**Алгоритм схема «1:0:1 синусоида»**

Компоненты состояния:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Название: | Флаг перемещения | Флаг направления движения | Флаг итераций | Регистр данных |
| Обозначение: |  |  |  |  |
| Множество значений: |  |  |  | Произвольное |
| Описание: | Определяет направление сдвигов элементов на текущей итерации. | Обеспечивает сдвиги как по столбцам, так и по строкам. | Определяет итерацию смены основных условий изменения двух других флагов | Хранит элементы матрицы M=. |

ЛФП алгоритма:

|  |  |  |  |  |  |  |  |
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| № п/п | Условие перехода | | | | | | Формула перехода |
| 1 |  | | | | | |  |
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| 4 |  |  | | | | |  |
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Начальное состояние матрицы флагов :

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | |  |  |  |  |  | | --- | --- | --- | --- | --- | | 0 | 1 | 0 | -1 | 0 | | 0 | 1 | 0 | -1 | 0 | | 0 | 1 | 0 | -1 | 0 | | 0 | 1 | 0 | -1 | 0 | | 0 | 1 | 0 | -1 | 0 |   Начальное состояние для матрицы : |

Начальное состояние матрицы флагов :

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | |  |  |  |  |  | | --- | --- | --- | --- | --- | | 2 | 2 | 2 | 2 | 2 | | 1 | 1 | 1 | 1 | 1 | | 2 | 2 | 2 | 2 | 2 | | 3 | 3 | 3 | 3 | 3 | | 2 | 2 | 2 | 2 | 2 |   Начальное состояние для матрицы : |

Начальное значение матрицы флагов :

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | |  |  |  |  |  | | --- | --- | --- | --- | --- | | 1 | 1 | 1 | 1 | 1 | | 1 | 1 | 1 | 1 | 1 | | 1 | 1 | 1 | 1 | 1 | | 1 | 1 | 1 | 1 | 1 | | 1 | 1 | 1 | 1 | 1 |   Начальное состояние для матрицы : |

