0x5DD0 ,*=LANOLIN;/ 0x565E \$- @ !#{,'?/ 0x0731  ,}/,&"/ '." 0x7AFC ^BUMPKIN '', 0x6131 :?.!,?#=./&" 0x2ED4 ': &+ \$ \$ 6	0x550A 0x29AD 0x1C86 0x778C 0x0C7B	*%.&%@-\$:==, GUMBOIL+?&+. & ;'[!*''@,]				
0x2FD4 .':,&+\$_%G 0x62B7 AMBLES?" / < 0x08F5 ;?:-= >\$:	0x26E4 0x16FD	/&.!,*;-"*LI MBING':^@?[& \$&*!-]\$":.\$_	>3/7 correct. >MANIKIN			



ROBCO INDUSTRIES (TM) TERMALINK PROTOCOL Enter Password Now					
2 ATTEM	PT(S) LEFT:				
0x2593 0x7C26 0x265D 0x461E 0x1F50 0x23C5 0x0D1A 0x8421 0x5DD0 0x565E 0x0731 0x7AFC 0x6131 0x2FD4 0x62B7	/ ^     # * \$ , . R E D SKIN / * \$ : / " + - @ ( / : / % @ " ) : % : ^ & & # ^ * _ LAZUL IS ^ * & " # % : & . "; @ ! " \$ \$ ^ ! : _ % , ; - / MANIKIN . @ ; " ^ + " + % [ - # & % ! , ] " #   / . / \$ , * = LANOLIN; / \$ -   @   ! # { , ' ? /   , } / , & " /   ' . " ^ BUMPKIN   ' , : ? . ! , ? # = . / & " . ' : , & + \$ _ % G AMBLES ? "   /   < ; ? : - =   > \$ :	0x7AF8 0x0438 0x32C7 0x352D 0x75D8 0x5B7A 0x766C 0x550A 0x29AD 0x1C86 0x778C 0x0C7B 0x88BD 0x26E4	LED;&*!./!@% #-#?:*,\$!=@^ #.&;. RAMEKI N-*.% /^\$* '=-@;?,\$+=^& -^LANDMAN. \$: ?.:( ;  &+\$)!.#?@ -/ ?&CANIKIN/!  =. _&-/!&;** *%.&%@-\$:==, GUMBOIL+?&+. & ;'[!*''@,] /&.!,*;-"*LI	<pre>&gt;GAMBLED &gt;Entry denied &gt;1/7 correct. &gt;REDSKIN &gt;Entry denied &gt;3/7 correct. &gt;MANIKIN</pre>	

- What do we need?
  - Print hex codes
  - Print lines
  - Print history

ROBCO INDUSTRIES (TM) TERMALINK PROTOCOL Enter Password Now						
2 ATTEMPT(S) LEFT:						
0x758A       / ^     # * \$ , . R E D         0x2593       S K I N / * \$ : / " + -         0x7C26       @ ( / : / % @ " ) : % :         0x265D       ^ & & # ^ * _ L A Z U L         0x461E       I S ^ * & " # % : &         0x1F50       . "; @ ! " \$ \$ ^ ! : _         0x23C5       % , ; - / M A N I K I N         0x0D1A       . @; " ^ + " + % [ - #         0x8421       & % ! , ] " #   / . / \$         0x50D0       , * = L A N O L I N ; /         0x565E       \$ -   @   ! # { , ' ? /         0x0731         , } / , & " /   ' . "         0x7AFC       ^ BUM P K T N I ' ' .	0x795B 0x7AF8 0x0438 0x32C7 0x352D 0x75D8 0x5B7A 0x56C 0x550A 0x29AD 0x1C86 0x778C	<pre>/@@/:&amp;-#GAMB LED;&amp;*!./!@% #-#?:*,\$!=@^ #.&amp;;. RAMEKI N-*.% /^\$* '=-@;?,\$+=^&amp; -^LANDMAN. \$: ?.:( ;  &amp;+\$)!.#?@ -/ ?&amp;CANIKIN/!  =. _&amp;-/!&amp;;** *%.&amp;%@-\$:==, GUMBOTL+?&amp;+. &amp; ;'[!*''@,]</pre>				
0x02FD4 . :, a+ \$ %0 0x62B7 AMBLES?" / < 0x08F5 ;?:-= >\$:	0x8655 0x26E4 0x16FD	ΜΒΙΝG':^@?[&	>MANIKIN			

- What do we need?
  - Print hex codes
  - Print lines
  - Print history
- But: The terminal prints *line by line*!

