Report Title

By

Nhóm 9

Kiến Trúc Máy Tính

PGS.TS Nguyễn Đình Việt

# BÁO CÁO THỰC HÀNH LOGISISM

Nhóm 9

Thành viên:

+ Nguyễn Việt Hùng + Nguyễn Thị Hương Trà

+ Vũ Trí Kiên + Nguyễn Thu Trang

A, Bảng chân lý

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| X1 | X2 | X3 | X4 | Z1 | Z2 | Z3 | Z4 | Z5 | Z6 | Z7 | Biểu diễn |
| 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | Số 1 |
| 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | Số 2 |
| 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | Số 3 |
| 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | Số 4 |
| 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | Số 5 |
| 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | Số 6 |
| 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | Số 7 |
| 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | Số 8 |
| 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | Số 9 |
| 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | Số 0 |
| 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | Số 9 ngược |
| 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | Số 9 |
| 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | Số 6 |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | Số 9 |

B, Bảng chân lý dạng SOP

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| X1 | X2 | X3 | X4 | Z1 | Minterm |
| 1 | 0 | 0 | 0 | 0 | X1X2’X3’X4’ |
| 0 | 1 | 0 | 0 | 1 | X1’X2X3’X4’ |
| 1 | 1 | 0 | 0 | 1 | X1X2X3’X4’ |
| 0 | 0 | 1 | 0 | 0 | X1’X2’X3X4’ |
| 1 | 0 | 1 | 0 | 1 | X1X2’X3X4’ |
| 0 | 1 | 1 | 0 | 1 | X1’X2X3X4’ |
| 1 | 1 | 1 | 0 | 1 | X1X2X3X4’ |
| 0 | 0 | 0 | 1 | 1 | X1’X2’X3’X4 |
| 1 | 0 | 0 | 1 | 1 | X1X2’X3’X4 |
| 0 | 0 | 0 | 0 | 1 | X1’X2’X3’X4’ |
| 0 | 1 | 0 | 1 | 1 | X1’X2X3’X4 |
| 0 | 0 | 1 | 1 | 1 | X1’X2’X3X4 |
| 0 | 1 | 1 | 1 | 1 | X1’X2X3X4 |
| 1 | 1 | 1 | 1 | 1 | X1X2X3X4 |
|  |  |  |  |  |  |

* Z1 = X1’X2X3’X4’ + X1X2X3’X4’ + X1X2’X3X4’ + X1’X2X3X4’ + X1X2X3X4’ + X1’X2’X3’X4 + X1X2’X3’X4 + X1’X2’X3’X4’+ X1’X2X3’X4+ X1’X2’X3X4+ X1’X2X3X4+ X1X2X3X4

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| X1 | X2 | X3 | X4 | Z2 | Minterm |
| 1 | 0 | 0 | 0 | 0 | X1X2’X3’X4’ |
| 0 | 1 | 0 | 0 | 0 | X1’X2X3’X4’ |
| 1 | 1 | 0 | 0 | 0 | X1X2X3’X4’ |
| 0 | 0 | 1 | 0 | 1 | X1’X2’X3X4’ |
| 1 | 0 | 1 | 0 | 1 | X1X2’X3X4’ |
| 0 | 1 | 1 | 0 | 1 | X1’X2X3X4’ |
| 1 | 1 | 1 | 0 | 0 | X1X2X3X4’ |
| 0 | 0 | 0 | 1 | 1 | X1’X2’X3’X4 |
| 1 | 0 | 0 | 1 | 1 | X1X2’X3’X4 |
| 0 | 0 | 0 | 0 | 1 | X1’X2’X3’X4’ |
| 0 | 1 | 0 | 1 | 1 | X1’X2X3’X4 |
| 0 | 0 | 1 | 1 | 1 | X1’X2’X3X4 |
| 0 | 1 | 1 | 1 | 1 | X1’X2X3X4 |
| 1 | 1 | 1 | 1 | 1 | X1X2X3X4 |

* Z2 = X1’X2’X3X4’ + X1X2’X3X4’ + X1’X2X3X4’+ X1’X2’X3’X4+ X1X2’X3’X4+ X1’X2’X3’X4’+ X1’X2X3’X4+ X1’X2’X3X4+ X1’X2X3X4+ X1X2X3X4

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| X1 | X2 | X3 | X4 | Z3 | Minterm |
| 1 | 0 | 0 | 0 | 1 | X1X2’X3’X4’ |
| 0 | 1 | 0 | 0 | 1 | X1’X2X3’X4’ |
| 1 | 1 | 0 | 0 | 1 | X1X2X3’X4’ |
| 0 | 0 | 1 | 0 | 1 | X1’X2’X3X4’ |
| 1 | 0 | 1 | 0 | 0 | X1X2’X3X4’ |
| 0 | 1 | 1 | 0 | 0 | X1’X2X3X4’ |
| 1 | 1 | 1 | 0 | 1 | X1X2X3X4’ |
| 0 | 0 | 0 | 1 | 1 | X1’X2’X3’X4 |
| 1 | 0 | 0 | 1 | 1 | X1X2’X3’X4 |
| 0 | 0 | 0 | 0 | 1 | X1’X2’X3’X4’ |
| 0 | 1 | 0 | 1 | 1 | X1’X2X3’X4 |
| 0 | 0 | 1 | 1 | 1 | X1’X2’X3X4 |
| 0 | 1 | 1 | 1 | 0 | X1’X2X3X4 |
| 1 | 1 | 1 | 1 | 1 | X1X2X3X4 |

* Z3 = X1X2’X3’X4’+ X1’X2X3’X4’+ X1X2X3’X4’+ X1’X2’X3X4’+ X1X2X3X4’+ X1’X2’X3’X4+ X1X2’X3’X4+ X1’X2’X3’X4’+ X1’X2X3’X4+ X1’X2’X3X4+ X1X2X3X4

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| X1 | X2 | X3 | X4 | Z4 | Minterm |
| 1 | 0 | 0 | 0 | 0 | X1X2’X3’X4’ |
| 0 | 1 | 0 | 0 | 1 | X1’X2X3’X4’ |
| 1 | 1 | 0 | 0 | 1 | X1X2X3’X4’ |
| 0 | 0 | 1 | 0 | 1 | X1’X2’X3X4’ |
| 1 | 0 | 1 | 0 | 1 | X1X2’X3X4’ |
| 0 | 1 | 1 | 0 | 1 | X1’X2X3X4’ |
| 1 | 1 | 1 | 0 | 0 | X1X2X3X4’ |
| 0 | 0 | 0 | 1 | 1 | X1’X2’X3’X4 |
| 1 | 0 | 0 | 1 | 1 | X1X2’X3’X4 |
| 0 | 0 | 0 | 0 | 0 | X1’X2’X3’X4’ |
| 0 | 1 | 0 | 1 | 1 | X1’X2X3’X4 |
| 0 | 0 | 1 | 1 | 1 | X1’X2’X3X4 |
| 0 | 1 | 1 | 1 | 1 | X1’X2X3X4 |
| 1 | 1 | 1 | 1 | 1 | X1X2X3X4 |

* Z4 = X1’X2X3’X4’+ X1X2X3’X4’+ X1’X2’X3X4’+ X1X2’X3X4’+ X1’X2X3X4’+X1’X2’X3’X4+ X1X2’X3’X4+ X1’X2X3’X4+ X1’X2’X3X4+ X1’X2X3X4+ X1X2X3X4

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| X1 | X2 | X3 | X4 | Z5 | Minterm |
| 1 | 0 | 0 | 0 | 0 | X1X2’X3’X4’ |
| 0 | 1 | 0 | 0 | 1 | X1’X2X3’X4’ |
| 1 | 1 | 0 | 0 | 0 | X1X2X3’X4’ |
| 0 | 0 | 1 | 0 | 0 | X1’X2’X3X4’ |
| 1 | 0 | 1 | 0 | 0 | X1X2’X3X4’ |
| 0 | 1 | 1 | 0 | 1 | X1’X2X3X4’ |
| 1 | 1 | 1 | 0 | 0 | X1X2X3X4’ |
| 0 | 0 | 0 | 1 | 1 | X1’X2’X3’X4 |
| 1 | 0 | 0 | 1 | 0 | X1X2’X3’X4 |
| 0 | 0 | 0 | 0 | 1 | X1’X2’X3’X4’ |
| 0 | 1 | 0 | 1 | 1 | X1’X2X3’X4 |
| 0 | 0 | 1 | 1 | 0 | X1’X2’X3X4 |
| 0 | 1 | 1 | 1 | 1 | X1’X2X3X4 |
| 1 | 1 | 1 | 1 | 0 | X1X2X3X4 |

