

## INSTRUCTIONS FOR THE MULTIPLE KEY INTERFACE

These instructions were written so that people unfamiliar with computing technology could use the prototype version of the multiple-key interface software. As a prototype, the version was not particularly easy to operate, and incorporated several control and monitoring functions which were helpful in gathering information but not well adapted for routine use of the programme. In order that people who wished to experiment with the system might have some guidance on what it was about and how to set it up, these instructions were provided. They cover all the system components available at the time of writing, though with emphasis on the use of the typing interface rather than on the control functions.

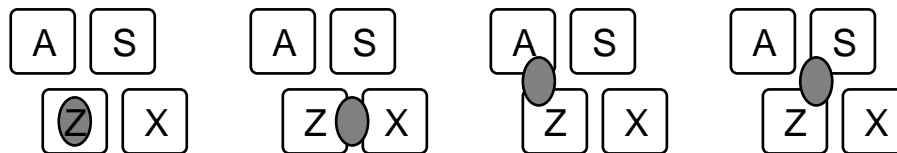
The material described includes an explanation of the aim of the system, and the reason for the experiments, how to set up the system, and how to use it in the intended way. Control functions are also described, though not always to the same level of detail. Some questions are included, to encourage the reader to assess the performance of the system.

### THE MULTIPLE-KEY KEYBOARD

#### WHAT IT'S ABOUT.

What you can type on a keyboard depends on how many keys you have, and how you can use them. If you have more keys, then every time you press a key you have more choice. For example, if you had twice as many keys you could have one key for each ordinary character and another for the shifted character, so you wouldn't need a shift key. If you had even more keys, you could use some of them for common words ( like "and" and "the" ) or for phrases you often use ( like your name or your address ).

I've tried to make an ordinary computer keyboard behave as though it had more keys than it really has. As well as pressing single keys in the ordinary way, you can press pairs of keys which are next to each other. Usually, that's a mistake, but I've made the computer recognise it as a real key-press. Think about the Z key. If the keyboard can recognise pairs of keys, then with one finger or something similar you can press Z alone, or Z and X, or Z and A, or Z and S, and all these "keys" can be made to mean different things.



That works with all the ordinary letter keys, and with a few other characters. How much else works depends on the keyboard, and how it's been handled. On my keyboard, the top row of ordinary keys has a row of smaller function keys above it, so there is often nothing quite like the Z and A or Z and S combinations. Because of that, I haven't made any combinations like that work, but the horizontal combinations, like F3 and F4, will work.

It is obviously sensible to leave the meanings of the single keys unchanged, but what do the new "keys" mean? They can be made to mean any combination of other keyboard characters, including words or phrases. Just to show how it works, I've made all the horizontal combinations mean the shifted characters – so the Z key alone means "z", but the Z and X combination means "Z". In the same way, the E and R combination means "E", the 5 and 6 combination means "%" ( on my keyboard ) and so on.

The other combinations are not given any meanings. You can give meanings to them if you wish; you will find instructions later in this leaflet. When you come to the end of what you are doing with the keyboard, you can save all the meanings you have given to the keys so that you can get them again next time you use it. Once you've saved the meanings, you can print them so that you don't forget what you've done.

## WHAT I'M TRYING TO DO NOW.

The computer programme which I have written is at the moment only for testing the idea of the new "keys", so it doesn't do anything useful. All you can do is type on the screen; you can't print or save what you've typed. If the new "keys" seem to be useful, I'll write a better programme which will be much more useful, but I don't want to spend a lot of time on it until I'm fairly sure that it will be worth while. This programme works with Windows 3.anything, but if you want to use it with MS-DOS it would be easy to change; ask.

I hope that people who try this programme will give me their opinions of it. There are some questions later which I would like people to answer, but I might not have thought of all the important points. So I would also like them to tell me anything else they think about the programme. If you would like to answer the questions, please do. And please tell me the bad things about the programme as well as the good ones; I want to know them all, so that I can make it better.

## SOME QUESTIONS.

About using two keys at once :

- Do you think it's useful to be able to use two keys at once ?
- Does it help you to type faster ?
- Is it easier to use than your usual way of typing ?
- What don't you like about it ?
- Can you think of any ways to make it better ?
  
- Anything else you'd like to say ?

About giving your own meanings to pairs of keys :

- Do you think that it's useful ?
- How do you choose the keys to use ?
- How easy is it to remember the meanings you've added, and which keys to use ?
  
- Anything else you'd like to say ?

About this leaflet :

- Did you find any mistakes in this leaflet ? ( If so, what are they ? )
- Could the leaflet be made better in any way ? ( If so, how ? )
  
- Anything else you'd like to say ?

Anything at all :

- Anything else you'd like to say ?

## HOW TO START THE PROGRAMME.

*This is a bit complicated at the moment. One of the things I have to do if I carry on is to tidy it all up and make it easier.*

Step 1 : Find a disc file called keybtst.exe.

That's the programme.

Step 2 : Start it in your usual way.

It invites you to adjust the window size –

Step 3 : Make the window as big as you can.

– and asks for the "keyfile name". The keyfile is the file which contains some meanings you've saved. ( There's another question about monitoring; ignore it for the moment. That's described later on. )

Step 4 : If you don't want to use a keyfile, just press "-" ( without the quotation marks ) and press **Enter**; if you do want a keyfile, type its name and press **Enter**. If what you type isn't the name of a file, or the file isn't of the right form, the programme stops. That's a bit crude, but it is just an experimental programme.

*Now the programme has started. You might come back to this position from time to time.*

It asks you to say what "mode" you want.

Step 5 : Ignore the "sticky keys" for the moment, and press 2 and **Enter** to use "multiple keys".

It asks you to give a number for the "delay constant". This is to adjust the programme's speed; the computer counts up to the number you give while waiting for you to press a second key. The number you want depends both on your computer and you. A big number slows down the computer, so you don't have to be as careful when you press two keys at once. It doesn't matter if you get this number wrong, because you can change it later. My computer is a 40 megahertz system, and I use 300 for the delay constant. If yours is faster you'll need a bigger number, and if it's slower you'll need a smaller number. In any case, 300 might not be a good setting for you, but, if in doubt, try 300.

Step 6 : Type the number, and press **Enter**.

*That's the end of the setting-up operation; the programme is ready to use. But if this is the first time, you might need to adjust the delay constant.*

Step 7 : Try pressing any ordinary key ( Z, perhaps ). If nothing happens, wait a bit. Try it a few times.

If the character takes a long time to appear on the screen, your delay constant is too big. Go on to step 9, and try a smaller one. If it's fast enough, go on to step 8.

Step 8 : Try pressing two keys at once ( Z and X, perhaps ). Try it a few times.

If you always get just the capital letter you expect, all is well, and you can stop following this set of instructions. If you sometimes get both a small letter and a capital letter, then your delay constant is too small; carry on to the next step.

Step 9 : Press **Esc**. That takes you back to step 5, and you can try another delay constant.

*If peculiar things happen when you're using the programme, it's worth trying a bigger delay constant; you can change it by going back to step 5 any time you like.*

## **HOW TO STOP THE PROGRAMME.**

If you want to get out of the programme, you should always be able to do it by pressing **ESC** and following the instructions on the screen. Sometimes you might have to do that a few times, but keep going and you should get out eventually. Most of the time, you can press **ESC** and **F1** together to get straight out of the programme, but if that doesn't work just keep on with **ESC** and read the instructions.

It will end up with an inactive window on the screen. You can get rid of that by clicking in the box at the top left-hand corner of the window, or by holding down the **Alt** key and pressing **F4**.

## HOW TO SET UP NEW MEANINGS.

This is easiest to explain with an example, so I'll describe how I would store my name as the meaning of the combination A and Q. Of course, you can use any combination you like, provided that it hasn't already been used, and make it mean anything you can do with the keyboard.

Step meaning 1 : I press F2.

I see some instructions, which ask me to press the keyset ( that's the combination of keys ) that I want to use.

Step meaning 2 : I press A and Q.

It tells me that I'm using that combination, which it calls [qa], and asks me to enter the meaning.

Step meaning 3 : I type Alan Creak. I can add other keys if I want, including Enter if I want a new line.

Step meaning 4 : I press ESC to show that I've come to the end.

It tells me that I've finished.

And now, if I press A and Q together, "Alan Creak" ( without the quotation marks, and with any newlines or other characters I've used ) appears on the screen.

You can attach meanings to any of the pairs of keys which haven't been given a meaning. If you try to use a pair of keys which can't be used together, the programme will tell you.

## HOW TO SAVE MEANINGS FOR NEXT TIME.

If you've set up any new meanings while using the programme, the programme will ask you whether you want to save the meanings when you come to the end. If you do, you will have to give a name to the collection of meanings; then the programme will store all your meaning in a file on the computer's disc. This is the keyfile which we saw in step 3 of the starting-up instructions; if you want the same set of meanings at some other time, you just type the name at step 3, and the file will be loaded.

If you started with a keyfile, and didn't change it, you won't be asked to save it, because it's still there on the disc. If you did change it, then when you finish the programme you can either forget the changes, or just add them to the keyfile you had before, or make a new keyfile; in any case, the old keyfile will still be there.

## FINDING WHAT MEANINGS YOU'VE DEFINED.

If you've defined some meanings, you might find them hard to remember. In that case, look at the keyfile with an editor. There's a lot of unhelpful material at the beginning of the keyfile, but at the end you'll find a list of your definitions, giving both the keysets you've used ( in code, but it's fairly obvious what it means ) and the meaning you've given. You might like to print that out to help your memory.

## STICKY KEYS.

When you start the programme, in step 5 of the instruction you can choose "sticky keys" instead of "multiple keys". That's another way to manage typing if you can only use one hand. Using sticky keys, you don't change the meanings of the keys, but you get capital letters in a different way : to type capital H, for example, you first press Shift and then press H. You don't have to press them at the same time, so it's much easier if you can't easily use two hands.

With a proper sticky keys programme, you can do the same trick with other keys which usually have to be pressed at the same time – particularly Ctrl and Fn keys – but this version only works with the Shift key. It's there so that you can easily compare simple typing with sticky keys and with multiple keys. You can change over from multiple keys to sticky keys at any time by doing this :

Step Sticky 1 : Press **Esc**.

That takes you back to Step 5 of the other instructions.

Step Sticky 2 : Press **1** then **Enter**.

Now you're ready to use sticky keys.

That's easier than using multiple keys, because you don't have to give a delay constant.

Of course, you can choose **1** at Step 5 of the original instructions if you want to begin with sticky keys. And to change back to multiple keys, just press **Esc** again and start again from Step 5.

When you're using sticky keys, you can set up new meanings just as you do for multiple keys. You can't set up as many, because sticky keys doesn't give you any way to say that you want pairs like **Z** and **A** or **Z** and **S**, but you can still use the function keys and other special ones. You can use them alone, or with **Shift**.

Any meanings you set up with sticky keys will still work if you go back to multiple keys, and meanings you set up with multiple keys will work with sticky keys if you can type the keyset. So a meaning set for the **F7** key with multiple keys will still work with the **F7** key if you use sticky keys, and pressing **Shift** then **F7** with sticky keys means the same as **F7** and **F8** together using multiple keys.

### **SOME QUESTIONS ABOUT STICKY KEYS.**

If you've tried using sticky keys :

- Which do you prefer, sticky keys or multiple keys ? Why ?
- Is it useful to have both ?
- Anything else you'd like to say ?

### **MONITORING YOUR PERFORMANCE.**

In Step 3 of the starting-up instructions, the programme asks a question about "monitoring". So far, we've ignored it, and it has gone away. It's not very likely that you'd want to use it for ordinary practising, except out of curiosity, but just in case here's a description of what it does and how to use it if you want to.

Monitoring gives more information about what you're doing with the keyboard; instead of just working out what you meant when you pressed one or two keys, it tells you what you really did. So, for example, if you pressed **Q** and **W** together, this would usually be displayed as capital **Q**, but when monitoring both keys are listed – twice each, because both key-down and key-up are recorded. Also, if you hold down the key, you'll see all the repeats produced by the automatic repeating machinery. The result is incomprehensible as text, but informative if you want to know just what's happening and in what order.

The monitor output can be displayed on the screen or saved in a disc file. The most useful setting for gathering data is to keep the ordinary character display on the screen while recording the monitor output in a file, but you can choose what you want to do with each channel independently.

Here are the instructions. There's a bit less detail than in the earlier descriptions, but there should be enough to work out what to do. Start at Step 3 of the original starting procedure.

Step 3 :        Make the window as big as you can.

- and asks for one of three responses. If you answer anything but "/", the simple sequence described earlier just carries on, and you hear no more about monitoring.

If you want monitoring, *this is your only chance* to turn it on. Reply with "/", and monitoring starts; you see the same screen as before, but without the question about monitoring. Answer as you would for the simple starting procedure, and go on with that procedure.

Once monitoring is turned on, you can, if you want, ignore it, except that it will be mentioned from time to time in messages and questions that appear. To make something else happen, get to the old Step 5, either as part of the starting procedure or by pressing ESC at any time during ordinary running, just as for other sorts of mode change. Now it will show a new question :

Step Monitor 1 :    Press Esc.

That takes you back to Step 5 of the other instructions, and show you a set of possibilities. One of these is "set monitoring" : choose it.

Step Monitor 2 :    Press 2.

You will see a report of the states of the two sorts of monitoring, and a menu list from which you can choose an item. This list will keep appearing until you choose "done", as some of the things you can do might take several steps.

- The items which mention "switch" turn monitoring off if it's on or on if it's off.
- You can't switch the file on unless it has a name.
- If you close the file, its name disappears.
- "Comment" just inserts a comment into the file, or shows it on the screen.

Step Monitor 3 :    Press 5.

That chooses "done", and you leave the monitor setting sequence. You're now back to the ordinary operation, and can do all the usual things.

If you switched the file monitor on, you should find the monitor file on the disc when you leave the programme. It looks much like the stuff that appears on the screen when you select screen monitoring.