ABSTRACT: A CRT data display system is provided with means for entering a character in memory for display in any position indicated by a cursor signal. Once a character has been entered, the cursor is automatically moved to the next character position in memory and displayed. The cursor may also be moved without entering a character. Character display is by a dot matrix such that \( n \) strokes are required to display a character and an additional stroke is required to provide an intercharacter space. The CRT beam is blanked during the additional stroke. The cursor signal is stored in a memory location read during the additional stroke period just preceding the position into which a character may be entered. Apparatus responds to the cursor signal a fraction of the time as the displayed data is repeatedly read for CRT regeneration, thereby displaying a blinking cursor. The cursor is displayed as a block in the character position accessible for entry, all without obliterating any character that may be present in that position.
DATA DISPLAY SYSTEM

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to remote data display terminals and in particular to display terminals having a character insertion capability for editing.

2. Description of the Prior Art

Many remote data display terminals are being used in computer and data storage systems as well as communication systems for composing or editing messages, updating data, and the like. Cathode ray tube (CRT) display units are ideally suited because of the fast rate at which data may be displayed and altered. A typical unit may display up to 15 lines of 64 characters. A display storage unit stores the data in a recirculating memory so that it may be cyclically read for regeneration of the characters on the face of the CRT. A keyboard unit controls the display and enables the operator to perform all data composition and manipulation tasks including editing by selectively entering characters. A cursor of some form is displayed to indicate to the operator the character position available for entry through a file storage and control unit. The keyboard unit is provided with control keys for positioning the cursor.

Although the cursor may take various forms, such as a caret between lines directly above or below the character position to be operated on, the control unit will be more complex with such a cursor for it must then effectively control the display of one additional line just for the cursor. This is particularly true of display units of the type in which each character is displayed as a 5×7 dot matrix such that a line then consists of 384 strokes, six strokes per character, each stroke only seven dots high. The strokes are generated by a synchronized sawtooth wave generator connected to the vertical beam deflection network and the dots are generated through the beam blanking control network by a 7-bit code read from the display storage unit for each of the first five character strokes. During the sixth character stroke, the beam is blanked in order to provide a blank space between characters.

In other systems, the cursor consists of a blinking line under the character position on the CRT where the next operation will take place. In still others, it consists of brackets around the character position. Accordingly, some systems do not require an additional display line, but all systems employing a recirculating memory for display data storage have, in the past, required an additional track or delay line just to store the cursor signal.

It would be desirable to store a cursor signal in the same delay line or track of a recirculating memory employed to store the data being displayed and to thereby mark the character position accessible to the operator in such a manner that its display lies within the same line as the character position being marked, but without obscuring or masking any character present for display in that position. Such a cursor signal should be easily advanced to the next position, as when the operator makes an entry, without interfering with any data being entered or in any way interfering with a character being displayed in that position except by marking it as the next character position to be acted upon.

SUMMARY OF THE INVENTION

The present invention is primarily directed to a CRT data display system having a character insertion capability, and means responsive to a cursor signal included with the data displayed for marking a given character position for entry of a character from a keyboard. In accordance with an embodiment of the invention, the cursor signal is stored between character signals and read during the intercharacter space display period just preceding the given character position. The cursor symbol is displayed as a blinking indicator, preferably a block, superimposed on any character that may be present in the given position by having the cursor signal be effective only a fraction of the cycles the character position so marked is regenerated on the CRT screen. Entry of a new character effectively erases any previous character and advances the cursor signal to the next character position. Means for so advancing the cursor signal without entering a character is also provided. For purposes of this invention, a character is any letter, numeral, punctuation mark, arbitrary symbol, or a blank character space, any one of which may be selectively entered by actuating a key on the keyboard unit.

