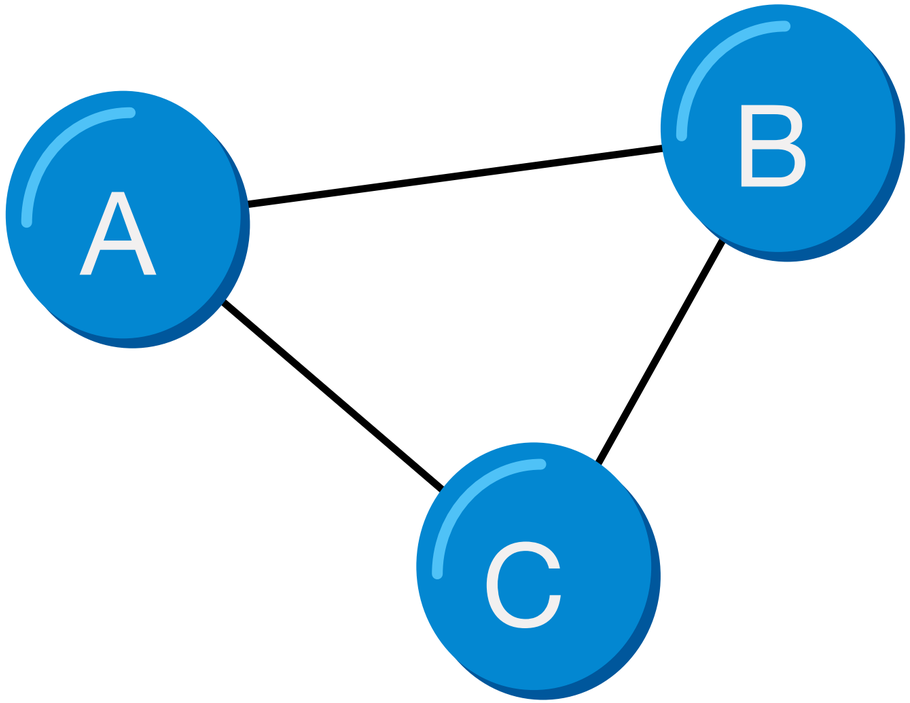
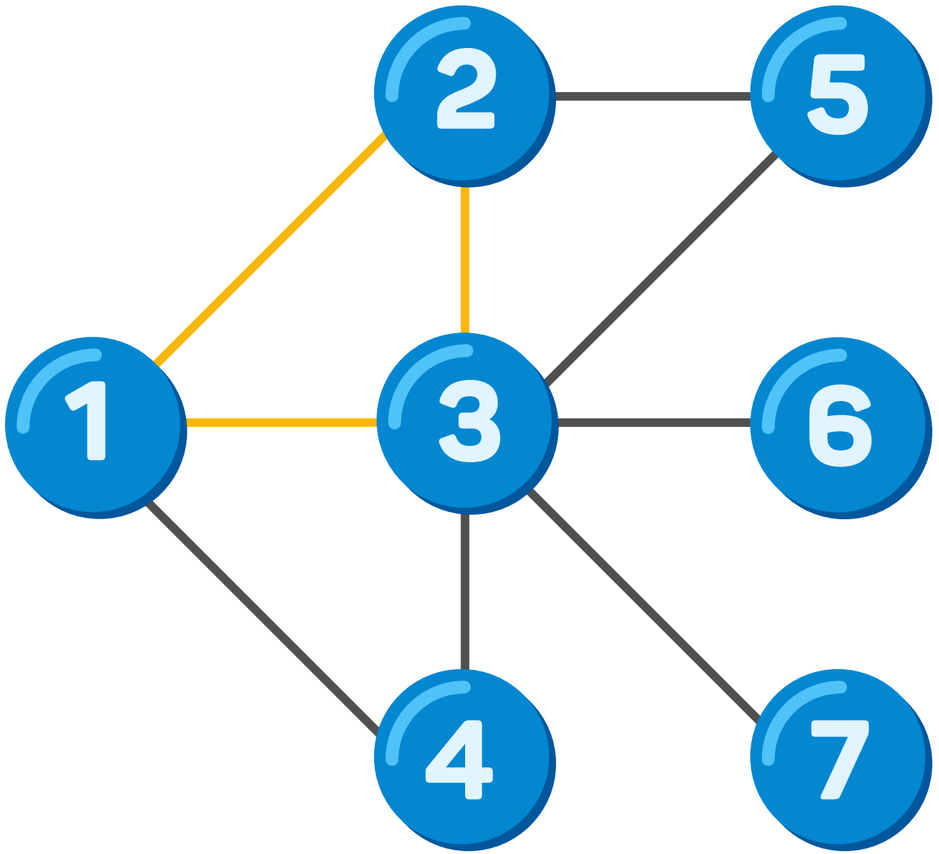
Triangles Intro

Triangle - a set of 3 vertices, provided there is an edge between any 2 of them.

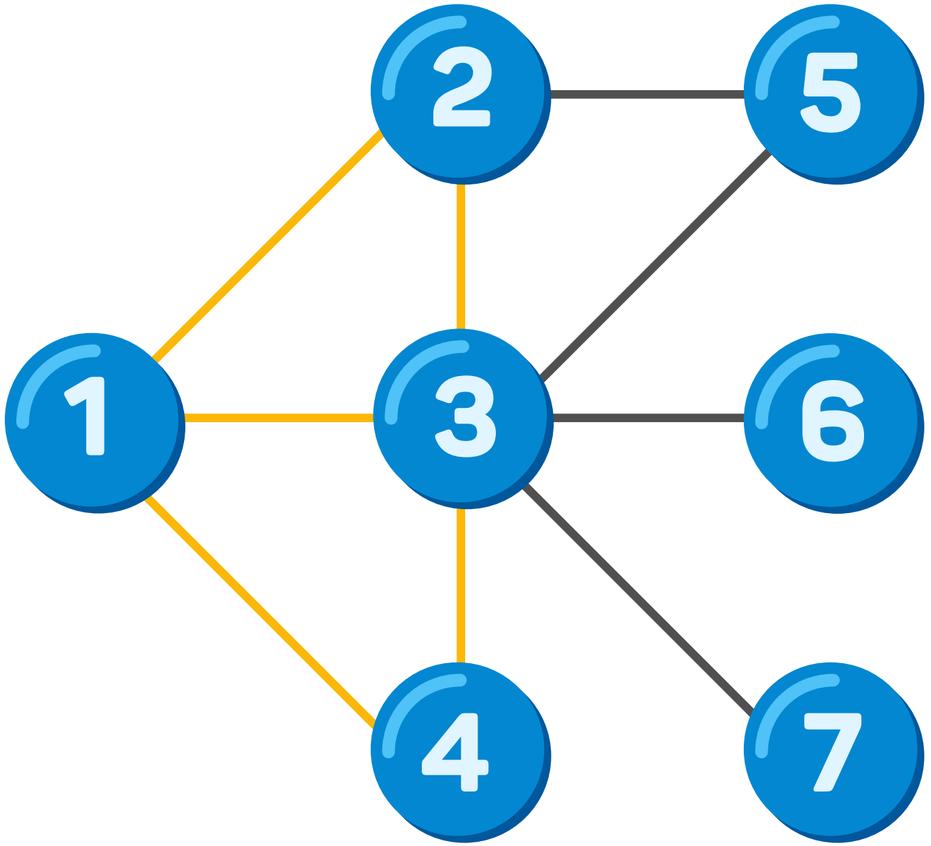


Mini social graph



1,2,3

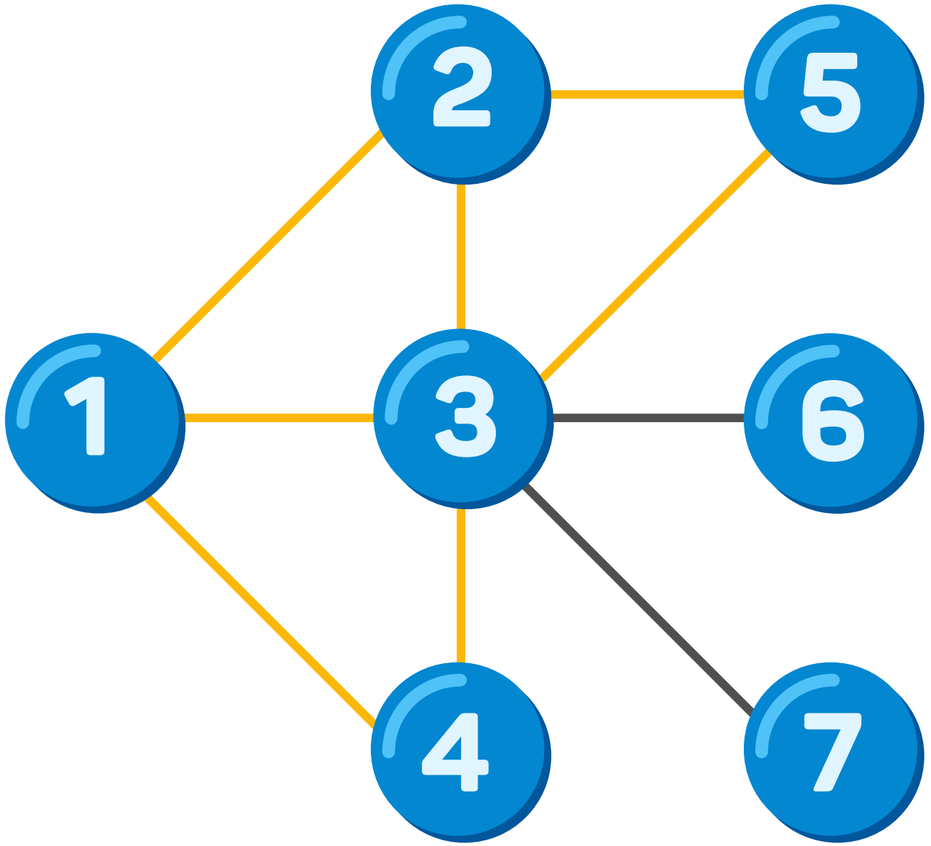
Mini social graph



1,2,3

1,3,4

Mini social graph

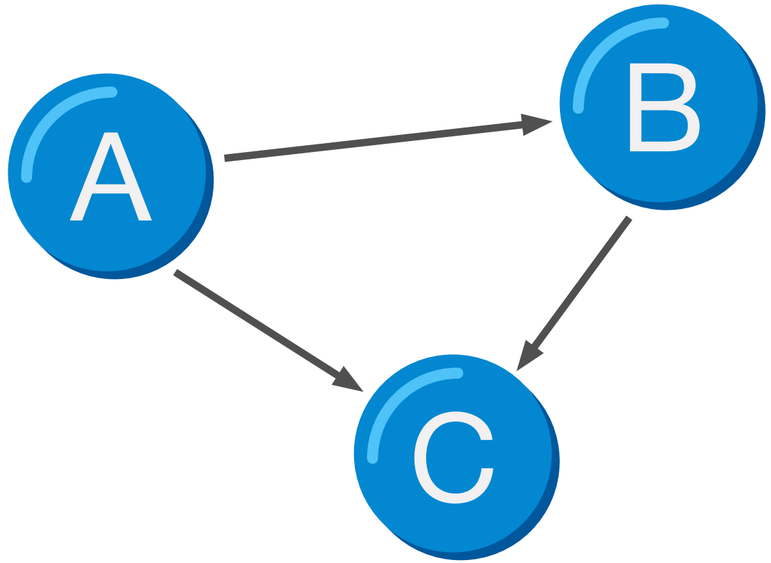


1,2,3

1,3,4

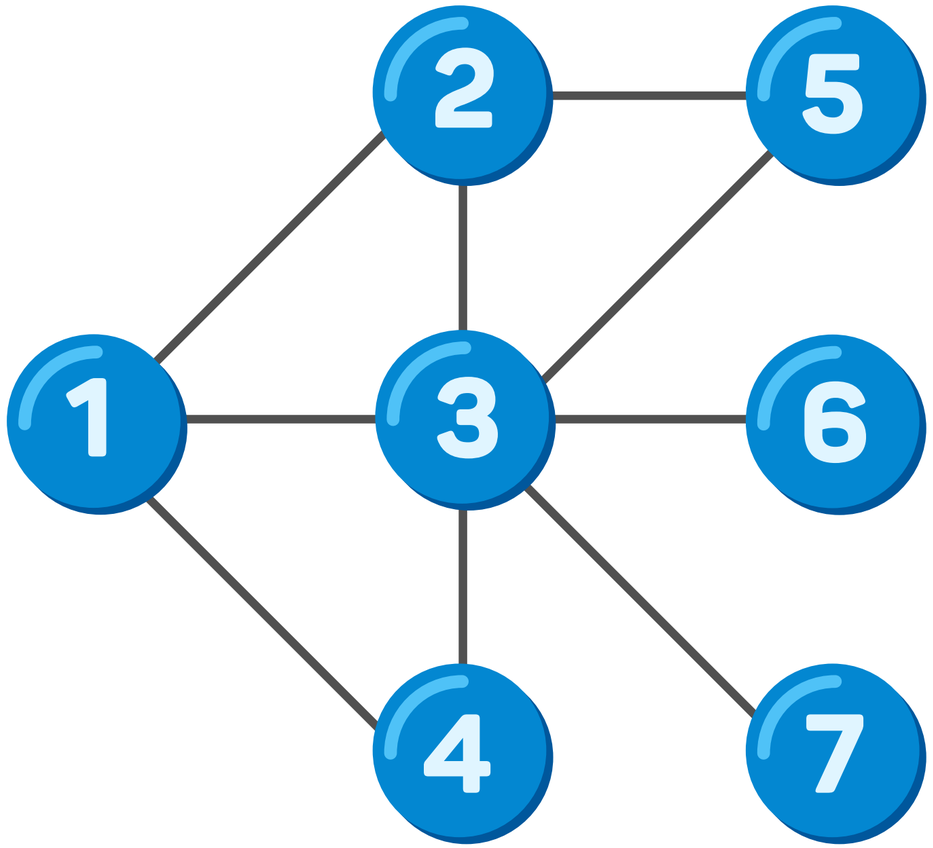
2,3,5

Triangle - a set of 3 vertices, provided there is an edge between any 2 of them.



For vertex A the number of triangles passing through it - is a number of triangles that contain vertex A as a part of 3-element set

