



User Interface Guidelines for the TI-83 Plus

Release 1.0

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INTRODUCTION

The User Interface (UI) guidelines contained in this document are for the TI-83 Plus calculator. Using these guidelines will make the development process of new calculator applications easier by creating a frame of reference from which to start. And more importantly, these guidelines will make it easier to optimize the interaction between the user and the calculator.

These guidelines are not hard and fast rules. They are only recommendations. Each application has its own unique needs, and in many cases, modifications to the guidelines may be needed to create a useful application.

GENERAL THOUGHTS

When designing the user interface for new calculator applications, keep in mind that the user will already be familiar with the basic UI elements used in the calculator's built-in functions. Starting a design with these familiar elements makes it easier and quicker for end-users to start using the calculator application. This will also reduce the complexity of the instruction manuals and reduce or eliminate after-purchase support.

However, it is important to note that improvements can and should be made to the basic UI elements. The basic UI elements are just that: basic. They do not cover all possible functions and operations that would be needed in a new application. Changes and modifications to these basic UI elements or introduction of new UI elements should be considered when it provides a perceived benefit to the end user.

Analogies to existing everyday-life activities are good starting points for creating an application's user interface. Fortunately, most TI-83 Plus calculator users are computer literate; windows, function keys, message and dialog boxes are familiar concepts. Thus, the computer is a good analogy when creating a new user interface. While the calculator does not have a pointing device (mouse), it does have a highly effective cursor control system (arrow keys). The screen resolution (64 by 96 pixels) is a fraction of its computer counterpart. Therefore, one needs to be careful when using graphical elements such as icons.

An iterative design process with a feedback loop is one of the most efficient ways to optimize a calculator application's user interface. The steps are straightforward:

- Evaluate the function or operation that needs to be performed.
It is often useful to make a list of every function that the application needs to provide, and then write out the functions in an active expression. E.g., *the user selects the type of curve from a list of four choices: up, down, left, right*. Grouping functions into like or similar activities can highlight common activities and often give structure to disparate tasks.
- Simulate the user interface.
This can be as simple as creating storyboards on paper or actually coding the desired function to run on the calculator. Obviously a *real* simulation on a calculator eliminates some of the testing variability, but this is usually a costly and time consuming effort.
- Test with end-users.
There are no substitutes for this step in the process. There are many ways to perform these tests. Some can be as simple as a one-on-one interview, or as complex as a hundred-user beta program.
- Analyze the results and make necessary changes.
This step in the process can be the most challenging. Tradeoffs and prioritization of the functions need to be made, and often without enough data from step 3.
- Go back to step 2.
There are no rules for how many times a user interface design must go through this feedback loop. Time and resource constraints usually dictates when and if more changes are needed.

TERMINOLOGY AND CONVENTIONS

In order to effectively communicate the user interface design guidelines, the following conventions and terminology are used.

Application – a “signed” executable software program of low-level instruction code that runs in the flash memory space on the TI-83 Plus calculator.

ASM – a low-level executable software program that runs in the static RAM memory space on the TI-83 Plus calculator. This is sometimes referred to as an “assembly program.”

Program – a set of commands that the TI-83 Plus calculator executes sequentially, as if you had entered them right from the keyboard. This has also been referred to as “Calculator BASIC.”

User Data Archive – calculator data or an ASM that is stored in the flash memory space on the TI-83 Plus calculator. This is somewhat analogous to a hard disk on a PC.

Hard key – a predefined key on the calculator. In this document, they are shown as they appear on the calculator e.g. **MODE** and **ENTER**. The second functions are shown in brackets, in upper case letters e.g. **2nd** [QUIT]. The cursor keys will be shown as follows: up  , down  , left  , right  .

Soft key – one of the keys on the top row when used in conjunction with a graphic on the bottom of the screen. Soft keys will use the same notation as the hard keys, except that they will use lower case letters, e.g., [esc] and [quit]. Positions of the soft keys will be denoted by the abbreviations: F1, F2, F3, F4, F5.

Home screen – the primary screen of the calculator used to enter instructions for execution, and expressions to evaluate.

Pixel location – the pixel numbering system is similar to that used on the **Pxl-On** (*row, column*) function where the row numbers are from 0 through 63 and the column numbers are from 0 through 95. The upper left pixel is (0,0) and the lower right pixel is (63, 95).

Standard font – this is the 5 x 7 pixel font used by the built-in calculator functions. The complete list of characters is shown in Appendix A

Small font – this is the 3 x 5 pixel font. The complete list of characters is shown in Appendix B.

Continuous scrolling – when the user presses a cursor key, the resulting action will advance to the next item, choice, element, etc. When the last item is reached, it will advance to the first item. There is no end; it acts like a continuous loop.

End scrolling – when the user presses a cursor key, the resulting action will advance to the next item, choice, element, etc. When the last item is reached, it will stop at that item.

Auto repeat – pressing and holding down a key will automatically repeat the keypress at a constant rate.

Work space – the area above the soft key legends

USER INTERFACE ELEMENTS

The basic user interface elements used in the base-code of the calculator are defined for reference on the following pages. There are many nuances that may not be described with each of these elements. Please refer to and exercise an actual TI-83 Plus calculator for specific operational details.

In many instances, the functions within an application need be distinguished from standard built-in functions through the use of the unique Application User Interface Elements. These elements are also listed on the subsequent pages.

BASIC USER INTERFACE ELEMENT: *NUMBERED MENU*

Usage: This element provides the user a method to select a single item from a list of items. There may be several *topics* on this screen, with each topic having its own list of items. This user interface element makes it easy to select an item from a long list; a single hard key press can make the selection and then proceed to the next operation.

Each item in the list is associated with a unique number or letter. The numbers/letters go from 1, 2, 3 ... 8, 9, 0, A, B, C, D, E, F...Z.

The list of items may span more than one screen; i.e., there can be more than seven items in this list.

Example: The MATH function, accessed by pressing **MATH** employs this user interface element. In this case there are four topics: MATH, NUM, CPX and PRB.

```

MATH NUM CPX PRB
1: Frac
2: Dec
3: 3
4: 3J(
5: *J
6: fMin(
7↓fMax(
  
```

Control: This element starts with the left most topic highlighted and the first item in the list. Only the number or letter with a colon are highlighted; the item itself is not highlighted.

Pressing **▶** will change to the next topic to the right. This key is auto repeat and continuous scrolling. Changing the topic will immediately change the items under that topic.

Example: The NUM function is accessed by pressing **▶** while in MATH.

```

MATH NUM CPX PRB
1: abs(
2: round(
3: iPart(
4: fPart(
5: int(
6: min(
7↓max(
  
```

Pressing **◀** will change to the next topic to the left. This key is auto repeat and continuous scrolling.

Pressing **▼** will highlight the next item down the list. This key is auto repeat and continuous scrolling.

Pressing **▲** will highlight the next item up the list. This key is auto repeat and continuous scrolling.

Pressing **ENTER** will immediately execute the selected item.

Note: Except those functions that need more parameters and get pasted to the home screen.

Pressing **2nd** [QUIT] will exit out of the menu and return the user to the home screen.

Pressing a number or letter key will immediately execute the selected item in the list.

If more than 7 items are in a list, an up or down arrow will be shown in place of the colon to indicate that more items exist above or below the current screen.

BASIC USER INTERFACE ELEMENT: *PLAIN MENU*

Usage: This element provides the user a method to select a single item from two or more items. Usually there are only two choices. There may also be several sets of choices per menu. This element is very useful for settings or preferences.

The items do not necessarily have to be text; they can be icons. Also, the choices do not have to be on a single line.

The set of choices may or may not have a description.

Example: The FORMAT function, accessed by pressing $\boxed{2nd}$ [FORMAT] employs this user interface element. In this example, there are 6 sets of choices, with 2 choices per set.

```

PolarGC
CoordOn CoordOff
GridOff GridOn
AxesOn AxesOff
LabelOff LabelOn
ExprOn ExprOff
  
```

The TABLE SET function, accessed by pressing $\boxed{2nd}$ [TBLSET] is another example of this user interface element. This example is unique in that it include sets of choices with descriptions and a text entry field.

```

TABLE SETUP
TblStart=-2
ΔTbl=1
Indent: Auto Ask
Depend: Auto Ask
  
```

Control: In this element, selected choices are highlighted with the choice of the selected set blinking. The choices are left justified separated by a space (6 pixels). The description of the set of choices is separated from the choices by a colon and a space.

Pressing $\boxed{\blacktriangleright}$ will move cause the next choice to the right to blink. This exhibits end scrolling behavior.

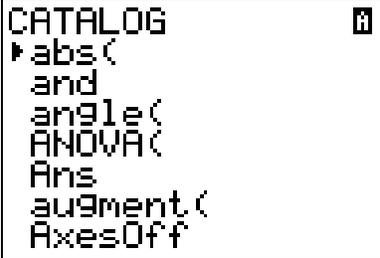
Pressing \boxed{ENTER} will highlight the choice that is blinking. The selection will immediately be stored, but the menu will remain in place. This behavior is different from the Numbered Menu in that the user is not returned to the home screen.

Pressing $\boxed{\blacktriangledown}$ will move to the next set of choices. This also exhibits end scrolling behavior.

