```
Input( 3 Vertices)
2
0 1
10
2
Expected: exact max clique: 2
Actual: exact max clique: 2
Runtime
--- 1.4280338287353516 seconds —
Input(5 Vertices):
4
0123
1023
2013
3012
4
Expected: exact max clique: 3
Actual: exact max clique: 3
Runtime: --- 1.3982501029968262 seconds —
Input(7 Vertices)
6
02
1234561
213456
312456
412356
512346
612345
exact max clique 6
--- 1.250974178314209 seconds —
6
02
1234561
```

```
2 1 3 4 5 6
3 1 2 4 5 6
4 1 2 3 5 6
5 1 2 3 4 6
6 1 2 3 4 5
```

Max Clique: 6

```
9
0 2 8 1
1 6 1 2
2 1 2
3
4 5 6 7 8
5 4 6 7 8
6 4 5 7 8
7 4 5 6 8
8 4 5 6 7

Max Clique: 5
```

exact max clique 5

--- 1.4033799171447754 seconds —

```
11
014568101848
104568106310
273
3 4
401568108
50146810
60145810
7
80145610
10014568
exact max clique 7
--- 1.3321149349212646 seconds —
11
014568101848
104568106310
273
3 4
401568108
50146810
60145810
80145610
10014568
Max Clique: 7
```

8 0 1 2 3 4 5 6 7 9 11 12 9 0 1 2 3 4 5 6 7 8 11 12 10 11 0 1 2 3 4 5 6 7 8 9 12 12 0 1 2 3 4 5 6 7 8 9 11

Max Clique: 12

exact max clique 12 --- 0.9154069423675537 seconds —

11 0 1 3 4 5 6 7 9 12 14 12 0 1 3 4 5 6 7 9 11 14 13 14 0 1 3 4 5 6 7 9 11 12

exact max clique 11
--- 1.2357778549194336 seconds —

Max Clique: 11

17
0 2 4 5 7 8 9 10 11 13 16 3 11 14 5 8 5
1 13 11 6 5 2 9
2 0 4 5 7 8 9 10 11 13 16 2 16 2 2 11 10
3 3 3 9 4 1 6
4 0 2 5 7 8 9 10 11 13 16 3 16 11 5 15 9
5 0 2 4 7 8 9 10 11 13 16 5 5 0 7
6 0 0 4
7 0 2 4 5 8 9 10 11 13 16 5 12 13
8 0 2 4 5 7 9 10 11 13 16 11 0

9 0 2 4 5 7 8 10 11 13 16 10 0 2 4 5 7 8 9 11 13 16 11 0 2 4 5 7 8 9 10 13 16 12 13 0 2 4 5 7 8 9 10 11 16 14 15 16 0 2 4 5 7 8 9 10 11 13

Max Clique: 11

exact max clique 11
--- 1.3751001358032227 seconds —

Max Clique: 11

19
1 0 2 4 5 8 11 14 15 18 13 11 2 0 16 13 18
2 0 1 4 5 8 11 14 15 18 1 3 9 14 0
3 3 9 8 9 12

```
4012581114151852916
50124811141518115189
6403
778
8 0 1 2 4 5 11 14 15 18
9
10
11 0 1 2 4 5 8 14 15 18
12
13
14 0 1 2 4 5 8 11 15 18
15 0 1 2 4 5 8 11 14 18
16
17
18 0 1 2 4 5 8 11 14 15
Max Clique: 10
19
0 1 2 4 5 8 11 14 15 18 3 11 3 4 9 8 18 9
1 0 2 4 5 8 11 14 15 18 13 11 2 0 16 13 18
20145811141518139140
3398912
4012581114151852916
50124811141518115189
6403
778
8 0 1 2 4 5 11 14 15 18
10
11 0 1 2 4 5 8 14 15 18
12
13
14 0 1 2 4 5 8 11 15 18
15 0 1 2 4 5 8 11 14 18
16
17
18 0 1 2 4 5 8 11 14 15
exact max clique 10
```

--- 2.2993600368499756 seconds —

```
21
0 1 3 4 7 8 9 10 11 12 13 14 18 19 20 1 8 6 19 20 0
1 0 3 4 7 8 9 10 11 12 13 14 18 19 20 18 0 15 20
2 18 11 19 20
3 0 1 4 7 8 9 10 11 12 13 14 18 19 20 6 1 5 16
4 0 1 3 7 8 9 10 11 12 13 14 18 19 20 17 0
5 11 12
6 16 13
7 0 1 3 4 8 9 10 11 12 13 14 18 19 20 17 6
8 0 1 3 4 7 9 10 11 12 13 14 18 19 20 8
9 0 1 3 4 7 8 10 11 12 13 14 18 19 20 0
10 0 1 3 4 7 8 9 11 12 13 14 18 19 20 8
11 0 1 3 4 7 8 9 10 12 13 14 18 19 20
12 0 1 3 4 7 8 9 10 11 13 14 18 19 20
13 0 1 3 4 7 8 9 10 11 12 14 18 19 20
14 0 1 3 4 7 8 9 10 11 12 13 18 19 20
15
16
17
18 0 1 3 4 7 8 9 10 11 12 13 14 19 20
19 0 1 3 4 7 8 9 10 11 12 13 14 18 20
20 0 1 3 4 7 8 9 10 11 12 13 14 18 19
```

```
21
0 1 3 4 7 8 9 10 11 12 13 14 18 19 20 1 8 6 19 20 0
1 0 3 4 7 8 9 10 11 12 13 14 18 19 20 18 0 15 20
2 18 11 19 20
3 0 1 4 7 8 9 10 11 12 13 14 18 19 20 6 1 5 16
4 0 1 3 7 8 9 10 11 12 13 14 18 19 20 17 0
5 11 12
6 16 13
7 0 1 3 4 8 9 10 11 12 13 14 18 19 20 17 6
8 0 1 3 4 7 9 10 11 12 13 14 18 19 20 8
9 0 1 3 4 7 8 10 11 12 13 14 18 19 20 8
11 0 1 3 4 7 8 9 10 12 13 14 18 19 20 8
11 0 1 3 4 7 8 9 10 12 13 14 18 19 20
12 0 1 3 4 7 8 9 10 11 13 14 18 19 20
```

```
13 0 1 3 4 7 8 9 10 11 12 14 18 19 20 14 0 1 3 4 7 8 9 10 11 12 13 18 19 20 15 16 17 18 0 1 3 4 7 8 9 10 11 12 13 14 19 20 19 0 1 3 4 7 8 9 10 11 12 13 14 18 20 20 0 1 3 4 7 8 9 10 11 12 13 14 18 19 exact max clique 15
```

--- 9.7825767993927 seconds —

Max Clique: 10

23 0 9 2 2 10 11 8 10 19 16 20 8 12

```
1 22 20 20 22 22 2 14 19 0 5
2 18 3 10 1 12 21 16 17
3 20 12 22 15 12 0 17 14
483801914
5 12 4 21 3 8
6 12 13 2 22 13
7 20
8
10 11 13 14 16 17 18 19 21 22
11 10 13 14 16 17 18 19 21 22
12
13 10 11 14 16 17 18 19 21 22
14 10 11 13 16 17 18 19 21 22
15
16 10 11 13 14 17 18 19 21 22
17 10 11 13 14 16 18 19 21 22
18 10 11 13 14 16 17 19 21 22
19 10 11 13 14 16 17 18 21 22
20
21 10 11 13 14 16 17 18 19 22
22 10 11 13 14 16 17 18 19 21
```

## exact max clique 10

--- 19.36954379081726 seconds —

```
25
0 1 3 4 5 6 7 8 9 10 11 12 14 15 16 17 18 19 22 23 24 16 3 4 23
1 0 3 4 5 6 7 8 9 10 11 12 14 15 16 17 18 19 22 23 24 8 21 5 21
2 9 6 10 6
3 0 1 4 5 6 7 8 9 10 11 12 14 15 16 17 18 19 22 23 24 4 18 8 9
4 0 1 3 5 6 7 8 9 10 11 12 14 15 16 17 18 19 22 23 24 8 9 2
5 0 1 3 4 6 7 8 9 10 11 12 14 15 16 17 18 19 22 23 24 21 0 6
6 0 1 3 4 5 7 8 9 10 11 12 14 15 16 17 18 19 22 23 24 17 12 21
7 0 1 3 4 5 6 8 9 10 11 12 14 15 16 17 18 19 22 23 24 1 19 8
8 0 1 3 4 5 6 7 9 10 11 12 14 15 16 17 18 19 22 23 24 6 19 5
9 0 1 3 4 5 6 7 8 10 11 12 14 15 16 17 18 19 22 23 24 16 14 12
10 0 1 3 4 5 6 7 8 9 10 12 14 15 16 17 18 19 22 23 24 5 9
12 0 1 3 4 5 6 7 8 9 10 11 14 15 16 17 18 19 22 23 24 5 9
```

```
13 1
14 0 1 3 4 5 6 7 8 9 10 11 12 15 16 17 18 19 22 23 24 1
15 0 1 3 4 5 6 7 8 9 10 11 12 14 16 17 18 19 22 23 24 17
16 0 1 3 4 5 6 7 8 9 10 11 12 14 15 17 18 19 22 23 24 10
17 0 1 3 4 5 6 7 8 9 10 11 12 14 15 16 18 19 22 23 24 19
18 0 1 3 4 5 6 7 8 9 10 11 12 14 15 16 17 19 22 23 24
19 0 1 3 4 5 6 7 8 9 10 11 12 14 15 16 17 18 22 23 24
20
21
22 0 1 3 4 5 6 7 8 9 10 11 12 14 15 16 17 18 19 23 24
23 0 1 3 4 5 6 7 8 9 10 11 12 14 15 16 17 18 19 22 24
24 0 1 3 4 5 6 7 8 9 10 11 12 14 15 16 17 18 19 22 23
```

Max Clique: 21

```
25
0 1 3 4 5 6 7 8 9 10 11 12 14 15 16 17 18 19 22 23 24 16 3 4 23
1 0 3 4 5 6 7 8 9 10 11 12 14 15 16 17 18 19 22 23 24 8 21 5 21
296106
3 0 1 4 5 6 7 8 9 10 11 12 14 15 16 17 18 19 22 23 24 4 18 8 9
4 0 1 3 5 6 7 8 9 10 11 12 14 15 16 17 18 19 22 23 24 8 9 2
5 0 1 3 4 6 7 8 9 10 11 12 14 15 16 17 18 19 22 23 24 21 0 6
6 0 1 3 4 5 7 8 9 10 11 12 14 15 16 17 18 19 22 23 24 17 12 21
7 0 1 3 4 5 6 8 9 10 11 12 14 15 16 17 18 19 22 23 24 1 19 8
8 0 1 3 4 5 6 7 9 10 11 12 14 15 16 17 18 19 22 23 24 6 19 5
9 0 1 3 4 5 6 7 8 10 11 12 14 15 16 17 18 19 22 23 24 16 14 12
10 0 1 3 4 5 6 7 8 9 11 12 14 15 16 17 18 19 22 23 24 22 8
11 0 1 3 4 5 6 7 8 9 10 12 14 15 16 17 18 19 22 23 24 5 9
12 0 1 3 4 5 6 7 8 9 10 11 14 15 16 17 18 19 22 23 24 20 4
13 1
14 0 1 3 4 5 6 7 8 9 10 11 12 15 16 17 18 19 22 23 24 1
15 0 1 3 4 5 6 7 8 9 10 11 12 14 16 17 18 19 22 23 24 17
16 0 1 3 4 5 6 7 8 9 10 11 12 14 15 17 18 19 22 23 24 10
17 0 1 3 4 5 6 7 8 9 10 11 12 14 15 16 18 19 22 23 24 19
18 0 1 3 4 5 6 7 8 9 10 11 12 14 15 16 17 19 22 23 24
19 0 1 3 4 5 6 7 8 9 10 11 12 14 15 16 17 18 22 23 24
20
21
22 0 1 3 4 5 6 7 8 9 10 11 12 14 15 16 17 18 19 23 24
23 0 1 3 4 5 6 7 8 9 10 11 12 14 15 16 17 18 19 22 24
24 0 1 3 4 5 6 7 8 9 10 11 12 14 15 16 17 18 19 22 23
```

Max Clique: 16

27
0 17 12 9 2 21 26 7 17 14 20
1 3 4 7 9 10 11 13 15 17 19 20 21 22 25 26 12 10 24 20 21 2 17 9 15 4
2 14 11 3 18 4 15 19 3
3 1 4 7 9 10 11 13 15 17 19 20 21 22 25 26 1 23 24 26 13 26 23 9
4 1 3 7 9 10 11 13 15 17 19 20 21 22 25 26 15 25 22 0 18 19 1 2

```
5 16 20 13 9 5 22 4
6 19 2 11 7 9 10 9
7 1 3 4 9 10 11 13 15 17 19 20 21 22 25 26 5 20 1 26 14 14
828215
9 1 3 4 7 10 11 13 15 17 19 20 21 22 25 26 5 23 26
10 1 3 4 7 9 11 13 15 17 19 20 21 22 25 26 2 13
11 1 3 4 7 9 10 13 15 17 19 20 21 22 25 26 8
12 10
13 1 3 4 7 9 10 11 15 17 19 20 21 22 25 26 2
15 1 3 4 7 9 10 11 13 17 19 20 21 22 25 26
16
17 1 3 4 7 9 10 11 13 15 19 20 21 22 25 26
18
19 1 3 4 7 9 10 11 13 15 17 20 21 22 25 26
20 1 3 4 7 9 10 11 13 15 17 19 21 22 25 26
21 1 3 4 7 9 10 11 13 15 17 19 20 22 25 26
22 1 3 4 7 9 10 11 13 15 17 19 20 21 25 26
23
24
25 1 3 4 7 9 10 11 13 15 17 19 20 21 22 26
26 1 3 4 7 9 10 11 13 15 17 19 20 21 22 25
```