ROBCO INDUSTRIES (TM) TERMALINK PROTOCOL Enter Password Now				
2 ATTEMPT(S) LEFT:				
0x758A / ^     # * \$ , . R E D 0x2593 SKIN / * \$ : / " + - 0x7C26 @ ( / : / %@ " ) : % :	0x1204 /@@/:&-#GAMB 0x795B LED;&*!./!@% 0x7AF8 #-#?:*,\$!=@^			
0x265D	0x0438       #.&;.   RAMEKI         0x32C7       N - *. %   / ^ \$ *.         0x352D       ' = -@;?, \$ + = ^ &			
0x23C5 %,;-/MANIKIN 0x0D1A .@;"^+"+%[-# 0x8421 &%!,]"# /./\$ 0x5DD0 ,*=LANOLIN;/	0x75D8       - ^ LANDMAN.         0x5B7A       \$ :   ? . : (   ;           0x766C       & + \$ ) ! . # ?@   - /         0x550A       25 CANTKIN ( )			
0x5DD0 ,*=LANOLIN;/ 0x565E \$- @ !#{,'?/ 0x0731  ,}/,&"/ '." 0x7AFC ^BUMPKIN!''.	0x550A ?&CANIKIN/!  0x29AD =. _&-/!&;** 0x1C86 *%.&%@-\$:==, 0x778C GUMBOIL+?&+.	>GAMBLED >Entry denied >1/7 correct. >REDSKTN		
0x6131 :?.!,?#=./&" 0x2rD4 ::,	0x0C7B       &  ; '[!*''@,]         0x00D       / a.!, '; - 'LI         0x26E4       MBING': ^@?[&			
0x08F5 ;?:-= >\$:	0x16FD \$&*!-]\$":.\$_			

- What do we need?
  - Print hex codes
  - Print lines
  - (Print history)
- But: The terminal prints *line by line*!
- For every row, print correct parts of the complete output
  - Hex + code + Hex + code (+ history)

ROBCO INDUSTRIES (TM) TERMALINK PROTOCOL Enter Password Now				
2 ATTEMPT(S) LEFT:				
0x758A       / ^     # * \$ , . R E D         0x2593       S K I N / * \$ : / " + -         0x7C26       @ ( / : / % @ " ) : % :         0x7C26       @ ( / : / % @ " ) : % :         0x265D       ^ & & # ^ * _ L A Z U L         0x461E       I S ^ * & " # % : &         0x1F50       . "; @ ! " \$ \$ ^ ! : _         0x23C5       % , ; - / M A N I K I N         0x0D1A       . @ ; " ^ + " + % [ - #         0x8421       & % ! , ] " #   / . / \$         0x50D0       , * = L A N O L I N ; /         0x565E       \$ -   @   ! # { , ' ? /         0x0731         , } / , & " /   ' . "         0x6131       : ? . ! , ? # = . / & "	0x795B 0x7AF8 0x0438 0x32C7 0x352D 0x75D8 0x5B7A 0x56C 0x550A 0x29AD 0x1C86 0x778C	<pre>/@@/:&amp;-#GAMB LED;&amp;*!./!@% #-#?:*,\$!=@^ #.&amp;;. RAMEKI N-*.% /^\$* '=-@;?,\$+=^&amp; -^LANDMAN. \$: ?.:( ;  &amp;+\$)!.#?@ -/ ?&amp;CANIKIN/!  &gt;GAMBLED =. _&amp;-/!&amp;;** &gt;Entry denied *%.&amp;%@-\$:==, &gt;1/7 correct. GUMBOTL+?&amp;+. &gt;REDSKTN &amp; ;'[!*''@,] &gt;Entry denied</pre>		
0x0131	0x0C7B 0x26E4 0x16FD	/a.!,*;-*LI >3/7 Correct. MBING':^@?[& >MANIKIN		

- What do we need?
  - Print hex codes
  - Print lines
  - (Print history)
- But: The terminal prints *line by line*!
- For every row, print correct parts of the complete output
  - Hex + code + Hex + code (+ history)



# UI, Part 4: Formatting (cont.)

ROBCO INDUSTRIES (TM) TERMALINK PROTOCOL Enter Password Now			
2 ATTEMPT(S) LEFT:			
<pre>0x758A / ^     # * \$, . R E D 0x2593 SKIN / * \$: / " + - 0x7C26 @ ( / : / % @ " ) : % : 0x265D ^ &amp; &amp; # ^ * _ LAZUL 0x461E IS ^ * &amp; " # % : &amp; 0x1F50 . "; @ ! " \$ \$ ^ ! : 0x23C5 %, ; - / MANIKIN 0x0D1A . @ ; " ^ + " + % [ - # 0x8421 &amp; % !, ] " #   / . / \$ 0x5DD0 , * = LANOLIN; / 0x565E \$ -   @   ! # {, ' ? / 0x0731  , } /, &amp; " /   ' . " 0x7AFC ^ BUMPKIN   ' ', 0x6131 :? .!, ? # = . / &amp; " 0x2FD4 . ' :, &amp; + \$ _ % G 0x62B7 AMBLES? "   /   &lt;</pre>	0x1204       /@@/:&-#GAMB         0x795B       LED;&*!./!@%         0x7AF8       #-#?:*,\$!=@^         0x0438       #.&;. RAMEKI         0x32C7       N-*.% /^\$*         0x352D       '=-@;?,\$+=^&         0x352D       '=-@;?,\$+=^&         0x352D       '=-@;?,\$+=^&         0x352D       '=-!LANDMAN.         0x5B7A       \$: ?.:( ;          0x766C       &+\$)!.#?@ -/         0x550A       ?&CANIKIN/!          0x29AD       =. _&-/!&;**         0x1C86       *%.&%@-\$:==,         0x7778C       GUMBOIL+?&+.         0x0C7B       & ;'[!*''@,]         0x88BD       /&.!,*;-"**LI         0x26E4       MBING':^@?[&	>GAMBLED >Entry denied >1/7 correct. >REDSKIN >Entry denied	

