## Labo 2: eigenschappen van digitale poorten

### Lab voeding

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| Familie | voedingspanning |
| 74HCT |  |
| 74HC |  |
| 4000 |  |

### Logische functie

#### 74HCT00: 2-input NAND

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| --- | --- | --- |
| B | A | X |
| 0 | 0 |  |
| 0 | 1 |  |
| 1 | 0 |  |
| 1 | 1 |  |

#### 74HC02: 2-input NOR

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| B | A | X |
| 0 | 0 |  |
| 0 | 1 |  |
| 1 | 0 |  |
| 1 | 1 |  |

#### 74HC08: 2-input AND

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| B | A | X |
| 0 | 0 |  |
| 0 | 1 |  |
| 1 | 0 |  |
| 1 | 1 |  |

#### 74HC14: 1-input NOT

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| A | X |
| 0 |  |
| 1 |  |

#### 74HC32: 2-input OR

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| B | A | X |
| 0 | 0 |  |
| 0 | 1 |  |
| 1 | 0 |  |
| 1 | 1 |  |

#### 74HC86: 2-input XOR

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| B | A | X |
| 0 | 0 |  |
| 0 | 1 |  |
| 1 | 0 |  |
| 1 | 1 |  |

**Is de bewering juist?** Laat ingangen NOOIT open. Ook al ligt de ingang schijnbaar op het juiste niveau of word de poort niet gebruikt, de storingsgevoeligheid is wel zeer groot.

*Ja, op deze open poorten kunnen Statische elektriciteiten en Ongewenste signalen die de voor foutieve meet resultaten en ongewenste activatie van de poort veroorzaken.*

## Spanning op open ingangen

### 74HCT00: 2-input NAND

Meet resultaat

besluit

### 74HC00: 2-input NAND

Meet resultaat

besluit

### 4011: 2-input NAND

Meet resultaat

besluit

## Inverte karakteristiek van NAND-poort in 3 technologieën

* 74HCT00

Scoop beeld

…………….. V / DIV

…………….. ms / DIV

…………….. Probes

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* 74HC00

Scoop beeld

…………….. V / DIV

…………….. ms / DIV

…………….. Probes

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* 4011 bij Vdd=5 V

Scoop beeld

…………….. V / DIV

…………….. ms / DIV

…………….. Probes

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* 4011 bij Vdd=12 V

Scoop beeld

…………….. V / DIV

…………….. ms / DIV

…………….. Probes

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* Wat kan er fout lopen met Vdd= 12 V?
* Vergelijk de 4 meeting van de 3 verschillende families

## LABO 3: Buffering en interfacing

### De LED als logische niveau-indicator

#### A: 74HC32 OR

Afbeelding met diagram, schets, lijn, Technische tekening

Automatisch gegenereerde beschrijving

VCC=

RI=

RL=

VF=

Bedrading schema

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#### B: 74HC32 OR

Schema

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Bedrading schema

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#### C: Bevindingen en besluiten

### Wired-AND Functie (de bedrade-EN functie)

Afbeelding met diagram, lijn, patroon, origami

Automatisch gegenereerde beschrijving