Проход алгоритма для матрицы 

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| №  iter | Матрица данных | Матрица флагов | Матрица флагов | Элемент матрицы флагов |
| 0 | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | 1 | 7 | 13 | 19 | 25 | 31 | | 2 | 8 | 14 | 20 | 26 | 32 | | 3 | 9 | 15 | 21 | 27 | 33 | | 4 | 10 | 16 | 22 | 28 | 34 | | 5 | 11 | 17 | 23 | 29 | 35 | | 6 | 12 | 18 | 24 | 30 | 36 | | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | 0 | 1 | 0 | -1 | 0 | 1 | | 0 | 1 | 0 | -1 | 0 | 1 | | 0 | 1 | 0 | -1 | 0 | 1 | | 0 | 1 | 0 | -1 | 0 | 1 | | 0 | 1 | 0 | -1 | 0 | 1 | | 0 | 1 | 0 | -1 | 0 | 1 | | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | 2 | 2 | 2 | 2 | 2 | 2 | | 1 | 1 | 1 | 1 | 1 | 1 | | 2 | 2 | 2 | 2 | 2 | 2 | | 3 | 3 | 3 | 3 | 3 | 3 | | 2 | 2 | 2 | 2 | 2 | 2 | | 1 | 1 | 1 | 1 | 1 | 1 | | 1 |
| 1 | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | 1 | 8 | 13 | 24 | 25 | 32 | | 2 | 9 | 14 | 19 | 26 | 33 | | 3 | 10 | 15 | 20 | 27 | 34 | | 4 | 11 | 16 | 21 | 28 | 35 | | 5 | 12 | 17 | 22 | 29 | 36 | | 6 | 7 | 18 | 23 | 30 | 31 | | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | 0 | 0 | 0 | 0 | 0 | 0 | | 1 | 1 | 1 | 1 | 1 | 1 | | 0 | 0 | 0 | 0 | 0 | 0 | | -1 | -1 | -1 | -1 | -1 | -1 | | 0 | 0 | 0 | 0 | 0 | 0 | | 1 | 1 | 1 | 1 | 1 | 1 | | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | 1 | 2 | 3 | 2 | 1 | 2 | | 1 | 2 | 3 | 2 | 1 | 2 | | 1 | 2 | 3 | 2 | 1 | 2 | | 1 | 2 | 3 | 2 | 1 | 2 | | 1 | 2 | 3 | 2 | 1 | 2 | | 1 | 2 | 3 | 2 | 1 | 2 | | 1 |
| 2 | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | 1 | 8 | 13 | 24 | 25 | 32 | | 33 | 2 | 9 | 14 | 19 | 26 | | 3 | 10 | 15 | 20 | 27 | 34 | | 11 | 16 | 21 | 28 | 35 | 4 | | 5 | 12 | 17 | 22 | 29 | 36 | | 31 | 6 | 7 | 18 | 23 | 30 | | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | 1 | 0 | -1 | 0 | 1 | 0 | | 1 | 0 | -1 | 0 | 1 | 0 | | 1 | 0 | -1 | 0 | 1 | 0 | | 1 | 0 | -1 | 0 | 1 | 0 | | 1 | 0 | -1 | 0 | 1 | 0 | | 1 | 0 | -1 | 0 | 1 | 0 | | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | 1 | 1 | 1 | 1 | 1 | 1 | | 2 | 2 | 2 | 2 | 2 | 2 | | 3 | 3 | 3 | 3 | 3 | 3 | | 2 | 2 | 2 | 2 | 2 | 2 | | 1 | 1 | 1 | 1 | 1 | 1 | | 2 | 2 | 2 | 2 | 2 | 2 | | 2 |
| 3 | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | 33 | 8 | 7 | 24 | 19 | 32 | | 3 | 2 | 13 | 14 | 27 | 26 | | 11 | 10 | 9 | 20 | 35 | 34 | | 5 | 16 | 15 | 28 | 29 | 4 | | 31 | 12 | 21 | 22 | 23 | 36 | | 1 | 6 | 17 | 18 | 25 | 30 | | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | 1 | 1 | 1 | 1 | 1 | 1 | | 0 | 0 | 0 | 0 | 0 | 0 | | -1 | -1 | -1 | -1 | -1 | -1 | | 0 | 0 | 0 | 0 | 0 | 0 | | 1 | 1 | 1 | 1 | 1 | 1 | | 0 | 0 | 0 | 0 | 0 | 0 | | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | 2 | 3 | 2 | 1 | 2 | 3 | | 2 | 3 | 2 | 1 | 2 | 3 | | 2 | 3 | 2 | 1 | 2 | 3 | | 2 | 3 | 2 | 1 | 2 | 3 | | 2 | 3 | 2 | 1 | 2 | 3 | | 2 | 3 | 2 | 1 | 2 | 3 | | 2 |