BASIC USER INTERFACE ELEMENT: *SELECTION LIST*

Usage: This element provides the user a method to select one or more items from a list of items. This is usually used when a large quantity of items (greater than 16) are available for selection.

Example: The CATALOG function, accessed by pressing $\boxed{2nd}$ [CATALOG] is an example of this element used to select a single item. In the CATALOG function, pressing \boxed{ALPHA} [letter] will move to the first element with that letter.



```

CATALOG
▸abs(
and
angle(
ANOVA(
Ans
augment(
AxesOff
  
```

The LINK function is an example of this element used to select multiple items. Note that there are two topic in this menu .



```

LINK
TRANSMIT
PERIOD PRGM
ZASMLoad PRGM
▸ZPERIOD PRGM
L1 LIST
L2 LIST
L3 LIST
L4 LIST
  
```

Control: This element exhibits continuous scrolling behavior. Pressing the $\boxed{\downarrow}$ or $\boxed{\uparrow}$ key will move to the next or previous item in the list. Pressing the $\boxed{ALPHA} \boxed{\downarrow}$ or $\boxed{ALPHA} \boxed{\uparrow}$ key has no effect. The selected element is indicated by a arrow icon in the first column.

Pressing \boxed{ENTER} has different effects for single selection or multiple selection elements. If this is a single selection, then pressing \boxed{ENTER} will take the selected element and return to the home screen. If this is a multiple selection, then pressing \boxed{ENTER} will toggle a square icon in the first column.

BASIC USER INTERFACE ELEMENT: *EDITORS*

Usage: This element provides the user with a method to enter text (numbers) within a menu.

Example: The WINDOW function shows this element in use. The description of the field is shown left justified. If the data in the field is text, then the description is separated by a colon, and for numeric data, the separator is an equals sign.

```
WINDOW
Xmin=-1.534291...
Xmax=-2.356194...
Xscl=1.5707963...
Ymin=-1.419354...
Ymax=-.64516129
Yscl=1
Xres=1
```

Control: Upon entering an editor, the cursor is located on the first character of the first field in overwrite mode. If the text is longer than the line, then an ellipsis character (...) will be shown at the end of the line.

Pressing the  or  keys moves to the next or previous field. Navigation between fields is auto repeating and end scrolling.

Pressing the  or  keys move to the next or previous character in the text. This is auto repeating.

Pressing  will erase the entire text in the field.

BASIC USER INTERFACE ELEMENT: *CURSOR*

Usage: The cursor gives the user a visual indication of where they are during editing. It also gives a perspective on how a keypress will react.

There are 5 different cursors: Entry, Insert, Second, Alpha and Full. The graphics are shown in the *TI-83 Plus Guidebook* on page 1-5.

Example: N/A

Control: The following description for cursor control is for a full screen editor, such as Y=.

The cursors are auto repeat in all directions.

The cursors are end scrolling up and down.

Scrolling to the right goes sequentially through each character; end of one line to the beginning of the next line.

Scrolling up and down goes to the character in the next or previous line.

2nd ▲ and 2nd ▼ do not have any effect.

With the cursor at the bottom of the screen, pressing ▼ scrolls the screen by one line. The mirror condition occurs when moving up.

With the cursor at the last character of the last line of the screen, pressing ▶ scrolls the screen by one line. The mirror condition occurs when moving up.

Pressing CLEAR will erase the entire text from the current field.

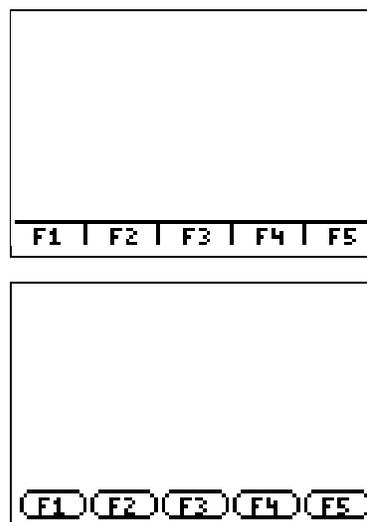
APPLICATION USER INTERFACE ELEMENTS: *SOFT KEY*

Usage: Soft keys are used to expand and optimize the input capability of the calculator. They are always used with dialog & message boxes and relate directly to the work space. Their meanings vary with the context of each screen.

The legends of the softkeys relate to top row of hard keys: F1, F2 ...F5. The legends use the small font.

It is important to be consistent between screens. The locations of keys with the same meaning should remain constant when navigating between screens, e.g., a soft key for saving an entry should be in the same location throughout an application.

Examples: These are generalized illustrations of the soft keys. The first screen shows a grid approach and the second shows a pictorial representation of the keys on the display.



Control: The legends for a soft key are usually four characters or less. However, it is acceptable to have a legend with up to eight characters and be associated with two hard keys. The legends should be centered between the key grid or inside the pictorial representation for optimal readability.

Pressing a soft key should immediately execute the action associated with it.

The soft key grid is defined with a horizontal bar from (2,57) through (94,57) and vertical lines at columns 19, 38, 57 and 76.

F1 is associated with `Y=`

F2 is associated with `WINDOW`

F3 is associated with `ZOOM`

F4 is associated with `TRACE`

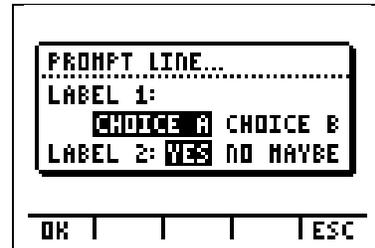
F5 is associated with `GRAPH`

APPLICATION USER INTERFACE ELEMENTS: *DIALOG BOX*

Usage: This element provides a way for the user to exchange information with the calculator. It is always used with softkeys, and usually only with the [ok] and [esc] keys.

Users can make a selection from short list of items, enter text (numbers), or make a Boolean decision (yes/no).

Example: This is a generalized illustration of a dialog box used to select sets of choices.



Control: The dialog box element is always centered in the work space. The dialog box should be “windowed” over the previous screen to provide context with a one blank pixel around the outside of the border.

The size of the dialog box is defined by the text or graphics contained within it. Horizontally, there should be three blank pixels between the dialog text and the border. Vertically, there should be two blank pixels between the dialog text and the border.

The prompt line is separated from the information in the dialog box by a dotted line. The text of the prompt is left justified and uses the small font. The prompt is usually followed by an ellipsis character (...).

The labels of a set of choices are left justified followed by a colon. If the label and its choices need to be on separate lines, then the choices need to be right justified. This could occur with long labels or with long choices.

The selection of choices is similar to the plain menu user interface element; pressing will set the blinking choice.

[ok] is associated with F1 and will apply the information selected or entered in the dialog box. [esc] is associated with F5 and will cancel any selections made and return the user back to the previous screen.

APPLICATION USER INTERFACE ELEMENTS: *MESSAGE BOX*

Usage: The message box is used to give information to the user. This is a one-way transaction, so the softkeys are not used. Also, the background (previous screen) may be omitted to give additional emphasis on the message.

Example: This shows a simple message box.



Control: The text of the message uses the small font and should be centered in the box when multiple lines are used.

The text: "Press any key..." is a graphic. A one line space should be placed between this graphic and the text of the message. This graphic should always be centered in the box.

Pressing any hard key on the calculator will acknowledge this message.

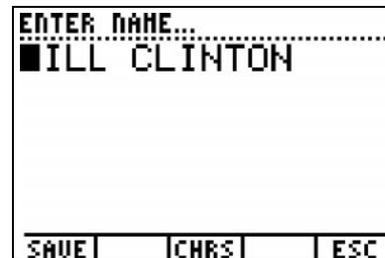
APPLICATION USER INTERFACE ELEMENTS: *DATA ENTRY FORM*

Usage: This element provides the user a method to enter data (text/number). It uses the full calculator screen and same editor as is found on the built-in calculator functions. The form itself uses the work space.

A prompt line is located at the top of the work space and gives the user additional information about the data s/he is entering. The prompt can be either a command or just the label of the field name. It uses the small font and is usually followed by an ellipses (...).

The editor is the full screen width and should result in no formatting changes when viewing the data outside the form.

Example: In this example, the field is a name.



Control: Cursor control is identical to that of the editor built into the calculator.

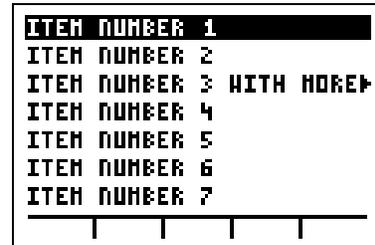
When entering a field that expects alpha text, the [chrs] softkey can be used to extend the calculator's character set.

The [save] key is associated with F1 and will save the data. [esc] will cancel any changes and return to the previous state.

APPLICATION USER INTERFACE ELEMENTS: *LIST VIEW*

Usage: This element is used to display a long list of items. Each row represents a single item. This is somewhat similar to the selection list element built into the calculator, except that this is used with lists of user-defined data, and not predefined. The text of each item in the list uses the small font, and the first character starts on pixel column number 1. This allows for full reverse highlighting.

Example: This example shows the first item selected with the third item having more information than will fit on the screen.



Control: This element exhibits end scrolling behavior. Often it is useful to provide the user with the ability to jump to a place in the list by pressing a number or alpha key.

