Graph Representation (C++)

#csspree Online

Representation Methods

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1. Adjacency Matrix

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2. Adjacency List

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3. Edge List

1. Adjacency Matrix

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for n nodes, use n x n matrix to store edge information

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```
int graph[5][5];
```

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```
int graph[5][5];
```

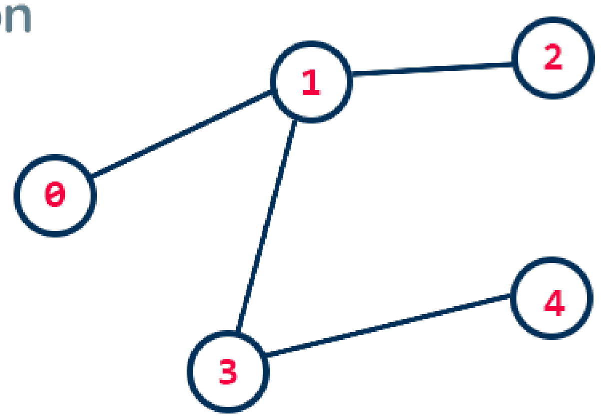
	0	1	2	3	4
0					
1					
2					
3					
4					

1. Adjacency Matrix

for n nodes, use n x n matrix to store edge information

```
int graph[5][5];
```

	0	1	2	3	4
0					
1					
2					
3					
4					

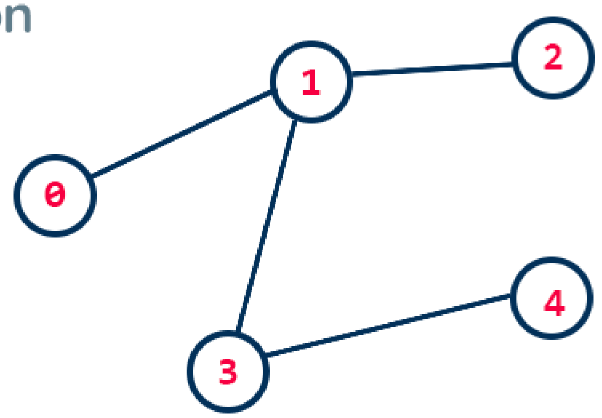


1. Adjacency Matrix

for n nodes, use n x n matrix to store edge information

```c
int graph[5][5];
```

	0	1	2	3	4
0					
1					
2					
3					
4					



Input:

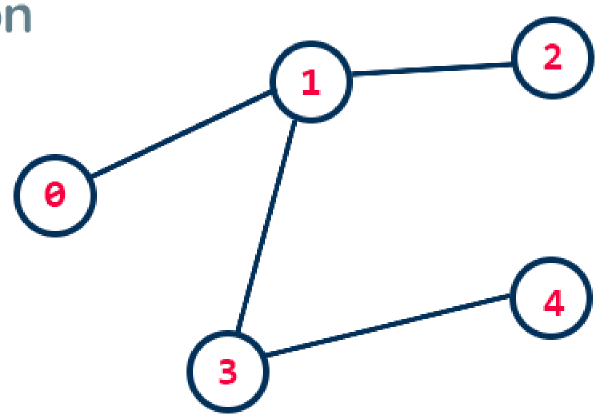
```
5 4    // number of nodes = 5, number of edges = 4
```

1. Adjacency Matrix

for n nodes, use n x n matrix to store edge information

```
int graph[5][5];
```

	0	1	2	3	4
0					
1					
2					
3					
4					



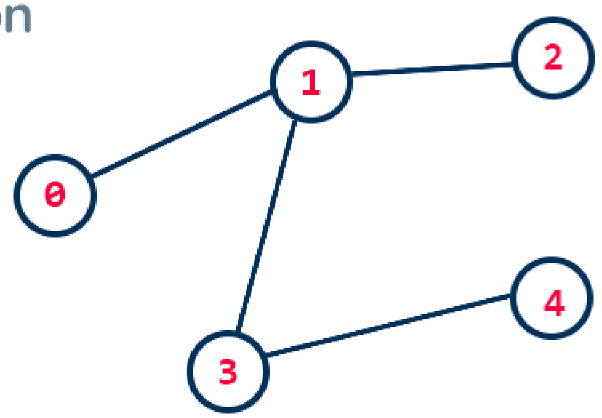
```
Input:

5 4     // number of nodes = 5, number of edges = 4
0 1
1 2     // u v (there is an edge between u, v)
1 3
3 4
```

