Университет ИТМО

**Домашняя работа №2**

**КОНСТРУКТОРСКО-ТЕХНОЛОГИЧЕСКОЕ ОБЕСПЕЧЕНИЕ ПРОИЗВОДСТВА ЭВМ**

Вариант 17

Выполнил:

студент гр. P3415

Припадчев Артём

Санкт-Петербург

2016

**Матрица смежности Q**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **u1** | **u2** | **u3** | **u4** | **u5** | **u6** | **u7** | **u8** | **u9** | **u10** | **u11** | **u12** | **u13** | **u14** | **u15** | **u16** | **u17** | **u18** | **u19** | **u20** | **u21** | **u22** | **u23** | **u24** | **u25** | **u26** | **u27** | **u28** | **u29** | **u30** | **u31** |
| **e1** | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 |
| **e2** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 |
| **e3** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 |
| **e4** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **e5** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| **e6** | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| **e7** | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| **e8** | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 |
| **e9** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 1 |
| **e10** | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 |
| **e11** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 |
| **e12** | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| **e13** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| **e14** | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 |
| **e15** | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **e16** | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

**Матрица комплексов R**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **e1** | **e2** | **e3** | **e4** | **e5** | **e6** | **e7** | **e8** | **e9** | **e10** | **e11** | **e12** | **e13** | **e14** | **e15** | **e16** |
| **e1** | **0** | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 2 | 2 | 0 | 2 | 1 | 3 | 2 | 1 |
| **e2** | 1 | **0** | 0 | 0 | 0 | 1 | 0 | 1 | 2 | 1 | 0 | 1 | 1 | 0 | 0 | 0 |
| **e3** | 0 | 0 | **0** | 0 | 2 | 2 | 1 | 1 | 2 | 1 | 2 | 2 | 1 | 3 | 2 | 1 |
| **e4** | 1 | 0 | 0 | **0** | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| **e5** | 1 | 0 | 2 | 1 | **0** | 1 | 0 | 1 | 1 | 1 | 2 | 0 | 1 | 0 | 1 | 0 |
| **e6** | 0 | 1 | 2 | 0 | 1 | **0** | 2 | 1 | 0 | 1 | 1 | 2 | 1 | 2 | 1 | 2 |
| **e7** | 0 | 0 | 1 | 0 | 0 | 2 | **0** | 2 | 1 | 0 | 1 | 1 | 0 | 3 | 1 | 2 |
| **e8** | 1 | 1 | 1 | 1 | 1 | 1 | 2 | **0** | 2 | 0 | 2 | 1 | 1 | 1 | 3 | 2 |
| **e9** | 2 | 2 | 2 | 0 | 1 | 0 | 1 | 2 | **0** | 2 | 4 | 1 | 1 | 3 | 2 | 1 |
| **e10** | 2 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 2 | **0** | 1 | 3 | 0 | 1 | 0 | 2 |
| **e11** | 0 | 0 | 2 | 0 | 2 | 1 | 1 | 2 | 4 | 1 | **0** | 1 | 0 | 0 | 2 | 1 |
| **e12** | 2 | 1 | 2 | 0 | 0 | 2 | 1 | 1 | 1 | 3 | 1 | **0** | 1 | 5 | 2 | 6 |
| **e13** | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | **0** | 1 | 1 | 0 |
| **e14** | 3 | 0 | 3 | 0 | 0 | 2 | 3 | 1 | 3 | 1 | 0 | 5 | 1 | **0** | 3 | 3 |
| **e15** | 2 | 0 | 2 | 0 | 1 | 1 | 1 | 3 | 2 | 0 | 2 | 2 | 1 | 3 | **0** | 2 |
| **e16** | 1 | 0 | 1 | 0 | 0 | 2 | 2 | 2 | 1 | 2 | 1 | 6 | 0 | 3 | 2 | **0** |

**Метод обратного размещения**

|  |  |  |  |
| --- | --- | --- | --- |
| **p1** | **p2** | **p3** | **p4** |
| **p5** | **p6** | **p7** | **p8** |
| **p9** | **p10** | **p11** | **p12** |
| **p13** | **p14** | **p15** | **p16** |

Матрица D

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **p1** | **p2** | **p3** | **p4** | **p5** | **p6** | **p7** | **p8** | **p9** | **p10** | **p11** | **p12** | **p13** | **p14** | **p15** | **p16** |  |
| **p1** | 0 | 1 | 2 | 3 | 1 | 2 | 3 | 4 | 2 | 3 | 4 | 5 | 3 | 4 | 5 | 6 | **48** |
| **p2** | 1 | 0 | 1 | 2 | 2 | 1 | 2 | 3 | 3 | 2 | 3 | 4 | 4 | 3 | 4 | 5 | **40** |
| **p3** | 2 | 1 | 0 | 1 | 3 | 2 | 1 | 2 | 4 | 3 | 2 | 3 | 5 | 4 | 3 | 4 | **40** |
| **p4** | 3 | 2 | 1 | 0 | 4 | 3 | 2 | 1 | 5 | 4 | 3 | 2 | 6 | 5 | 4 | 3 | **48** |
| **p5** | 1 | 2 | 3 | 4 | 0 | 1 | 2 | 3 | 1 | 2 | 3 | 4 | 2 | 3 | 4 | 5 | **40** |
| **p6** | 2 | 1 | 2 | 3 | 1 | 0 | 1 | 2 | 2 | 1 | 2 | 3 | 3 | 2 | 3 | 4 | **32** |
| **p7** | 3 | 2 | 1 | 2 | 2 | 1 | 0 | 1 | 3 | 2 | 1 | 2 | 4 | 3 | 2 | 3 | **32** |
| **p8** | 4 | 3 | 2 | 1 | 3 | 2 | 1 | 0 | 4 | 3 | 2 | 1 | 5 | 4 | 3 | 2 | **40** |
| **p9** | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 0 | 1 | 2 | 3 | 1 | 2 | 3 | 4 | **40** |
| **p10** | 3 | 2 | 3 | 4 | 2 | 1 | 2 | 3 | 1 | 0 | 1 | 2 | 2 | 1 | 2 | 3 | **32** |
| **p11** | 4 | 3 | 2 | 3 | 3 | 2 | 1 | 2 | 2 | 1 | 0 | 1 | 3 | 2 | 1 | 2 | **32** |
| **p12** | 5 | 4 | 3 | 2 | 4 | 3 | 2 | 1 | 3 | 2 | 1 | 0 | 4 | 3 | 2 | 1 | **40** |
| **p13** | 3 | 4 | 5 | 6 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 0 | 1 | 2 | 3 | **48** |
| **p14** | 4 | 3 | 4 | 5 | 3 | 2 | 3 | 4 | 2 | 1 | 2 | 3 | 1 | 0 | 1 | 2 | **40** |
| **p15** | 5 | 4 | 3 | 4 | 4 | 3 | 2 | 3 | 3 | 2 | 1 | 2 | 2 | 1 | 0 | 1 | **40** |
| **p16** | 6 | 5 | 4 | 3 | 5 | 4 | 3 | 2 | 4 | 3 | 2 | 1 | 3 | 2 | 1 | 0 | **48** |

Di:

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 48 | 48 | 48 | 48 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 32 | 32 | 32 | 32 |
| p1 | p4 | p13 | p16 | p2 | p3 | p5 | p8 | p9 | p12 | p14 | p15 | p6 | p7 | p10 | p11 |

Ri:

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 4 | 8 | 11 | 12 | 14 | 15 | 17 | 17 | 17 | 20 | 20 | 22 | 23 | 24 | 28 | 28 |
| e4 | e2 | e13 | e5 | e7 | e10 | e1 | e6 | e11 | e3 | e8 | e15 | e16 | e9 | e12 | e14 |

Размещение:

|  |  |  |  |
| --- | --- | --- | --- |
| e4 | e7 | e10 | e2 |
| e1 | e16 | e9 | e6 |
| e11 | e12 | e14 | e3 |
| e13 | e8 | e15 | e5 |

**Раскраска графа алгоритмом упорядоченных вершин**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| j=1 | 14 | 13 | 13 | 12 | 12 | 12 | 11 | 11 | 11 | 11 | 10 | 10 | 10 | 9 | 7 | 4 |
| E | **e8** | **e9** | **e12** | **e3** | **e6** | **e15** | **e1** | **e13** | **e14** | **e16** | **e5** | **e10** | **e11** | **e7** | **e2** | **e4** |
| Цвет | К |  |  |  |  |  |  |  |  |  |  | К |  |  |  |  |
| j=2 | 11 | 11 | 11 | 10 | 10 | 10 | 9 | 9 | 9 | 8 | 8 | 8 | 5 | 3 |  |  |
| E | **e9** | **e12** | **e15** | **e3** | **e6** | **e13** | **e1** | **e14** | **e16** | **e5** | **e11** | **e7** | **e2** | **e4** |  |  |
| Цвет | О |  |  |  | О |  |  |  |  |  |  |  |  | О |  |  |
| j=3 | 9 | 9 | 8 | 7 | 7 | 7 | 7 | 6 | 6 | 5 | 3 |  |  |  |  |  |
| E | **e12** | **e15** | **e3** | **e13** | **e1** | **e14** | **e16** | **e11** | **e7** | **e5** | **e2** |  |  |  |  |  |
| Цвет | Ж |  |  |  |  |  |  |  |  | Ж |  |  |  |  |  |  |
| j=4 | 7 | 6 | 6 | 6 | 5 | 5 | 5 | 4 | 2 |  |  |  |  |  |  |  |
| E | **e15** | **e3** | **e14** | **e16** | **e13** | **e1** | **e7** | **e11** | **e2** |  |  |  |  |  |  |  |
| Цвет | З |  |  |  |  |  |  |  | З |  |  |  |  |  |  |  |
| j=5 | 5 | 5 | 5 | 4 | 3 | 3 | 3 |  |  |  |  |  |  |  |  |  |
| E | **e3** | **e14** | **e16** | **e7** | **e13** | **e1** | **e11** |  |  |  |  |  |  |  |  |  |
| Цвет | Г |  |  |  |  | Г |  |  |  |  |  |  |  |  |  |  |
| j=6 | 3 | 3 | 3 | 2 | 1 |  |  |  |  |  |  |  |  |  |  |  |
| E | **e14** | **e16** | **e7** | **e11** | **e13** |  |  |  |  |  |  |  |  |  |  |  |
| Цвет | С |  |  | С |  |  |  |  |  |  |  |  |  |  |  |  |
| j=7 | 1 | 1 | 0 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| E | **e16** | **e7** | **e13** |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Цвет | Ф |  | Ф |  |  |  |  |  |  |  |  |  |  |  |  |  |
| j=8 | 0 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| E | **e7** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Цвет | Ч |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

**Матрица весов**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **c1** | **c2** | **c3** | **c4** | **c5** | **c6** | **c7** | **c8** | **c9** | **c10** | **c11** | **c12** | **c13** | **c14** | **c15** | **c16** |
| **c1** | **0** | 1 | 0 | 3 | 1 | 0 | 0 | 4 | 4 | 6 | 0 | 10 | 3 | 12 | 10 | 6 |
| **c2** | 1 | **0** | 0 | 0 | 0 | 1 | 0 | 3 | 6 | 2 | 0 | 4 | 4 | 0 | 0 | 0 |
| **c3** | 0 | 0 | **0** | 0 | 6 | 4 | 1 | 2 | 8 | 3 | 4 | 6 | 5 | 12 | 6 | 4 |
| **c4** | 3 | 0 | 0 | **0** | 4 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 |
| **c5** | 1 | 0 | 6 | 4 | **0** | 1 | 0 | 3 | 1 | 2 | 6 | 0 | 2 | 0 | 4 | 0 |
| **c6** | 0 | 1 | 4 | 0 | 1 | **0** | 2 | 2 | 0 | 1 | 2 | 6 | 3 | 4 | 3 | 8 |
| **c7** | 0 | 0 | 1 | 0 | 0 | 2 | **0** | 2 | 3 | 0 | 1 | 2 | 0 | 9 | 2 | 6 |
| **c8** | 4 | 3 | 2 | 1 | 3 | 2 | 2 | **0** | 8 | 0 | 4 | 1 | 5 | 4 | 9 | 4 |
| **c9** | 4 | 6 | 8 | 0 | 1 | 0 | 3 | 8 | **0** | 2 | 8 | 3 | 1 | 6 | 6 | 4 |
| **c10** | 6 | 2 | 3 | 0 | 2 | 1 | 0 | 0 | 2 | **0** | 1 | 6 | 0 | 1 | 0 | 6 |
| **c11** | 0 | 0 | 4 | 0 | 6 | 2 | 1 | 4 | 8 | 1 | **0** | 1 | 0 | 0 | 2 | 2 |
| **c12** | 10 | 4 | 6 | 0 | 0 | 6 | 2 | 1 | 3 | 6 | 1 | **0** | 4 | 15 | 4 | 6 |
| **c13** | 3 | 4 | 5 | 6 | 2 | 3 | 0 | 5 | 1 | 0 | 0 | 4 | **0** | 1 | 2 | 0 |
| **c14** | 12 | 0 | 12 | 0 | 0 | 4 | 9 | 4 | 6 | 1 | 0 | 15 | 1 | **0** | 3 | 6 |
| **c15** | 10 | 0 | 6 | 0 | 4 | 3 | 2 | 9 | 6 | 0 | 2 | 4 | 2 | 3 | **0** | 2 |
| **c16** | 6 | 0 | 4 | 0 | 0 | 8 | 6 | 4 | 4 | 6 | 2 | 6 | 0 | 6 | 2 | **0** |

**Кратчайший путь при помощи алгоритма Дейкстры**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **13** | **14** | **15** | **16** |
| **x1** | **0** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **x2** | ∞ | **1** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **x3** | ∞ | ∞ | ∞ | 7 | 6 | 6 | 6 | 6 | 6 | 5 | 5 | 5 | **5** |  |  |  |
| **x4** | ∞ | 3 | 3 | 3 | 3 | **3** |  |  |  |  |  |  |  |  |  |  |
| **x5** | ∞ | 1 | **1** |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **x6** | ∞ | ∞ | 2 | **2** |  |  |  |  |  |  |  |  |  |  |  |  |
| **x7** | ∞ | ∞ | ∞ | ∞ | 4 | 4 | 4 | 4 | **4** |  |  |  |  |  |  |  |
| **x8** | ∞ | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | **4** |  |  |  |  |  |  |
| **x9** | ∞ | 4 | 4 | 2 | **2** |  |  |  |  |  |  |  |  |  |  |  |
| **x10** | ∞ | 6 | 3 | 3 | 3 | 3 | **3** |  |  |  |  |  |  |  |  |  |
| **x11** | ∞ | ∞ | ∞ | 7 | 4 | 4 | 4 | 4 | 4 | 4 | **4** |  |  |  |  |  |
| **x12** | ∞ | 10 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | **5** |  |  |
| **x13** | ∞ | 3 | 3 | 3 | 3 | 3 | 3 | **3** |  |  |  |  |  |  |  |  |
| **x14** | ∞ | 12 | 12 | 12 | 6 | 6 | 6 | 4 | 4 | 4 | 4 | **4** |  |  |  |  |
| **x15** | ∞ | 10 | 10 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | **5** |  |
| **x16** | ∞ | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | **6** |

**Путь с наибольшей пропускной способностью алгоритмом Франка-Фриша**

Поиск пути из e4 в e14

1. Проводим разрез ребер вершины e4. Находим Q1 = 6.
2. Закорачиваем все ребра графа c q>=Q1. Это ребра:

(1,10) (1,12) (1,14) (1,15) (1,16)

(2, 9) (3,5) (3,9) (3,12) (3,14) (3,15)

(4,13)

(5,11) (6,12) (6,16) (7,14) (7,16)

(8,9) (8,15) (9,11) (9,14) (9,15)

(10,12) (10,16) (12,14) (12,16) (14,16)

1. Выполняем упрощение, объединяя ребра с одинаковыми вершинами

(1,10,12,14,15,16)

(2,9)

(3,5,9,12,14,15)

(4,13)

(5,11)

(6,16)

(7,14,16)

(8,9,15)

(9,11,14,15)

(10,12,16)

(12,14,16)

(14,16)

1. Повторяем упрощение

(1,10,12,14,15,16,3,5,9,11,6,7,8,2)

(4,13)

1. Ребро 4-13 имеет пропускную способность = 6
2. Пропускная способность ребер до вершины 4: 3,4,1 max =4

Пропускная способность ребер до вершины 13: 3,4,5,2,3,5,1,4,1,2 max=5 из вершин 3 и 8

1. Максимальная пропускная способность до вершины 3 = 12 из вершины 14, до 8 = 9 из вершины 15
2. Вершины 4 и 14 объединены. Путь:

12 5 6

4 --- 13 --- 3 --- 14

1. Пропускная способность искомого пути Q(P) = 5