| 4 | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | 32 | 33 | 8 | 7 | 24 | 19 | | 3 | 2 | 13 | 14 | 27 | 26 | | 10 | 9 | 20 | 35 | 34 | 11 | | 5 | 16 | 15 | 28 | 29 | 4 | | 36 | 31 | 12 | 21 | 22 | 23 | | 1 | 6 | 17 | 18 | 25 | 30 | | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | 0 | -1 | 0 | 1 | 0 | -1 | | 0 | -1 | 0 | 1 | 0 | -1 | | 0 | -1 | 0 | 1 | 0 | -1 | | 0 | -1 | 0 | 1 | 0 | -1 | | 0 | -1 | 0 | 1 | 0 | -1 | | 0 | -1 | 0 | 1 | 0 | -1 | | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | 2 | 2 | 2 | 2 | 2 | 2 | | 3 | 3 | 3 | 3 | 3 | 3 | | 2 | 2 | 2 | 2 | 2 | 2 | | 1 | 1 | 1 | 1 | 1 | 1 | | 2 | 2 | 2 | 2 | 2 | 2 | | 3 | 3 | 3 | 3 | 3 | 3 | | 3 |
| 5 | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | 32 | 6 | 8 | 14 | 24 | 30 | | 3 | 33 | 13 | 35 | 27 | 19 | | 10 | 2 | 20 | 28 | 34 | 26 | | 5 | 9 | 15 | 21 | 29 | 11 | | 36 | 16 | 12 | 18 | 22 | 4 | | 1 | 31 | 17 | 7 | 25 | 23 | | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | 0 | 0 | 0 | 0 | 0 | 0 | | -1 | -1 | -1 | -1 | -1 | -1 | | 0 | 0 | 0 | 0 | 0 | 0 | | 1 | 1 | 1 | 1 | 1 | 1 | | 0 | 0 | 0 | 0 | 0 | 0 | | -1 | -1 | -1 | -1 | -1 | -1 | | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | 3 | 2 | 1 | 2 | 3 | 2 | | 3 | 2 | 1 | 2 | 3 | 2 | | 3 | 2 | 1 | 2 | 3 | 2 | | 3 | 2 | 1 | 2 | 3 | 2 | | 3 | 2 | 1 | 2 | 3 | 2 | | 3 | 2 | 1 | 2 | 3 | 2 | | 3 |
| 6 | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | 32 | 6 | 8 | 14 | 24 | 30 | | 33 | 13 | 35 | 27 | 19 | 3 | | 10 | 2 | 20 | 28 | 34 | 26 | | 11 | 5 | 9 | 15 | 21 | 29 | | 36 | 16 | 12 | 18 | 22 | 4 | | 31 | 17 | 7 | 25 | 23 | 1 | | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | -1 | 0 | 1 | 0 | -1 | 0 | | -1 | 0 | 1 | 0 | -1 | 0 | | -1 | 0 | 1 | 0 | -1 | 0 | | -1 | 0 | 1 | 0 | -1 | 0 | | -1 | 0 | 1 | 0 | -1 | 0 | | -1 | 0 | 1 | 0 | -1 | 0 | | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | 3 | 3 | 3 | 3 | 3 | 3 | | 2 | 2 | 2 | 2 | 2 | 2 | | 1 | 1 | 1 | 1 | 1 | 1 | | 2 | 2 | 2 | 2 | 2 | 2 | | 3 | 3 | 3 | 3 | 3 | 3 | | 2 | 2 | 2 | 2 | 2 | 2 | | 0 |
| 7 | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | 31 | 6 | 35 | 14 | 23 | 30 | | 32 | 13 | 20 | 27 | 24 | 3 | | 33 | 2 | 9 | 28 | 19 | 26 | | 10 | 5 | 12 | 15 | 34 | 29 | | 11 | 16 | 7 | 18 | 21 | 4 | | 36 | 17 | 8 | 25 | 22 | 1 | | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | -1 | -1 | -1 | -1 | -1 | -1 | | 0 | 0 | 0 | 0 | 0 | 0 | | 1 | 1 | 1 | 1 | 1 | 1 | | 0 | 0 | 0 | 0 | 0 | 0 | | -1 | -1 | -1 | -1 | -1 | -1 | | 0 | 0 | 0 | 0 | 0 | 0 | | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | 2 | 1 | 2 | 3 | 2 | 1 | | 2 | 1 | 2 | 3 | 2 | 1 | | 2 | 1 | 2 | 3 | 2 | 1 | | 2 | 1 | 2 | 3 | 2 | 1 | | 2 | 1 | 2 | 3 | 2 | 1 | | 2 | 1 | 2 | 3 | 2 | 1 | | 0 |
| 8 | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | 6 | 35 | 14 | 23 | 30 | 31 | | 32 | 13 | 20 | 27 | 24 | 3 | | 26 | 33 | 2 | 9 | 28 | 19 | | 10 | 5 | 12 | 15 | 34 | 29 | | 16 | 7 | 18 | 21 | 4 | 11 | | 36 | 17 | 8 | 25 | 22 | 1 | | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | 0 | 1 | 0 | -1 | 0 | 1 | | 0 | 1 | 0 | -1 | 0 | 1 | | 0 | 1 | 0 | -1 | 0 | 1 | | 0 | 1 | 0 | -1 | 0 | 1 | | 0 | 1 | 0 | -1 | 0 | 1 | | 0 | 1 | 0 | -1 | 0 | 1 | | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | 2 | 2 | 2 | 2 | 2 | 2 | | 1 | 1 | 1 | 1 | 1 | 1 | | 2 | 2 | 2 | 2 | 2 | 2 | | 3 | 3 | 3 | 3 | 3 | 3 | | 2 | 2 | 2 | 2 | 2 | 2 | | 1 | 1 | 1 | 1 | 1 | 1 | | 1 |