• Printing the history

- Only print as many history lines as there are rows of hex/code
- If there is not enough history, print nothing there
- Latest history at the bottom
- Last line should not have a newline

# UI, Part 4: Formatting (cont.)

ROBCO INDUSTRIES (TM) TERMALINK PROTOCOL Enter Password Now			
2 ATTEMPT(S) LEFT:			
0x758A /^  #*\$,.RED 0x2593 SKIN/*\$:/"+- 0x7C26 @(/:/%@"):%: 0x265D ^&&#^*_LAZUL 0x461E IS^*&"#%:& 0x1F50 .";@!"\$\$^!: 0x23C5 %,;-/MANIKIN 0x0D1A .@;"^+"+%[-# 0x8421 &&%!,]"# /./\$ 0x5DD0 ,*=LANOLIN;/ 0x565E \$- @ !#{,'?/ 0x731  ,}/,&"/ '." 0x7AFC ^BUMPKIN '', 0x6131 :?.!,?#=./&" 0x2FD4 .':,&+\$_%G 0x62B7 AMBLES?" / < 0x08F5 ;?:-= >\$:	0x1204       /@@/:&-#GAMB         0x795B       LED;&*!./!@%         0x775B       HED;&*!./!@%         0x774F8       #-#?:*,\$!=@^         0x74F8       #.4?:*,\$!=@^         0x0438       #.&;.         RAMEKI         0x0438       #.&;.         RAMEKI         0x32C7       N-*.%         /^\$*         0x352D       '=-@;?,\$+=^&         0x352D       '=-@;?.\$       \$+=^&         0x75D8       -^	>GAMBLED >Entry denied >1/7 correct. >REDSKIN >Entry denied >3/7 correct. >MANIKIN	

• Printing the history

- Only print as many history lines as there are rows of hex/code
- If there is not enough history, print nothing there
- Latest history at the bottom
- Last line should not have a newline





# More things to do!

- Exercise 11
  - Random hex codes
  - More fun choice of words (more shared characters)
  - Alternative game rules

0x758A 0x2593 **0x7C26** 0x265D **0x461E** 0x1F50 0x23C5 **0x0D1A 0x8421 0x5DD0** 0x565E 0x0731 0x7AFC **0x6131 0x2FD4** 0x62B7 0x08F5

# More things to do!

- Exercise 11
  - Random hex codes
  - More fun choice of words (more shared characters)
  - Alternative game rules
- And furthermore...
  - Removal of duds / replenishing allowance

,GLEETED@"":	
; # ^ / ! [ % . + / & ^	
] -   # ; ? & # = / ? C	
UDDLED, = " - @ '	
,"/[?\$_"-/]	
\$ ^ - " = ! ! + L 0 B	
<b>ATED;;:</b> ?=@\$"	
:{^/@\$&%}" "	
?=.^@\$!	>
%&=*.#%./=	>Dud removed.
@^#" ??@&%?&	>
;*+-\$FLICKED	>Dud removed.
- ^   / , "@&; { , #	>
##%\$} \$@%/.!	>Allowance
.';&/	>replenished.
,-# *^/<:,,:	>{
#?>\$;*@#%,,*	

# More things to do!

- Exercise 11
  - Random hex codes
  - More fun choice of words (more shared characters)
  - Alternative game rules
- And furthermore...
  - Removal of duds / replenishing allowance
  - Moving the cursor instead of redrawing the entire screen
    - Using terminal commands or *ncurses*
  - Different UI (for example using Kivy)

# Some advice for the exam and the future

- Learning by doing
  - Write your own programs from scratch!
    - No copying from friends
    - No «reading and understanding» without any writing
  - Keep practicing, solve small problems
    - Write a text-based adventure game
    - Write a simple, interactive calculator (+-/\* etc.)
    - Solve the exercises by yourself! (And don't memorize them)
- It's hard for everyone in the beginning, just keep practicing!

# Informatik I Live Coding Thanks for your attention and good luck!



# Quality Management

Please provide us with your feedback regarding the Informatik 1 lecture!

https://qmsl.uzh.ch/de/XELN4 (DE) https://qmsl.uzh.ch/en/XELN4 (EN)

The links are also provided in the OLAT forum in the post "Course Evaluation".

