**Zadání 1. úkolu do předmětu IZU**

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Pomocí metody UCS určete **nejkratší** dobu, za kterou čtyři lidé přejdou most. Máme most, přes který mohou jít jen dva lidé zaráz a přitom musí nést pochodeň. Každý jde jinou rychlostí, pokud jsou dva lidé spolu, jdou rychlostí pomalejšího. Doba přechodu mostu pro jednotlivé osoby viz tabulka, rychlosti u operátorů doplňte. Operátory používejte podle jejich pořadí. V jednotlivých krocích uvádějte obsahy zásobníků Open a Closed. Jako cestu vypište pořadí použitých operátorů.

Pochodeň je označena „\*“, číslo udává dobu cesty, osoby (A, B, C, D) nalevo od čísla jsou na jedné straně mostu, osoby napravo od čísla jsou na druhé straně mostu. „X“ značí dobu, za kterou se všichni lidé dostanou na druhou stranu.

Start: [\*ABCD0]

Cíl: [XABCD\*]

Časy:

A : 1

B : 5

C : 6

D : 15

Operátory:

1. A <- 1 5. AB -> 5 9. BD -> 15

2. B <- 5 6. AC -> 6 10. CD -> 15

3. C <- 6 7. AD ->15

4. D <- 15 8. BC ->6

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| Najkrajtšia cesta | AB -> 5 | A <- 1 | AC -> 6 | A <- 1 | AD ->15 |  |  |  |
| Doba cesty: | 5 | 1 | 6 | 1 | 15 | = | 28 |  |

Ciest existuje viac ale ja som došiel k tejto keďže rovnake ohodnotenie som vymazaval počas cesty.

Zelenou som označil uzol ktory som išiel expandovať a červenou uzol ktorý sa vymazal.

