Домашняя Работа №7 по Дискретной Математике

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Группа 191-322

Вариант - 27

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Задача 10.27

F1=0001 0011 0001 1111,

F2=0111 1101 1000 1010

F3=0101 1000 1111 0010

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| |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | |  | -z | | z | |  | | -x | 0 | 0 | 1 | 0 | -y | | 0 | 0 | 1 | 1 | y | | x | 1 | 1 | 1 | 1 | | 0 | 0 | 1 | 0 | -y | |  | -t | t | | -t |  |   F1 | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | |  | -z | | z | |  | | -x | 0 | 1 | 1 | 1 | -y | | 1 | 1 | 1 | 0 | y | | x | 1 | 0 | 0 | 1 | | 1 | 0 | 0 | 0 | -y | |  | -t | t | | -t |  |   F2 | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | |  | -z | | z | |  | | -x | 0 | 1 | 1 | 0 | -y | | 1 | 0 | 0 | 0 | y | | x | 0 | 0 | 0 | 1 | | 1 | 1 | 1 | 1 | -y | |  | -t | t | | -t |  |   F3 |

Строим карту для f1&f2&f3 = 0001 0000 0000 0010

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | -z | | z | |  |
| -x | 0 | 0 | 1 | 0 | -y |
| 0 | 0 | 0 | 0 | y |
| x | 0 | 0 | 0 | 1 |
| 0 | 0 | 0 | 0 | -y |
|  | -t | t | | -t |  |

D(f1&f2&f3) = x’y’z V xyt’

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | |  | -z | | z | |  | | -x | 0 | 0 | - | 0 | -y | | 0 | 0 | 1 | 1 | y | | x | 1 | 1 | 1 | - | | 0 | 0 | 1 | 0 | -y | |  | -t | t | | -t |  |   F1\_1 | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | |  | -z | | z | |  | | -x | 0 | 1 | - | 1 | -y | | 1 | 1 | 1 | 0 | y | | x | 1 | 0 | 0 | - | | 1 | 0 | 0 | 0 | -y | |  | -t | t | | -t |  |   F2\_1 | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | |  | -z | | z | |  | | -x | 0 | 1 | - | 0 | -y | | 1 | 0 | 0 | 0 | y | | x | 0 | 0 | 0 | - | | 1 | 1 | 1 | 1 | -y | |  | -t | t | | -t |  |   F3\_1 |

Строим карту для f1\_1&f2\_1

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | -z | | z | |  |
| -x | 0 | 0 | - | 0 | -y |
| 0 | 0 | 1 | 0 | y |
| x | 1 | 0 | 0 | - |
| 0 | 0 | 0 | 0 | -y |
|  | -t | t | | -t |  |

D(f1\_1&f2\_1) = x’z’t’ V x’yt

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | |  | -z | | z | |  | | -x | 0 | 0 | - | 0 | -y | | 0 | 0 | - | 1 | y | | x | - | 1 | 1 | - | | 0 | 0 | 1 | 0 | -y | |  | -t | t | | -t |  |   F1\_2 | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | |  | -z | | z | |  | | -x | 0 | 1 | - | 1 | -y | | 1 | 1 | - | 0 | y | | x | - | 0 | 0 | - | | 1 | 0 | 0 | 0 | -y | |  | -t | t | | -t |  |   F2\_2 | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | |  | -z | | z | |  | | -x | 0 | 1 | - | 0 | -y | | 1 | 0 | 0 | 0 | y | | x | 0 | 0 | 0 | - | | 1 | 1 | 1 | 1 | -y | |  | -t | t | | -t |  |   F3\_2 |

Строим карту для f2\_2&f3\_2

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | -z | | z | |  |
| -x | 0 | 1 | - | 0 | -y |
| 1 | 0 | - | 0 | y |
| x | - | 0 | 0 | - |
| 1 | 0 | 0 | 0 | -y |
|  | -t | t | | -t |  |

D(f2\_2&f3\_2) = xy’t’ V x’y’t V x’yt’

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | |  | -z | | z | |  | | -x | 0 | 0 | - | 0 | -y | | 0 | 0 | - | 1 | y | | x | - | 1 | 1 | - | | 0 | 0 | 1 | 0 | -y | |  | -t | t | | -t |  |   F1\_3 | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | |  | -z | | z | |  | | -x | 0 | - | - | 1 | -y | | - | 1 | - | 0 | y | | x | - | 0 | 0 | - | | - | 0 | 0 | 0 | -y | |  | -t | t | | -t |  |   F2\_3 | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | |  | -z | | z | |  | | -x | 0 | - | - | 0 | -y | | - | 0 | 0 | 0 | y | | x | 0 | 0 | 0 | - | | - | 1 | 1 | 1 | -y | |  | -t | t | | -t |  |   F3\_3 |

Строим карту для f2\_2&f3\_2

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | -z | | z | |  |
| -x | 0 | - | - | 0 | -y |
| - | 0 | - | 0 | y |
| x | - | 0 | 0 | - |
| - | 0 | 1 | 0 | -y |
|  | -t | t | | -t |  |

D(f1\_3,f3\_3) = xy’t

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | |  | -z | | z | |  | | -x | 0 | 0 | - | 0 | -y | | 0 | 0 | - | 1 | y | | x | - | 1 | 1 | - | | 0 | 0 | - | 0 | -y | |  | -t | t | | -t |  |   F1\_4 | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | |  | -z | | z | |  | | -x | 0 | - | - | 1 | -y | | - | 1 | - | 0 | y | | x | - | 0 | 0 | - | | - | 0 | 0 | 0 | -y | |  | -t | t | | -t |  |   F2\_4 | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | |  | -z | | z | |  | | -x | 0 | - | - | 0 | -y | | - | 0 | 0 | 0 | y | | x | 0 | 0 | 0 | - | | - | 1 | - | 1 | -y | |  | -t | t | | -t |  |   F3\_4 |

D(f1&f2&f3) = x’y’z V xyt’

D(f1\_1&f2\_1) = x’z’t’ V x’yt

D(f2\_2&f3\_2) = xy’t’ V x’y’t V x’yt’

D(f1\_3,f3\_3) = xy’t

f1 = x’y’z V xyt’ V x’z’t’ V x’yt V xy’t

f2 = x’y’z V xyt’ V x’z’t’ V x’yt V xy’t’ V x’y’t V x’yt’

f3 = x’y’z V xyt’ V xy’t’ V x’y’t V x’yt’ V xy’t

Программируемая логическая матрица (ПЛМ), реализующая совместно функции f1,f2,f3:

