

M I C R O B E E T U R T L E

U S E R S M A N U A L

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M I C R O B E E T U R T L E

U S E R S M A N U A L

1. To get your turtle off and running, place your 'TURTLE' program tape in the cassette player and follow the instructions in your Microbee Manual for loading a program. The TURTLE will start automatically when it has finished loading.

After the TURTLE has toddled onto your screen you will see

Name Please:

He is just being friendly so type in your name followed by the RETURN key.

2. DO YOU HAVE A TAPE TO LOAD?

If you have used the turtle before and have saved some shapes on tape, or if you want to use the demonstration tape, you may press the 'Y' key and then follow the instructions on the screen. If you do not have any tape with shapes already recorded then you must reply 'N'.

3. MENU

If you have followed all the instructions (if you haven't then you are very, very naughty!) you should have the set of commands displayed on the screen and near the bottom of the screen is the word Ready.

YOU ARE NOW READY TO BEGIN DRAWING WITH
YOUR TURTLE

4. IMMEDIATE MODE INSTRUCTIONS

C stands for CLEAR. Before any drawing can take place, the screen must be cleared.

Type C

D stands for DOWN. If you want the TURTLE to draw as he moves about the screen then he must have his pen DOWN.

Type D and then press the RETURN key.

U stands for UP. If you want the TURTLE to move to a new position without leaving a trail behind then he must have his pen UP.

F stands for FORWARD. It must be followed by the number of steps you wish the TURTLE to take.

Type DF100 and press the RETURN key.

B stands for BACK. (Similar to FORWARD).

R stands for RIGHT. It must be followed by the number of degrees you wish the TURTLE to turn through.

Type DF100R90F100 then press RETURN

L stands for LEFT. (Similar to RIGHT).

5. HOW TO DRAW A SQUARE

(a) Assuming you have the program loaded, press C to clear the screen.

(b) Now type the following:

DF100R90F100R90F100R90F100

and then press RETURN.

(Note: If any unexpected BEEPS were heard when typing in the program, then an error has been made. Refer to the section in the manual on ERRORS.)

6. A BETTER WAY TO DRAW A SQUARE

(.....) Brackets are used to make the TURTLE repeat a number of steps. The number immediately after the ')' tells the TURTLE how many times to repeat the steps contained in the brackets.

- (a) Press C to clear the screen.
- (b) Type D(F100R90)4 then press RETURN.

7. HELP! IT'S NOT DOING WHAT IT'S SUPPOSED TO

ESC stands for ESCAPE. In the top left-hand corner of your Microbee keyboard there is a key marked ESC. This is the magic cure for all (well, nearly all) troubles.

- (a) If the TURTLE is busy drawing on the screen, pressing ESC once will stop him. Pressing any key will get him going again!
- (b) If the Ready sign is displayed without the menu then pressing ESC once will produce a BEEP. Pressing ESC again will return you to the MENU.
- (c) If pressing the ESC key does not seem to be working then hold it (the ESC key) down for a couple of seconds. In most cases this will return you to the Command Menu. If this fails, read the section on ERRORS in this manual.

Note: When returning to the menu, you must press ESC twice : once for the BEEP and once more for the menu listing. If you only press it once the TURTLE may freeze up.

*C - CHECK
Draw shape
S Shape that
ESC - stop T.*

*T - enter programme
E - Edit a programme
Q - Quit + ~~edit~~ save
ESC - ESC - Menu*

8. PROGRAM MODE - STORING A PROGRAM TO DRAW A SHAPE

P stands for PROGRAM. If you want to enter a program to draw a shape then:
(a) Obtain the Command Menu (see section 7)
(b) Press P

The program will respond with ENTER.
Now enter a name for your program. (If more than 4 letters are used it will be truncated.)

example Press 'P'
ENTER 'SQRE' for the name of the program.
Don't forget to press the Return key.
Type D(F8OR9O)4 and press RETURN.

9. WHAT SHAPES DOES THE TURTLE KNOW HOW TO DO

S stands for the SHAPE LIST. After typing in a shape program as described in section 8 or after loading a tape containing some shapes, press S.

On the screen, the heading Shape List will appear and across the screen is shown the names of the shapes. If no shapes have been entered then no names will appear.

Note: Any time a command does not appear to work, try returning to the Command Menu as described in Section 7.

10. TO DRAW A SHAPE STORED IN MEMORY

* stands for DRAW. This symbol can be obtained by holding the shift key down and typing the key 3.

The program will respond with DRAW.
Enter the name of the shape which you wish the Turtle to draw. (If the shape is not in memory, the Turtle will tell you).

11. ONE PROCEDURE MAY CALL ANOTHER PROCEDURE.

- (a) The immediate mode : Having cleared the screen (section 4) and entered a shape, say SQRE for example (section 8), this procedure may be used in an immediate mode instruction. To draw 2 squares for example type:

D#SQRE#UR9OF90L90D#SQRE#

Note An immediate mode instruction cannot begin with # (see section 10) as the system will think that you wish to draw a shape and ask for its name. Hence the 'D' is necessary in the example above.

THUS THE NAME OF THE SHAPE CALLED MUST BE ENCLOSED BY A PAIR OF #.

- (b) Program Mode: When defining a shape, a previous defined shape may be included as part of the definition as in the immediate mode. However, a shape defined by first pressing 'P' may begin with a #. For example:

HOUS > #SQRE#FBOR90#TRI#

Note ONLY ONE LEVEL OF NESTING OF SHAPES IS ALLOWED. That is, one shape may call a second shape but that shape may not call a third shape, and still return to the first calling routine. A procedure may call several other procedures.

12. EDITING 1: THE NAME OF A SHAPE AFTER 'P' OR 'E'

When asked to enter the name of a shape to define it (P) or to edit it (E) or the draw it (#) if a mistake is made press the BACK SPACE key on the top right hand corner of the keyboard. Alterations can be made by overtyping.

13. EDITING 2: CHANGING A PROCEDURE DURING IMMEDIATE MODE

Before the RETURN key has been pressed, a procedure which is being entered in IMMEDIATE MODE (see sections 4 & 5) may be altered. To back up to a character to change it, use the < key (SHIFT ,). Characters may be altered by overtyping. Characters which have already been backspaced over must be retyped.

Note: The same applies to a program when being entered for the first time following a 'P' command.

14. EDITING 3: THE EDIT MODE

After one or more shapes have been stored in memory, they may be altered by typing 'E'. Type in the name of the procedure you wish to change (see section 12). The system will respond by clearing the screen, typing the procedure and its name and positioning the flashing cursor out of sight just before the first character of the procedure.

(a) > Pressing the right hand arrow key will copy the character above the flashing cursor. (Initially, it will copy the first character although the cursor cannot be seen).

(b) < Pressing the left hand arrow key will back up over the character deleting it from the procedure unless it is copied as above or retyped as below.

(c) I Pressing the key 'I' when in the EDIT mode inserts a blank into the procedure and all characters to the right are shuffled along one place. The blank may then be overtyped with a suitable character. Several blanks may be inserted at once.

(d) DEL Pressing the key 'DEL' on the right hand side of the keyboard deletes one character above the flashing cursor and all characters to the right are shuffled along one place to the left.

Note: AFTER EDITING, BEFORE PRESSING RETURN, THE PROCEDURE MUST BE ENTIRELY COPIED OR THOSE CHARACTERS NOT COPIED WILL BE TRUNCATED.

15. TO DELETE A SHAPE FROM MEMORY

Press 'E' as if you were about to edit a shape. Type in the name of the shape you wish to delete. By then pressing the RETURN key immediately, the shape will be removed from memory.

16. ERRORS: HOW TO REGAIN CONTROL

- (a) After typing 'L', 'R', 'B', 'F', or ')' the turtle will expect you to type in a number and will object to some other key. A BEEP will be heard. You must either type a number or back up (see sections 13 and 14) and alter the previous command. To abort the program press ESC (see section 7).
- (b) After opening a '#' to call a program, the TURTLE will expect you to close it off again and will object if RETURN is pressed before this occurs, (see section 11).
- (c) After opening a '(' to define a repeat loop, the TURTLE will expect you to close it again and will object if RETURN is pressed before this occurs. (See section 6).
- (d) It may sometimes occur that after much editing, inserting, deleting, copying and altering etc. the Syntax checker has become confused and then refuses to accept a key for no apparent reason.
 1. Try backing up and altering the character.
 2. Try typing a '(' or a ')' or a '#' and then backspacing over it.
 3. Try pressing ESC (see section 7).
 4. If all else fails press RESEI and the TURTLE program will restart. (All shape programs stored in memory will be lost).

17. ADDITIONAL NOTES

1. To add something to the end of a shape already defined it is necessary to copy the whole shape first, (see section 14). Holding down the SHIFT key and '.' (>) will copy to the end of the procedure and then a BEEP will be heard. This utilises the auto-repeat facility of the Microbee keyboard.
2. To gain experience in directing the TURTLE it is a good idea to begin in the immediate mode and execute a series of short procedures.

e.g. Type 'C' to clear the screen
Then ... F100 (RETURN)
 R120 (RETURN)
 F100 (RETURN)
 R120 (RETURN)
 F100 (RETURN)

These can be then strung together:-
 F100R120F100R120F100 (RETURN)

Or programmed using a loop:-
 (F100R120)3 (RETURN)

Or stored as a shape:-
 Press 'P'
 Enter the name 'TRI'
 TRI > (F100R120)3 (RETURN)

3. Loops may be nested to several levels. Try this program:-
 ((F50(F10R120)3B50R90)4UR90F120D2)2
4. To stop the TURTLE momentarily to check for errors or to see which part of the program he is up to press ESC once. Any key will start him again while holding down the ESC for a few seconds will return you to the MENU (see section 7).

17. ADDITIONAL NOTES (cont.)

An example of an editing procedure:-

- (a) Enter the program HEX --> (F100R60)6 (see section 8)
- (b) Press 'E' to enter the EDIT MODE. (see section 14)
- (c) Enter the name HEX (Don't forget RETURN)
- (d) On the screen you should see:-
HEX --> (F100R60)6 (no flashing cursor)
- (e) Press the > key (shift .) 5 times
- (f) You should now see
HEX --> (F100R60)6 (cursor under R)
- (g) Now press the key 'I' 3 times. This should insert
3 blanks:-
HEX--> (F100---R60)6
- (h) Now type 'B20'. You should see:-
HEX (F100B20R60)6
- (i) Now press the > key 5 more times to copy the rest
of the procedure, then press RETURN.
- (j) Try drawing your own shape (see section 10).

18. IDEAS AND EXAMPLES

1. Start with some simple polygons using loops.
TRI -->(F100R120)3
SQRE-->(F100R90)4
PENT-->(F80R72)5
OCT -->(F40R45)8

These may be combined to make other shapes:-
HOUS-->#SQRE#F100R30#TRI#

2. Try making shapes which draw letters in the alphabet. Define a space character and print your initials.

```
A--> F50R90F40R90F50R90F15R90F20L90F10L90
      F20R90F15UB15R90F25D(F10R90)4UB25L90
      F15R90
E--> F50R90F40R90F10R90F30L90F10L90F10R90
      F10R90F10L90F10L90F30R90F10R90F40R90
SP--> UR90F50L90D
INIT--> #A##SP##E#
```

Note: The program 'INIT' says draw 'A' then do a space character then draw 'E'.

3. Try drawing some more complicated symmetrical shapes such as:-