1. Adjacency Matrix

for n nodes, use n x n matrix to store edge information

```
int graph[5][5];
```

$$\begin{array}{c|ccccc} & 0 & 1 & 2 & 3 & 4 \\ \hline 0 & & 1 & & & \\ 1 & 1 & & & & \\ 2 & & & & & \\ 3 & & & & & \\ 4 & & & & & \end{array}$$



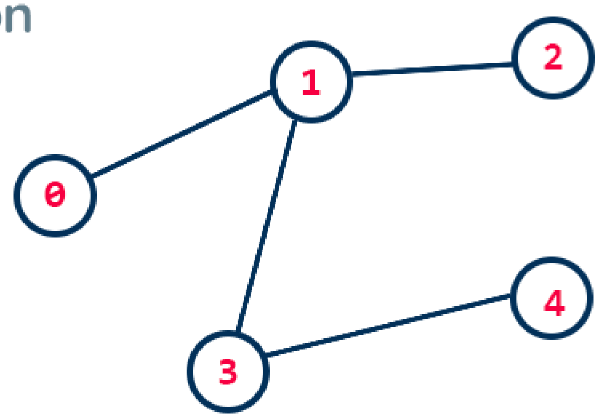
```
Input:

5 4     // number of nodes = 5, number of edges = 4
0 1
1 2     // graph[0][1] = 1; graph[1][0] = 1;
1 3
3 4
```

1. Adjacency Matrix

for n nodes, use n x n matrix to store edge information

```
int graph[5][5];
```

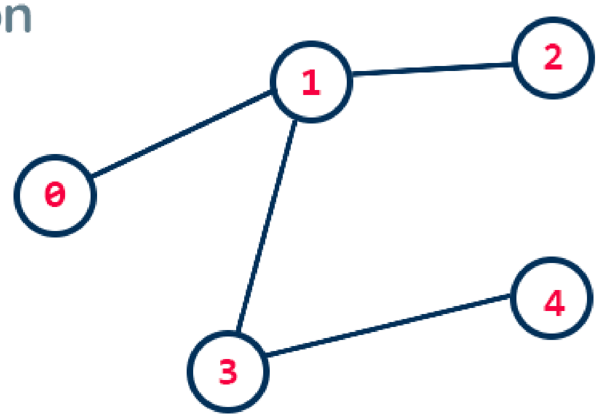
$$\begin{array}{c|ccccc} & 0 & 1 & 2 & 3 & 4 \\ \hline 0 & & 1 & & & \\ 1 & 1 & & 1 & & \\ 2 & & 1 & & & \\ 3 & & & & & \\ 4 & & & & & \end{array}$$



```
Input:

5 4     // number of nodes = 5, number of edges = 4
0 1
1 2     // graph[1][2] = 1; graph[2][1] = 1;
1 3
3 4
```

1. Adjacency Matrix

for n nodes, use n x n matrix to store edge information



```
int graph[5][5];
```

	0	1	2	3	4
0		1			
1	1		1	1	
2		1			
3		1			
4					

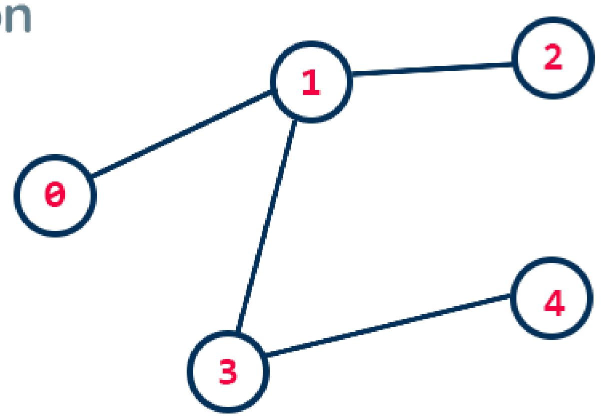
```
Input:

5 4    // number of nodes = 5, number of edges = 4
0 1
1 2    // graph[1][3] = 1; graph[3][1] = 1;
1 3
3 4
```

1. Adjacency Matrix

for n nodes, use n x n matrix to store edge information

```
int graph[5][5];
```

	0	1	2	3	4
0		1			
1	1		1	1	
2		1			
3		1			1
4				1	



Input:

```
5 4     // number of nodes = 5, number of edges = 4
0 1
1 2     // graph[3][4] = 1; graph[4][3] = 1;
1 3
3 4
```

2. Adjacency List

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for n nodes, use array of vectors of size n to store edge information

```
vector <int> graph[5];
```

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```
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```
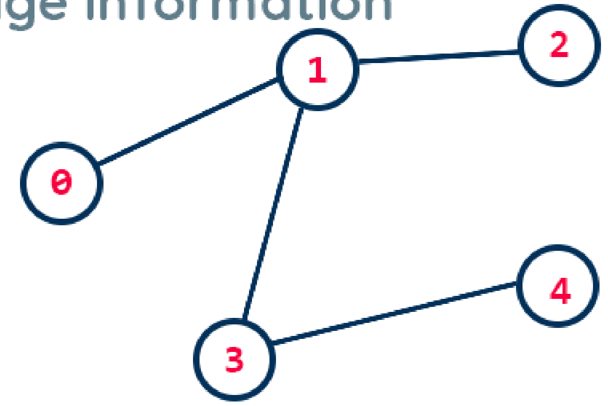
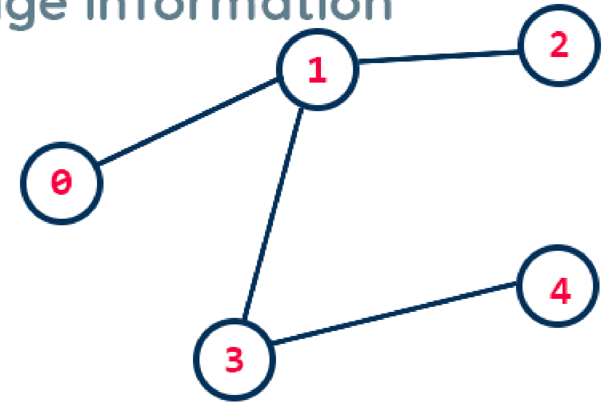



Input:

```
5 4    // number of nodes = 5, number of edges = 4
0 1
1 2
1 3
3 4
```

2. Adjacency List

for n nodes, use array of vectors of size n to store edge information



```
vector <int> graph[5];
```

0

1

2

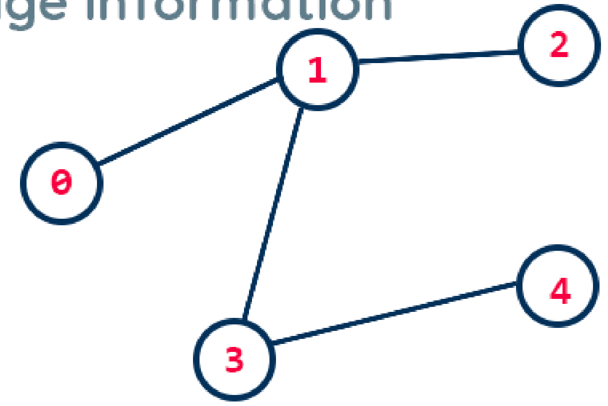
3

4

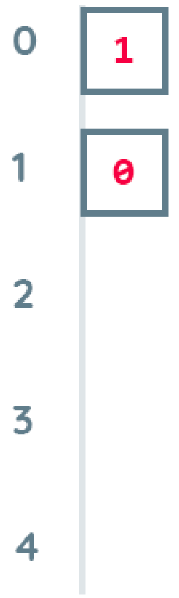
```
Input:
5 4    // number of nodes = 5, number of edges = 4
0 1
1 2
1 3
3 4
```

2. Adjacency List

for n nodes, use array of vectors of size n to store edge information



```
vector <int> graph[5];
```

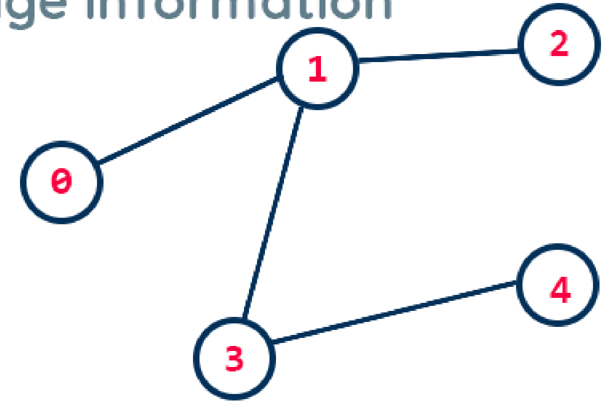


Input:

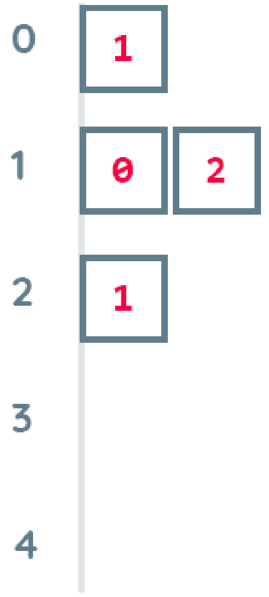
```
5 4    // number of nodes = 5, number of edges = 4
0 1
1 2    // graph[0].push_back(1); graph[1].push_back(0);
1 3
3 4
```

2. Adjacency List

for n nodes, use array of vectors of size n to store edge information



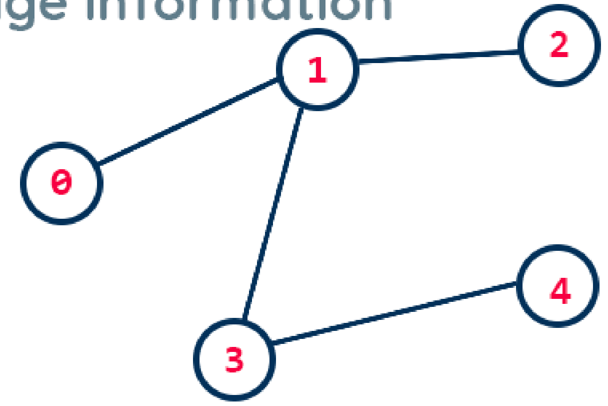
```
vector <int> graph[5];
```



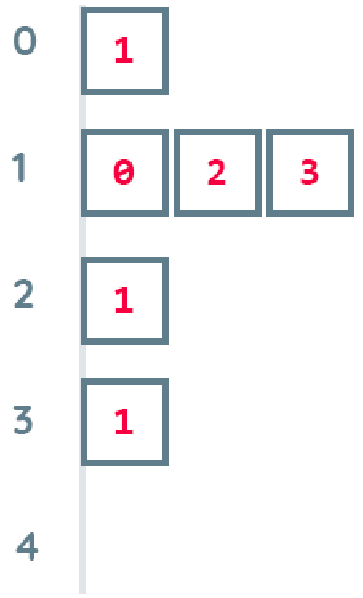
```
Input:
5 4     // number of nodes = 5, number of edges = 4
0 1
1 2     // graph[1].push_back(2); graph[2].push_back(1);
1 3
3 4
```

2. Adjacency List

for n nodes, use array of vectors of size n to store edge information



```
vector <int> graph[5];
```

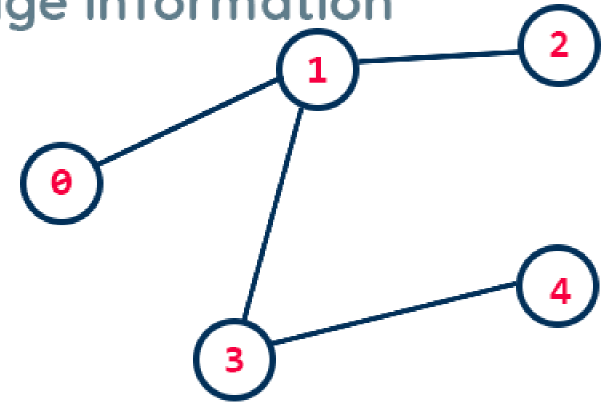


Input:

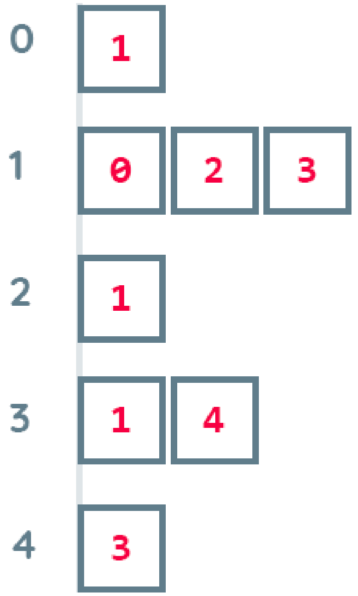
```
5 4     // number of nodes = 5, number of edges = 4
0 1
1 2     // graph[1].push_back(3); graph[3].push_back(1);
1 3
3 4
```

2. Adjacency List

for n nodes, use array of vectors of size n to store edge information



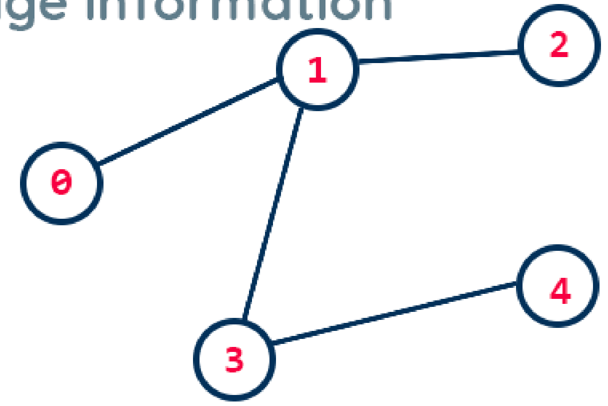
```
vector <int> graph[5];
```



```
Input:

5 4     // number of nodes = 5, number of edges = 4
0 1
1 2     // graph[3].push_back(4); graph[4].push_back(3);
1 3
3 4
```

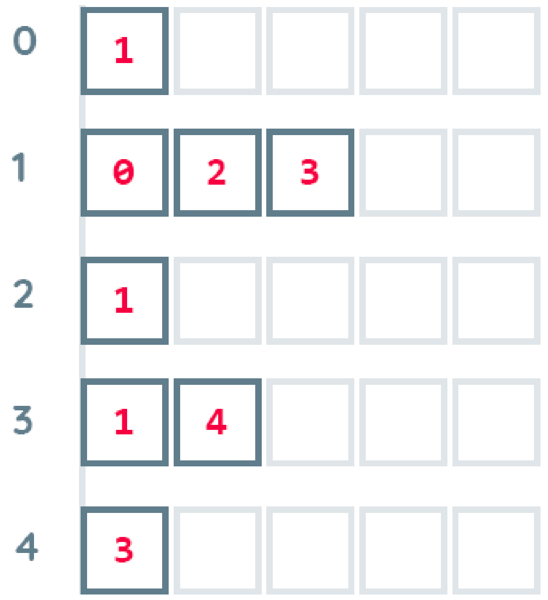
2. Adjacency List

for n nodes, use array of vectors of size n to store edge information



```
vector <int> graph[5];
```

```
// savings
```



```
Input:

5 4     // number of nodes = 5, number of edges = 4
0 1
1 2
1 3
3 4
```