MIS Outputs

Example 1

We have the graph:

```
(1, 2), (1, 5), (2, 3), (3, 4), (4, 5)
```

The **QUBO Matrix** generated for this graph:

```
[-1. 2. 0. 0. 2.]

[ 0. -1. 2. 0. 0.]

[ 0. 0. -1. 2. 0.]

[ 0. 0. 0. -1. 2.]

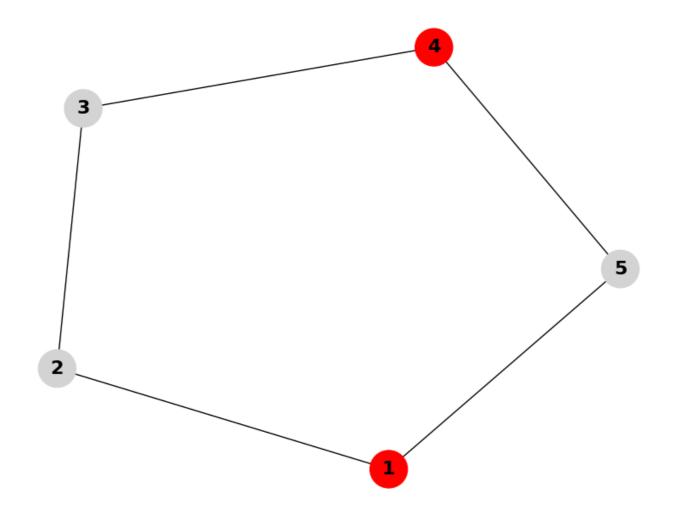
[ 0. 0. 0. -1.]
```

The **MIS** for this graph is:

```
[1, 4]
```

The **Energy** used: -2

Graph:



Example 2

We have the graph:

```
('0', '1'), ('0', '11'),
('1', '9'), ('1', '3'),
('2', '3'),
('4', '5'), ('4', '7'),
('5', '6'),
('6', '7'),
('8', '9'),
('9', '10'),
('10', '11')
```

The **QUBO Matrix** generated for this graph:

```
Θ.
             2.
                0.
                        Θ.
                            0.
                                0.
                                    0.
                                        0.
                                           0.]
[-1.
     2.
                    0.
[ 0. -1.
         0. 0. 0.
                    2.
                        Θ.
                            0.
                                0.
                                    0. 0.
                                           2.]
                            0.
                                       0.
     0. -1.
             2.
               Θ.
                    0.
                        Θ.
                                0.
                                    0.
                                           2.]
     0. 0. -1. 0.
                    Θ.
                        0.
                            Θ.
                                0.
                                    Θ. Θ.
                                           0.]
             0. -1.
                        0.
     Θ.
         Θ.
                   2.
                            Θ.
                                0.
                                    0. 0.
                                           0.]
     Θ.
            0. 0. -1.
                        0.
                            0.
                                Θ.
                                    Θ.
                                      0.
[ 0.
         0.
```

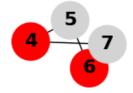
```
[ 0.
        0. 0. 0. 0. -1. 2. 0. 2. 0. 0.]
                   Θ.
                      0. -1.
                             2. 0. 0.
                                        0.]
[ 0.
     Θ.
        Θ.
            0.
               0.
[ 0.
     0.
        0. 0. 0. 0.
                      0.
                          0. -1.
                                 2. 0. 0.]
           0. 0. 0. 0.
                          0. 0. -1. 0. 0.]
[ 0.
     0.
        Θ.
[ 0.
     0.
        0.
            Θ.
               0. 0. 0.
                          0.
                             0. 0. -1. 2.]
[ 0.
     Θ.
        0.
            Θ.
               Θ.
                   Θ.
                      0.
                          0.
                              0.
                                 0. 0. -1.]
```

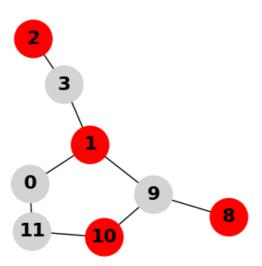
The **MIS** for this graph is:

```
['0', '1', '2', '3', '4', '5']
```

The **Energy** used: -6

Graph:





Example 3

We have the graph:

```
('0', '6'), ('0', '7'), ('0', '8'), ('0', '9'), ('0', '10'), ('0', '11'), ('1', '6'), ('1', '7'), ('1', '8'), ('1', '9'), ('1', '10'), ('1', '11'),
```

```
('2', '6'), ('2', '7'), ('2', '8'), ('2', '9'), ('2', '10'), ('2', '11'), ('3', '6'), ('3', '7'), ('3', '8'), ('3', '9'), ('3', '10'), ('3', '11'), ('4', '6'), ('4', '7'), ('4', '8'), ('4', '9'), ('4', '10'), ('4', '11'), ('5', '6'), ('5', '7'), ('5', '8'), ('5', '9'), ('5', '10'), ('5', '11')
```

The **QUBO Matrix** generated for this graph:

```
2.
            2.
                    0.
                        0.
                           0.
                               2.
                                   2.
                                       2.
                                          2.]
[-1.
     Θ.
                0.
[ 0. -1.
         2.
            2.
                0.
                    0.
                        0.
                           Θ.
                               2.
                                   2.
                                       2.
                                          2.]
                2.
                        2.
                           2.
                                          0.]
     0. -1.
            0.
                    2.
                               0.
                                   0.
                                       0.
     0.
         0. -1.
               2. 2.
                        2.
                           2.
                               0.
                                   0. 0.
                                          0.]
                                   2. 2.
     0.
         0.
            0. -1.
                    0. 0.
                           0.
                               2.
                                          2.]
 0.
     0.
         0.
            Θ.
                0. -1.
                        0.
                           Ο.
                               2.
                                   2. 2.
                                          2.]
 0.
     0.
         0.
            0.
                Θ.
                    0. -1.
                           0.
                               2.
                                   2. 2.
                                          2.]
            Θ.
                Θ.
                    0. 0. -1.
                               2.
                                   2. 2.
[ 0.
     0.
         0.
                                          2.]
 0.
     0.
         0.
            0.
                0.
                    0. 0. 0. -1.
                                   0. 0.
                                          0.]
[ 0.
     Θ.
         0.
            Θ.
                0.
                    0. 0. 0. 0. -1. 0. 0.]
[ 0.
     Θ.
         Θ.
            0. 0. 0.
                        0. 0. 0. 0. -1. 0.]
                0. 0. 0.
                           0.
                               0. 0. 0. -1.]
Γ 0.
     0.
         0.
            0.
```

The **MIS** for this graph is:

```
['0', '1', '2', '3', '4', '5']
```

The **Energy** used: -6

Graph:

