CSC258 lab1
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PRA0105

(K-maps in the next page, with optimized logic expressions for the circuit)

	A	B	C	S0	S1	S2	S3	S4	S5	S6
0	0	0	0	1	0	1	0	1	1	0
1	0	0	1	0	1	1	0	1	1	0
2	0	1	0	1	1	1	0	1	1	0
3	0	1	1	0	0	0	0	1	0	1
4	1	0	0	0	0	0	0	0	0	0
5	1	0	1	0	0	1	1	1	0	0
6	1	1	0	1	0	0	1	1	1	1
7	1	1	1	0	0	1	0	1	1	0

$S_0 = m_0 + m_2 + m_6$ $S_1 = m_1 + m_2$

$S_2 = m_3 \cdot m_4 \cdot m_6$ $S_3 = m_0 + m_5 + m_6$

$S_4 = m_0 \cdot m_4$ $S_5 = m_0 + m_1 + m_2 + m_6$

$S_6 = m_4 \cdot m_5$

For S_0: $\bar{A}\cdot\bar{B}\cdot\bar{C} + \bar{A}\cdot B\cdot\bar{C} + A\cdot B\cdot\bar{C}$

	$\bar{B}\cdot\bar{C}$	$\bar{B}\cdot C$	BC	$B\cdot\bar{C}$
$\bar{A}$	1	0	0	1
A	0	0	0	1

$S_0 = \bar{A}\cdot\bar{C} + B\cdot\bar{C}$

For S_1: $\bar{A}\cdot\bar{B}\cdot C + \bar{A}\cdot B\cdot\bar{C}$

	$\bar{B}\cdot\bar{C}$	$\bar{B}\cdot C$	BC	$B\cdot\bar{C}$
$\bar{A}$	0	1	0	1
A	0	0	0	0

$S_1 = \bar{A}\cdot\bar{B}\cdot C + \bar{A}\cdot B\cdot\bar{C}$

For S_2: $(A+\bar{B}+\bar{C})(\bar{A}+B+C)(\bar{A}+\bar{B}+C)$

	$\bar{B}+\bar{C}$	$\bar{B}+C$	$B+C$	$B+\bar{C}$
$\bar{A}$	1	(0	0)	1
A	(0)	1	1	1

$S_2 = (A+\bar{B}+\bar{C})(\bar{A}+C)$

For S_3: $\bar{A}\cdot\bar{B}\cdot\bar{C} + A\cdot\bar{B}\cdot C + A\cdot B\cdot\bar{C}$

	$\bar{B}\cdot\bar{C}$	$\bar{B}\cdot C$	BC	$B\cdot\bar{C}$
$\bar{A}$	(1)	0	0	0
A	0	(1)	0	(1)

$S_3 = \bar{A}\cdot\bar{B}\cdot\bar{C} + A\cdot\bar{B}\cdot C + A\cdot B\cdot\bar{C}$

For S_4: $(A+B+C)\cdot(\bar{A}+B+C)$

	$\bar{B}+\bar{C}$	$\bar{B}+C$	$B+C$	$B+\bar{C}$
$\bar{A}$	1	1	(0	1
A	1	1	0)	1

$S_4 = B+C$

For S_5: $\bar{A}\cdot\bar{B}\cdot\bar{C} + \bar{A}\cdot\bar{B}\cdot C + \bar{A}\cdot B\cdot\bar{C} + A\cdot B\cdot\bar{C}$

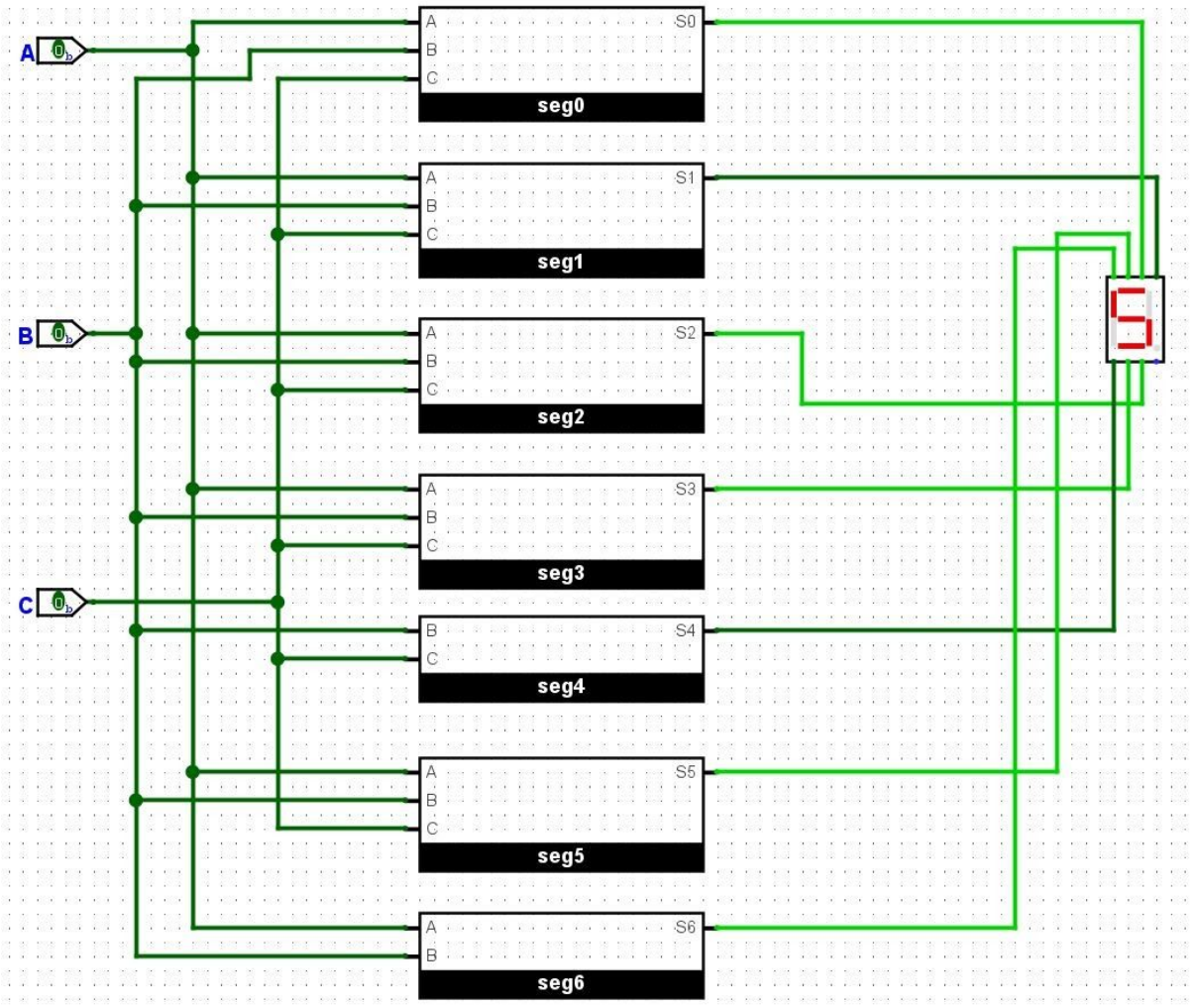
	$\bar{B}\cdot\bar{C}$	$\bar{B}C$	BC	$B\cdot\bar{C}$
$\bar{A}$	(1	1)	0	(1
A	0	0	0	1)

$S_5 = \bar{A}\cdot\bar{B} + B\cdot\bar{C} = \overline{(A+B)} + B\cdot\bar{C}$

For S6: $(\bar{A}+B+C)\cdot(\bar{A}+B+\bar{C})$

	$\bar{B}+\bar{C}$	$\bar{B}+C$	$B+C$	$B+\bar{C}$
$\bar{A}$	1	1	0	0
A	1	1	1	1

$S6 = \bar{A}+B$


A
B
C
A
B
C
S0
seg0
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B
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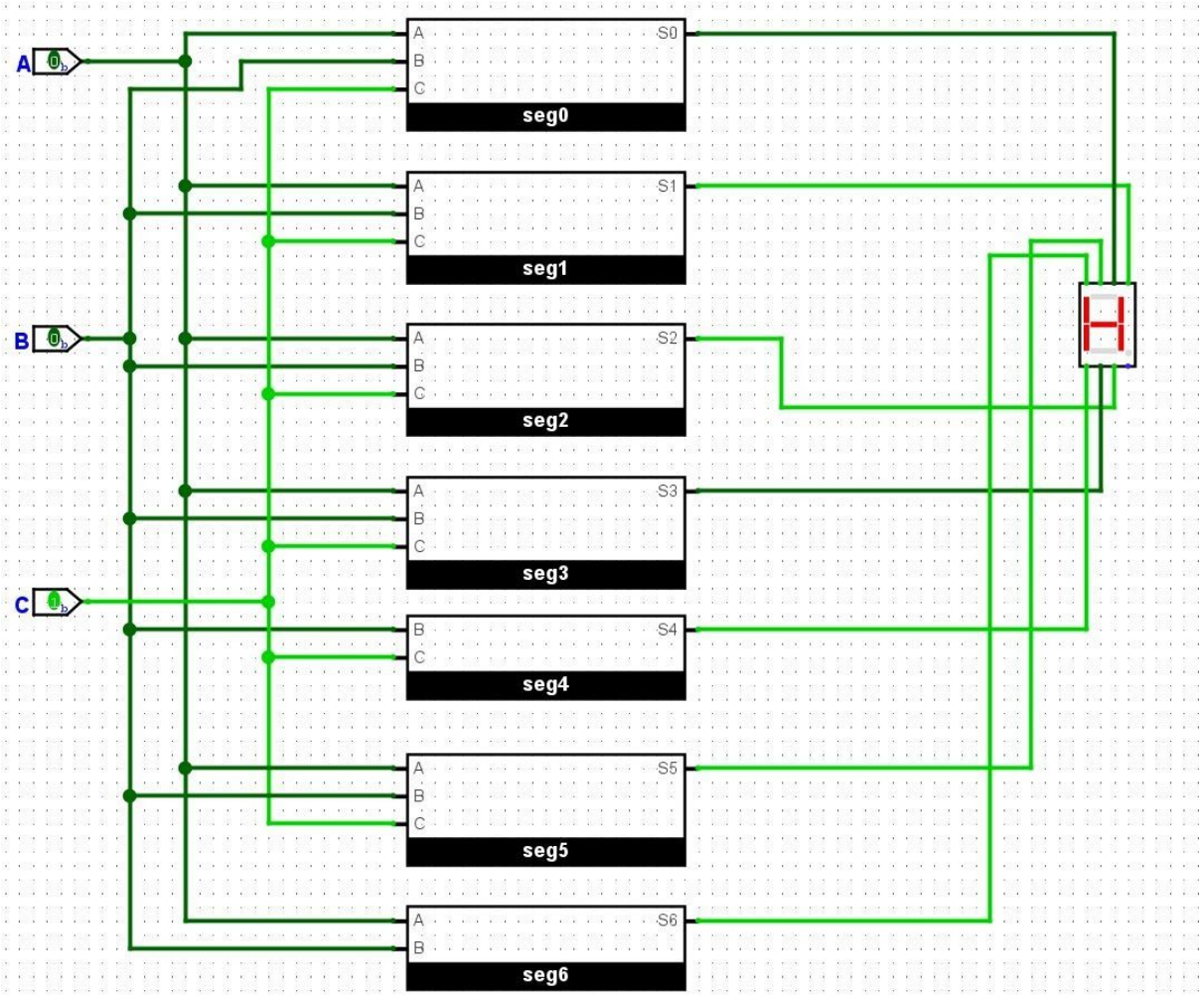
S1
seg1
A
B
C
S2
seg2
A
B
C
S3
seg3
B
C
S4
seg4
A
B
C
S5
seg5
A
B
S6
seg6


A
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C
A
B
C
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seg1
A
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C
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seg2
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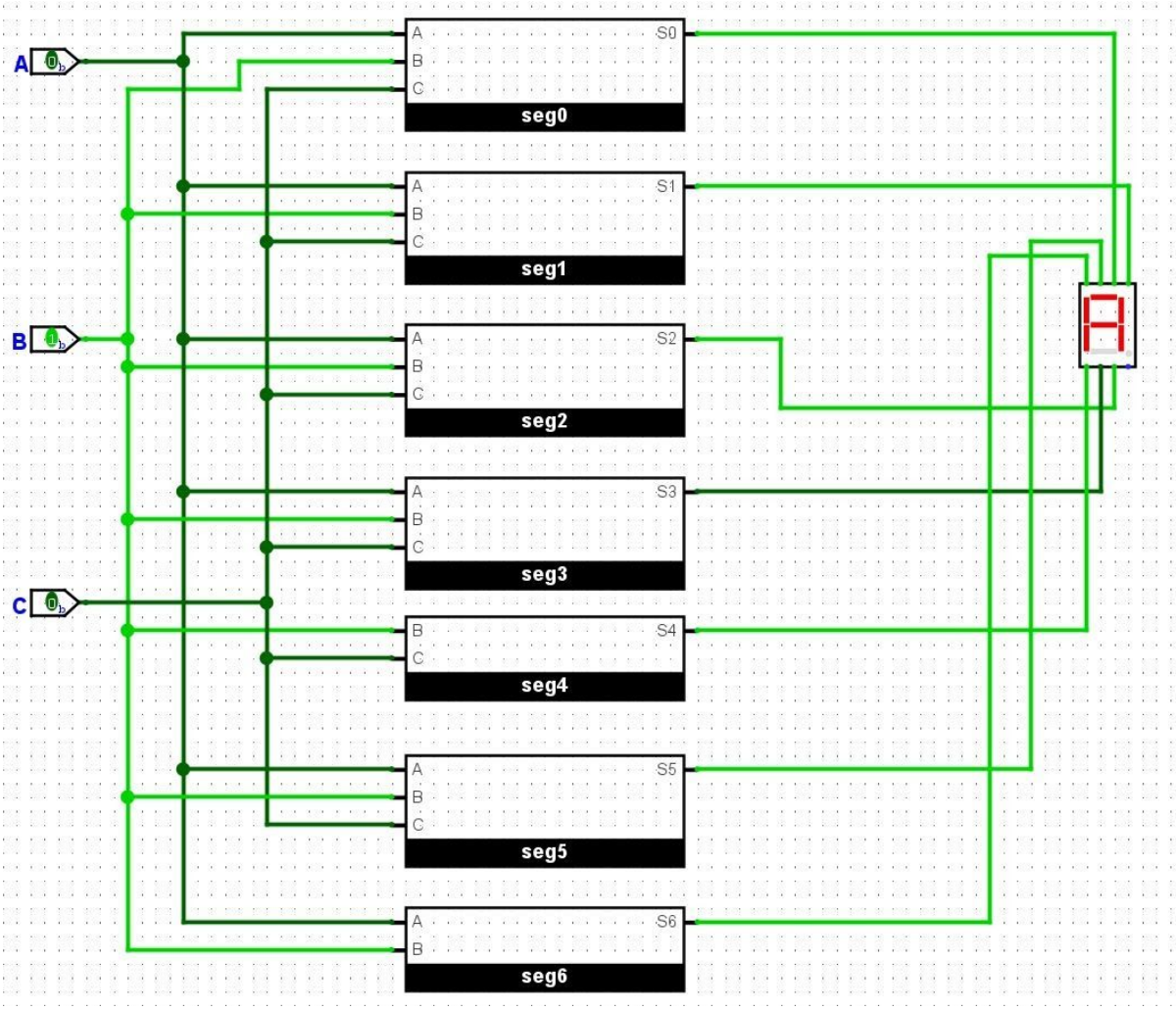
S4
seg4
A
B
C
S5
seg5
A
B
S6
seg6


A
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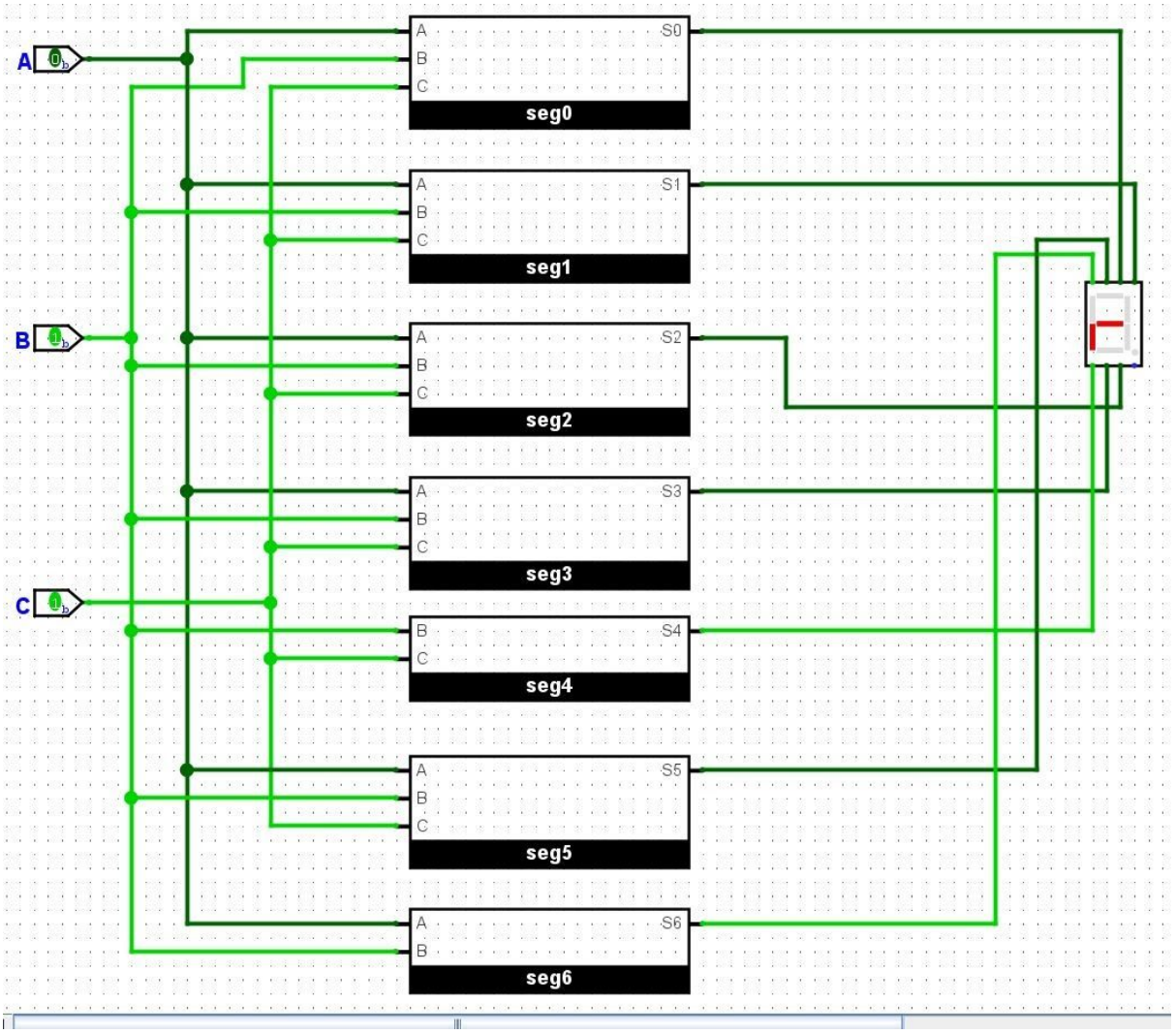
C
S4
seg4
A
B
C
S5
seg5
A
B
S6
seg6


A
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seg5
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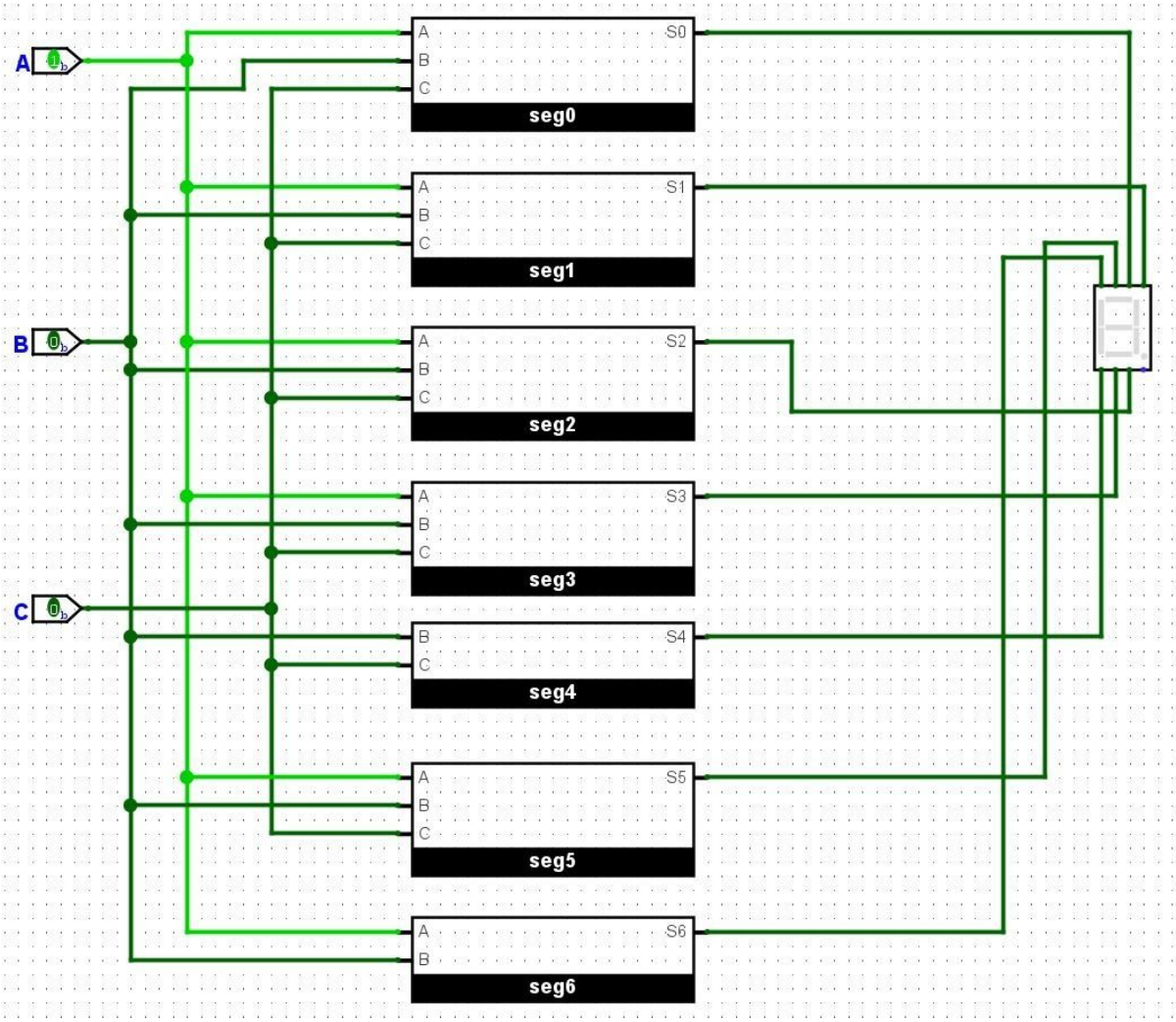
B
S6
seg6