Pressing **ENTER** when an item is highlighted will move control to that item.

The **ALPHA**  and **ALPHA**  keys cause the next or previous 7 items to be shown in the work space.

If more text exists for an entry, a right arrow icon will be shown at the end of the line. Pressing  will scroll the selected entry to the left one character at a time until the last character is displayed in the last column.

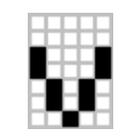
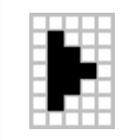
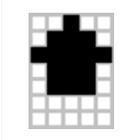
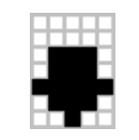
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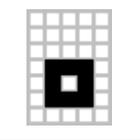
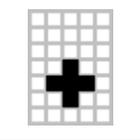
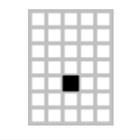
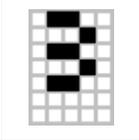
The following books are good sources for software user interface theory and implementation:

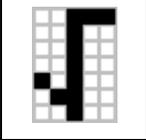
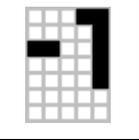
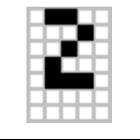
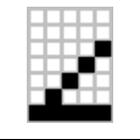
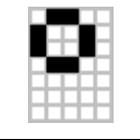
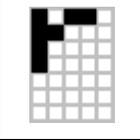
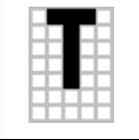
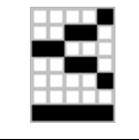
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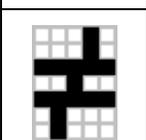
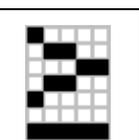
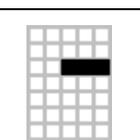
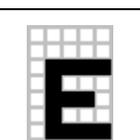
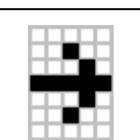
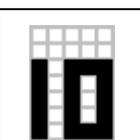
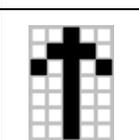
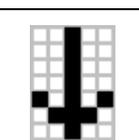
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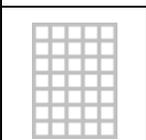
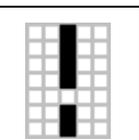
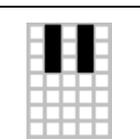
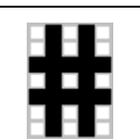
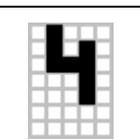
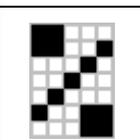
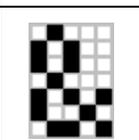
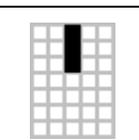
APPENDIX A: STANDARD FONT

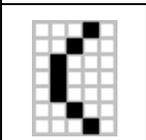
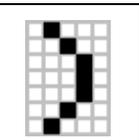
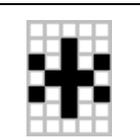
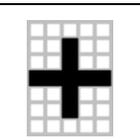
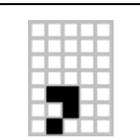
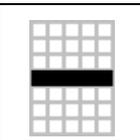
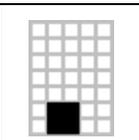
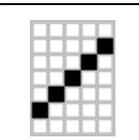
00h	01h	02h	03h	04h	05h	06h	07h
							

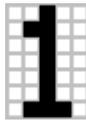
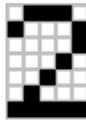
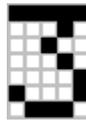
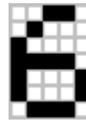
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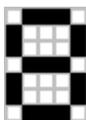
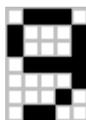
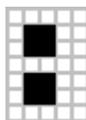
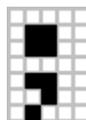
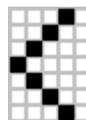
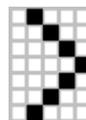
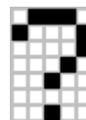
10h	11h	12h	13h	14h	15h	16h	17h
							

18h	19h	1Ah	1Bh	1Ch	1Dh	1Eh	1Fh
							

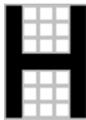
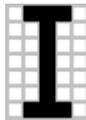
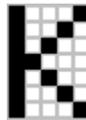
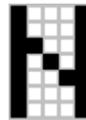
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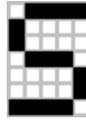
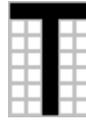
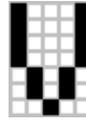
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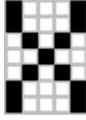
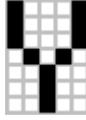
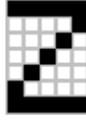
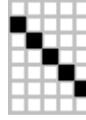
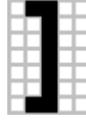
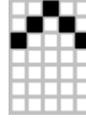
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38H	39H	3Ah	3Bh	3Ch	3Dh	3Eh	3Fh
							