In accordance with a preferred embodiment of the present invention, each character is displayed in a 5×7 dot matrix. Each of the five columns of the matrix constitutes one vertical stroke of the CRT beam. Seven bit times are required for one stroke and one bit time for return of the beam to the base of the line of characters for the next stroke. Thus, video information is stored in a recirculating memory in stroke groups, each group being comprised of a certain number of bit storing position, herein eight. The stroke groups are arranged m, herein six, to a character with a certain number (m minus 1), herein five, being used to store video information and with at least some (1), herein one, being used to provide a space between characters on the display. The binary digits are read from the memory in series and applied to a beam blanking control system of the CRT during the first five stroke intervals of a six stroke character set. The beam is blanked during the entire sixth stroke interval to provide an intercharacter signal to generate a cursor for the next character position is stored in memory in one of the bit positions sequentially read during the sixth of intercharacter space stroke time. That signal is not displayed as a dot because the beam is blanked, but it is employed every so many cycles to display a dot in all 35 dot positions of the next character, without otherwise disturbing any character displayed. Once a new character is entered into the recirculating memory for display in the position marked by the cursor, the cursor signal preceding that position in memory is erased and a new cursor signal is stored in memory in a corresponding bit position of the sixth (intercharacter space) stroke of the character entered. If the operator elects not to enter a character, he may advance the cursor signal from the keyboard.

The novel features of the invention are set forth with particularity in the appended claims. The invention will best be understood from the following description when read in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a general block diagram of a CRT data display system of the type for which the present invention is intended;
FIG. 2 illustrates an exemplary manner of producing characters on the CRT of FIG. 1;
FIG. 3 is a block diagram illustrating an embodiment of the present invention;
FIG. 4 is a block diagram illustrating an exemplary form of a data control section of a control unit for the embodiment of FIG. 3; and
FIG. 5 is a timing diagram for the operation of the embodiment of FIG. 3 with the data entry control section of FIG. 4.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to FIG. 1, a CRT display unit 10 is provided with a cyclic display storage unit 11, such as a magnetic drum having a plurality of tracks from which data to be displayed is cyclically read for regeneration of characters on a CRT screen. A file storage and control unit 12 provides bulk storage of data that may be displayed and the necessary logic for controlling the transfer of data to the display storage unit 11 and, in accordance with the present invention, for editing data by the selective insertion of characters in positions marked by a cursor displayed as a blinking block consisting of 35 dots in a 5×7 matrix. The transfer of data for display is controlled by an operator through a keyboard unit 13. The keyboard is also adapted to give the user maximum capability.
to arrange, manipulate, format, inspect, and edit by inserting and removing data. The file storage and control unit 12 is also adapted for use with external systems through an optional interface represented by a bidirectional transmission line 14.

FIG. 2 illustrates an exemplary manner for producing characters on the CRT display unit 10 using a 5x7 dot matrix generated as the beam sweeps through six strokes for each character under the control of a sawtooth wave generator. As will be explained hereinafter, the video code format of the data in the display storage unit 11 is arranged in eight bit groups with each group corresponding to a different beam stroke. Thus, during any given stroke, the beam is turned on at each of seven points depending upon whether a binary "1" for that point is stored in the corresponding eight bit group in the display storage unit. For example, to display the letter N, the video code would have a binary "1" in each of seven bit positions of the eight bit group corresponding to the first stroke. An eighth bit position is provided in the code for each stroke, but the beam is blanked during that bit time regardless of the state thereof to allow the beam to return to the base of the next stroke. As shown in FIG. 2, the second stroke includes a binary "1" in the fifth bit position only. Similarly, the video code group for the third and fourth strokes include a binary "1" in the fourth and third bit positions, respectively, while the video code for the fifth stroke is the same as for the first stroke. During any one stroke, the beam is blanked throughout all eight bit times to provide an intercharacter space between the letter N and the subsequent character to be displayed, shown as "A" in FIG. 2.

