APPENDIX A I/O AND ACTIVATION

This appendix provides an example of the way in which the I/O and activation LKM request can be used. This example is intended to illustrate the circumstances under which the I/O and activation request may be of use.

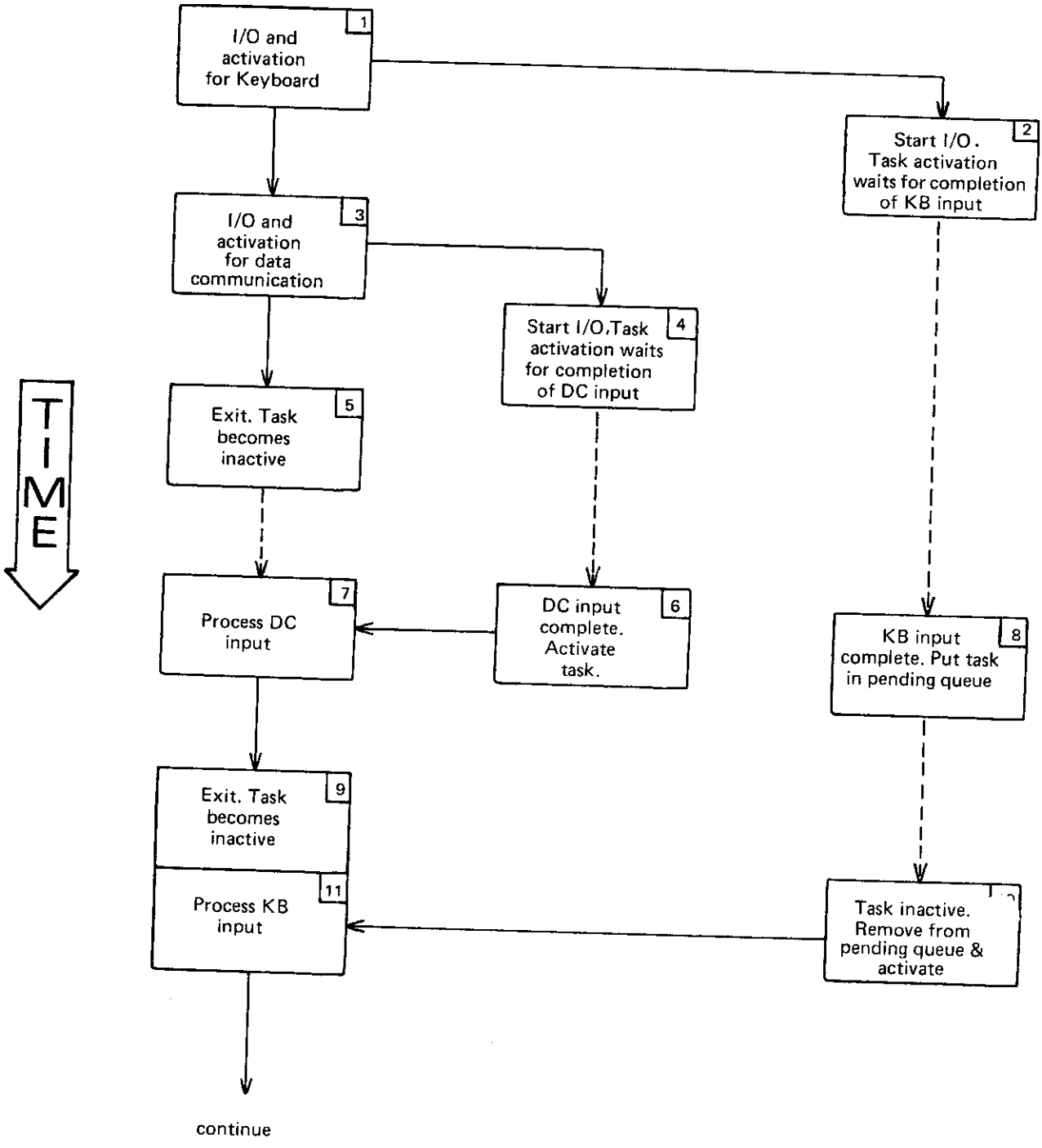
The processing carried out in the example could of course be organised differently. The reasons for using an I/O and activate request and the way in which the associated processing is organised is, of course, a function of application objectives and programming style.

Consider an application task in which the following situations exist:

- Input is needed from the keyboard.
- Input is expected from the data communication line.

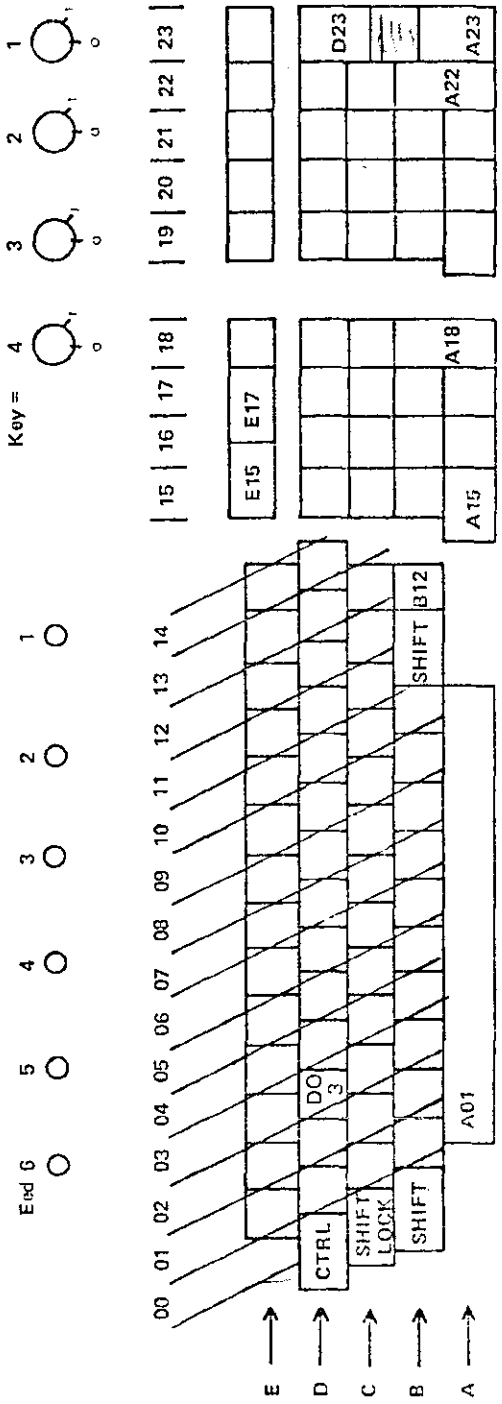
In both these cases the time required to complete an input is indeterminate: it may be milliseconds, seconds, minutes or longer. Also, the input must be processed as soon as it is complete. A solution is to use I/O and activation to handle both input operations and then to perform an exit LKM request. The task will thus be inactive until one of the inputs is complete. The task will be reactivated at a specified start point at the completion of each input.

The following diagram and explanation amplify these points.


1
I/O and activation for Keyboard
2
Start I/O. Task activation waits for completion of KB input
3
I/O and activation for data communication
4
Start I/O.Task activation waits for completion of DC input
5
Exit. Task becomes inactive
TIME
7
Process DC input
6
DC input complete. Activate task.
8
KB input complete. Put task in pending queue
9
Exit. Task becomes inactive
11
Process KB input
Task inactive. Remove from pending queue & activate
continue

1. An I/O and activation request is issued for the keyboard.
2. The Monitor starts the I/O operation but does not yet try to activate the task.
3. An I/O and activation request is issued for the D.C. line.
4. The Monitor starts the I/O operation but does not yet try to activate the task.
5. An exit request is issued. The task becomes inactive.
   Other active tasks may now be dispatched.
6. D.C. input is complete and the task is placed in the dispatcher queue. It is activated at the start point specified in 3. (Activation is immediate in the diagram, but in reality the task would probably have to queue).
7. The D.C. input is processed.
8. While D.C. input is being processed the KB input completes. The Monitor cannot activate the task because it is already active, so the task goes into the pending queue.
9. An exit request is issued. The task again becomes inactive.
10. The Monitor immediately removes the second activation from the pending queue and places the task in the dispatcher queue. It is activated at the start point specified in 1. (Activation is immediate in the diagram, but in reality the task would probably have to queue).
11. The KB input is processed.

APPENDIX A: CODES GENERATED FOR KEYBOARD PTS 6236



Code list key pad layout.

Code List

Row \ Column	0	1	2	3	4	5	6	7
0	A15	A19	A01	E10	E12	D10	E15	key 1 →1
1	B15	B19		E01	C01	D01	E17	key 1 →0
2	B16	B20		E02	B05	D04	E18	key 2 →1
3	B17	B21		E03	B03	C02	E19	key 2 →0
4	C15	C19		E04	C03	D05	E20	key 3 →1
5	C16	C20		E05	D03	D07	E21	key 3 →0
6	C17	C21		E06	C04	B04	E22	key 4 →1
7	D15	D19	C12	E07	C05	D02	E23	key 4 →0
8	D16	D20		E08	C06	B02		SHIFT →1
9	D17	D21		E09	D08	D06		SHIFT →0
A	A16	A20		B12	C07	B01		CTRL →1
B	A17	A21	E11	C13	C08	C11		CTRL →0
C	A18	A22	B08	E13	C09	C10		
D	C18	C22	B10	D13	B07	D11		
E	D18	D22	B09	D14	B06	D12		
F	A23	D23		E14	D09			

Index

Key	Index in Function Cluster	Key	Index in Function Cluster	Key	Index in Shift Unshift CTRL and SHIFT/CTRL Cluster	Key	Index in Shift Unshift CTRL and SHIFT/CTRL Cluster
A15	1	C22	30	A01	1	C05	40
B15	2	D22	31	C12	8	C06	41
B16	3	D23	32	E11	12	D08	42
B17	4	E15	33	B08	13	C07	43
C15	5	E17	34	B10	14	C08	44
C16	6	E18	35	B09	15	C09	45
C17	7	E19	36	E10	17	B07	46
D15	8	E20	37	E01	18	B06	47
D16	9	E21	38	E02	19	D09	48
D17	10	E22	39	E03	20	D10	49
A16	11	E23	40	E04	21	D01	50
A17	12			E05	22	D04	51
A18	13			E06	23	C02	52
C18	14			E07	24	D05	53
D18	15			E08	25	D07	54
A23	16			E09	26	B04	55
A19	17			B12	27	D02	56
B19	18			C13	28	B02	57
B20	19			E13	29	D06	58
B21	20			D13	30	B01	59
C19	21			D14	31	C11	60
C20	22			E14	32	C10	61
C21	23			E12	33	D11	62
D19	24			C01	34	D12	63
D20	25			B05	35		
D21	26			B03	36		
A20	27			C03	37		
A21	28			D03	38		
A22	29			C04	39		