РГЗ 1, задание 6, вариант 6;

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Найти кратчайшее решение задачи о покрытии

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  | 1 |  |  |  |  |  | 1 |  |  |
|  |  |  | 1 |  |  | 1 |  |  |  |  |
|  | 1 | 1 |  |  | 1 |  |  |  |  |  |
|  |  |  |  | 1 |  |  |  | 1 | 1 |  |
|  | 1 |  |  | 1 |  |  |  | 1 |  | 1 |
|  |  |  |  | 1 |  | 1 |  |  |  |  |
|  |  | 1 |  |  | 1 |  | 1 |  |  | 1 |
|  |  |  | 1 |  |  |  | 1 |  | 1 |  |

Столбец b2 поглощает столбец b5:

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  | 1 |  |  |  |  |  | 1 |  |  |
|  |  |  | 1 |  |  | 1 |  |  |  |  |
|  | 1 | 1 |  |  | 1 |  |  |  |  |  |
|  |  |  |  | 1 |  |  |  | 1 | 1 |  |
|  | 1 |  |  | 1 |  |  |  | 1 |  | 1 |
|  |  |  |  | 1 |  | 1 |  |  |  |  |
|  |  | 1 |  |  | 1 |  | 1 |  |  | 1 |
|  |  |  | 1 |  |  |  | 1 |  | 1 |  |

Строка A является поглощаемой, поэтому вычеркивается без запоминания:

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  | 1 |  |  |
|  |  | 1 |  |  | 1 |  |  |  |  |
|  | 1 |  |  | 1 |  |  |  |  |  |
|  |  |  | 1 |  |  |  | 1 | 1 |  |
|  | 1 |  | 1 |  |  |  | 1 |  | 1 |
|  |  |  | 1 |  | 1 |  |  |  |  |
|  |  |  |  | 1 |  | 1 |  |  | 1 |
|  |  | 1 |  |  |  | 1 |  | 1 |  |

Столбец b4 поглощает столбец b8, поэтому вычеркивается:

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |  |  |  |
|  |  | 1 |  |  | 1 |  |  |  |  |
|  | 1 |  |  | 1 |  |  |  |  |  |
|  |  |  | 1 |  |  |  | 1 | 1 |  |
|  | 1 |  | 1 |  |  |  | 1 |  | 1 |
|  |  |  | 1 |  | 1 |  |  |  |  |
|  |  |  |  | 1 |  | 1 |  |  | 1 |
|  |  | 1 |  |  |  | 1 |  | 1 |  |

Строка F поглощается строкой B и вычеркивается без запоминания:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |  |  |
|  |  | 1 |  | 1 |  |  |  |  |
|  | 1 |  | 1 |  |  |  |  |  |
|  |  |  |  |  |  | 1 | 1 |  |
|  | 1 |  |  |  |  | 1 |  | 1 |
|  |  |  |  | 1 |  |  |  |  |
|  |  |  | 1 |  | 1 |  |  | 1 |
|  |  | 1 |  |  | 1 |  | 1 |  |

Строка B является ядерной, запоминаем и вычеркиваем вместе со столбцами b3 и b6:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |  |  |
|  |  | 1 |  | 1 |  |  |  |  |
|  | 1 |  | 1 |  |  |  |  |  |
|  |  |  |  |  |  | 1 | 1 |  |
|  | 1 |  |  |  |  | 1 |  | 1 |
|  |  |  | 1 |  | 1 |  |  | 1 |
|  |  | 1 |  |  | 1 |  | 1 |  |

Получаем следующую таблицу, которая более не упрощается (циклический остаток):

{B}

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |
|  | 1 | 1 |  |  |  |  |
|  |  |  |  | 1 | 1 |  |
|  | 1 |  |  | 1 |  | 1 |
|  |  | 1 | 1 |  |  | 1 |
|  |  |  | 1 |  | 1 |  |

Для получения решения раскладываем таблицу по первому столбцу, содержащему 2 единицы. Получаем 2 ветви решения R1 и R2:

{B}

{B}

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| R1 |  |  |  |  |  |  |
|  | 1 | 1 |  |  |  |  |
|  |  |  |  | 1 | 1 |  |
|  | 1 |  |  | 1 |  | 1 |
|  |  | 1 | 1 |  |  | 1 |
|  |  |  | 1 |  | 1 |  |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| R2 |  |  |  |  |  |  |
|  | 1 | 1 |  |  |  |  |
|  |  |  |  | 1 | 1 |  |
|  | 1 |  |  | 1 |  | 1 |
|  |  | 1 | 1 |  |  | 1 |
|  |  |  | 1 |  | 1 |  |

{B, E}

{B, C}

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| R1 |  |  |  |  |
|  |  | 1 | 1 |  |
|  |  | 1 |  | 1 |
|  | 1 |  |  | 1 |
|  | 1 |  | 1 |  |

|  |  |  |  |
| --- | --- | --- | --- |
| R2 |  |  |  |
|  | 1 |  |  |
|  |  |  | 1 |
|  | 1 | 1 |  |
|  |  | 1 | 1 |

Рассмотрим ветвь R1. Она также является циклическим остатком, разложим его по столбцу b7 на ветви R11 и R12:

{B, C}

{B, C}

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| R11 |  |  |  |  |
|  |  | 1 | 1 |  |
|  |  | 1 |  | 1 |
|  | 1 |  |  | 1 |
|  | 1 |  | 1 |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| R12 |  |  |  |  |
|  |  | 1 | 1 |  |
|  |  | 1 |  | 1 |
|  | 1 |  |  | 1 |
|  | 1 |  | 1 |  |

В решении R12 получим 2 поглощенных строки:

В решении R11 получим 2

поглощенных строки:

{B, C, H}

|  |  |  |
| --- | --- | --- |
| R12 |  |  |
|  | 1 |  |
|  | 1 | 1 |
|  |  | 1 |

{B, C, G}

|  |  |  |
| --- | --- | --- |
| R11 |  |  |
|  | 1 | 1 |
|  | 1 |  |
|  |  | 1 |

{B, C, H}

|  |  |  |
| --- | --- | --- |
| R12 |  |  |
|  | 1 | 1 |

{B, C, G}

|  |  |  |
| --- | --- | --- |
| R11 |  |  |
|  | 1 | 1 |

Получим решение **{B, C, G, D}**.

Получим решение **{B, C, H, E}**.

Рассмотри ветвь R2:

Строки C и D являются поглощаемыми и вычеркиваются без запоминания:

{B, E}

|  |  |  |  |
| --- | --- | --- | --- |
| R2 |  |  |  |
|  | 1 |  |  |
|  |  |  | 1 |
|  | 1 | 1 |  |
|  |  | 1 | 1 |

Cтроки G и H являются ядерными:

{B, E}

|  |  |  |  |
| --- | --- | --- | --- |
| R2 |  |  |  |
|  | 1 | 1 |  |
|  |  | 1 | 1 |

Получим решение **{B, E, G, H}**.

В результате имеем 3 равных между собой решения:

**{B, C, G, D}**, **{B, C, H, E}**, **{B, E, G, H}**.