Since the CRT beam is blanked during the sixth stroke of each character, the bit positions corresponding thereto in memory may be used to store whatever nonvideo information is desired. Thus, in accordance with the present invention, one of the positions read during the sixth stroke is employed to store a cursor signal so that, upon reading that signal, the storage and control unit 12 may cause the CRT unit 10 to display a cursor symbol, e.g., a dot in each of the 35 positions of the next character. For example, if a cursor signal is stored in the code group for the sixth stroke of the video code for the letter N in FIG. 2, the file storage and control unit 12 will cause a block of 35 dots to be superimposed on the following character, i.e., the letter "A," thereby indicating to the operator that a new character may be entered in that position. The cursor signal is also used to time the storing of the video code for the new character in the display storage unit.

In accordance with a further aspect of the invention, the file storage and control unit 12 continuously monitors the cursor signal and is capable of generating a block marker during only a fraction of the cycles that the display storage unit 11 operates to regenerate the characters on the CRT screen. In that manner, the cursor appears as a blinking block superimposed on the character otherwise appearing in that display position but allowing the operator to continue to view the character upon which the cursor symbol is superimposed.

The operator may key any character he wishes to enter into the position marked by the cursor symbol. The file storage and control unit 12 then enters the video code of that new character in the display storage unit 11 in place of the video code for the character already being displayed the next time the display storage unit 11 reaches that position for display regeneration, as indicated by the cursor signal in the sixth stroke code group of the character preceding it.

The file storage and control unit 12 not only enters the video code for the new character but also automatically advances the cursor signal from the sixth stroke code group of the preceding character to the sixth stroke code group of the character being entered. The operator may also advance the cursor signal from one character position to the next by operating the appropriate key, or to any other position by operating other keys.

It should be understood that the file storage and control unit 12 includes function control logic which sequences the data flow, entry, and manipulation. Thus, when a function is specified by the operator at the keyboard unit 13, a function code converter in the unit 12 sends a service request to function control logic also in the unit 12 in order that the appropriate sequencer unit may be initiated.

The file storage portion of the unit 12 consists of a drum with a plurality of tracks to be used as required not only to store data, but also to manipulate data. In practice, the display storage unit 11 may also be implemented on the same drum. However, it should be understood that the file storage may, for example, be comprised of magnetic cores. The display storage unit 11 may also be of another form, such as recirculating delay lines, or even a block of core memory having work memory locations read cyclically, each word having 48 bits for the six stroke characters, or the equivalent. The words would then be read from such a core memory in sequence into a bit serializer, such as a shift register.

When a keyboard operator requests a transfer of data from the unit 12 to the display storage unit 11, the unit 12 locates the data in the file and transfers it to the display storage unit 11 in the appropriate video code. This usually requires code conversion since data is preferably stored in the unit 12 in the standard ASCII code. The data in video format entered into the display storage unit 11 is synchronized with the CRT display unit 10, as by clock indexed pulses stored in separate tracks of the display storage unit. In other words, the beam raster scan of the CRT display unit 10 operates in synchronism with the cyclic display storage unit.

A detailed block diagram illustrating an embodiment of the present invention will now be described with reference to FIG. 3 wherein the CRT display unit 10, the file storage and control unit 12 and the keyboard 13 are shown in block form only inasmuch as each may be conventionally implemented, as in any one of several commercially available CRT display systems. Accordingly, FIG. 3 shows in somewhat more detail only that part of the cyclic display storage unit 11 which exemplifies the present invention and which in practice, is an integral part of the file storage and control unit 12 as noted hereinbefore. It should also be understood that only so much of the display storage unit is shown in FIG. 3 as is necessary to understand and practice the present invention.

Dram tracks 20 and 21 are dedicated for storage of video codes, one video code consisting of eight bits for each stroke group of a character. As noted hereinbefore with reference to FIG. 2, six strokes are required for each character so that a total of 48 binary digits are stored on the tracks 20 and 21 for each character, half on one track and the other half stored in parallel on the second track. For instance, for the sixth stroke group, the odd numbered bits are stored on the track 20 and the even numbered bits are stored on the track 21. A single track could be employed to store all bits in sequence, but two tracks are preferred to avoid bit density problems on the magnetic record media. Four, or even eight, tracks could also be used but with present recording techniques, such would not be necessary. Moreover, the necessary serializing of four or eight bits would be more complex. Accordingly, a two-track display storage system is deemed to be the optimum configuration, but future technology may make a one-track system more feasible.

For convenience, the bit positions are indicated in FIG. 3 by the arabic numerals 1 to 8, but it should be understood that in each bit position only a binary "0" or a binary "1" is stored in accordance with the code required for generation of the character to be displayed. For instance, to display the letter N, the fourth stroke group (see FIG. 2) would contain a binary "1" in bit position 3 and a binary "0" in all other bit positions 4, 5, 6 and 7. In other a binary "1" or a binary "0" may be stored since the beam is blanked during the eighth bit time of each stroke group, but in practice, a binary "0" is stored unless nonvideo information is to be stored with the video code group.

The beam is also blanked during all eight bit times of the sixth stroke group so that, for video display purposes, it is not material what binary digit is stored in each bit position,
although in practice a binary "0" is stored in each bit position unless it is desired to store some nonvideo information. In accordance with the present invention, a cursor signal is stored in one of the bit positions of a sixth stroke group, preferably as a binary "1" in bit position 6. Thus, by allocating one of the bit positions in a sixth (intercharacter space) stroke group for storage of a cursor signal, the next character position is marked as belonging to the code group into which a character may be entered. Accordingly, the cursor position can be defined without the use of a separate track to carry the cursor signal.

The sixth bit position of a sixth stroke group is preferably utilized to store the cursor signal because as the cursor signal is transferred from one character position to another, it is necessary to erase the binary "1" in its present location and store a binary "1" in the next location, with no disturbing binary digits of the video code in the new location. Therefore, the use of a separate track is eliminated. Because of flux fringing which cannot be avoided, the bit positions on either side of the cursor signal position should not be used. This requirement is imposed by the high bit density (e.g., 680 bits per inch) employed in the tracks 20 and 21. In a display storage unit having a lower bit density, it would be possible to selectively store a single bit in any position without affecting bits stored in adjacent positions, in which case there would be no restrictions on the bit positions of the stroke group selected for storing the cursor signal.

The video codes of successive characters are read from the tracks 20 and 21 by read heads 23 and 24, and stored in sequential pairs by buffer flip-flops FF1 and FF2, preferably JK flip-flops triggered by clock pulses read from a clock pulse track 27 by a read head 26. Accordingly, the read head unit 28 generates four clock pulses for each stroke. A bit counter 29 counts the four clock pulses to generate distinct clock signals C1, C2, C3 and C4 for each pair of video code bits read. The clock pulses from the read head 28 are also applied directly to a sampling pulse generator 30 which transmits a pair of strobe signals B1 and B2 for each pair of stroke group bits read by the head 28. The strobe unit 30 is connected to the code group in bit position 10 of the cyclic display unit 10 to generate a strobe signal for the display of characters marked by the cursor as indicated in FIG. 3. Consequently, dots are displayed in response to the output of the flip-flop FF5 during each bit position of only strokes 1 to 5 of the following character position (except the retrace bit position 8 of each such stroke).

Once the operator observes which character position is available for entry, as marked by the CRT display unit 30 of the sixth stroke group of the character being marked by a cursor signal, he selects a code representing the character to be entered and stores it in a buffer register until the cursor signal is again read and sampled to set the flip-flops FF1 and FF2. He then generates a pulse by setting the counter 37 operative only a fraction of the time the character being marked by a cursor signal is to be regenerated on the face of the CRT. For example, the counter 37 may consist of two binary circuits in cascade in order to effectively divide the number of cursor signals displayed by four, thereby rendering the gate 36 operative only every fourth time the character being marked is to be regenerated. However, instead of counting the cursor signal, which occurs only once during each cycle of the track 21, a system synchronizing index pulse is counted. That index pulse is stored on a separate track 38 and read by a head 39.

