**CENTRO EDUCACIONAL DA FUNDAÇÃO SALVADOR ARENA**

**FACULDADE ENGENHEIRO SALVADOR ARENA**

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**Projeto Decodificador**

**7 segmentos**

(FILIPPO VALIANTE FILHO)

SÃO BERNARDO DO CAMPO

**2022**

## ELETRÔNICA DIGITAL - Decodificador BCD - 7 Segmentos

| nº | D | C | B | A | a | b | c | d | e | f | g |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| 1 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 |
| 2 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 |
| 3 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 |
| 4 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 |
| 5 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 |
| 6 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 |
| 7 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 |
| 8 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 9 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 |
| - | 1 | 0 | 1 | 0 | X | X | X | X | X | X | X |
| - | 1 | 0 | 1 | 1 | X | X | X | X | X | X | X |
| - | 1 | 1 | 0 | 0 | X | X | X | X | X | X | X |
| - | 1 | 1 | 0 | 1 | X | X | X | X | X | X | X |
| - | 1 | 1 | 1 | 0 | X | X | X | X | X | X | X |
| - | 1 | 1 | 1 | 1 | X | X | X | X | X | X | X |

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|---|---|---|---|
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| Nome: | Renan Cesar | RA: | 81210033 |
| Nome: | Victor Nunes | RA: | 81210012 |

**MAPA DE KARNAUGH**

**TABELA A**



| Tabela a | | | |
|---|---|---|---|
| | $\overline{B}\,\overline{A}$ | $\overline{B}\,A$ | $B\,A$ | $B\,\overline{A}$ |
| $\overline{D}\,\overline{C}$ | 1 | 0 | 1 | 1 |
| $\overline{D}\,C$ | 0 | 1 | 1 | 1 |
| $D\,C$ | X | X | X | X |
| $D\,\overline{C}$ | 1 | 1 | X | X |

$A = \overline{C}\,\overline{A} + D + C\,A + B$    OU    $A = D + B + C \odot A$

**TABELA B**

| Tabela b | | | | |
|---|---|---|---|---|
| | $\overline{B}\,\overline{A}$ | $\overline{B}\,A$ | $B\,A$ | $B\,\overline{A}$ |
| $\overline{D}\,\overline{C}$ | 1 | 1 | 1 | 1 |
| $\overline{D}\,C$ | 1 | 0 | 1 | 0 |
| $D\,C$ | X | X | X | X |
| $D\,\overline{C}$ | 1 | 1 | X | X |

$$B = \overline{B}\,\overline{A} + \overline{C} + B\,A \qquad OU \qquad B = \overline{C} + B \odot A$$

**TABELA C**

| Tabela c | | | | |
|---|---|---|---|---|
| | $\overline{B}\,\overline{A}$ | $\overline{B}\,A$ | $B\,A$ | $B\,\overline{A}$ |
| $\overline{D}\,\overline{C}$ | 1 | 1 | 1 | 0 |
| $\overline{D}\,C$ | 1 | 1 | 1 | 1 |
| $D\,C$ | X | X | X | X |
| $D\,\overline{C}$ | 1 | 1 | X | X |

$$C = \overline{B} + A + C$$

**TABELA D**

| Tabela d | | | | |
|---|---|---|---|---|
| | $\overline{B}\,\overline{A}$ | $\overline{B}\,A$ | $B\,A$ | $B\,\overline{A}$ |
| $\overline{D}\,\overline{C}$ | 1 | 0 | 1 | 1 |
| $\overline{D}\,C$ | 0 | 1 | 0 | 1 |
| $D\,C$ | X | X | X | X |
| $D\,\overline{C}$ | 1 | 1 | X | X |

$$D = \overline{C}\,\overline{A} + C\,\overline{B}\,A + D + \overline{C}\,B + B\,\overline{A}$$

**TABELA E**

| Tabela e | | | | |
|---|---|---|---|---|
| | $\overline{B}\,\overline{A}$ | $\overline{B}\,A$ | $B\,A$ | $B\,\overline{A}$ |
| $\overline{D}\,\overline{C}$ | 1 | 0 | 0 | 1 |
| $\overline{D}\,C$ | 0 | 0 | 0 | 1 |
| $D\,C$ | X | X | X | X |
| $D\,\overline{C}$ | 1 | 0 | X | X |

$E = \overline{C}\,\overline{A} + B\,\overline{A}$


**TABELA F**

| Tabela f | | | | |
|---|---|---|---|---|
| | $\overline{B}\,\overline{A}$ | $\overline{B}\,A$ | $B\,A$ | $B\,\overline{A}$ |
| $\overline{D}\,\overline{C}$ | 1 | 0 | 0 | 0 |
| $\overline{D}\,C$ | 1 | 1 | 0 | 1 |
| $D\,C$ | X | X | X | X |
| $D\,\overline{C}$ | 1 | 1 | X | X |

$F = \overline{B}\,\overline{A} + C\,\overline{B} + D + C\,\overline{A}$


**TABELA G**

| Tabela g | | | | |
|---|---|---|---|---|
| | $\overline{B}\,\overline{A}$ | $\overline{B}\,A$ | $B\,A$ | $B\,\overline{A}$ |
| $\overline{D}\,\overline{C}$ | 0 | 0 | 1 | 1 |
| $\overline{D}\,C$ | 1 | 1 | 0 | 1 |
| $D\,C$ | X | X | X | X |
| $D\,\overline{C}$ | 1 | 1 | X | X |

$G = C\,\overline{B} + D + \overline{C}\,B + B\,\overline{A}$     OU     $G = D + B\,\overline{A} + C \oplus B$