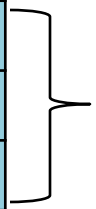
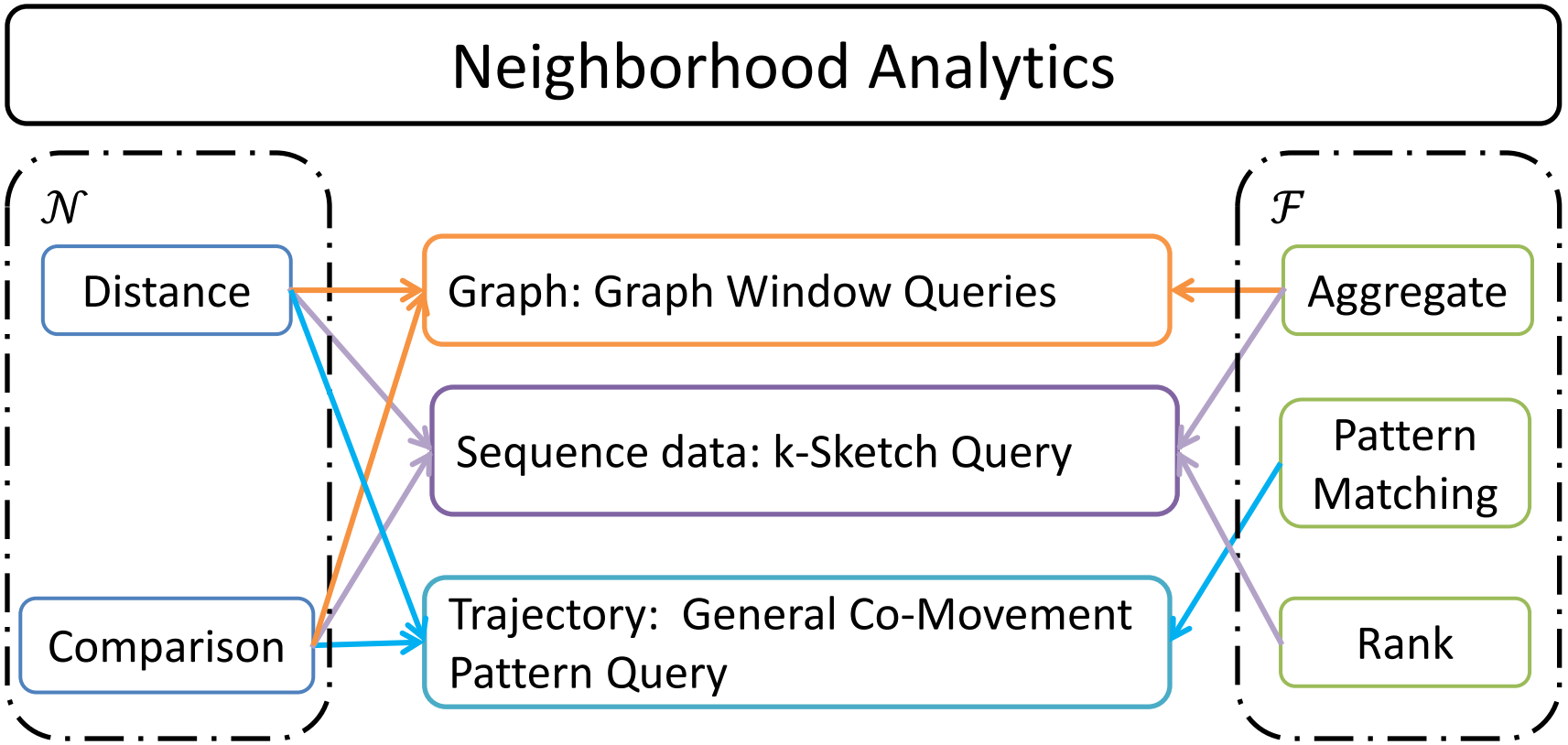
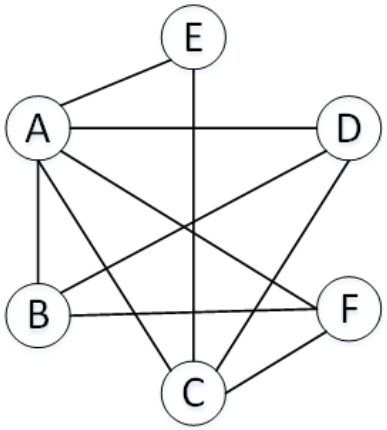
ID	Season	Region	Sales	***SUM()***	***AVG()***
1	1	West	5100	***5100***	***5100***
2	2	West	5200	***10300***	***5150***
3	3	West	5200	***15500***	***5166***
4	4	West	4500	***20000***	***5000***
5	1	East	5000	***5000***	***5000***
6	2	East	4400	***9400***	***4700***
7	3	East	4800	***14200***	***4733***
8	4	East	5100	***19300***	***4825***



Window of Tuple 3

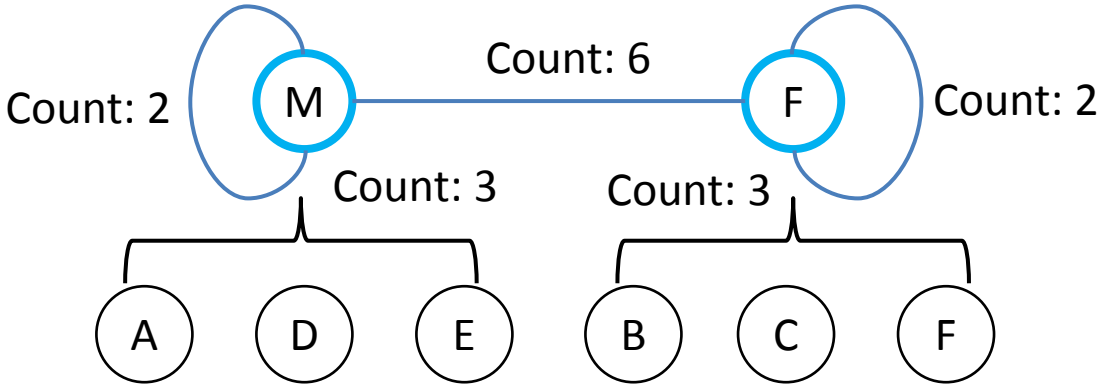
```
SELECT Season, Region, Sales,
SUM(), AVG(), OVER(PARTITION
BY Region ORDER BY Season
DESC)
FROM employee;
```


Neighborhood Analytics
$\mathcal{N}$
Distance
Comparison
Graph: Graph Window Queries
Sequence data: k-Sketch Query
Trajectory: General Co-Movement Pattern Query
$\mathcal{F}$
Aggregate
Pattern Matching
Rank

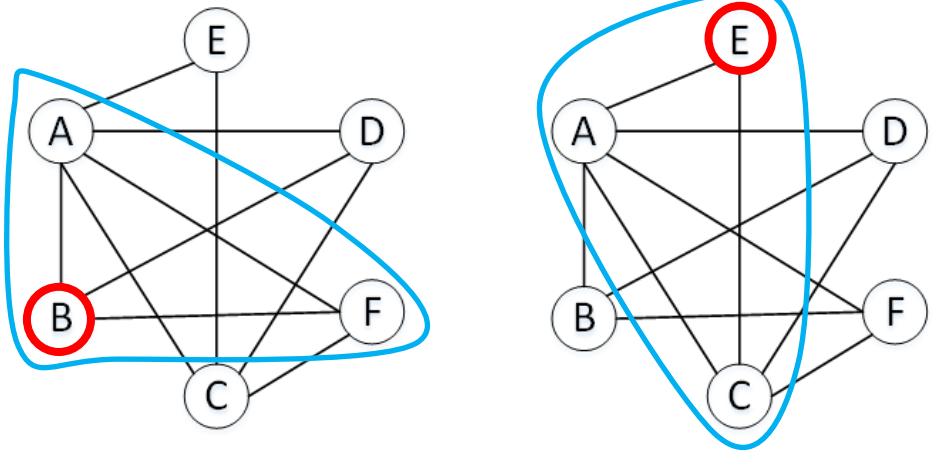


User	Age	Gender
A	21	M
B	26	F
C	30	F
D	22	M
E	28	M
F	23	F

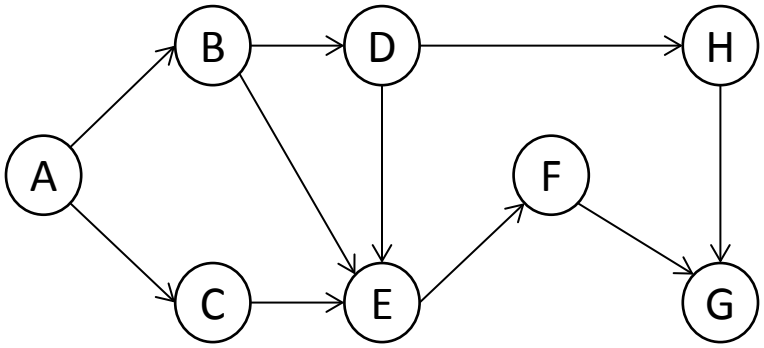
(a) Mini social network



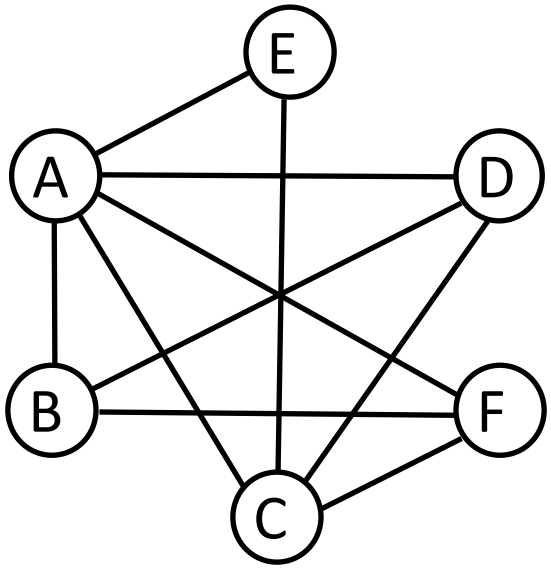
(b) Graph Aggregation



(c) Graph Window



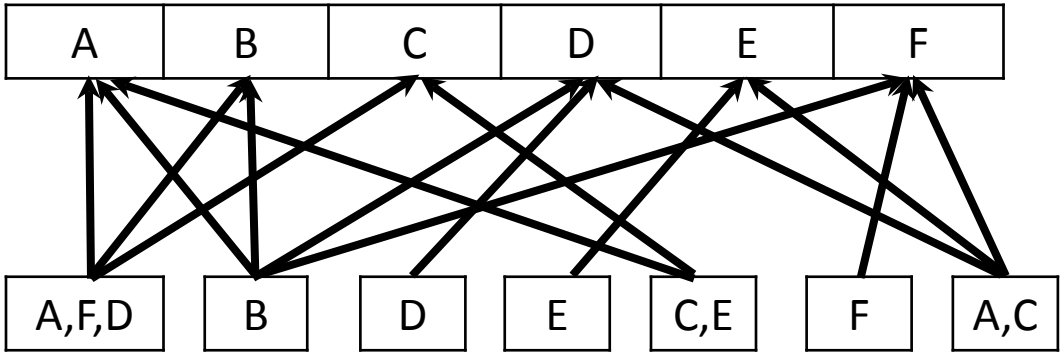
ID	Type	ID	Type
A	Enzyme	E	Enzyme
B	Cytokine	F	Cytokine
C	Transporter	G	Enzyme
D	Enzyme	H	Transporter



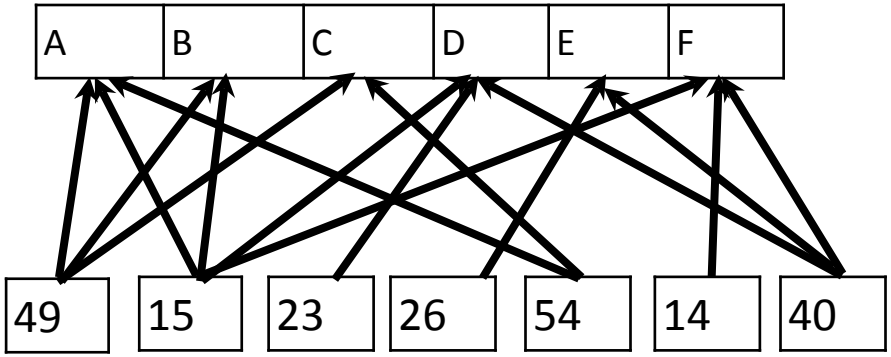
(a)

User	Age	Gender	Industry	Posts
A	21	M	IT	12
B	26	F	IT	15
C	30	F	Finance	28
D	22	M	Finance	23
E	28	M	Power	26
F	23	F	Power	14

(b)



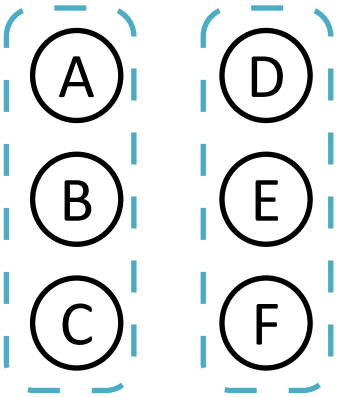
(a)



(b)

Vertex	Sum
A	118
B	64 103 78
C	103
D	78
E	66
F	55

(c)



(a) Vertex Clusters

Window Generation

Cluster C_1

Node	Window
A	A,B,C
B	A,B
C	A,C
D	A,B,C
E	A,C
F	A,B,C

Cluster C_2

Node	Window
A	D,E,F
B	D,F
C	D,E,F
D	D
E	E
F	F

(b) Inverted Window List

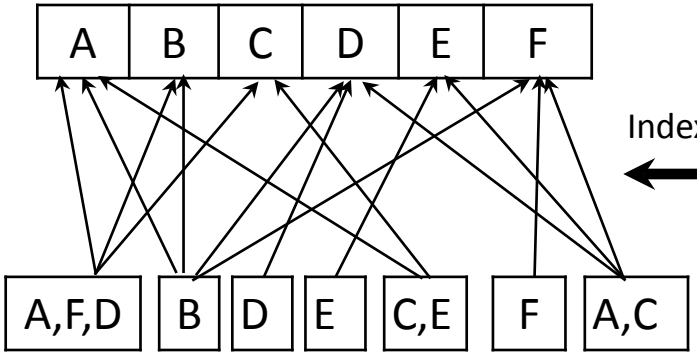
Equivalent Node Merging

A,C	D,E,F
B	D,F
D	D
E	E
F	F

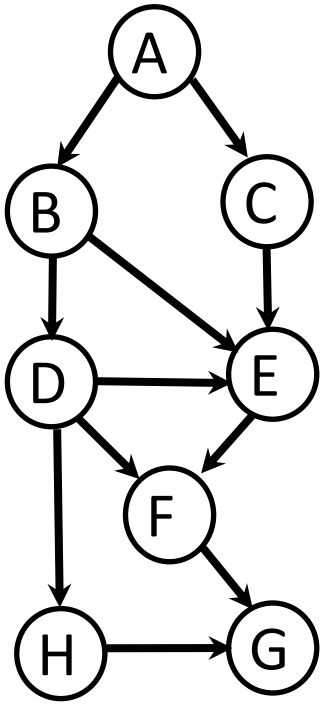
A,D,F	A,B,C
B	A,B
C,E	A,C

(c) Equivalent Nodes

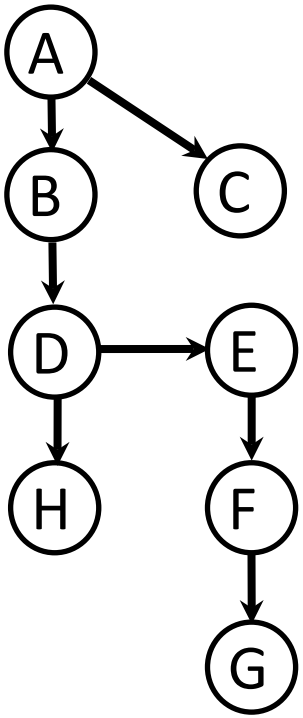
Index Construction



(d) DBIndex



(a)



(b)

ID	PID	WD
A	nil	nil
B	A	nil
C	A	nil
D	B	nil
E	D	C
F	E	nil
G	F	H
H	D	nil

(c)