Mini social graph

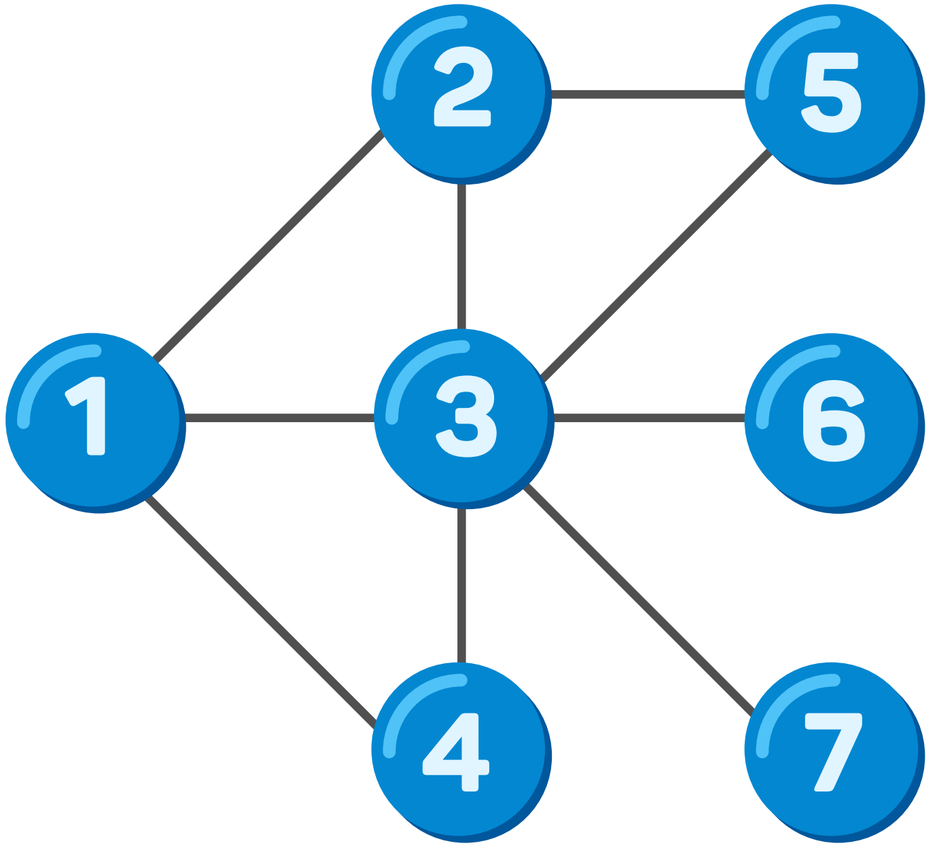


1 - 2 triangles
2 - 2 triangles
3 - 3 triangles
4 - 1 triangle
5 - 1 triangle
6 - 0 triangles
7 - 0 triangles

Mini social graph

1, 2, 3
2, 2, 3
3, 3, 6
4, 1, 2
5, 1, 2
6, 0, 1
7, 0, 1
fake user , 0, 5

Mini social graph



```
vertices = sparkSession.createDataFrame([
    ("1"."Alex", 28, "M","MIPT"),
    ("2","Emeli", 28, "F","MIPT"),
    ("3","Natasha", 27, "F","SPbSU"),
    ("4","Pavel", 30, "M","MIPT"),
    ("5","Oleg", 35, "M","MIPT"),
    ("6","Ivan", 30, "M","MSU"),
    ("7","Ilya", 29, "M","MSU")], ["id","name","age","gender","university"])

edges = sparkSession.createDataFrame([
    ("1","2","friend"),("2","1","friend"),
    ("1","3","friend"),("3","1","friend"),
    ("1","4","friend"),("4","1","friend"),
    ("2","3","friend"),("3","2","friend"),
    ("2","5","friend"),("5","2","friend"),
    ("3","4","friend"),("4","3","friend"),
    ("3","5","friend"),("5","3","friend"),
    ("3","6","friend"),("6","3","friend"),
    ("3","7","friend"),("7","3","friend"),
], ["src", "dst" , "relationship"])

from graphframes import *
g = GraphFrame(vertices, edges)
```

```
results = g.triangleCount()
results.show
```

count	id	name	age	gender	university
2	1	Alex	28	M	MIPT
2	2	Emeli	28	F	MIPT
3	3	Natasha	27	F	SPbSU
1	4	Pavel	30	M	MIPT
1	5	Oleg	35	M	MIPT
0	6	Ivan	30	M	MSU
0	7	Ilya	29	M	MSU

Summary

- You have learned how to count number of triangles passing through each vertex in graph using DataFrame library.