The gate 36 is also connected to the two output terminals of the sampling pulse generator 30 by an OR gate 40 in order that generation of dots for the display of a blinking block (i.e., cursor symbol) be synchronized by strobe signals B1 and B2 in the same manner that generation of dots for the display of a character is synchronized by the strobe signals B1 and B2 through gates 31 and 32. However, it should be understood that such synchronization, as well as other synchronization indicated in FIG. 3, is a matter of design that depends upon the manner in which the CRT display unit 10 is implemented, rather than upon the concepts of the present invention. The same manner in which synchronization is indicated in FIG. 3 for the file storage and control unit 12, bit counter 29 and stroke counter 34 shown connected to the read heads 28 and 39 for clock and index pulses. The flip-flop FF5 is set during the last half of the sixth stroke if a cursor signal is present in bit position 6. Accordingly, a dot would normally be produced during bit time 7 of stroke 6, but, as noted hereinabove, the beam of the CRT display unit 10 is blanked during the entire period of the sixth stroke. Consequently, dots are displayed in response to the output of the flip-flop FF5, during each bit position of only strokes 1 to 5 of the following character position (except the retrace bit position 8 of each such stroke).

The manner in which the file storage and control unit 12 controls entry of a new character and advances the cursor signal from one position to the next will now be described with reference to an exemplary implementation illustrated in FIG. 4. When any key on the keyboard unit 13 (FIG. 3) is depressed to enter a character, a signal is transmitted to an input terminal 41 of an OR gate 42 to enable an AND gate 43 to transmit a pulse from gate 35 (FIG. 3), as indicated by the legend "GATE 35" at an input terminal of the AND gate 43. That pulse 45 (shown in FIG. 5) is transmitted by the AND gate 43 to control logic 44 of the file storage and control unit 12 which stores a binary "0" in the sixth bit position from which the cursor signal was just read, thereby erasing the cursor signal. That pulse is also transmitted by the AND gate 43 to a buffer flip-flop FF5.

As shown in FIG. 5, the flip-flop FF5 is set during the period of the pulse C4 shown on track stroke if a cursor signal is present in the sixth bit position and then reset by the next pulse C3 via an
AND gate 46. While the flip-flop FF is set, an AND gate 47 is enabled in order that the next pulse C4 may set a flip-flop FF, but only if a character has been entered and a signal is present at the input terminal 41. The flip-flop FF remains on for five full strokes of the next character, as shown in FIG. 5, and is then reset by the next stroke signal S5. In that manner, the flip-flop FF transmits a signal to a control logic network 49 that initiates entry of the character selected by the operator in the position indicated by the cursor signal just erased.

The output terminal of the flip-flop FF is also connected to an AND gate 50 to enable it to set a flip-flop FF in response to the same pulse C4, which resets the flip-flop FF. The flip-flop FF remains set until the end of the fifth stroke period, at which time the next stroke signal S5 enables an AND gate 52 to reset it in response to the next pulse C5. Accordingly, the flip-flop FF remains set until after the pulse C3 of the next stroke 6. While it is set, the flip-flop FF enables an AND gate 53 to transmit a pulse 51 (FIG. 5) to a logic network 54 in response to a pulse C5 during the next stroke signal S5 to store a binary "1" in the sixth bit position of the sixth stroke of the character being entered.

The logic networks 44, 49 and 54 are connected to a pair of recording amplifiers 55 and 56 which are connected to respective write heads 57 and 58 as shown in FIG. 3. Accordingly, only the amplifier 56 connected to the head 58 receives recording signals from all three of the logic networks 44, 49 and 54 since a cursor signal is stored only in track 21. Both heads 57 and 58 are so positioned on their respective tracks 20 and 21 as to allow for delays in causing binary digits to be recorded through the logic networks 44, 49 and 54. In that manner, when a new character is entered, it is properly entered in the character position specified by the cursor signal and the cursor signal is advanced one character position.

If the operator depresses a key to advance the cursor signal without entering a character, a signal is transmitted to an input terminal 60 of the OR gate 42 so that the same functions are then initiated in the logic networks 44 and 54, but not in the logic network 49 because the AND gate 47 connected to the set input terminal of the flip-flop 48 is not then enabled by an input signal from the terminal 41. If both keys are actuated at the same time, the result is, of course, as though only the "enter character" key is depressed Although not shown, the signals at input terminals 41 and 60 are provided by buffer flip-flops which are set when the respective keys are actuated, and reset when the action indicated thereby is complete so that, for example, the same character is not entered automatically in all subsequent character positions of the display storage. The character input register, also not shown, is cleared at the same time, all in accordance with normal techniques for interfacing digital equipment with a keyboard for entering data.

From the foregoing, it should now be appreciated that a data display system has been disclosed herein in which a cursor symbol is displayed in response to a cursor signal selectively recorded in otherwise unused portions of video data tracks instead of requiring an extra cursor signal track. The cursor symbol is displayed by superimposing it over a displayed symbol and causing it to blink.

We claim:
1. In combination with a display device including a movable writing means actuable to form a visible image on a target, control means for controlling the movement of said writing means, said control means comprising:
a cyclic memory containing a plurality of groups of bit storing positions;
timing means for cyclically defining character sets of successive time intervals, each character set being comprised of m intervals with at least one of said m intervals serving as a character space interval;
deflection means for causing said writing means to cyclically describe a predetermined pattern on said target;
reading means for reading bits from a different one of said groups during each of said intervals;

video means responsive to bits read by said reading means during each of m intervals except for said intercharacter space interval of each character set of intervals for selectively actuating said writing means to describe a predetermined character on said target;
and logic means responsive to bits read by said reading means during an intercharacter space interval for causing said writing means to display a cursor symbol at a predetermined location on said target.
2. The combination of claim 1 wherein said deflection means causes said writing means to describe a series of substantially parallel strokes, and wherein each of said groups read during said m intervals other than said intercharacter space interval of each set of m intervals stores video information with respect to a different one of said parallel strokes.
3. The combination of claim 1 wherein said logic means responsive to bits read by said reading means during said intercharacter space interval of a character set includes means for actuating said writing means during predetermined intervals of the succeeding character set.
4. In a data display system employing a CRT unit which displays a plurality of characters, each in a dot matrix consisting of a plurality of columns, each column having a series of dot positions at which a beam of said CRT unit is unblanked in response to binary digits of a video code serially read from a storage unit, and wherein said CRT beam is automatically blanked for one complete stroke between characters to provide a space between displayed characters, said intercharacter blanking occurring while intercharacter bit storage positions are read from said storage unit, to thus maintain synchronism between the movement of said CRT beam and the reading of said storage unit, apparatus for marking a given character position for selective entry of a new character and for manifesting the accessibility of said given character position comprising:
a cursor symbol stored as a binary digit in one of said positions of said storage unit read during an intercharacter stroke of said CRT beam preceding a given character position;
means for detecting the presence of said cursor symbol as said intercharacter stroke bit storage positions are read;
marker means connected to said means for detecting a cursor symbol in said CRT beam unit to display a cursor symbol in the character position succeeding said intercharacter stroke;
and entry means connected to said marker means for enabling new video code to be entered in place of the video code stored in said storage unit subsequent to said cursor symbol.
5. In a data display system, apparatus as defined in claim 4 wherein said entry means includes means for advancing said cursor signal from one of said positions of said storage unit read during an intercharacter stroke of said CRT beam preceding said given character position to a corresponding position of said storage unit read during an intercharacter stroke of said CRT beam following said given character position when a character is entered, thereby automatically marking the next character position as accessible for entry.
6. In a data display system, apparatus as defined in claim 5 wherein said entry means includes means for selectively advancing said cursor signal to mark the next character position as accessible for entry without entering a character.
7. In a data display system, apparatus as defined in claim 4 wherein said displayed characters are periodically refreshed at a certain rate and wherein said cursor signal detecting means causes said CRT unit to refresh said cursor symbol at a lesser rate whereby said cursor symbol will appear as a blinking character.
8. In a data display system, apparatus as defined in claim 7 wherein said entry means includes means for advancing said cursor signal from one of said positions of said storage unit read during an intercharacter stroke of said CRT beam preceding said given character position to a corresponding
position of said storage unit read during an intercharacter stroke of said CRT beam following said given character position when a character is entered, thereby automatically marking the next character position as accessible for entry.

9. In a data display system, apparatus as defined in claim 8 wherein said entry means includes means for selectively advancing said cursor signal to mark the next character position as accessible for entry without entering a character.

10. In a data display system of a type having storage means for storing data to be displayed, each character of data being defined by a predetermined video code, and the blank space between characters being indicated by an intercharacter space code consisting of at least one bit position of storage, and having display means connected to said storage means for reading said data for display, character by character, and for displaying said characters with blank intercharacter spaces in response to the video codes thereof regardless of the binary value of digits stored in said intercharacter space codes between character defining video codes, said display system further having entry means connected to said storage means for entering video codes of new characters, one character at a time on a selective basis, wherein an operator may enter characters through a keyboard connected to said storage means, apparatus for marking a given character position for selective entry of a new character and for manifesting the accessibility of said given character position comprising:

a cursor signal stored in said storage means as a binary code in the intercharacter space code position preceding the video code of said given character position;

means connected to said display means for detecting the presence of a cursor signal between video character codes being read for display; and

means connected to said cursor signal detecting means and said storage means for displaying in said given character position a manifestation marking it for entry of a new character code for display.

11. In a data display system, apparatus as defined in claim 10 wherein said display means reads said data for display cyclically and displays each character during each cycle, and said cursor signal detecting means is effective to display said manifestation in said given character position once for every given number of cycles, whereby said manifestation appears as a blinking marker.

12. In a data display system, apparatus as defined in claim 11 including means connected to said display means for advancing said cursor signal code from the intercharacter space preceding said given character position to the intercharacter space following said given character position for display of said blinking marker when a character has been entered by said entry means, thereby marking the next character position for entry of a new character code therein.

13. In a data display system, apparatus as defined in claim 12 including means connected to said entry means for automatically entering into said given position marked for entry a code representing any character selected for entry by said operator through said keyboard.

14. In a data display system, apparatus as defined in claim 13 wherein said display means comprises a CRT display unit and said storage means comprises a cyclic display storage unit, whereby data being displayed is cyclically read for refreshing the characters displayed, each character being displayed by a succession of strokes covering a character position during which a beam of said CRT is unblanked by the video code of a character stored in said storage means for display in that position and an additional stroke before displaying a character in the next adjacent position during which said beam is blanked and said intercharacter space code is read to provide an intercharacter space, and wherein said cursor signal detecting means includes means for producing a signal enabling a character to be entered in the next character position to be read upon detection of said intercharacter space code.

15. In a data display system, apparatus as defined in claim 14 wherein each character is displayed in a matrix of dots, each dot being formed by unblanking said beam in response to binary digits of said video code, and said cursor signal detecting means alters the operation of said display means in all dot positions when it is effective to produce said blinking marker.

16. In a data display system, apparatus as defined in claim 15 wherein said cursor signal detecting means alters the operation of said display means by unblanking said beam at all dot positions, whereby said blinking marker appears as a blinking block superimposed on any character present in the position thus being marked as accessible for entry.