```
// output with timing_graphs_tfriedma.cnf, pretty_print = True
         3 nodes: Found solution.
                                      Elapsed time: 0.0002 seconds
Case 1,
Case 2,
         3 nodes: Found solution.
                                      Elapsed time: 0.0000 seconds
Case 3,
         3 nodes: Found solution.
                                      Elapsed time: 0.0000 seconds
Case 4,
         3 nodes: Found solution.
                                      Elapsed time: 0.0000 seconds
         3 nodes: Found solution.
Case 5,
                                      Elapsed time: 0.0000 seconds
Case 6,
         3 nodes: Found solution.
                                      Elapsed time: 0.0000 seconds
Case 7,
         3 nodes: Found solution.
                                      Elapsed time: 0.0000 seconds
Case 8,
         3 nodes: Found solution.
                                      Elapsed time: 0.0000 seconds
Case 9,
         3 nodes: Found solution.
                                      Elapsed time: 0.0000 seconds
Case 10, 3 nodes: Found solution.
                                      Elapsed time: 0.0000 seconds
Case 11, 3 nodes: Found solution.
                                      Elapsed time: 0.0000 seconds
Case 12, 3 nodes: Found solution.
                                      Elapsed time: 0.0000 seconds
Case 13, 3 nodes: Found solution.
                                      Elapsed time: 0.0000 seconds
Case 14, 3 nodes: Found solution.
                                      Elapsed time: 0.0000 seconds
Case 15, 3 nodes: Found solution.
                                      Elapsed time: 0.0000 seconds
Case 16, 3 nodes: No Solution Found. Elapsed time: 0.0000 seconds
Case 17, 3 nodes: No Solution Found. Elapsed time: 0.0000 seconds
Case 18, 3 nodes: No Solution Found. Elapsed time: 0.0000 seconds
Case 19, 4 nodes: Found solution.
                                      Elapsed time: 0.0000 seconds
Case 20, 4 nodes: Found solution.
                                      Elapsed time: 0.0000 seconds
Case 21, 4 nodes: Found solution.
                                      Elapsed time: 0.0000 seconds
Case 22, 4 nodes: Found solution.
                                      Elapsed time: 0.0000 seconds
Case 23, 4 nodes: Found solution.
                                      Elapsed time: 0.0000 seconds
Case 24, 4 nodes: Found solution.
                                      Elapsed time: 0.0000 seconds
Case 25, 4 nodes: Found solution.
                                      Elapsed time: 0.0000 seconds
Case 26, 4 nodes: Found solution.
                                      Elapsed time: 0.0000 seconds
Case 27, 4 nodes: Found solution.
                                      Elapsed time: 0.0000 seconds
Case 28, 4 nodes: Found solution.
                                      Elapsed time: 0.0000 seconds
Case 29, 4 nodes: Found solution.
                                      Elapsed time: 0.0000 seconds
Case 30, 4 nodes: Found solution.
                                      Elapsed time: 0.0000 seconds
Case 31, 4 nodes: Found solution.
                                      Elapsed time: 0.0000 seconds
Case 32, 4 nodes: Found solution.
                                      Elapsed time: 0.0000 seconds
Case 33, 4 nodes: Found solution.
                                      Elapsed time: 0.0000 seconds
Case 34, 4 nodes: No Solution Found. Elapsed time: 0.0000 seconds
Case 35,
         4 nodes: No Solution Found. Elapsed time: 0.0000 seconds
Case 36, 4 nodes: No Solution Found. Elapsed time: 0.0000 seconds
Case 37, 5 nodes: Found solution.
                                      Elapsed time: 0.0000 seconds
Case 38, 5 nodes: Found solution.
                                      Elapsed time: 0.0000 seconds
Case 39, 5 nodes: Found solution.
                                      Elapsed time: 0.0000 seconds
Case 40, 5 nodes: Found solution.
                                      Elapsed time: 0.0000 seconds
```

```
Case 41,
          5 nodes: Found solution.
                                      Elapsed time: 0.0000 seconds
                                      Elapsed time: 0.0000 seconds
Case 42, 5 nodes: Found solution.
Case 43, 5 nodes: Found solution.
                                      Elapsed time: 0.0000 seconds
Case 44, 5 nodes: Found solution.
                                      Elapsed time: 0.0000 seconds
Case 45,
         5 nodes: Found solution.
                                      Elapsed time: 0.0000 seconds
Case 46,
          5 nodes: Found solution.
                                      Elapsed time: 0.0000 seconds
Case 47,
         5 nodes: Found solution.
                                      Elapsed time: 0.0000 seconds
          5 nodes: Found solution.
Case 48,
                                      Elapsed time: 0.0000 seconds
Case 49,
          5 nodes: Found solution.
                                      Elapsed time: 0.0000 seconds
Case 50,
         5 nodes: Found solution.
                                      Elapsed time: 0.0000 seconds
Case 51,
          5 nodes: Found solution.
                                      Elapsed time: 0.0000 seconds
Case 52,
          5 nodes: No Solution Found. Elapsed time: 0.0000 seconds
Case 53,
          5 nodes: No Solution Found. Elapsed time: 0.0000 seconds
Case 54, 5 nodes: No Solution Found. Elapsed time: 0.0000 seconds
Case 55, 6 nodes: Found solution.
                                      Elapsed time: 0.0000 seconds
Case 56, 6 nodes: Found solution.
                                      Elapsed time: 0.0000 seconds
Case 57, 6 nodes: Found solution.
                                      Elapsed time: 0.0000 seconds
Case 58, 6 nodes: Found solution.
                                      Elapsed time: 0.0000 seconds
Case 59, 6 nodes: Found solution.
                                      Elapsed time: 0.0000 seconds
Case 60, 6 nodes: Found solution.
                                      Elapsed time: 0.0000 seconds
Case 61, 6 nodes: Found solution.
                                      Elapsed time: 0.0000 seconds
Case 62, 6 nodes: Found solution.
                                      Elapsed time: 0.0000 seconds
Case 63, 6 nodes: Found solution.
                                      Elapsed time: 0.0000 seconds
Case 64, 6 nodes: Found solution.
                                      Elapsed time: 0.0000 seconds
Case 65, 6 nodes: Found solution.
                                      Elapsed time: 0.0000 seconds
Case 66, 6 nodes: Found solution.
                                      Elapsed time: 0.0000 seconds
Case 67, 6 nodes: Found solution.
                                      Elapsed time: 0.0000 seconds
Case 68, 6 nodes: Found solution.
                                      Elapsed time: 0.0000 seconds
Case 69, 6 nodes: Found solution.
                                      Elapsed time: 0.0000 seconds
Case 70,
         6 nodes: No Solution Found. Elapsed time: 0.0001 seconds
Case 71,
          6 nodes: No Solution Found. Elapsed time: 0.0001 seconds
Case 72, 6 nodes: No Solution Found. Elapsed time: 0.0001 seconds
                                      Elapsed time: 0.0000 seconds
Case 73,
         7 nodes: Found solution.
Case 74, 7 nodes: Found solution.
                                      Elapsed time: 0.0000 seconds
Case 75,
         7 nodes: Found solution.
                                      Elapsed time: 0.0000 seconds
Case 76,
         7 nodes: Found solution.
                                      Elapsed time: 0.0000 seconds
Case 77,
         7 nodes: Found solution.
                                      Elapsed time: 0.0000 seconds
Case 78,
         7 nodes: Found solution.
                                      Elapsed time: 0.0000 seconds
Case 79,
         7 nodes: Found solution.
                                      Elapsed time: 0.0000 seconds
Case 80,
         7 nodes: Found solution.
                                      Elapsed time: 0.0000 seconds
Case 81,
         7 nodes: Found solution.
                                      Elapsed time: 0.0000 seconds
Case 82, 7 nodes: Found solution.
                                      Elapsed time: 0.0000 seconds
Case 83,
         7 nodes: Found solution.
                                      Elapsed time: 0.0000 seconds
```

```
Case 84,
         7 nodes: Found solution.
                                      Elapsed time: 0.0000 seconds
                                      Elapsed time: 0.0000 seconds
Case 85, 7 nodes: Found solution.
Case 86,
         7 nodes: Found solution.
                                      Elapsed time: 0.0000 seconds
Case 87,
         7 nodes: Found solution.
                                      Elapsed time: 0.0001 seconds
Case 88,
         7 nodes: No Solution Found. Elapsed time: 0.0009 seconds
Case 89,
         7 nodes: No Solution Found. Elapsed time: 0.0009 seconds
Case 90,
         7 nodes: No Solution Found. Elapsed time: 0.0008 seconds
Case 91,
         8 nodes: Found solution.
                                      Elapsed time: 0.0013 seconds
Case 92, 8 nodes: Found solution.
                                      Elapsed time: 0.0001 seconds
Case 93, 8 nodes: Found solution.
                                      Elapsed time: 0.0002 seconds
Case 94,
         8 nodes: Found solution.
                                      Elapsed time: 0.0000 seconds
Case 95, 8 nodes: Found solution.
                                      Elapsed time: 0.0001 seconds
Case 96,
         8 nodes: Found solution.
                                      Elapsed time: 0.0001 seconds
Case 97, 8 nodes: Found solution.
                                      Elapsed time: 0.0000 seconds
Case 98, 8 nodes: Found solution.
                                      Elapsed time: 0.0000 seconds
Case 99,
         8 nodes: Found solution.
                                      Elapsed time: 0.0000 seconds
Case 100, 8 nodes: Found solution.
                                       Elapsed time: 0.0001 seconds
Case 101, 8 nodes: Found solution.
                                       Elapsed time: 0.0000 seconds
Case 102, 8 nodes: Found solution.
                                       Elapsed time: 0.0000 seconds
Case 103, 8 nodes: Found solution.
                                       Elapsed time: 0.0004 seconds
Case 104, 8 nodes: Found solution.
                                       Elapsed time: 0.0001 seconds
Case 105, 8 nodes: Found solution.
                                       Elapsed time: 0.0000 seconds
Case 106, 8 nodes: No Solution Found. Elapsed time: 0.0063 seconds
Case 107, 8 nodes: No Solution Found. Elapsed time: 0.0068 seconds
Case 108, 8 nodes: No Solution Found. Elapsed time: 0.0080 seconds
Case 109, 9 nodes: Found solution.
                                       Elapsed time: 0.0007 seconds
Case 110, 9 nodes: Found solution.
                                       Elapsed time: 0.0006 seconds
Case 111, 9 nodes: Found solution.
                                       Elapsed time: 0.0001 seconds
Case 112, 9 nodes: Found solution.
                                       Elapsed time: 0.0000 seconds
Case 113, 9 nodes: Found solution.
                                       Elapsed time: 0.0001 seconds
Case 114, 9 nodes: Found solution.
                                       Elapsed time: 0.0112 seconds
Case 115, 9 nodes: Found solution.
                                       Elapsed time: 0.0000 seconds
Case 116, 9 nodes: Found solution.
                                       Elapsed time: 0.0006 seconds
Case 117, 9 nodes: Found solution.
                                       Elapsed time: 0.0006 seconds
Case 118, 9 nodes: Found solution.
                                       Elapsed time: 0.0001 seconds
Case 119, 9 nodes: Found solution.
                                       Elapsed time: 0.0001 seconds
Case 120, 9 nodes: Found solution.
                                       Elapsed time: 0.0005 seconds
Case 121, 9 nodes: Found solution.
                                       Elapsed time: 0.0000 seconds
Case 122, 9 nodes: Found solution.
                                       Elapsed time: 0.0000 seconds
Case 123, 9 nodes: Found solution.
                                       Elapsed time: 0.0001 seconds
Case 124, 9 nodes: No Solution Found. Elapsed time: 0.0534 seconds
Case 125, 9 nodes: No Solution Found. Elapsed time: 0.0444 seconds
Case 126, 9 nodes: No Solution Found. Elapsed time: 0.0437 seconds
```

```
Case 127, 10 nodes: Found solution.
                                        Elapsed time: 0.0010 seconds
Case 128, 10 nodes: Found solution.
                                       Elapsed time: 0.0006 seconds
Case 129, 10 nodes: Found solution.
                                        Elapsed time: 0.0000 seconds
Case 130, 10 nodes: Found solution.
                                       Elapsed time: 0.0114 seconds
Case 131, 10 nodes: Found solution.
                                       Elapsed time: 0.0043 seconds
Case 132, 10 nodes: Found solution.
                                       Elapsed time: 0.0004 seconds
Case 133, 10 nodes: Found solution.
                                       Elapsed time: 0.0000 seconds
Case 134, 10 nodes: Found solution.
                                       Elapsed time: 0.0007 seconds
Case 135, 10 nodes: Found solution.
                                       Elapsed time: 0.0000 seconds
Case 136, 10 nodes: Found solution.
                                       Elapsed time: 0.0000 seconds
Case 137, 10 nodes: Found solution.
                                       Elapsed time: 0.0000 seconds
Case 138, 10 nodes: Found solution.
                                       Elapsed time: 0.0044 seconds
Case 139, 10 nodes: Found solution.
                                       Elapsed time: 0.0436 seconds
Case 140, 10 nodes: Found solution.
                                       Elapsed time: 0.0007 seconds
Case 141, 10 nodes: Found solution.
                                       Elapsed time: 0.0083 seconds
Case 142, 10 nodes: No Solution Found. Elapsed time: 0.5966 seconds
Case 143, 10 nodes: No Solution Found. Elapsed time: 0.4975 seconds
Case 144, 10 nodes: No Solution Found. Elapsed time: 0.5470 seconds
Case 145, 11 nodes: Found solution.
                                        Elapsed time: 0.0219 seconds
Case 146, 11 nodes: Found solution.
                                       Elapsed time: 0.0001 seconds
Case 147, 11 nodes: Found solution.
                                       Elapsed time: 0.0000 seconds
Case 148, 11 nodes: Found solution.
                                       Elapsed time: 0.0009 seconds
Case 149, 11 nodes: Found solution.
                                       Elapsed time: 0.0000 seconds
Case 150, 11 nodes: Found solution.
                                       Elapsed time: 0.0563 seconds
Case 151, 11 nodes: Found solution.
                                       Elapsed time: 0.1201 seconds
Case 152, 11 nodes: Found solution.
                                       Elapsed time: 0.0009 seconds
Case 153, 11 nodes: Found solution.
                                       Elapsed time: 0.1937 seconds
Case 154, 11 nodes: Found solution.
                                       Elapsed time: 0.0431 seconds
Case 155, 11 nodes: Found solution.
                                       Elapsed time: 0.0000 seconds
Case 156, 11 nodes: Found solution.
                                       Elapsed time: 0.0905 seconds
Case 157, 11 nodes: Found solution.
                                       Elapsed time: 0.0377 seconds
Case 158, 11 nodes: Found solution.
                                       Elapsed time: 0.0011 seconds
Case 159, 11 nodes: Found solution.
                                       Elapsed time: 0.0057 seconds
Case 160, 11 nodes: No Solution Found. Elapsed time: 6.0970 seconds
Case 161, 11 nodes: No Solution Found. Elapsed time: 4.4293 seconds
Case 162, 11 nodes: No Solution Found. Elapsed time: 4.4828 seconds
Case 163, 12 nodes: Found solution.
                                        Elapsed time: 0.0285 seconds
Case 164, 12 nodes: Found solution.
                                       Elapsed time: 0.3776 seconds
Case 165, 12 nodes: Found solution.
                                        Elapsed time: 4.2600 seconds
Case 166, 12 nodes: Found solution.
                                       Elapsed time: 0.7522 seconds
Case 167, 12 nodes: Found solution.
                                       Elapsed time: 0.0000 seconds
Case 168, 12 nodes: Found solution.
                                       Elapsed time: 1.2228 seconds
Case 169, 12 nodes: Found solution.
                                       Elapsed time: 0.0163 seconds
```

```
Case 170, 12 nodes: Found solution.
                                       Elapsed time: 0.0538 seconds
Case 171, 12 nodes: Found solution.
                                       Elapsed time: 0.0502 seconds
Case 172, 12 nodes: Found solution.
                                       Elapsed time: 0.0021 seconds
Case 173, 12 nodes: Found solution.
                                       Elapsed time: 0.0000 seconds
Case 174, 12 nodes: Found solution.
                                       Elapsed time: 0.0000 seconds
Case 175, 12 nodes: Found solution.
                                       Elapsed time: 0.7740 seconds
Case 176, 12 nodes: Found solution.
                                       Elapsed time: 23.4814 seconds
Case 177, 12 nodes: Found solution.
                                       Elapsed time: 0.0019 seconds
Case 178, 12 nodes: No Solution Found. Elapsed time: 62.8051 seconds
Case 179, 12 nodes: No Solution Found. Elapsed time: 67.5762 seconds
Case 180, 12 nodes: No Solution Found. Elapsed time: 84.7678 seconds
```

```
// output with testing_graphs_tfriedma.cnf, pretty_print = True
         1 nodes: Found solution.
Case 1,
                                      Elapsed time: 0.0000 seconds
Case 2,
         1 nodes: Found solution.
                                     Elapsed time: 0.0000 seconds
         1 nodes: Found solution.
                                     Elapsed time: 0.0000 seconds
Case 3,
Case 4,
         2 nodes: Found solution.
                                     Elapsed time: 0.0000 seconds
Case 5,
         2 nodes: Found solution.
                                     Elapsed time: 0.0000 seconds
Case 6,
         2 nodes: Found solution.
                                     Elapsed time: 0.0000 seconds
Case 7,
         3 nodes: No Solution Found. Elapsed time: 0.0000 seconds
                                     Elapsed time: 0.0000 seconds
Case 8,
         3 nodes: Found solution.
Case 9,
         3 nodes: No Solution Found. Elapsed time: 0.0000 seconds
Case 10, 4 nodes: No Solution Found. Elapsed time: 0.0000 seconds
Case 11,
         4 nodes: No Solution Found. Elapsed time: 0.0000 seconds
         4 nodes: No Solution Found. Elapsed time: 0.0000 seconds
Case 12,
Case 13, 5 nodes: No Solution Found. Elapsed time: 0.0000 seconds
Case 14, 5 nodes: No Solution Found. Elapsed time: 0.0000 seconds
Case 15,
         5 nodes: Found solution.
                                      Elapsed time: 0.0000 seconds
Case 16, 6 nodes: No Solution Found. Elapsed time: 0.0001 seconds
Case 17, 6 nodes: Found solution.
                                      Elapsed time: 0.0000 seconds
Case 18, 6 nodes: Found solution.
                                      Elapsed time: 0.0000 seconds
         7 nodes: No Solution Found. Elapsed time: 0.0007 seconds
Case 19,
Case 20, 7 nodes: No Solution Found. Elapsed time: 0.0007 seconds
Case 21,
         7 nodes: No Solution Found. Elapsed time: 0.0008 seconds
Case 22, 8 nodes: Found solution.
                                      Elapsed time: 0.0000 seconds
Case 23, 8 nodes: Found solution.
                                      Elapsed time: 0.0006 seconds
Case 24,
         8 nodes: Found solution.
                                     Elapsed time: 0.0001 seconds
Case 25, 9 nodes: No Solution Found. Elapsed time: 0.0433 seconds
Case 26, 9 nodes: Found solution.
                                     Elapsed time: 0.0001 seconds
Case 27, 9 nodes: Found solution.
                                     Elapsed time: 0.0001 seconds
Case 28, 10 nodes: Found solution.
                                     Elapsed time: 0.0073 seconds
Case 29, 10 nodes: No Solution Found. Elapsed time: 0.3900 seconds
```

```
Case 30, 10 nodes: Found solution.
                                      Elapsed time: 0.0047 seconds
Case 31, 11 nodes: No Solution Found. Elapsed time: 4.4018 seconds
Case 32, 11 nodes: Found solution.
                                      Elapsed time: 0.0867 seconds
Case 33, 11 nodes: Found solution.
                                      Elapsed time: 0.0542 seconds
Case 34, 12 nodes: No Solution Found. Elapsed time: 48.7486 seconds
Case 35, 12 nodes: No Solution Found. Elapsed time: 50.5030 seconds
                                      Elapsed time: 0.0084 seconds
Case 36, 12 nodes: Found solution.
Case 37, 13 nodes: Found solution.
                                      Elapsed time: 5.1494 seconds
Case 38, 13 nodes: Found solution.
                                      Elapsed time: 4.1751 seconds
Case 39, 13 nodes: Found solution.
                                      Elapsed time: 0.0000 seconds
Case 40, 14 nodes: Found solution.
                                      Elapsed time: 0.8234 seconds
```