## exact max clique 16

--- 302.8389298915863 seconds ---

```
29
0 1 2 3 4 5 6 7 9 10 11 13 14 15 16 18 19 20 24 25 26 27 18 1 28 18 6 23
1 0 2 3 4 5 6 7 9 10 11 13 14 15 16 18 19 20 24 25 26 27 7 4 26 17 28 21
2 0 1 3 4 5 6 7 9 10 11 13 14 15 16 18 19 20 24 25 26 27 9 12 1 11 11
3 0 1 2 4 5 6 7 9 10 11 13 14 15 16 18 19 20 24 25 26 27 8 19 26 0 9
4 0 1 2 3 5 6 7 9 10 11 13 14 15 16 18 19 20 24 25 26 27 24 2 14
5 0 1 2 3 4 6 7 9 10 11 13 14 15 16 18 19 20 24 25 26 27 1 23 0
6 0 1 2 3 4 5 7 9 10 11 13 14 15 16 18 19 20 24 25 26 27 10 4 5
7 0 1 2 3 4 5 6 9 10 11 13 14 15 16 18 19 20 24 25 26 27 4 25 16
8 14 8 12
9 0 1 2 3 4 5 6 7 10 11 13 14 15 16 18 19 20 24 25 26 27 20 14
10 0 1 2 3 4 5 6 7 9 11 13 14 15 16 18 19 20 24 25 26 27 19 13
11 0 1 2 3 4 5 6 7 9 10 13 14 15 16 18 19 20 24 25 26 27 3 27
12 25 26
13 0 1 2 3 4 5 6 7 9 10 11 14 15 16 18 19 20 24 25 26 27 10 6
14 0 1 2 3 4 5 6 7 9 10 11 13 15 16 18 19 20 24 25 26 27 9 27
```

```
15 0 1 2 3 4 5 6 7 9 10 11 13 14 16 18 19 20 24 25 26 27 22 10 16 0 1 2 3 4 5 6 7 9 10 11 13 14 15 18 19 20 24 25 26 27 11 11 17 16

18 0 1 2 3 4 5 6 7 9 10 11 13 14 15 16 19 20 24 25 26 27 12 19 0 1 2 3 4 5 6 7 9 10 11 13 14 15 16 18 20 24 25 26 27 20 0 1 2 3 4 5 6 7 9 10 11 13 14 15 16 18 19 24 25 26 27 21 22 23 24 0 1 2 3 4 5 6 7 9 10 11 13 14 15 16 18 19 20 25 26 27 25 0 1 2 3 4 5 6 7 9 10 11 13 14 15 16 18 19 20 24 26 27 26 0 1 2 3 4 5 6 7 9 10 11 13 14 15 16 18 19 20 24 26 27 27 0 1 2 3 4 5 6 7 9 10 11 13 14 15 16 18 19 20 24 25 26 27 27 0 1 2 3 4 5 6 7 9 10 11 13 14 15 16 18 19 20 24 25 26 28
```

Max Clique: 22

```
28
0 26 18 20 18 19 4 15 20 13 21
1 4 7 8 9 10 12 14 15 16 17 19 20 21 23 24 27 27 4 1 26 7 0 26 21 24
2 24 15 16 21 26 24 11 7
3 4 23 15 6 0 6 27
4 1 7 8 9 10 12 14 15 16 17 19 20 21 23 24 27 4 11 18 17 22 18 18
5 11 15 9 19 15
6 6 1 23 11 13
7 1 4 8 9 10 12 14 15 16 17 19 20 21 23 24 27 8 26 19 25 8
8 1 4 7 9 10 12 14 15 16 17 19 20 21 23 24 27 20 24 4 3 3
9 1 4 7 8 10 12 14 15 16 17 19 20 21 23 24 27 14 20 27 20 9
10 1 4 7 8 9 12 14 15 16 17 19 20 21 23 24 27 5 13 21 14 17
11 18 10 22 11
12 1 4 7 8 9 10 14 15 16 17 19 20 21 23 24 27 22 17 16
13 22
14 1 4 7 8 9 10 12 15 16 17 19 20 21 23 24 27
15 1 4 7 8 9 10 12 14 16 17 19 20 21 23 24 27
16 1 4 7 8 9 10 12 14 15 17 19 20 21 23 24 27
17 1 4 7 8 9 10 12 14 15 16 19 20 21 23 24 27
18
19 1 4 7 8 9 10 12 14 15 16 17 20 21 23 24 27
20 1 4 7 8 9 10 12 14 15 16 17 19 21 23 24 27
21 1 4 7 8 9 10 12 14 15 16 17 19 20 23 24 27
22
23 1 4 7 8 9 10 12 14 15 16 17 19 20 21 24 27
```

24 1 4 7 8 9 10 12 14 15 16 17 19 20 21 23 27 25 26 27 1 4 7 8 9 10 12 14 15 16 17 19 20 21 23 24

exact max clique 17
--- 568.4367382526398 seconds ---

For size 29 More then 1 hour