

Figure 5-4 Basic computer registers connected to a common bus.

PC = 0000 0001 0100 0111 0000 0010 0000

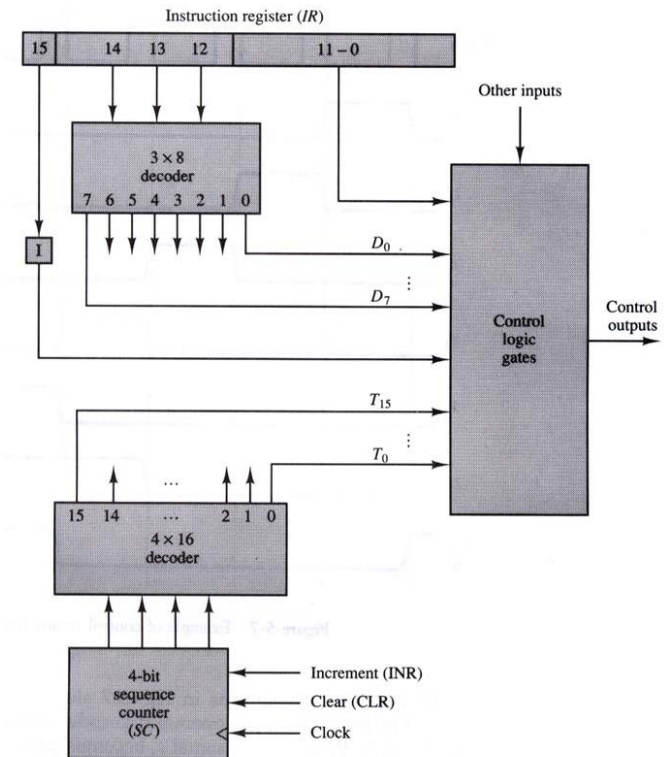


Figure 5-6 Control unit of basic computer.

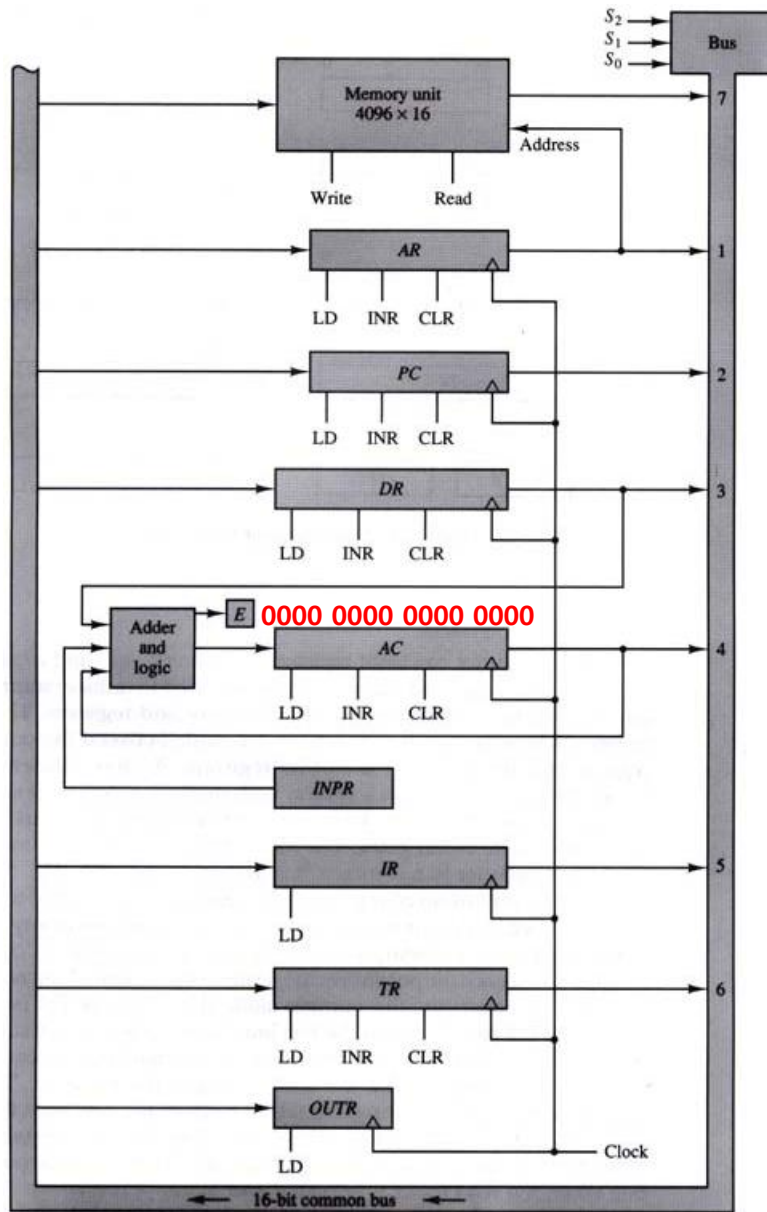


Figure 5-4 Basic computer registers connected to a common bus.

PC = 0000 0001 0100 0111 0000 0010 0000

0111 0000 0010 0000

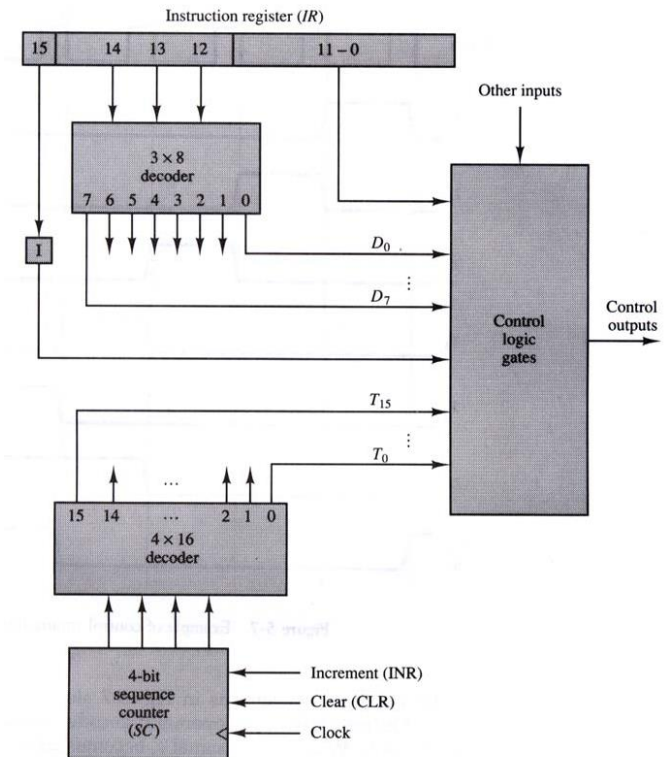


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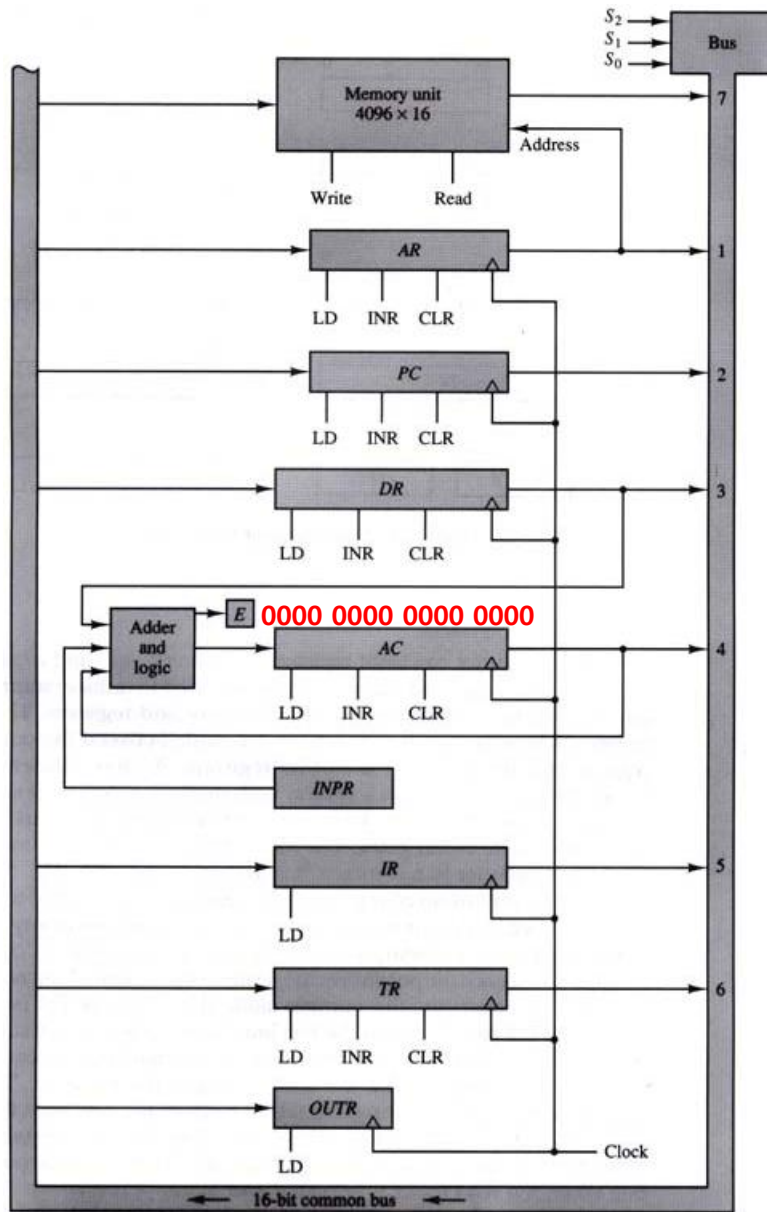


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PC = 0000 0001 0100 0111 0000 0010 0000

0111 0000 0010 0000

Register reference

$B_5 = 1 \rightarrow \text{INC}$

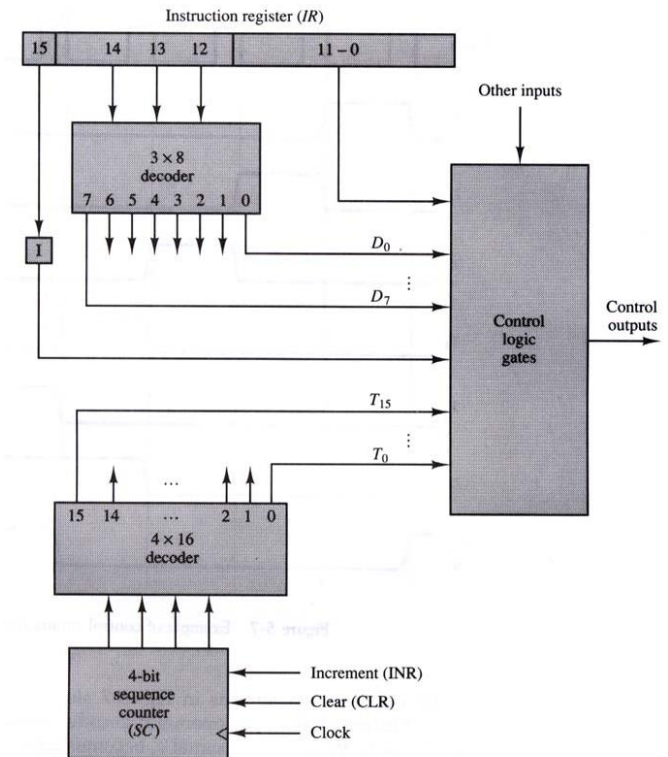


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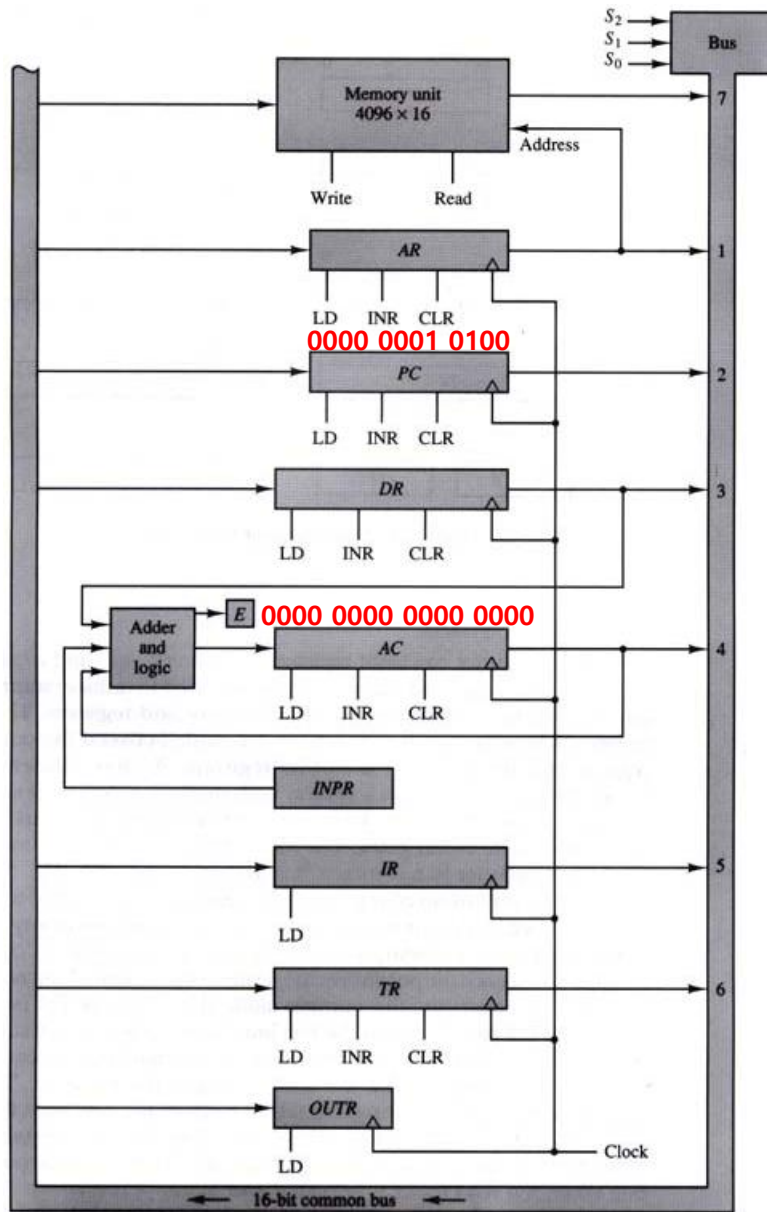


Figure 5-4 Basic computer registers connected to a common bus.

PC = 0000 0001 0100 0111 0000 0010 0000

$T_0 : AR \leftarrow PC$

$T_1 : IR \leftarrow M[AR], PC \leftarrow PC + 1$

$T_2 : D_0, \dots, D_7 \leftarrow \text{Decode } IR(12 - 14), AR \leftarrow IR(0 - 11), I \leftarrow IR(15)$

$T_3 : AC \leftarrow AC + 1$

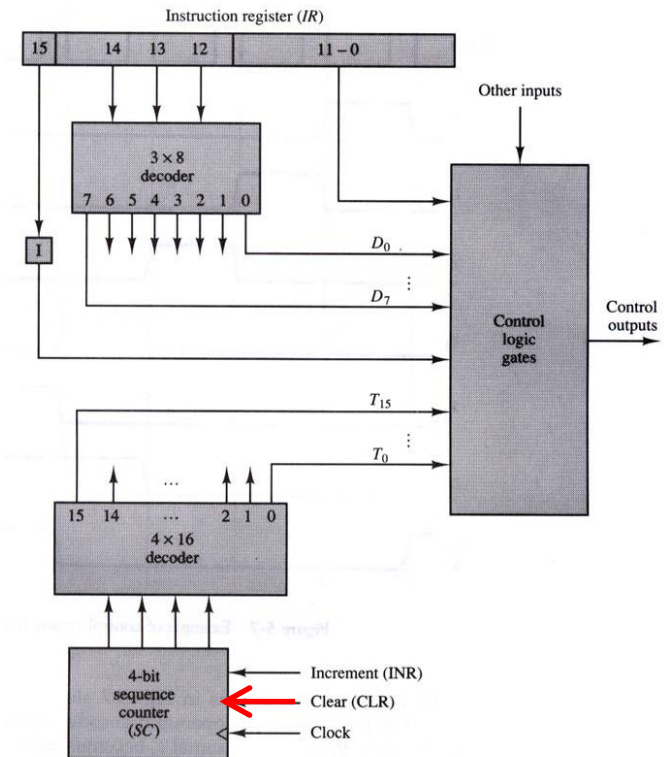


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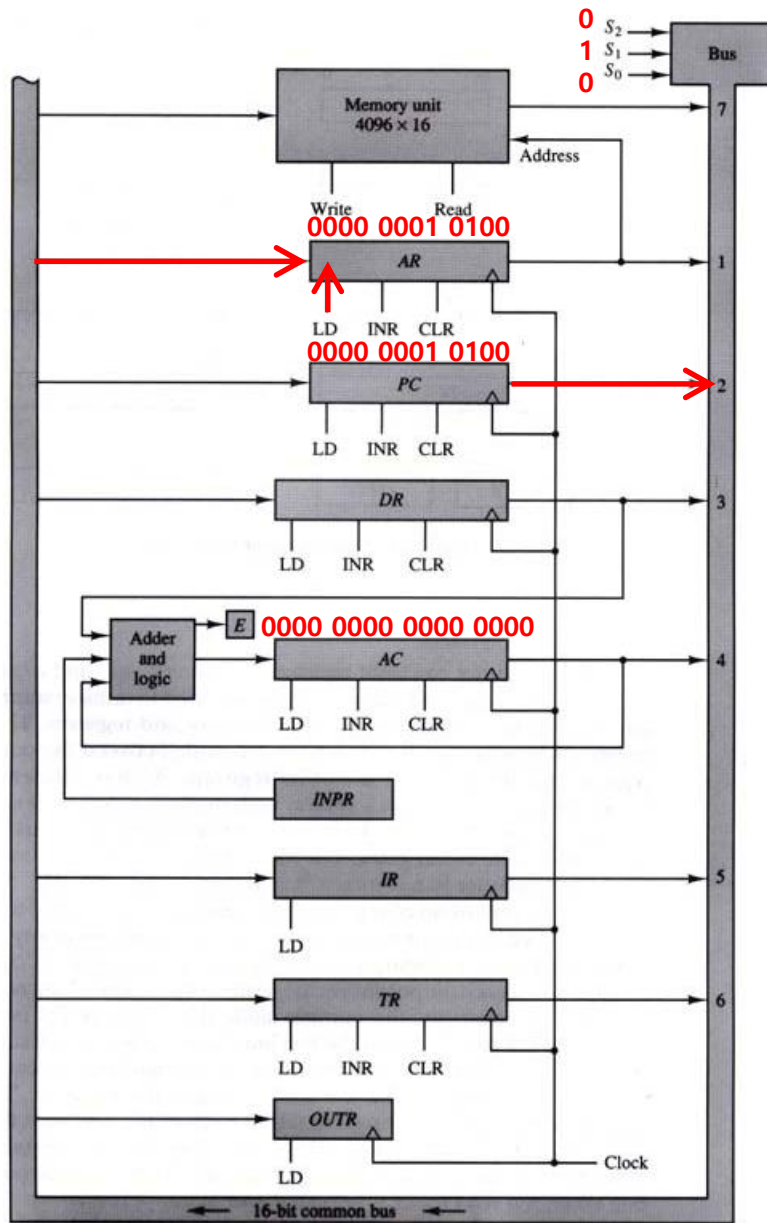


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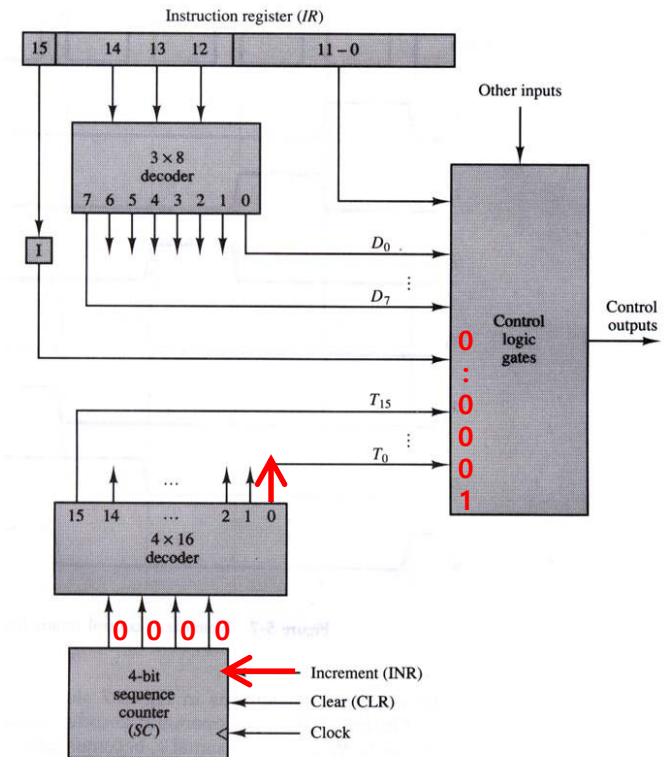


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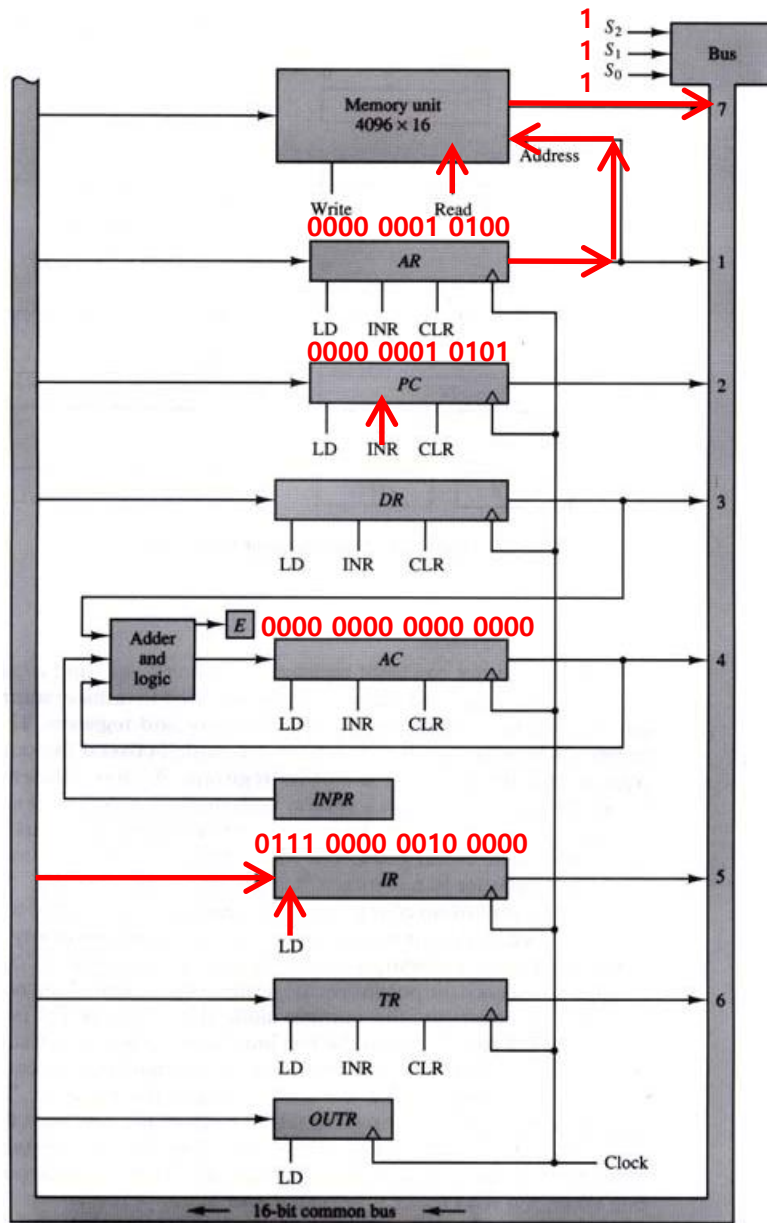


Figure 5-4 Basic computer registers connected to a common bus.

0000 0001 0100
 PC = 0000 0001 0101

0111 0000 0010 0000

$T_0 : AR \leftarrow PC$

$T_1 : IR \leftarrow M[AR], PC \leftarrow PC + 1$

$T_2 : D_0, \dots, D_7 \leftarrow \text{Decode } IR(12 - 14), AR \leftarrow IR(0 - 11), I \leftarrow IR(15)$

$T_3 : AC \leftarrow AC + 1$

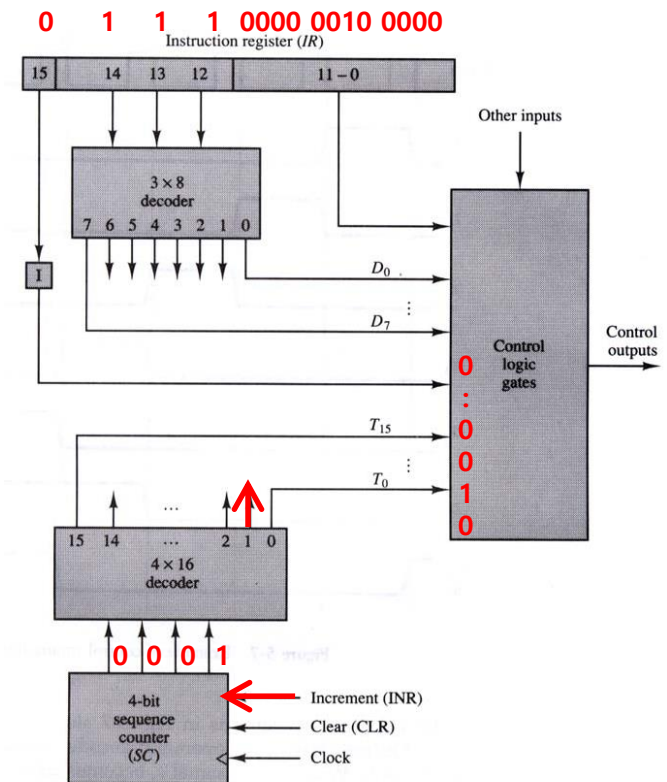


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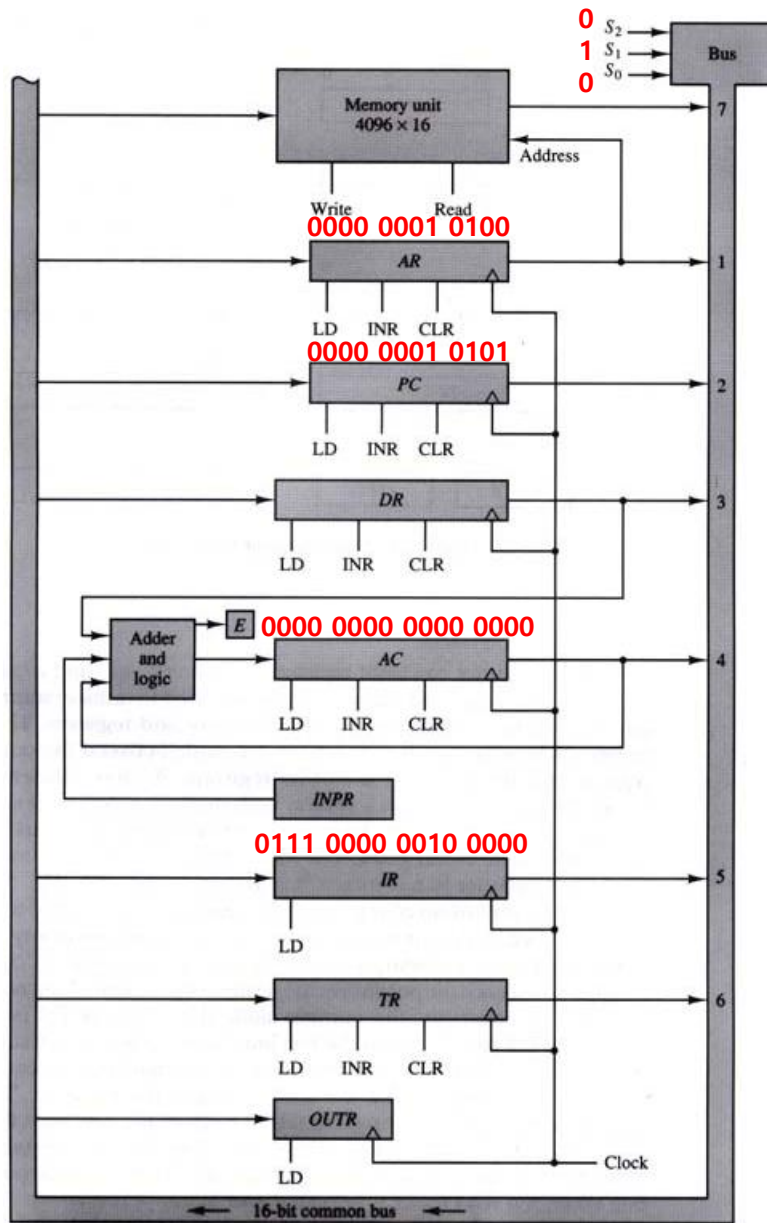


Figure 5-4 Basic computer registers connected to a common bus.

0000 0001 0100
PC = 0000 0001 0101

0111 0000 0010 0000

$T_0 : AR \leftarrow PC$

$T_1 : IR \leftarrow M[AR], PC \leftarrow PC + 1$

$T_2 : D_0, \dots, D_7 \leftarrow \text{Decode } IR(12 - 14), AR \leftarrow IR(0 - 11), I \leftarrow IR(15)$

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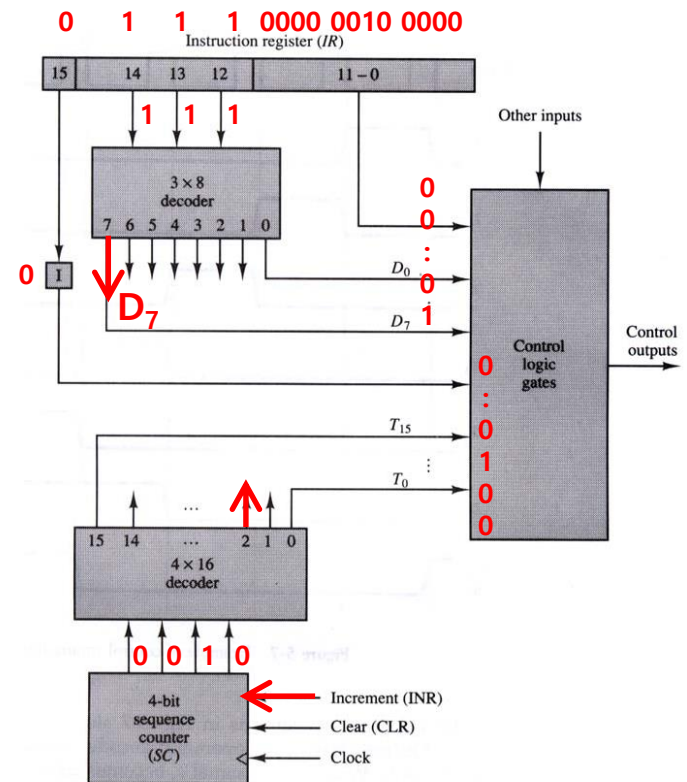


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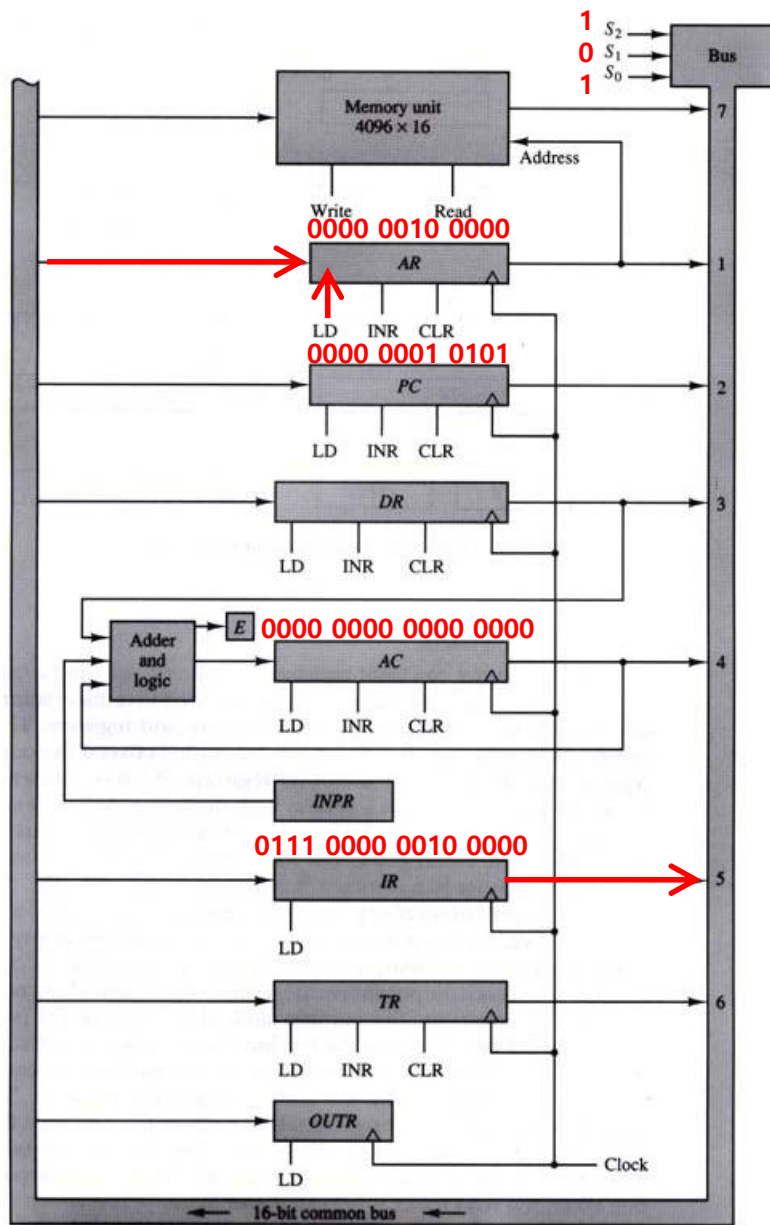


Figure 5-4 Basic computer registers connected to a common bus.

0000 0001 0100
PC = 0000 0001 0101

0111 0000 0010 0000

$T_0 : AR \leftarrow PC$

$T_1 : IR \leftarrow M[AR], PC \leftarrow PC + 1$

$T_2 : D_0, \dots, D_7 \leftarrow \text{Decode } IR(12 - 14), AR \leftarrow IR(0 - 11), I \leftarrow IR(15)$

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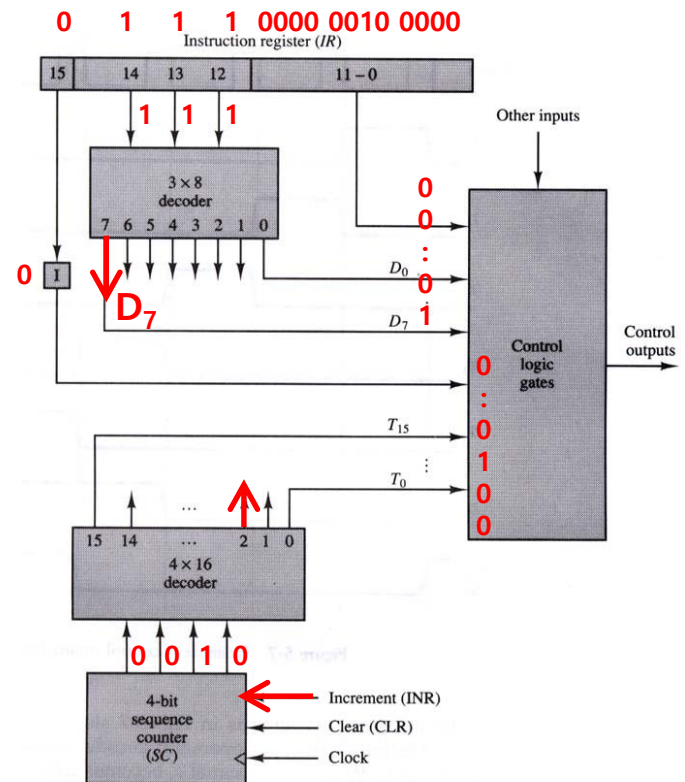


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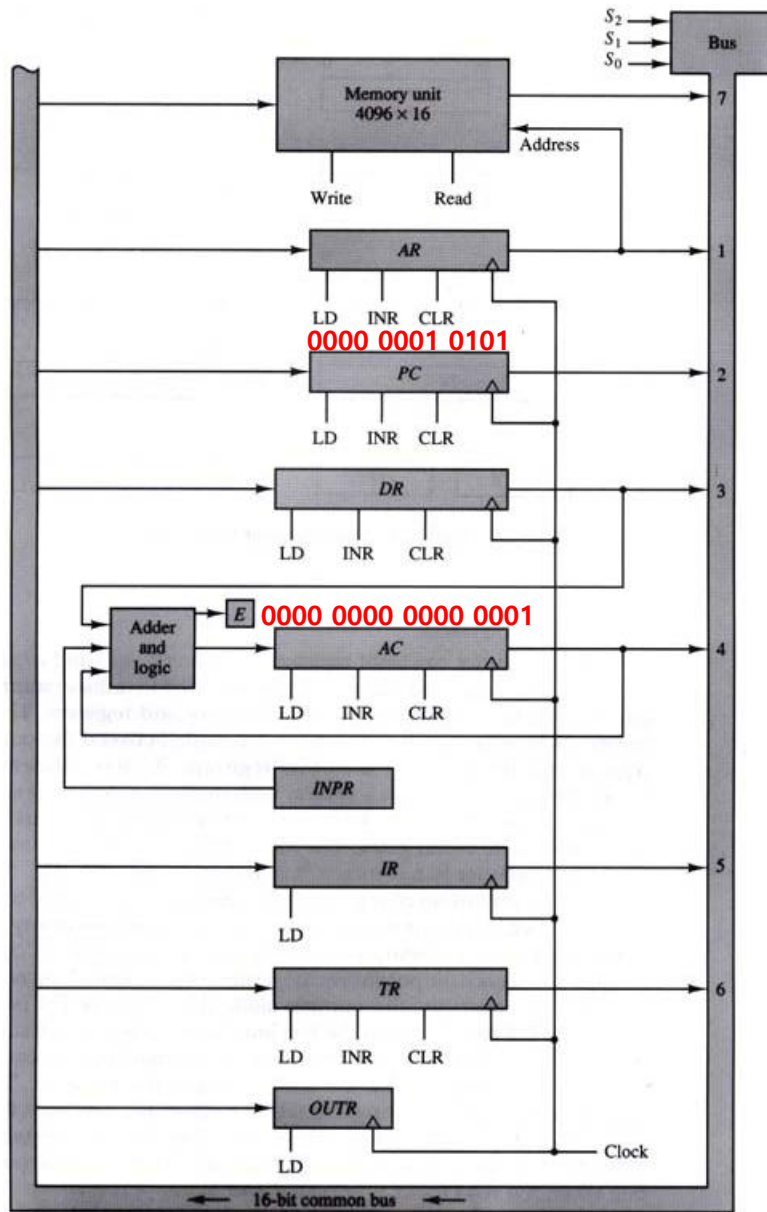


Figure 5-4 Basic computer registers connected to a common bus.

0000 0001 0100 0111 0000 0010 0000
 PC = 0000 0001 0101 0001 0001 0000 0000
 ⋮ ⋮
 0001 0000 0000 0000 0000 0000 0011

0001 0001 0000 0000

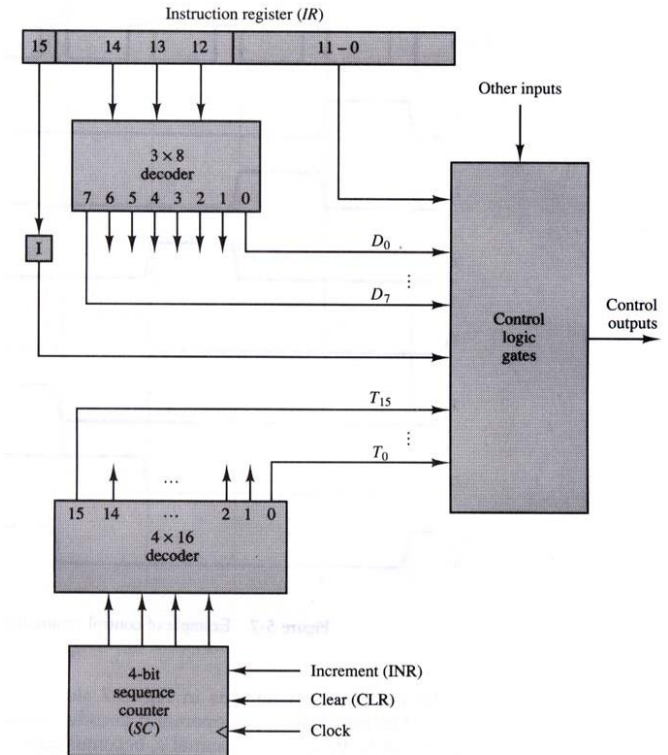


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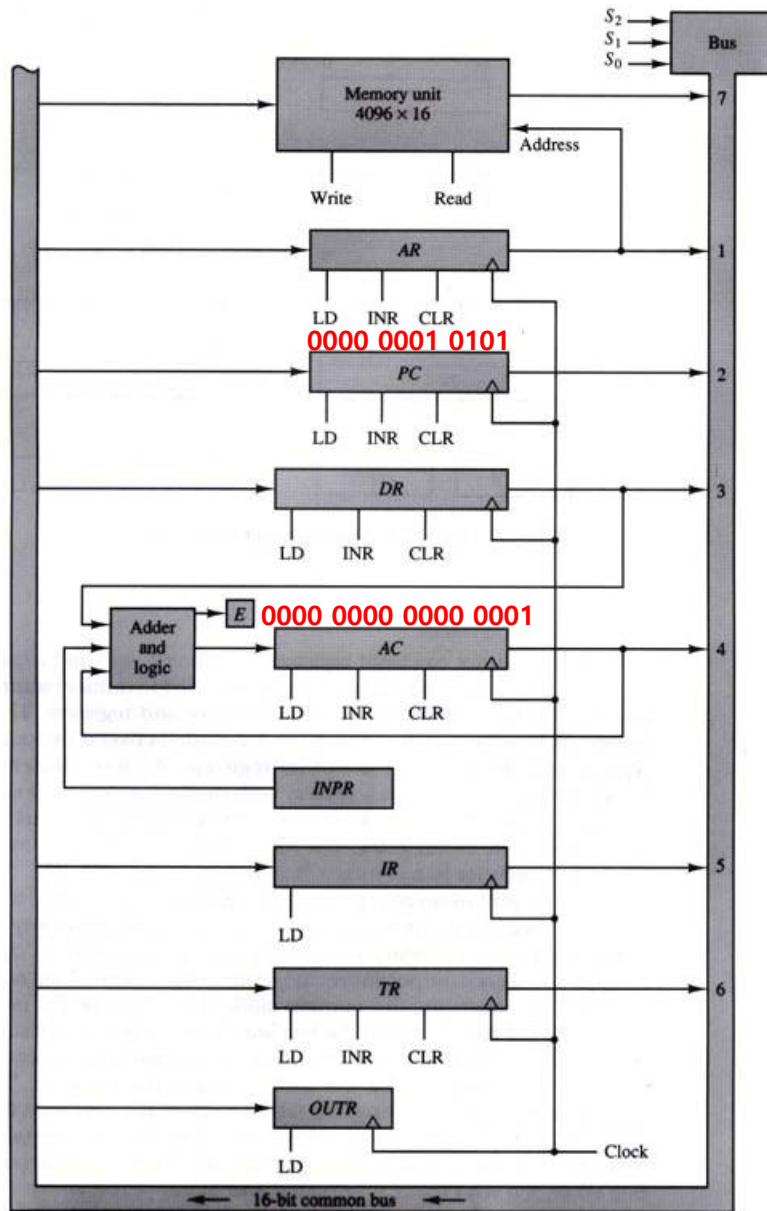


Figure 5-4 Basic computer registers connected to a common bus.

0000 0001 0100 0111 0000 0010 0000
 PC = 0000 0001 0101 0001 0001 0000 0000
 ⋮ ⋮
 0001 0000 0000 0000 0000 0000 0011

0001 0001 0000 0000
 Direct Memory reference Operand address
ADD

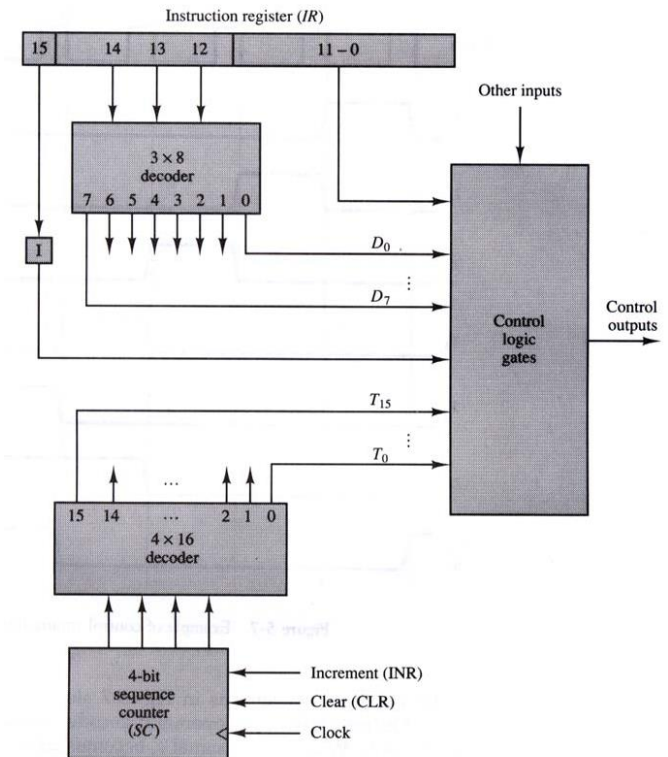


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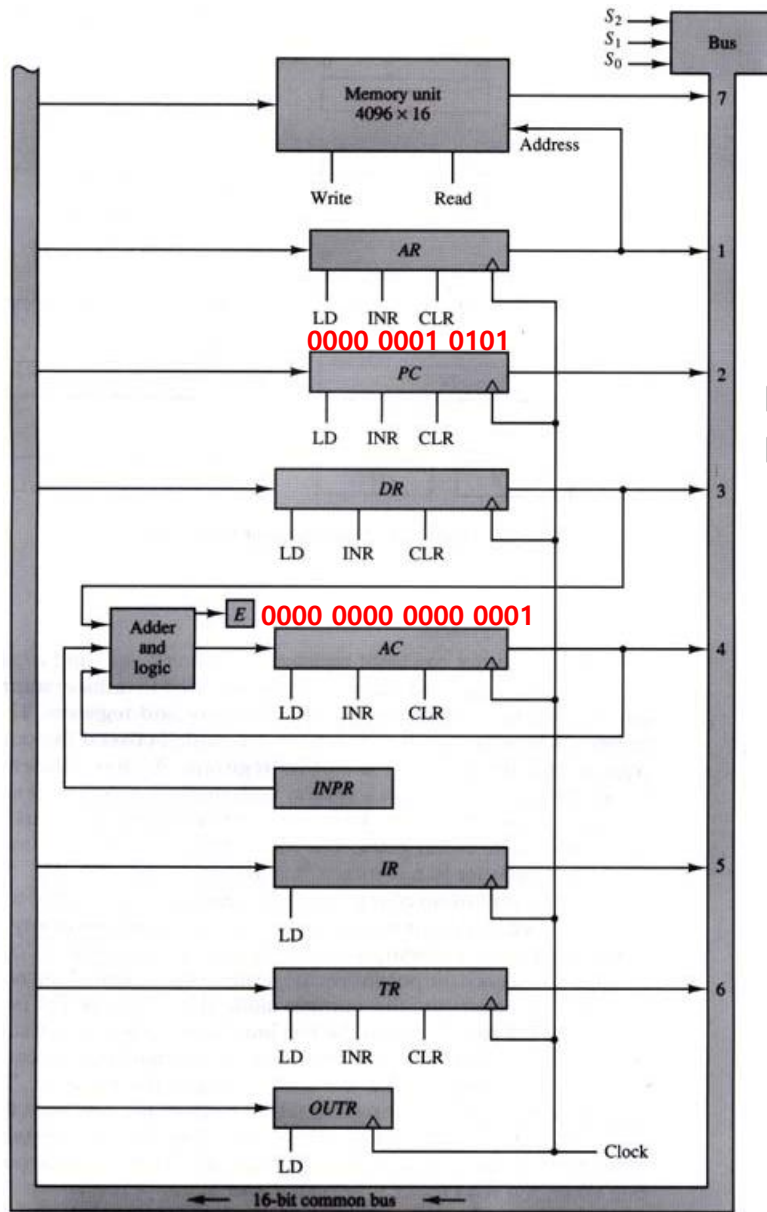


Figure 5-4 Basic computer registers connected to a common bus.

$0000\ 0001\ 0100$ $0111\ 0000\ 0010\ 0000$
 $PC = 0000\ 0001\ 0101$ $0001\ 0001\ 0000\ 0000$
 \vdots \vdots
 $0001\ 0000\ 0000$ $0000\ 0000\ 0000\ 0011$

$T_0 : AR \leftarrow PC$
 $T_1 : IR \leftarrow M[AR], PC \leftarrow PC + 1$
 $T_2 : D_0, \dots, D_7 \leftarrow \text{Decode } IR(12 - 14), AR \leftarrow IR(0 - 11), I \leftarrow IR(15)$
 $T_3 : \text{Nothing}$
 $D_1 T_4 : DR \leftarrow M[AR]$
 $D_1 T_5 : AC \leftarrow AC + DR, E \leftarrow C_{out}, SC \leftarrow 0$

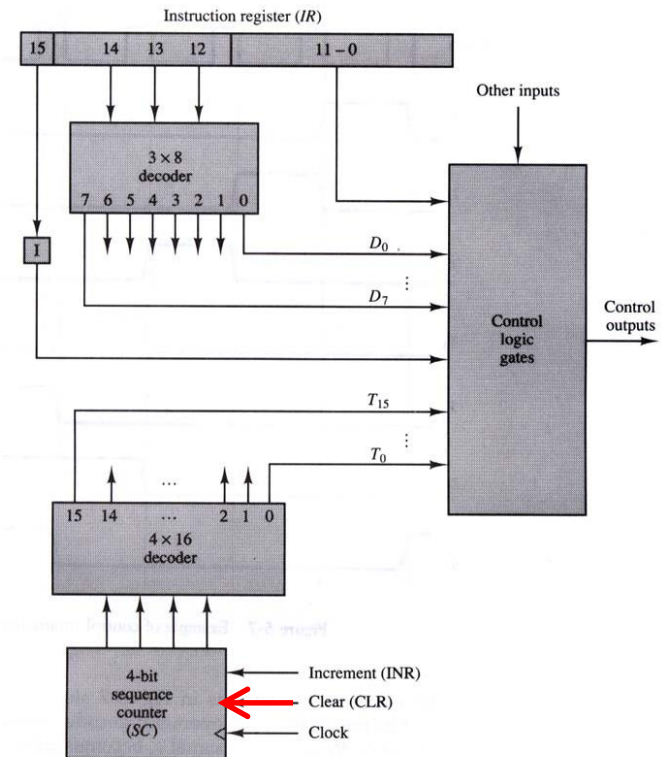


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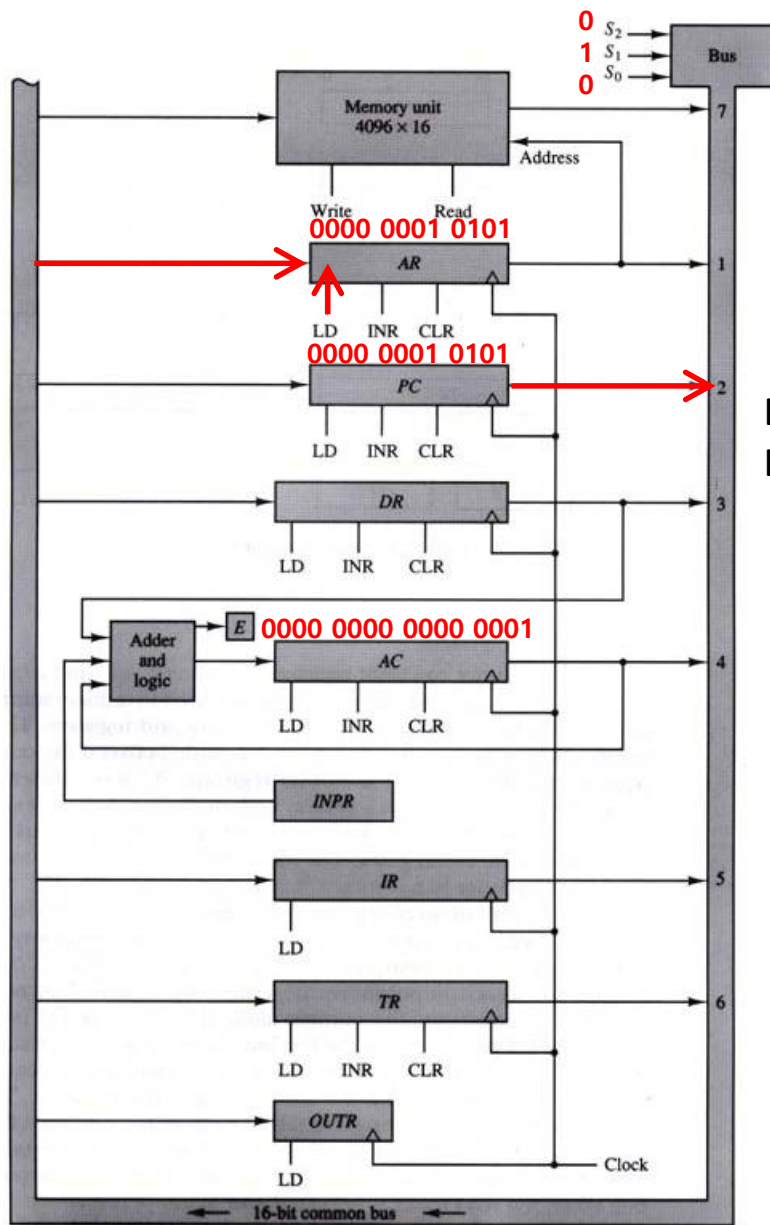


Figure 5-4 Basic computer registers connected to a common bus.

0000 0001 0100
 PC = 0000 0001 0101
 ...
 0001 0000 0000

0111 0000 0010 0000
 0001 0001 0000 0000
 ...
 0000 0000 0000 0011

$T_0 : AR \leftarrow PC$

$T_1 : IR \leftarrow M[AR], PC \leftarrow PC + 1$

$T_2 : D_0, \dots, D_7 \leftarrow \text{Decode } IR(12 - 14), AR \leftarrow IR(0 - 11), I \leftarrow IR(15)$

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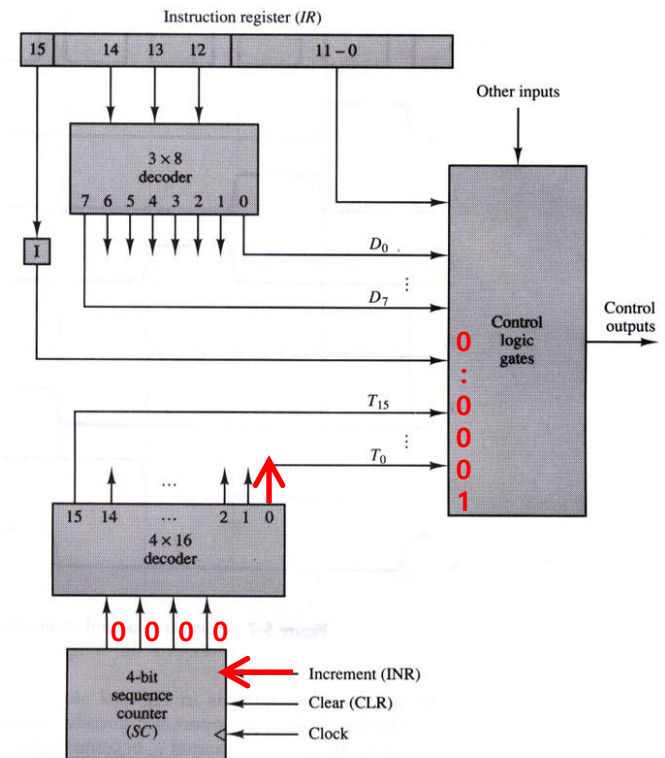


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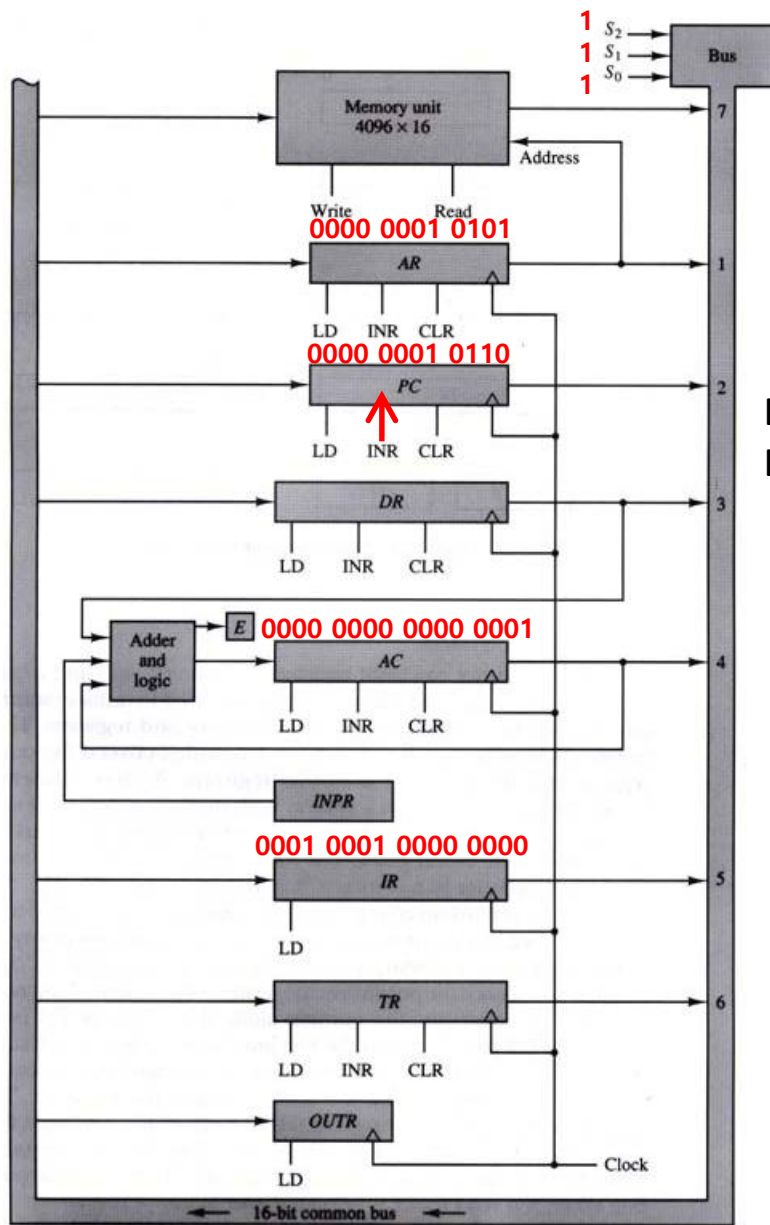


Figure 5-4 Basic computer registers connected to a common bus.

0000 0001 0100 0111 0000 0010 0000
 0000 0001 0101 0001 0001 0000 0000
 : :
 : :
 0001 0000 0000 0000 0000 0000 0011

PC = 0000 0001 0110

$T_0 : AR \leftarrow PC$

$T_1 : IR \leftarrow M[AR], PC \leftarrow PC + 1$

$T_2 : D_0, \dots, D_7 \leftarrow \text{Decode } IR(12 - 14), AR \leftarrow IR(0 - 11), I \leftarrow IR(15)$

$T_3 : \text{Nothing}$

$D_1 T_4 : DR \leftarrow M[AR]$

$D_1 T_5 : AC \leftarrow AC + DR, E \leftarrow C_{out}, SC \leftarrow 0$

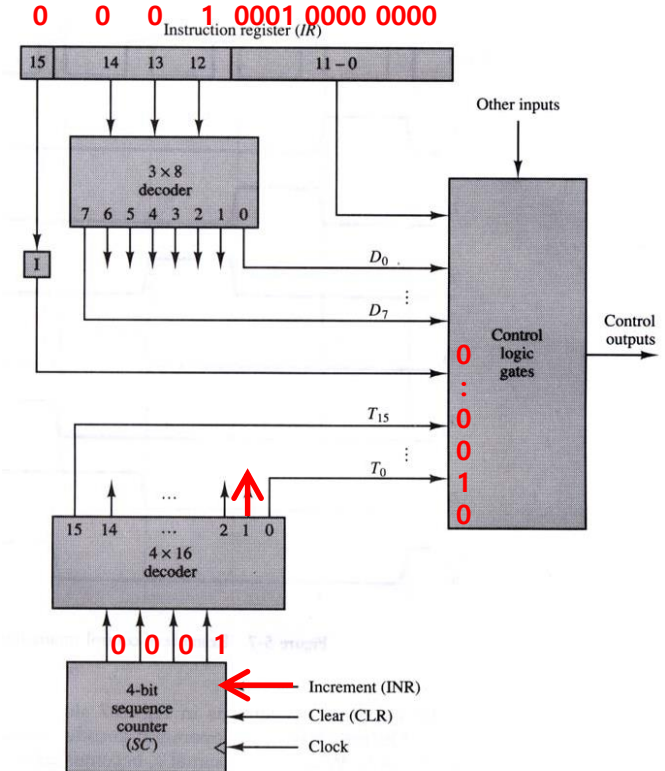


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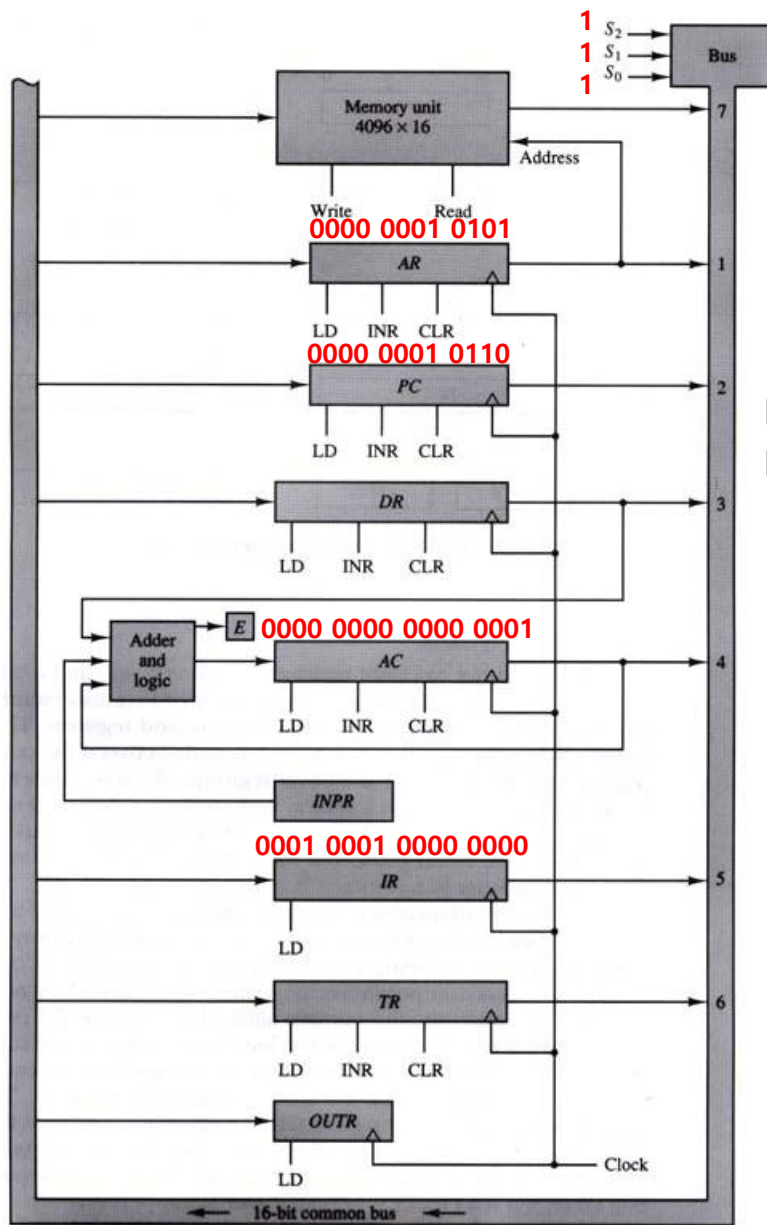


Figure 5-4 Basic computer registers connected to a common bus.

0000 0001 0100 0111 0000 0010 0000
 0000 0001 0101 0001 0001 0000 0000
 PC = 0000 0001 0110 ⋮
 ⋮ ⋮
 0001 0000 0000 0000 0000 0000 0011

$T_0 : AR \leftarrow PC$
 $T_1 : IR \leftarrow M[AR], PC \leftarrow PC + 1$
 $T_2 : D_0, \dots, D_7 \leftarrow \text{Decode } IR(12 - 14), AR \leftarrow IR(0 - 11), I \leftarrow IR(15)$
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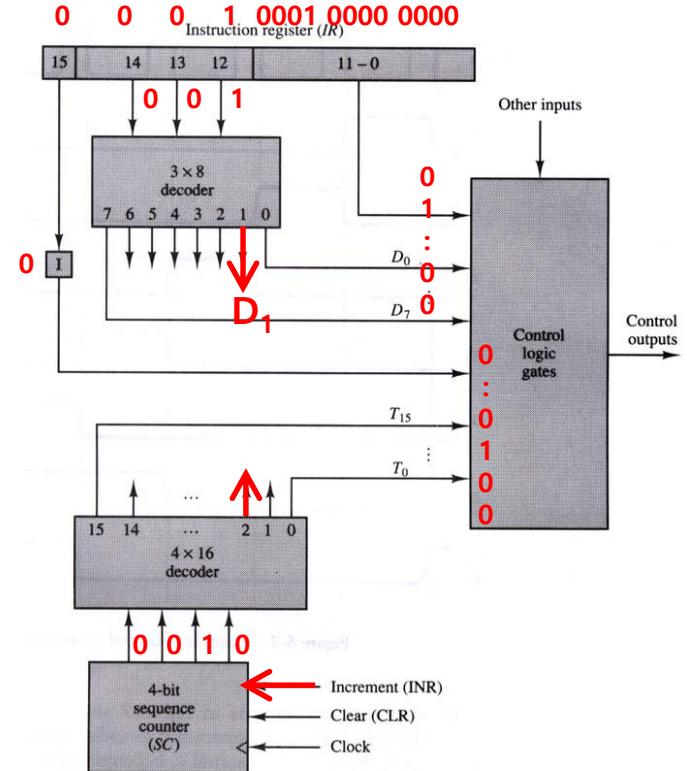


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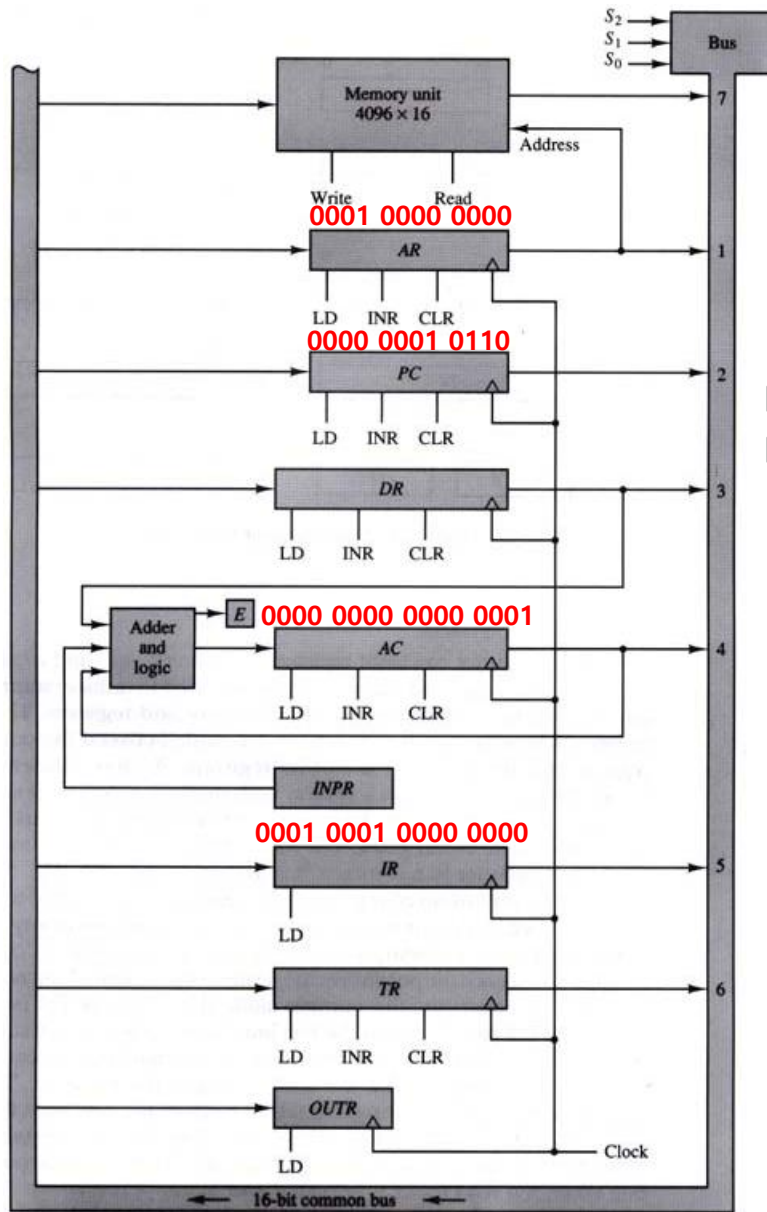


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0000 0001 0100 0111 0000 0010 0000
 0000 0001 0101 0001 0001 0000 0000
 PC = 0000 0001 0110 ⋮
 ⋮ ⋮
 0001 0000 0000 0000 0000 0000 0011

$T_0 : AR \leftarrow PC$

$T_1 : IR \leftarrow M[AR], PC \leftarrow PC + 1$

$T_2 : D_0, \dots, D_7 \leftarrow \text{Decode } IR(12 - 14), AR \leftarrow IR(0 - 11), I \leftarrow IR(15)$

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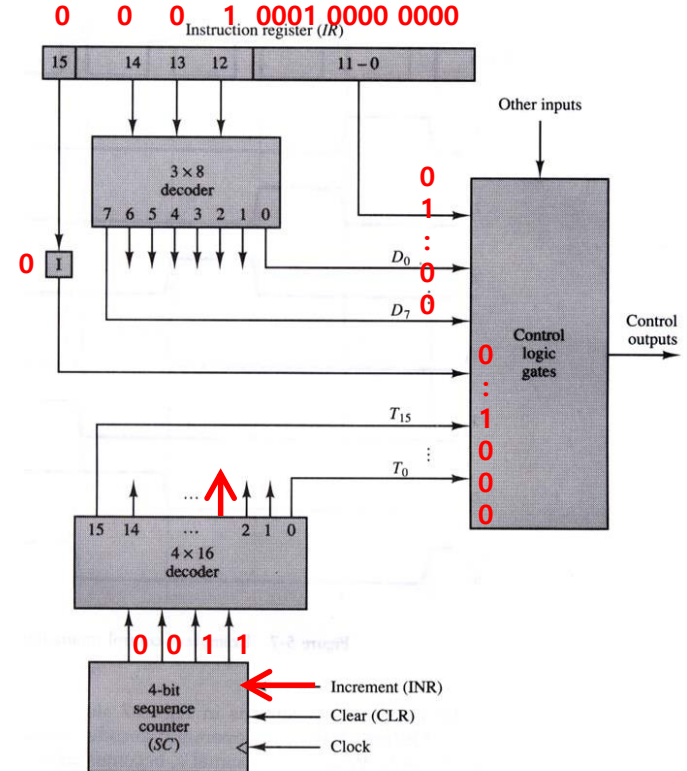


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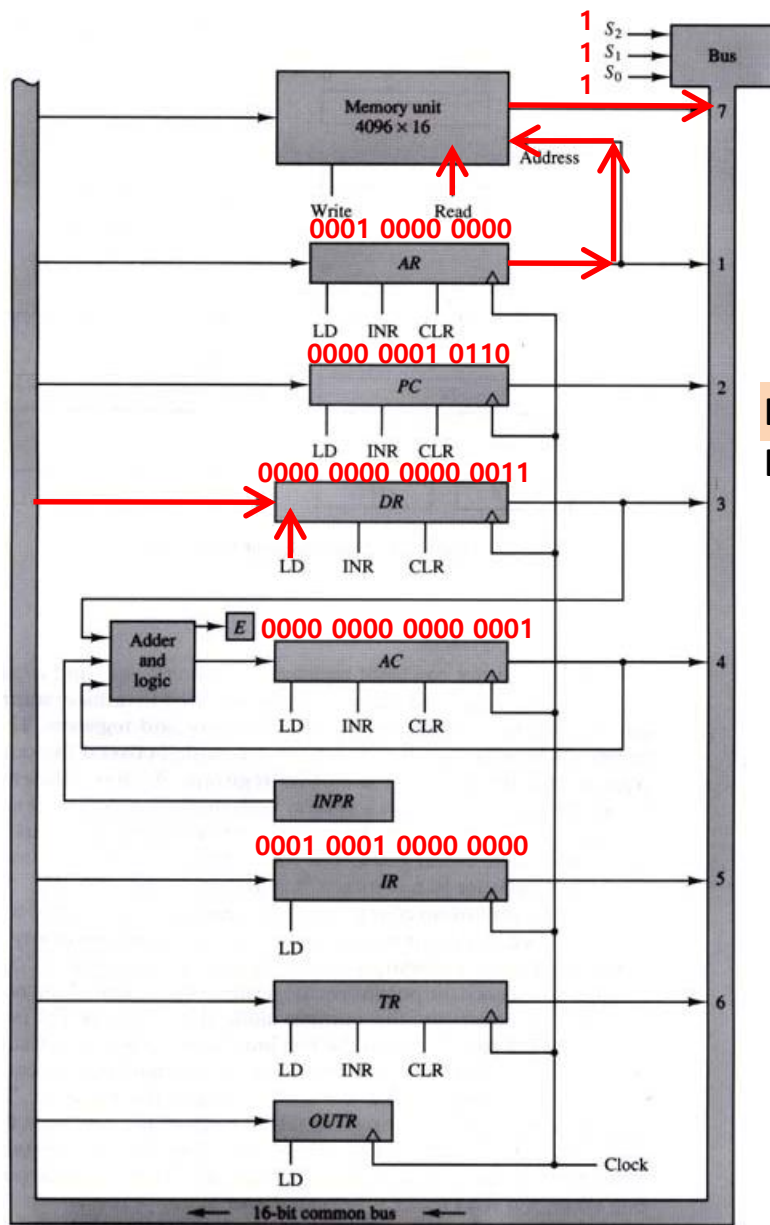


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0000 0001 0100	0111 0000 0010 0000
0000 0001 0101	0001 0001 0000 0000
...	...
0000 0001 0110	0000 0000 0000 0011

PC = 0000 0001 0110

$T_0 : AR \leftarrow PC$

$T_1 : IR \leftarrow M[AR], PC \leftarrow PC + 1$

$T_2 : D_0, \dots, D_7 \leftarrow \text{Decode } IR(12 - 14), AR \leftarrow IR(0 - 11), I \leftarrow IR(15)$

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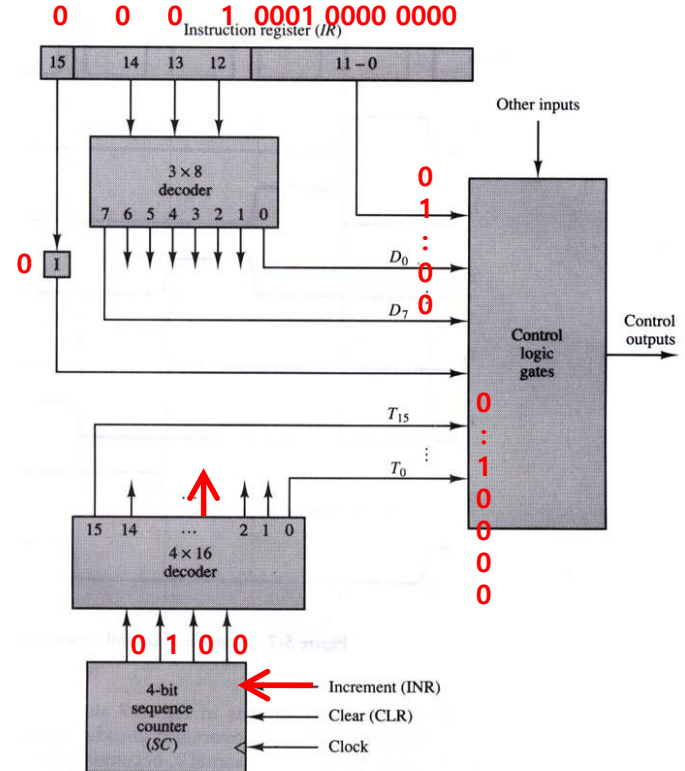


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