Z5 = X1’X2X3’X4’+ X1’X2X3X4’+X1’X2’X3’X4+ X1’X2’X3’X4’+ X1’X2X3’X4+ X1’X2X3X4

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| X1 | X2 | X3 | X4 | Z6 | Minterm |
| 1 | 0 | 0 | 0 | 1 | X1X2’X3’X4’ |
| 0 | 1 | 0 | 0 | 0 | X1’X2X3’X4’ |
| 1 | 1 | 0 | 0 | 1 | X1X2X3’X4’ |
| 0 | 0 | 1 | 0 | 1 | X1’X2’X3X4’ |
| 1 | 0 | 1 | 0 | 1 | X1X2’X3X4’ |
| 0 | 1 | 1 | 0 | 1 | X1’X2X3X4’ |
| 1 | 1 | 1 | 0 | 1 | X1X2X3X4’ |
| 0 | 0 | 0 | 1 | 1 | X1’X2’X3’X4 |
| 1 | 0 | 0 | 1 | 1 | X1X2’X3’X4 |
| 0 | 0 | 0 | 0 | 1 | X1’X2’X3’X4’ |
| 0 | 1 | 0 | 1 | 0 | X1’X2X3’X4 |
| 0 | 0 | 1 | 1 | 1 | X1’X2’X3X4 |
| 0 | 1 | 1 | 1 | 1 | X1’X2X3X4 |
| 1 | 1 | 1 | 1 | 1 | X1X2X3X4 |

Z6 = X1X2’X3’X4’+X1X2X3’X4’+ X1’X2’X3X4’+ X1X2’X3X4’+ X1’X2X3X4’+ X1X2X3X4’+ X1’X2’X3’X4+X1X2’X3’X4+ X1’X2’X3’X4’+ X1’X2’X3X4+ X1’X2X3X4+ X1X2X3X4

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| X1 | X2 | X3 | X4 | Z7 | Minterm |
| 1 | 0 | 0 | 0 | 0 | X1X2’X3’X4’ |
| 0 | 1 | 0 | 0 | 1 | X1’X2X3’X4’ |
| 1 | 1 | 0 | 0 | 1 | X1X2X3’X4’ |
| 0 | 0 | 1 | 0 | 0 | X1’X2’X3X4’ |
| 1 | 0 | 1 | 0 | 1 | X1X2’X3X4’ |
| 0 | 1 | 1 | 0 | 1 | X1’X2X3X4’ |
| 1 | 1 | 1 | 0 | 0 | X1X2X3X4’ |
| 0 | 0 | 0 | 1 | 1 | X1’X2’X3’X4 |
| 1 | 0 | 0 | 1 | 1 | X1X2’X3’X4 |
| 0 | 0 | 0 | 0 | 1 | X1’X2’X3’X4’ |
| 0 | 1 | 0 | 1 | 1 | X1’X2X3’X4 |
| 0 | 0 | 1 | 1 | 1 | X1’X2’X3X4 |
| 0 | 1 | 1 | 1 | 1 | X1’X2X3X4 |
| 1 | 1 | 1 | 1 | 1 | X1X2X3X4 |

* Z7 = X1’X2X3’X4’+ X1X2X3’X4’+ X1X2’X3X4’+X1’X2X3X4’+ X1’X2’X3’X4+X1X2’X3’X4+ X1’X2’X3’X4’+ X1’X2X3’X4+ X1’X2’X3X4+ X1’X2X3X4+ X1X2X3X4

C.

Biểu thức rút gọn của các đoạn LED trong mạch:

Z1 = ~X3 ~X1 + X2 + X3 X1 + X4

Z2 = ~X2 ~X1 + X3 ~X2 + X3 ~X1 + X4

Z3 = ~X3 + ~X2 ~X1 + X2 X1

Z4 = ~X3 X2 + X2 ~X1 + X3 ~X1 + X4

Z5 = ~X3 ~X1 + X2 ~X1

Z6 = ~X2 + X1 + X3

Z7 = ~X3~X1 + ~X3 X2 + X2 ~X1 + X3 ~X2 X1 + X4