40h	41h	42h	43h	44h	45h	46h	47h
							

48h	49h	4Ah	4Bh	4Ch	4Dh	4Eh	4Fh
							

50h	51h	52h	53h	54h	55h	56h	57h
							

58h	59h	5Ah	5Bh	5Ch	5Dh	5Eh	5Fh
							

60h	61h	62h	63h	64h	65h	66h	67h

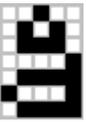
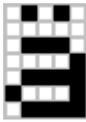
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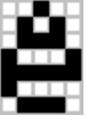
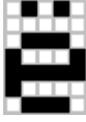
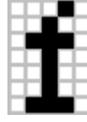
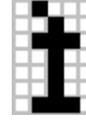
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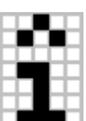
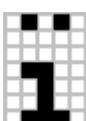
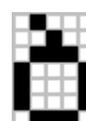
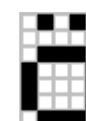
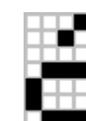
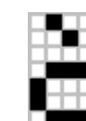
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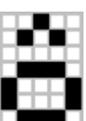
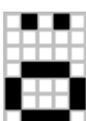
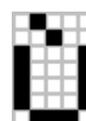
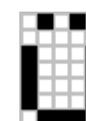
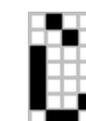
80h	81h	82h	83h	84h	85h	86h	87h

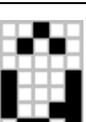
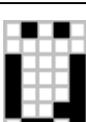
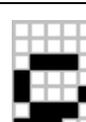
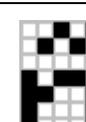
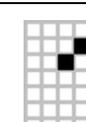
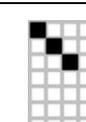
88h	89h	8Ah	8Bh	8Ch	8Dh	8Eh	8Fh

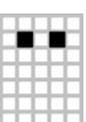
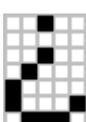
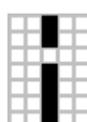
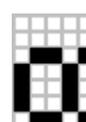
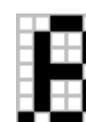
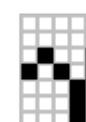
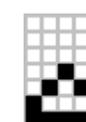
90h	91h	92h	93h	94h	95h	96h	97h
							

98h	99h	9Ah	9Bh	9Ch	9Dh	9Eh	9Fh
							

A0h	A1h	A2h	A3h	A4h	A5h	A6h	A7h
							

A8h	A9h	AAh	ABh	ACH	ADh	Aeh	Afh
							

B0h	B1h	B2h	B3h	B4h	B5h	B6h	B7h
							

B8h	B9h	BAh	BBh	BCh	BDh	BEh	BFh
							

C0h	C1h	C2h	C3h	C4h	C5h	C6h	C7h

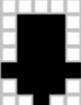
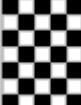
C8h	C9h	CAh	CBh	CCh	CDh	CEh	CFh

D0h	D1h	D2h	D3h	D4h	D5h	D6h	D7h

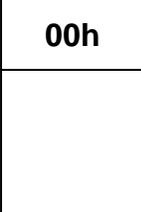
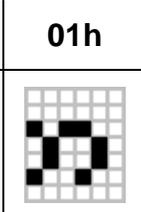
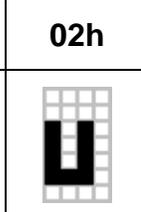
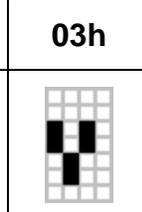
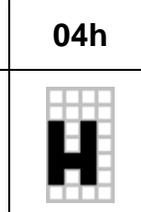
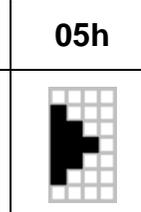
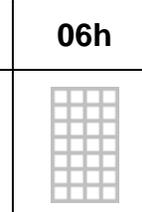
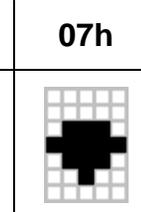
D8h	D9h	DAh	DBh	DCh	DDh	DEh	DFh

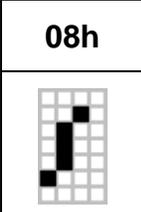
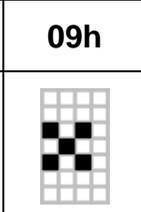
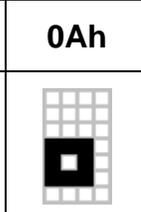
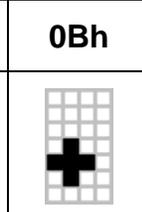
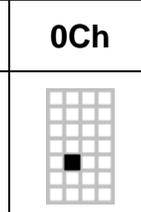
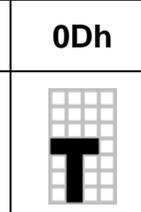
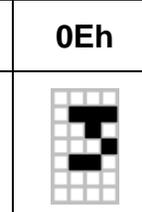
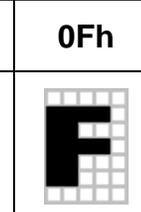
E0h	E1h	E2h	E3h	E4h	E5h	E6h	E7h

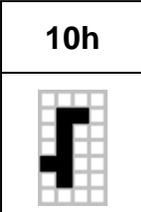
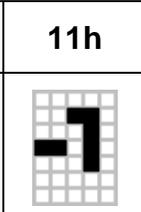
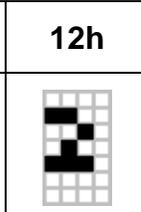
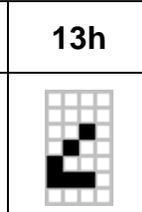
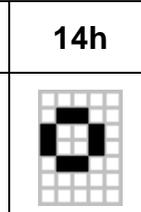
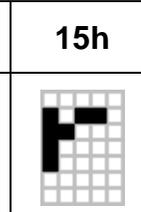
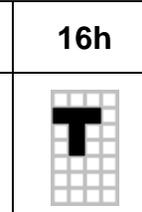
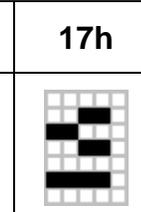
E8h	E9h	EAh	EBh	ECh	EDh	EEh	EFh

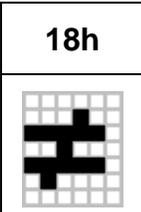
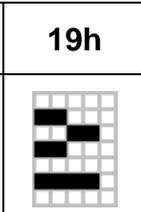
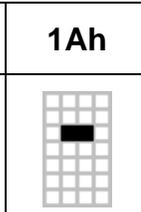
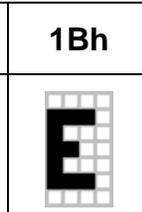
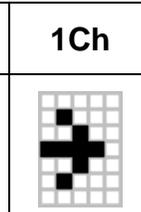
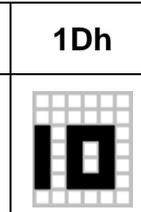
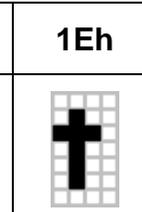
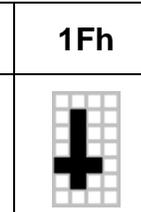
F0h	F1h						
							

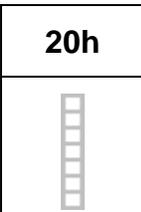
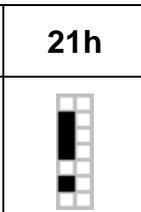
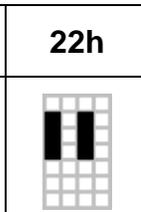
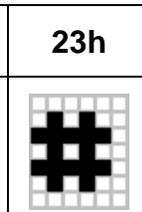
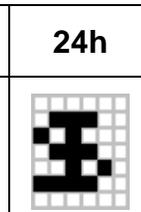
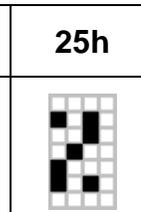
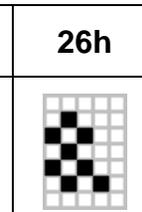
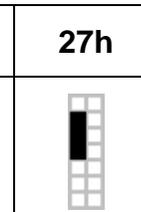
APPENDIX B: SMALL FONT

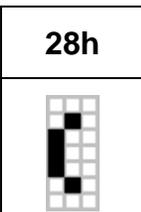
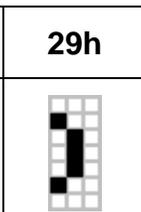
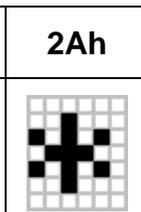
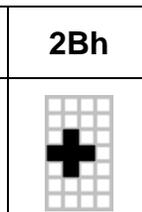
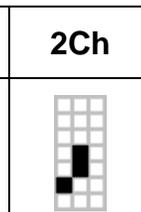
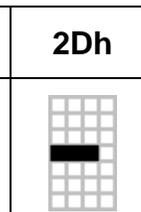
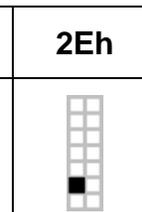
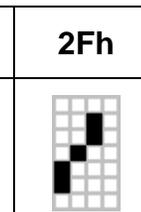
00h	01h	02h	03h	04h	05h	06h	07h
							