A
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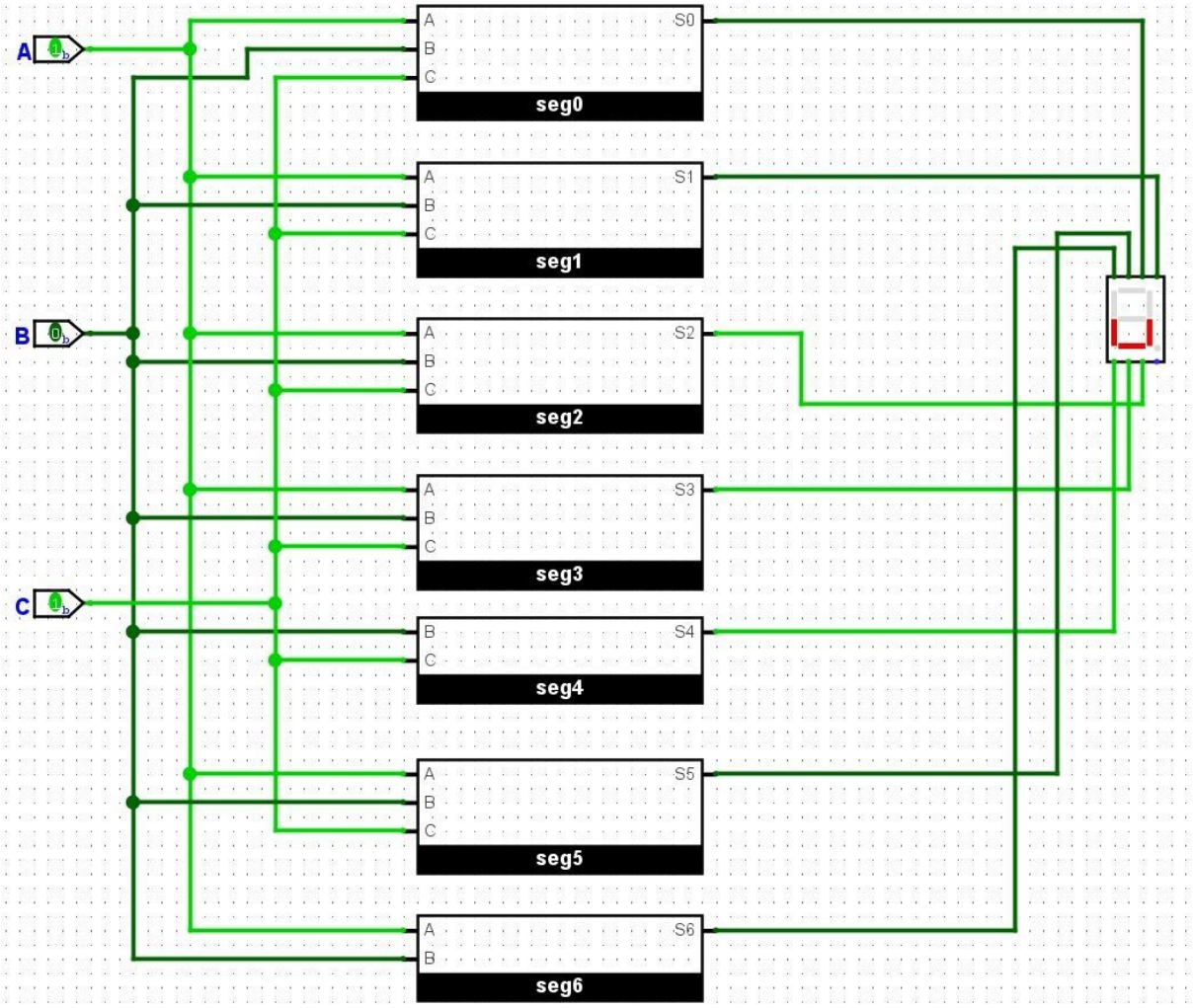
A
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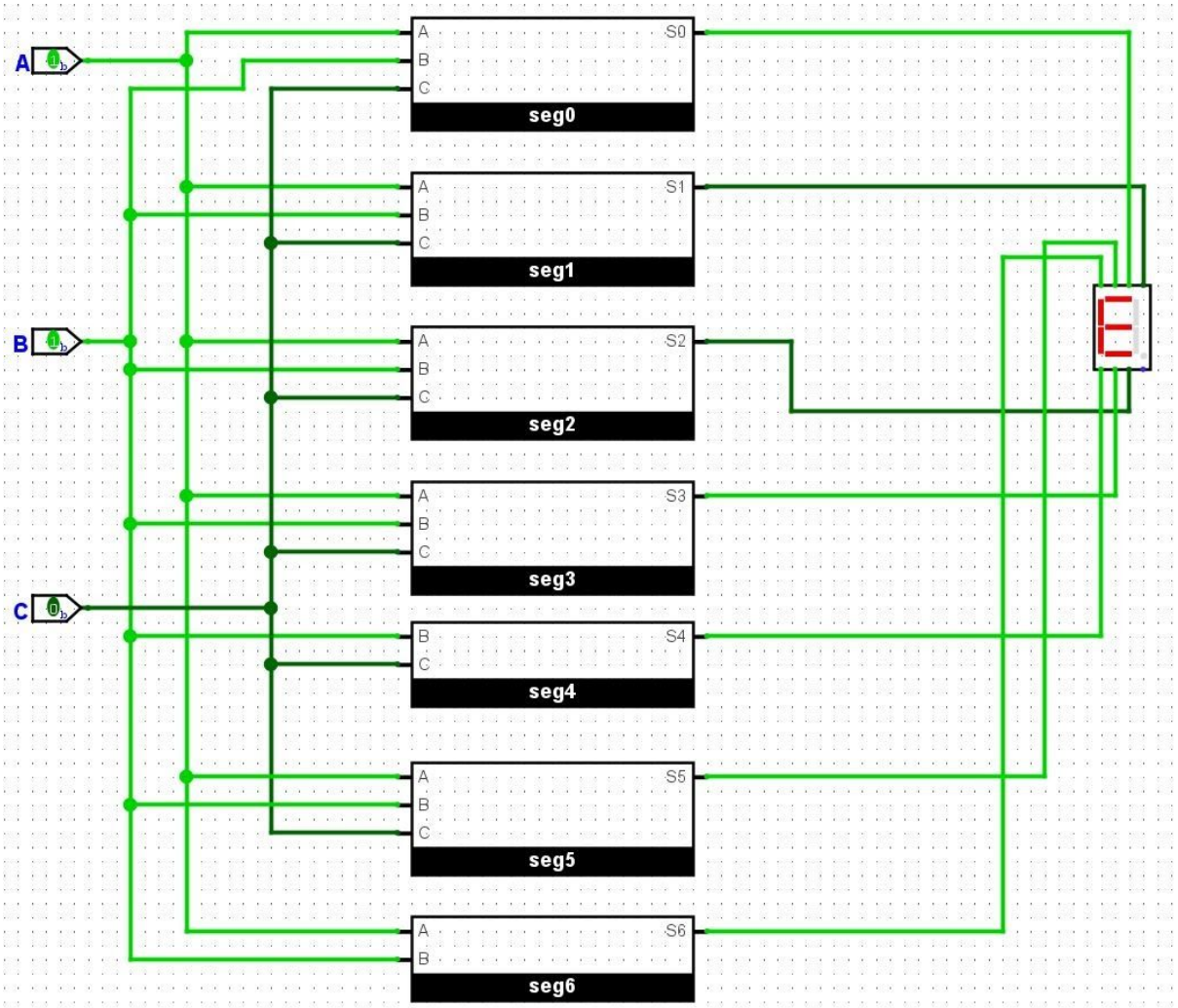