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| Open: | [\*ABCD0] |  |  |  |  |  |  |  |
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| Open: | [CD5AB\*] | [BD6AC\*] | [BC15AD\*] |  |  |  |  |  |
|  |  | [AD6BC\*] | [AC15BD\*] |  |  |  |  |  |
|  |  |  | [AB15CD\*] |  |  |  |  |  |
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| Closed: | [\*ABCD0] |  |  |  |  |  |  |  |
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| Open: | [\*ACD6B] | [\*BCD10A] |  |  |  |  | [BD6AC\*] | [BC15AD\*] |
|  |  |  |  |  |  |  | [AD6BC\*] | [AC15BD\*] |
|  |  |  |  |  |  |  |  | [AB15CD\*] |
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| Closed: | [\*ABCD0] | [CD5AB\*] |  |  |  |  |  |  |
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| Open: | [D12ABC\*] | [C21ABD\*] |  |  |  | [\*BCD10A] | [BD6AC\*] | [BC15AD\*] |
|  |  | [A21BCD\*] |  |  |  |  | [AD6BC\*] | [AC15BD\*] |
|  |  |  |  |  |  |  |  | [AB15CD\*] |
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| Closed: | [\*ABCD0] | [CD5AB\*] | [\*ACD6B] |  |  |  |  |  |
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| Open: | [\*ABD7C] | [\*BCD12A] |  |  |  | [\*BCD10A] | [C21ABD\*] | [BC15AD\*] |
|  |  |  |  |  |  | [AD6BC\*] | [A21BCD\*] | [AC15BD\*] |
|  |  |  |  |  |  |  | [D12ABC\*] | [AB15CD\*] |
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| Closed: | [\*ABCD0] | [CD5AB\*] | [\*ACD6B] | [BD6AC\*] |  |  |  |  |
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| Open: | [\*ABD11C] | [\*ACD12B] |  |  | [\*ABD7C] | [\*BCD10A] | [C21ABD\*] | [BC15AD\*] |
|  |  |  |  |  |  |  | [A21BCD\*] | [AC15BD\*] |
|  |  |  |  |  |  |  | [D12ABC\*] | [AB15CD\*] |
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| Closed: | [\*ABCD0] | [CD5AB\*] | [\*ACD6B] | [BD6AC\*] | [AD6BC\*] |  |  |  |
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| Open: | [D12ABC\*] | [B22ACD\*] | [A22BCD\*] |  |  | [\*BCD10A] | [C21ABD\*] | [BC15AD\*] |
|  |  |  |  |  |  |  | [A21BCD\*] | [AC15BD\*] |
|  |  |  |  |  |  |  | [D12ABC\*] | [AB15CD\*] |
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| Closed: | [\*ABCD0] | [CD5AB\*] | [\*ACD6B] | [BD6AC\*] | [AD6BC\*] | [\*ABD7C] |  |  |
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| Open: | [D16ABC\*] | [C25ABD\*] | [B25ACD\*] |  |  | [D12ABC\*] | [C21ABD\*] | [BC15AD\*] |
|  |  |  |  |  |  |  | [A21BCD\*] | [AC15BD\*] |
|  |  |  |  |  |  |  | [B22ACD\*] | [AB15CD\*] |
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| Closed: | [\*ABCD0] | [CD5AB\*] | [\*ACD6B] | [BD6AC\*] | [AD6BC\*] | [\*ABD7C] | [\*BCD10A] |  |
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| Open: | [\*AD13BC] | [\*BD17AC] | [\*CD18AB] |  |  |  | [C21ABD\*] | [BC15AD\*] |
|  |  |  |  |  |  |  | [A21BCD\*] | [AC15BD\*] |
|  |  |  |  |  |  |  | [B22ACD\*] | [AB15CD\*] |
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| Closed: | [\*ABCD0] | [CD5AB\*] | [\*ACD6B] | [BD6AC\*] | [AD6BC\*] | [\*ABD7C] | [\*BCD10A] | [D12ABC\*] |
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| Open: | [28ABCD\*] |  |  |  |  | [\*CD18AB] | [C21ABD\*] | [BC15AD\*] |
|  |  |  |  |  |  | [\*BD17AC] | [A21BCD\*] | [AC15BD\*] |
|  |  |  |  |  |  |  | [B22ACD\*] | [AB15CD\*] |
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| Closed: | [\*ABCD0] | [CD5AB\*] | [\*ACD6B] | [BD6AC\*] | [AD6BC\*] | [\*ABD7C] | [\*BCD10A] | [D12ABC\*] |
|  | [\*AD13BC] |  |  |  |  |  |  |  |
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| Open: | [28ABCD\*] |  | [\*ABC16D] | [\*BCD30A] |  | [\*CD18AB] | [C21ABD\*] |  |
|  |  |  |  |  |  |  | [A21BCD\*] | [AC15BD\*] |
|  |  |  |  |  |  |  | [B22ACD\*] | [AB15CD\*] |
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| Closed: | [\*ABCD0] | [CD5AB\*] | [\*ACD6B] | [BD6AC\*] | [AD6BC\*] | [\*ABD7C] | [\*BCD10A] | [D12ABC\*] |
|  | [\*AD13BC] | [BC15AD\*] |  |  |  |  |  |  |
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| Open: | [28ABCD\*] |  | [\*ABC20D] | [\*ACD30B] |  |  | [\*CD18AB] | [B22ACD\*] |
|  | [\*ABC16D] |  |  |  |  |  | [C21ABD\*] | [AB15CD\*] |
|  |  |  |  |  |  |  | [A21BCD\*] |  |
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| Closed: | [\*ABCD0] | [CD5AB\*] | [\*ACD6B] | [BD6AC\*] | [AD6BC\*] | [\*ABD7C] | [\*BCD10A] | [D12ABC\*] |
|  | [\*AD13BC] | [BC15AD\*] |  |  |  |  |  |  |
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| Open: | [28ABCD\*] |  | [\*ABC21D] | [\*ABD30C] |  |  | [\*CD18AB] | [B22ACD\*] |
|  | [\*ABC16D] |  |  |  |  |  | [C21ABD\*] |  |
|  |  |  |  |  |  |  | [A21BCD\*] |  |
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| Closed: | [\*ABCD0] | [CD5AB\*] | [\*ACD6B] | [BD6AC\*] | [AD6BC\*] | [\*ABD7C] | [\*BCD10A] | [D12ABC\*] |
|  | [\*AD13BC] | [BC15AD\*] | [AB15CD\*] |  |  |  |  |  |
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| Open: | [28ABCD\*] |  | [A22BCD\*] | [C21ABD\*] | [B22ACD\*] |  | [\*CD18AB] | [B22ACD\*] |
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|  |  |  |  |  |  |  | [A21BCD\*] |  |
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| Closed: | [\*ABCD0] | [CD5AB\*] | [\*ACD6B] | [BD6AC\*] | [AD6BC\*] | [\*ABD7C] | [\*BCD10A] | [D12ABC\*] |
|  | [\*AD13BC] | [BC15AD\*] | [AB15CD\*] | [\*ABC16D] |  |  |  |  |
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| Open: | [28ABCD\*] |  |  | [33ABCD\*] |  |  |  | [B22ACD\*] |
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|  |  |  |  |  |  |  |  | [A21BCD\*] |
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| Closed: | [\*ABCD0] | [CD5AB\*] | [\*ACD6B] | [BD6AC\*] | [AD6BC\*] | [\*ABD7C] | [\*BCD10A] | [D12ABC\*] |
|  | [\*AD13BC] | [BC15AD\*] | [AB15CD\*] | [\*ABC16D] | [\*CD18AB] |  |  |  |
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| Open: | [28ABCD\*] |  |  | [\*AC22BD] |  |  |  | [B22ACD\*] |
|  |  |  |  | [\*BC26AD] |  |  |  |  |
|  |  |  |  | [\*CD36AB] |  |  |  | [A21BCD\*] |
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| Closed: | [\*ABCD0] | [CD5AB\*] | [\*ACD6B] | [BD6AC\*] | [AD6BC\*] | [\*ABD7C] | [\*BCD10A] | [D12ABC\*] |
|  | [\*AD13BC] | [BC15AD\*] | [AB15CD\*] | [\*ABC16D] | [\*CD18AB] | [C21ABD\*] |  |  |
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| Open: | [28ABCD\*] |  |  | [\*AB26CD] |  |  |  | [B22ACD\*] |
|  |  |  |  | [\*AC27BD] |  |  |  | [\*AC22BD] |
|  |  |  |  | [\*AD36BC] |  |  |  | [\*BC26AD] |
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| Closed: | [\*ABCD0] | [CD5AB\*] | [\*ACD6B] | [BD6AC\*] | [AD6BC\*] | [\*ABD7C] | [\*BCD10A] | [D12ABC\*] |
|  | [\*AD13BC] | [BC15AD\*] | [AB15CD\*] | [\*ABC16D] | [\*CD18AB] | [C21ABD\*] | [A21BCD\*] |  |
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| Open: | [28ABCD\*] |  |  | [28ABCD\*] |  |  |  | [B22ACD\*] |
|  |  |  |  |  |  |  |  | [\*AB26CD] |
|  |  |  |  |  |  |  |  | [\*BC26AD] |
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| Closed: | [\*ABCD0] | [CD5AB\*] | [\*ACD6B] | [BD6AC\*] | [AD6BC\*] | [\*ABD7C] | [\*BCD10A] | [D12ABC\*] |
|  | [\*AD13BC] | [BC15AD\*] | [AB15CD\*] | [\*ABC16D] | [\*CD18AB] | [C21ABD\*] | [A21BCD\*] | [\*AC22BD] |
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| Open: | [28ABCD\*] |  |  | [\*AB23CD] |  |  |  |  |
|  |  |  |  | [\*BC28AD] |  |  |  | [\*AB26CD] |
|  |  |  |  | [\*BD37AC] |  |  |  | [\*BC26AD] |
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| Closed: | [\*ABCD0] | [CD5AB\*] | [\*ACD6B] | [BD6AC\*] | [AD6BC\*] | [\*ABD7C] | [\*BCD10A] | [D12ABC\*] |
|  | [\*AD13BC] | [BC15AD\*] | [AB15CD\*] | [\*ABC16D] | [\*CD18AB] | [C21ABD\*] | [A21BCD\*] | [\*AC22BD] |
|  | [B22ACD\*] |  |  |  |  |  |  |  |

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| Open: | [28ABCD\*] |  |  | [28ABCD\*] |  |  |  | [\*BD37AC] |
|  |  |  |  |  |  |  |  | [\*BC26AD] |
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| Closed: | [\*ABCD0] | [CD5AB\*] | [\*ACD6B] | [BD6AC\*] | [AD6BC\*] | [\*ABD7C] | [\*BCD10A] | [D12ABC\*] |
|  | [\*AD13BC] | [BC15AD\*] | [AB15CD\*] | [\*ABC16D] | [\*CD18AB] | [C21ABD\*] | [A21BCD\*] | [\*AC22BD] |
|  | [B22ACD\*] |  |  |  |  |  |  |  |

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| Open: | [28ABCD\*] |  |  | [32ABCD\*] |  |  |  | [\*BD37AC] |
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| Closed: | [\*ABCD0] | [CD5AB\*] | [\*ACD6B] | [BD6AC\*] | [AD6BC\*] | [\*ABD7C] | [\*BCD10A] | [D12ABC\*] |
|  | [\*AD13BC] | [BC15AD\*] | [AB15CD\*] | [\*ABC16D] | [\*CD18AB] | [C21ABD\*] | [A21BCD\*] | [\*AC22BD] |
|  | [B22ACD\*] | [\*BC26AD] |  |  |  |  |  |  |