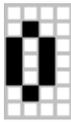
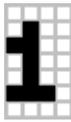
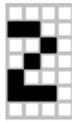
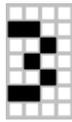
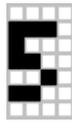
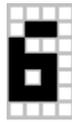
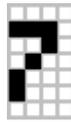
08h	09h	0Ah	0Bh	0Ch	0Dh	0Eh	0Fh
							

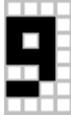
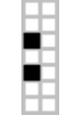
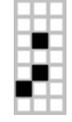
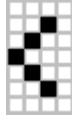
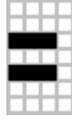
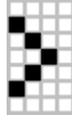
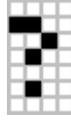
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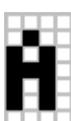
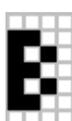
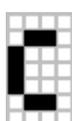
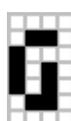
18h	19h	1Ah	1Bh	1Ch	1Dh	1Eh	1Fh
							

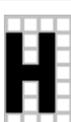
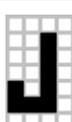
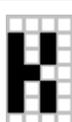
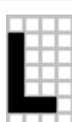
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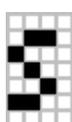
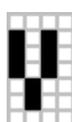
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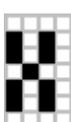
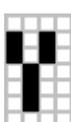
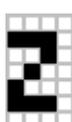
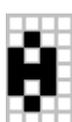
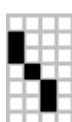
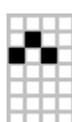
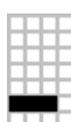
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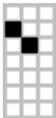
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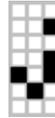
40h	41h	42h	43h	44h	45h	46h	47h
							

48h	49h	4Ah	4Bh	4Ch	4Dh	4Eh	4Fh
							

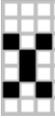
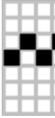
50h	51h	52h	53h	54h	55h	56h	57h
							

58h	59h	5Ah	5Bh	5Ch	5Dh	5Eh	5Fh
							

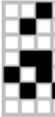
60h	61h	62h	63h	64h	65h	66h	67h
							

68h	69h	6Ah	6Bh	6Ch	6Dh	6Eh	6Fh
							

70h	71h	72h	73h	74h	75h	76h	77h
							

78h	79h	7Ah	7Bh	7Ch	7Dh	7Eh	7Fh
							

80h	81h	82h	83h	84h	85h	86h	87h
							

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90h	91h	92h	93h	94h	95h	96h	97h

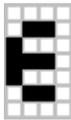
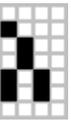
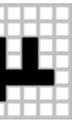
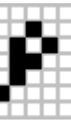
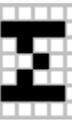
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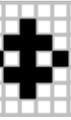
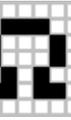
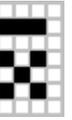
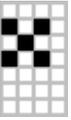
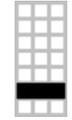
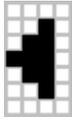
A0h	A1h	A2h	A3h	A4h	A5h	A6h	A7h

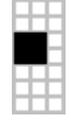
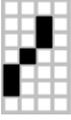
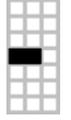
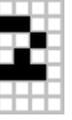
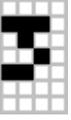
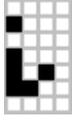
A8h	A9h	AAh	ABh	ACH	ADh	Aeh	Afh

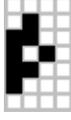
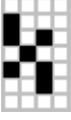
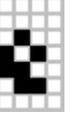
B0h	B1h	B2h	B3h	B4h	B5h	B6h	B7h

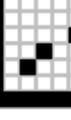
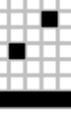
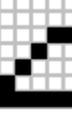
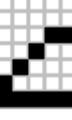
B8h	B9h	BAh	BBh	BCh	BDh	BEh	BFh

C0h	C1h	C2h	C3h	C4h	C5h	C6h	C7h
							

C8h	C9h	CAh	CBh	CCh	CDh	CEh	CFh
							

D0h	D1h	D2h	D3h	D4h	D5h	D6h	D7h
							

D8h	D9h	DAh	DBh	DCh	DDh	DEh	DFh
							

E0h	E1h	E2h	E3h	E4h	E5h	E6h	E7h
							

E8h	E9h	EAh	EBh	ECh			
		