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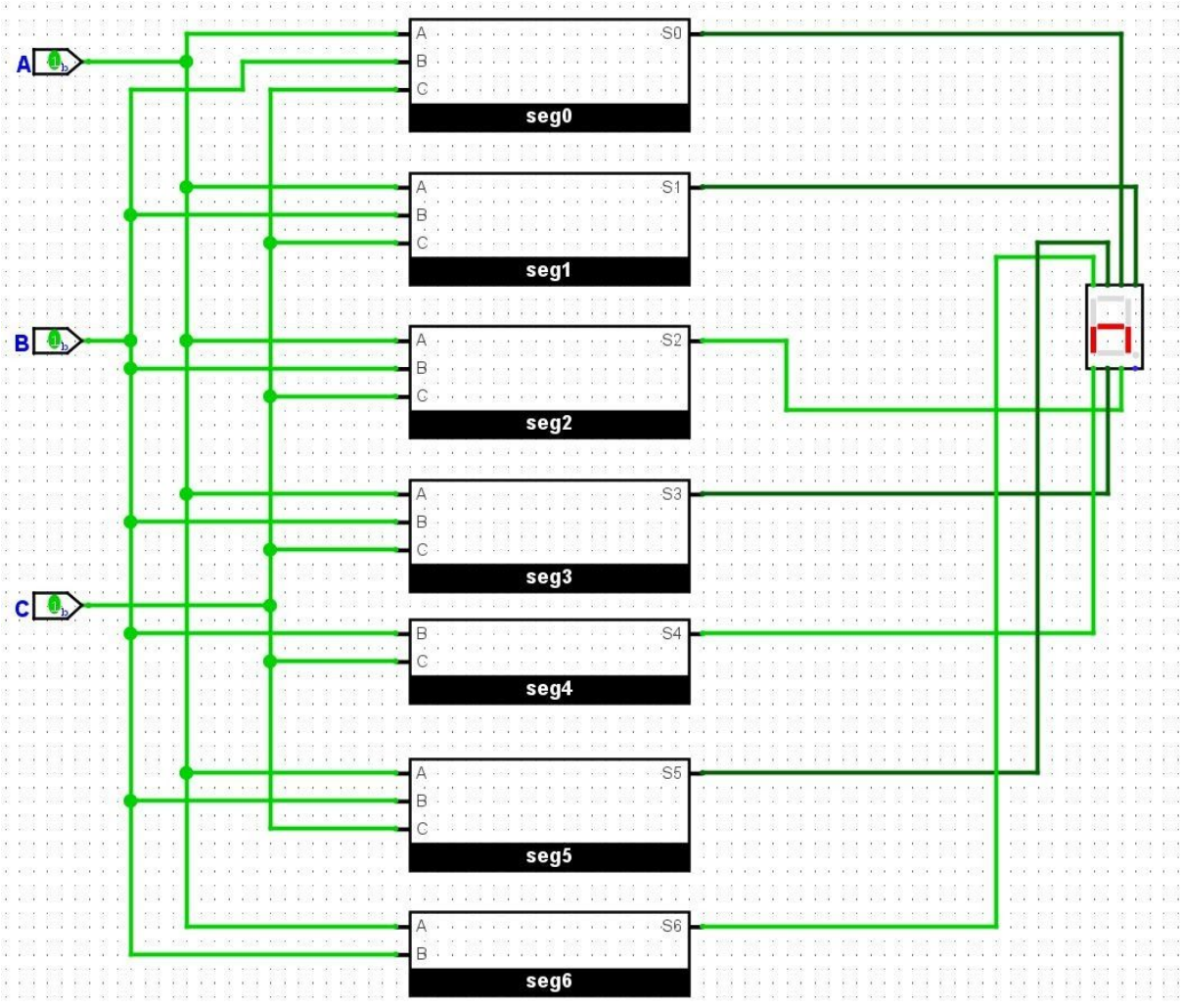
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S5
seg5
A
B
S6
seg6