

junior's growing up!

a survey of possible extensions

Since Elektor published the article on the Junior Computer (May 1980) the editorial office has been inundated with queries about expansion possibilities. Basically, it all boils down to: how can the Junior Computer be expanded and to what extent?

As would be expected, there are a number of different possibilities for 'developing' the Junior Computer, however to say 'the sky's the limit' would hardly be wise. When thinking about possible expansions for the Junior Computer it is best to be selective and not concern ourselves with equipment which has no real purpose. For this reason a 'listing' of the future hardware and software extensions has been drawn up and is given below. Obviously, this can be no more than a brief summary at this stage, but full details will be provided in the forthcoming publication of Books 2 and 3.

1. Interface card

A cassette interface seems to be the number one requirement as far as hardware is concerned. This has been included on the interface card and has provision for two separate cassette recorders. It is also compatible with the KIM microcomputer. The cassette interface can be controlled by means of either the hexadecimal keyboard or an ASCII keyboard (in the latter case there are a number of operational possibilities).

The interface card also contains 1 k of RAM (2 x 2114), user input/output (6522) and a standard RS 232 interface. In addition, there is provision for two IC sockets on the board which can be used for further memory expansion. One of the following memory devices can be inserted into each of the two sockets: 2708 (1 k EPROM), 2716 (2 k EPROM) or 8114 (1 k RAM). This adds up to a possible 3... 5 k of extra memory.

2. Memory extension

An article describing the RAM/EPROM card was published in Elektor number 65 (September 1980) and in the following issue (number 66, October 1980) an explanation of how to connect it to the Junior Computer was given. We realise that the price of 2732 EPROMs may well exceed the budget of some of our readers and so we are currently examining ideas for developing a less expensive version — no promises, mind!

3. Hardware

Various peripheral devices can be connected to the computer such as a video interface and ASCII keyboard (the Elekterminal) and a printer. As mentioned previously, the forthcoming books will explain exactly how these peripherals can be added.

4. EPROM programmer

It's all very well developing programs and storing them on cassette, but certain routines are better stored permanently in system memory. For this reason, an EPROM programmer is currently being developed which will be suitable for 2708, 2716 and 2732 devices, including their derivatives such as those with JEDEC pinning. The programmer will consist of a basic unit with 'plug in' modules for the different device types.

5. Firmware

Bearing point 4 in mind, comprehensive editor, assembler and disassembler routines have been developed for use with an ASCII keyboard (Elekterminal) and a printer. These routines will enable you to develop, debug and list programs quickly and efficiently.

6. Suggestions

A host of items are still the subject of discussion. Any useful suggestions that readers may have will be more than welcome. For example, would you like to be able to program your Junior Computer in a high level language? If so, which one? BASIC? Extended or Tiny? Broad Scots or Scouse? Or would you prefer to jump in at the deep end with

Pascal? How about a floppy disc and graphics? Send your answers on a post-card please to . . . No seriously, if you have any ideas please let us know (we are not yet capable of reading minds!!).

7. Software: user programs

Along the same lines, what sort of programs do you want to run on your Junior Computer? Games? Business? Accounts? There are far more interesting possibilities than digital clocks and reaction timers! Again, and even more important, have you any programs? If perchance you have written any interesting programs, don't be shy, send them to our editorial staff. They may well prove useful in helping out fellow Junior Computer operators (or even ourselves!) and at the same time you can bring your 'output' into the limelight by having it published in Elektor.

For those who can't wait . . .

We accept the fact that certain members of our readership are somewhat anxious for the various extension possibilities to be published as soon as possible. However, it may well be an idea to bear in mind the following points: By publishing the details of the Junior Computer project Elektor hoped to interest a large number of potential computer enthusiasts who merely required a bit of encouragement (together with equipment they could afford!). The Junior Computer books are therefore necessarily tailored to suit their tastes and requirements. Those of you who were already working with computers are bound to grow a little impatient at the step-by-step methods employed.

Another aspect worth considering is that Elektor does have a magazine to publish which contains various topics and projects that all require technical research. The neat double-sided main computer board and the interface card both required a large amount of time and effort to develop.

Think of it this way: when you go out to have a meal and a good time, you don't just pop around to the local 'chippy', you go to a proper restaurant. Bear with us, it will all be well worth waiting for!