The Gridcase Plus laptop shown below is a version of the Gridcase 3 model. It was custom built for Bloomberg, a multi-billion dollar financial corporation. It came with Bloomberg's proprietary software as well as an 8087 math processor and a special keyboard driver for the weird layout.

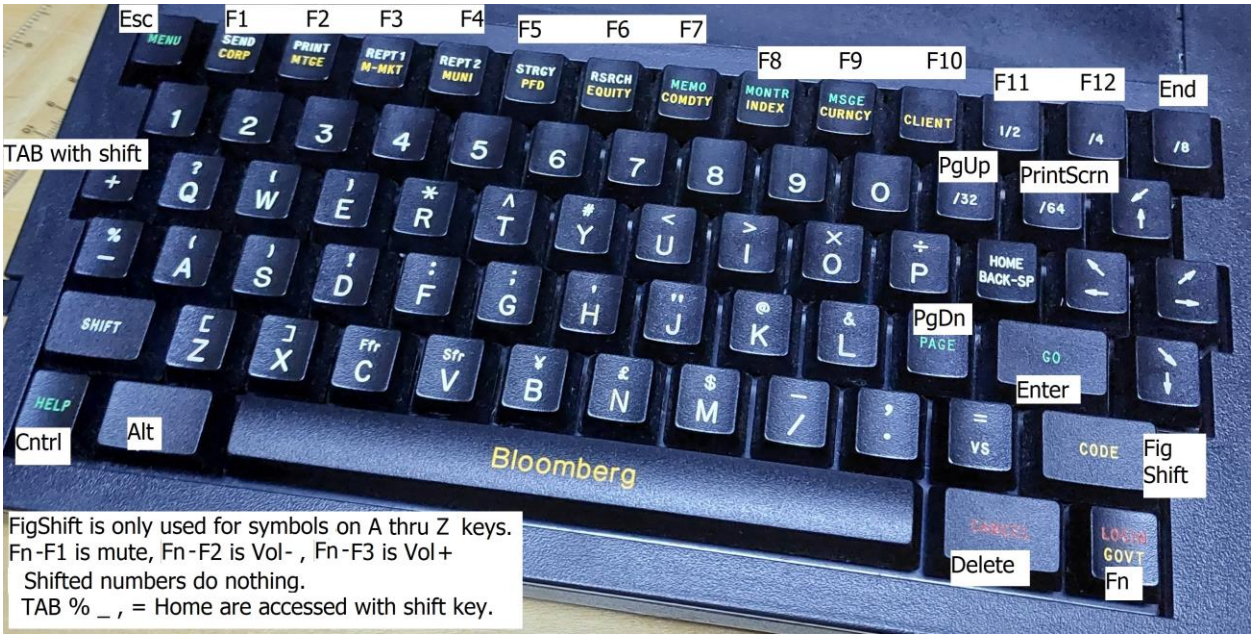
It is completely bricked so there’s no reservations about gutting it to make a project laptop.

The laptop is shown below with the cover removed. You can see the 12 and 10 pin cables connecting the keyboard to the motherboard.

The keyboard cables were disconnected from the motherboard and 22 wires were soldered from the keyboard to the Teensy 4.1 I/O pins per the following table. Note that Teensy I/O 13 was skipped because it is connected to the onboard LED. Teensy I/O 15 was not working correctly so the wire was moved to I/O 24. A Teensy 4.1 was used (because it was available) but any other Teensy could be used with no code changes.

Keyboard Connector and pin number	Teensy I/O number	Reported pin number
Connector 1 pin 1	0	1
Connector 1 pin 2	1	2
Connector 1 pin 3	2	3
Connector 1 pin 4	3	4
Connector 1 pin 5	4	5
Connector 1 pin 6	5	6
Connector 1 pin 7	6	7
Connector 1 pin 8	7	8
Connector 1 pin 9	8	9
Connector 1 pin 10	9	10
Connector 2 pin 1	10	11
Connector 2 pin 2	11	12
Connector 2 pin 3	12	13
Connector 2 pin 4	14	14
Connector 2 pin 5	24	15
Connector 2 pin 6	16	16
Connector 2 pin 7	17	17
Connector 2 pin 8	18	18
Connector 2 pin 9	19	19
Connector 2 pin 10	20	20
Connector 2 pin 11	21	21
Connector 2 pin 12	22	22

The keyboard keys were redefined as shown in the following picture.



Some of this keyboards original features were maintained in the Teensy code. It does not have a right shift key. The “CODE” key acts as a Figure Shift. Holding Figure Shift down allows access to the symbol found on the alphabet keys. Shifted numbers do not send anything but shifted alphabet keys send the upper case letter. Many of the financial spreadsheet keys were redefined in order to use this keyboard on a PC.

New key matrix code called Matrix_Decoder_Lucas.ino was used to get the following pin connections.

help	3	12
blank	2	11
shift	2	21
cancel	2	20
govt	1	12
code	2	22
-	1	15
+	1	14
a	3	16
b	4	18
c	4	19
d	6	18
e	7	19
f	18	5
g	6	17
h	5	17
i	7	16
j	6	16
k	5	16
l	6	15
m	17	4
n	3	17
o	8	16
p	15	7
q	4	13
r	7	18
s	5	19
t	8	18
u	8	17
v	3	18
w	6	19
x	3	19
y	7	17
z	4	16
1	3	13
2	5	13
3	7	13
4	19	8
5	9	18
6	9	17
7	9	16
8	9	15
9	9	14
0	8	15

/32	8	14
/64	7	14
up arrow	6	12
back-sp	6	14
left arrow	5	14
right arrow	5	12
down arrow	12	4
go	14	4
page	5	15
vs	3	14
period	4	15
/	3	15
menu	1	13
corp	13	6
mtge	8	13
m-mkt	9	19
muni	10	19
pfd	10	18
equity	10	17
comdty	10	16
index	10	15
curncy	10	14
client	9	12
1/2	8	12
/4	10	12
/8	7	12
space	10	13

The connections were translated into the row-column matrix shown below.

	1 I/O 0	2 I/O 1	3 I/O 2	4 I/O 3	5 I/O 4	6 I/O 5	7 I/O 6	8 I/O 7	9 I/O 8	10 I/O 9
11 I/O 10		Blank= Alt								
12 I/O 11	Govt= Fn		Help= Cntrl	Down	Right	Up	/8= End	½= F11	Client= F10	/4= F12
13 I/O 12	Menu =Esc		1	Q	2	Corp =F1	3	Mtge =F2		Space
14 I/O 14	Plus		VS	Go= Enter	Left	Back Sp	/64= PrntScrn	/32= PgUp	9	Curncy= F9
15 I/O 15	Minus		Slash	Period	Page =PgDn	L	P	0	8	Index= F8
16 I/O 16			A	Z	K	J	i	O	7	Comdty =F7
17 I/O 17			N	M	H	G	Y	U	6	Equity= F6
18 I/O 18			V	B	F	D	R	T	5	Pfd= F5
19 I/O 19			X	C	S	W	E	4	M-Mkt =F3	Muni= F4
20 I/O 20		Cancel= Delete								
21 I/O 21		Shift								
22 I/O 22		Code= Fig shift								

Gridcase3_rev5.ino is the finished USB keyboard code that implements all the keys shown in the table.