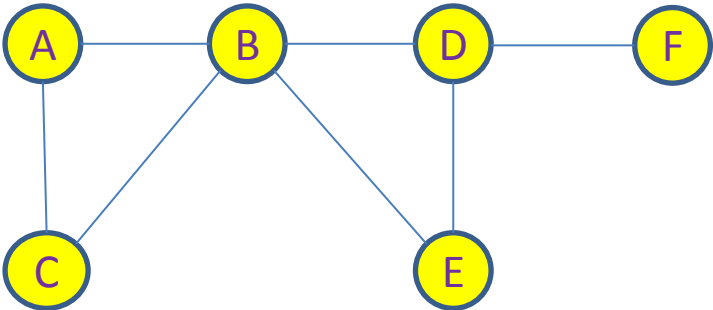


CS6423

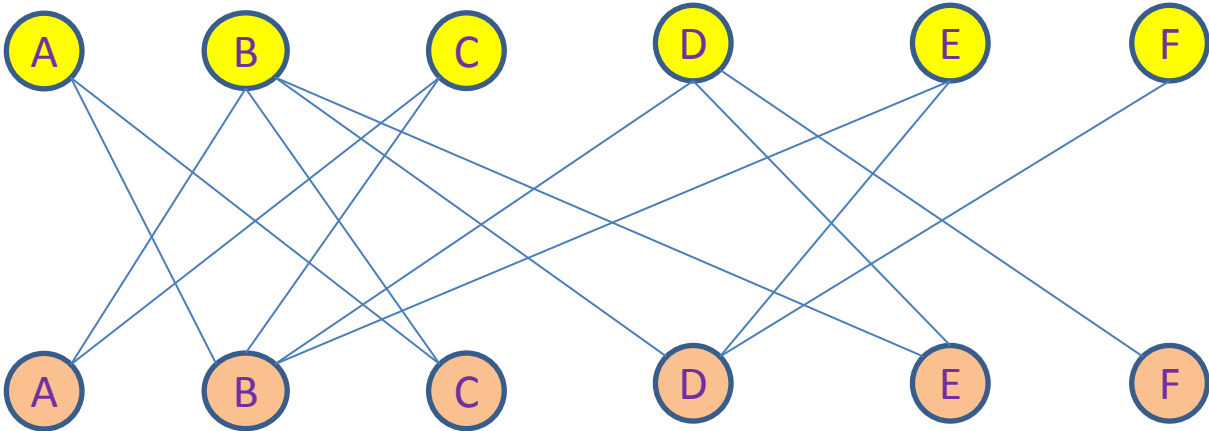
MidTerm (2018) solutions
(partial solutions only)

1(a)

Input graph



Map



Reduce

Neighbours

$\langle \{B,C\}, 1 \rangle$

$\langle \{A,C,D,E\}, 1 \rangle$

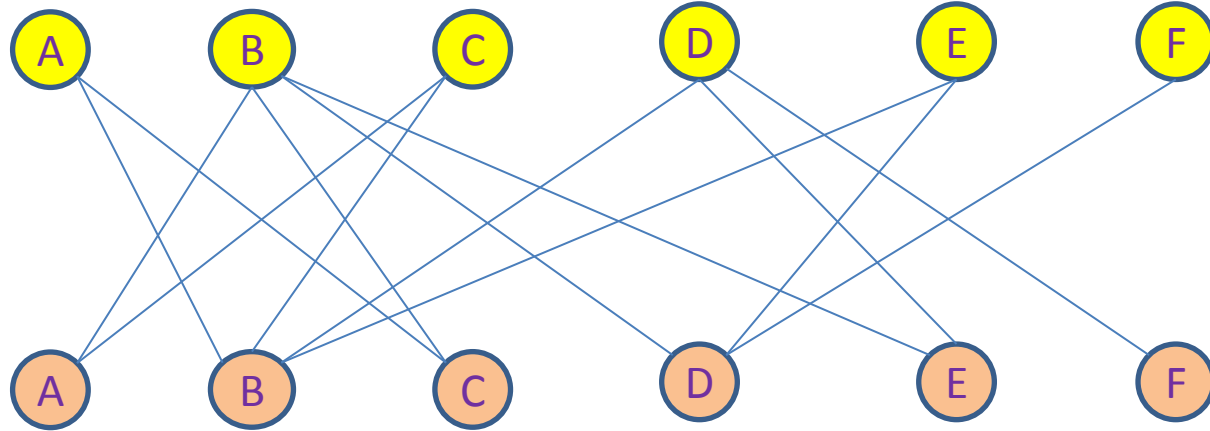
$\langle \{A,B\}, 1 \rangle$

$\langle \{B,E,F\}, 1 \rangle$

$\langle \{B,D\}, 1 \rangle$

$\langle \{D\}, 1 \rangle$

Map



Reduce

Round 1:

$\langle \{B,C\}, 1 \rangle$

$\langle \{A,C,D,E\}, 1 \rangle$

$\langle \{A,B\}, 1 \rangle$

$\langle \{B,E,F\}, 1 \rangle$

$\langle \{B,D\}, 1 \rangle$

$\langle \{D\}, 1 \rangle$

B: $\langle \{A,C,D,E\}, 2 \rangle$

A: $\langle \{B,C\}, 2 \rangle$

B: $\langle \{A,C,D,E\}, 2 \rangle$

B: $\langle \{A,C,D,E\}, 2 \rangle$

B: $\langle \{A,C,D,E\}, 2 \rangle$

C: $\langle \{A,B\}, 2 \rangle$

C: $\langle \{B,C\}, 2 \rangle$

A: $\langle \{B,C\}, 2 \rangle$

D: $\langle \{B,E,F\}, 2 \rangle$

D: $\langle \{B,E,F\}, 2 \rangle$

D: $\langle \{B,E,F\}, 2 \rangle$

E: $\langle \{B,D\}, 2 \rangle$

E: $\langle \{B,D\}, 2 \rangle$

F: $\langle \{D\}, 2 \rangle$

Neighbours

$\langle \{B,C\}, 1 \rangle$

$\langle \{A,C,D,E\}, 1 \rangle$

$\langle \{A,B\}, 1 \rangle$

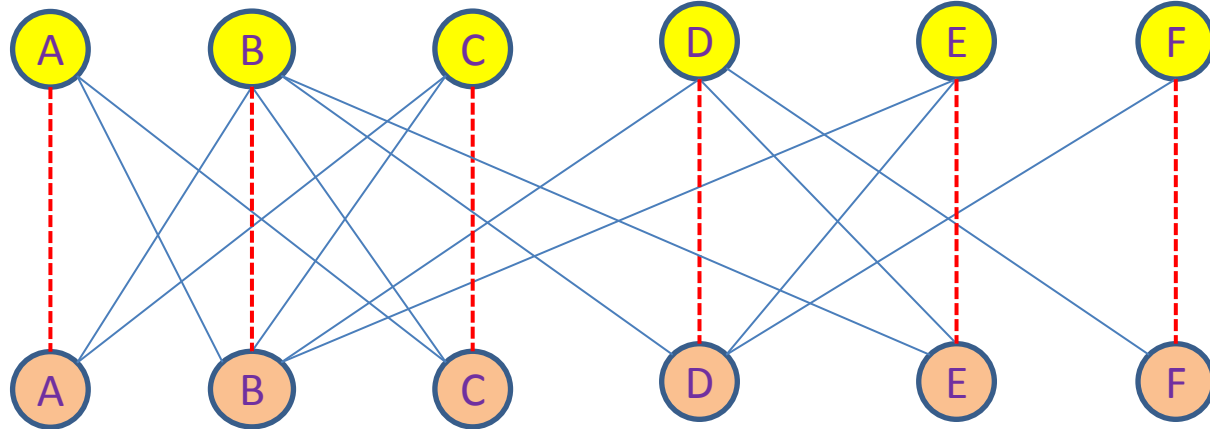
$\langle \{B,E,F\}, 1 \rangle$

$\langle \{B,D\}, 1 \rangle$

$\langle \{D\}, 1 \rangle$

Map

Reduce



Round 1:

$\langle \{B,C\}, 1 \rangle$

$\langle \{A,C,D,E\}, 1 \rangle$

$\langle \{A,B\}, 1 \rangle$

$\langle \{B,E,F\}, 1 \rangle$

$\langle \{B,D\}, 1 \rangle$

$\langle \{D\}, 1 \rangle$

B: $\langle \{A,C,D,E\}, 2 \rangle$

A: $\langle \{B,C\}, 1 \rangle$

A: $\langle \{B,C\}, 1 \rangle$

B: $\langle \{A,C,D,E\}, 2 \rangle$

B: $\langle \{A,C,D,E\}, 2 \rangle$

C: $\langle \{A,B\}, 2 \rangle$

C: $\langle \{A,B\}, 2 \rangle$

B: $\langle \{A,C,D,E\}, 2 \rangle$

D: $\langle \{B,E,F\}, 2 \rangle$

D: $\langle \{B,E,F\}, 2 \rangle$

D: $\langle \{B,E,F\}, 2 \rangle$

E: $\langle \{B,D\}, 2 \rangle$

E: $\langle \{B,D\}, 2 \rangle$

F: $\langle \{D\}, 2 \rangle$

EMIT

$\{ \langle \{B,C\}, 1 \rangle, \langle \{D,E\}, 2 \rangle \}$

$\{ \langle \{A,C,D,E\}, 1 \rangle, \langle \{F\}, 2 \rangle \}$

$\{ \langle \{A,B\}, 1 \rangle, \langle \{D,E\}, 2 \rangle \}$

$\{ \langle \{B,E,F\}, 1 \rangle, \langle \{A,C\}, 2 \rangle \}$

$\{ \langle \{B,D\}, 1 \rangle, \langle \{A,C,F\}, 2 \rangle \}$

$\{ \langle \{D\}, 1 \rangle, \langle \{B,E\}, 2 \rangle \}$

Neighbours

$\{\langle\{B,C\},1\rangle,$
 $\langle\{D,E\},2\rangle\}$

$\{\langle\{A,C,D,E\},1\rangle,$
 $\langle\{F\},2\rangle\}$

$\{\langle\{A,B\},1\rangle,$
 $\langle\{D,E\},2\rangle\}$

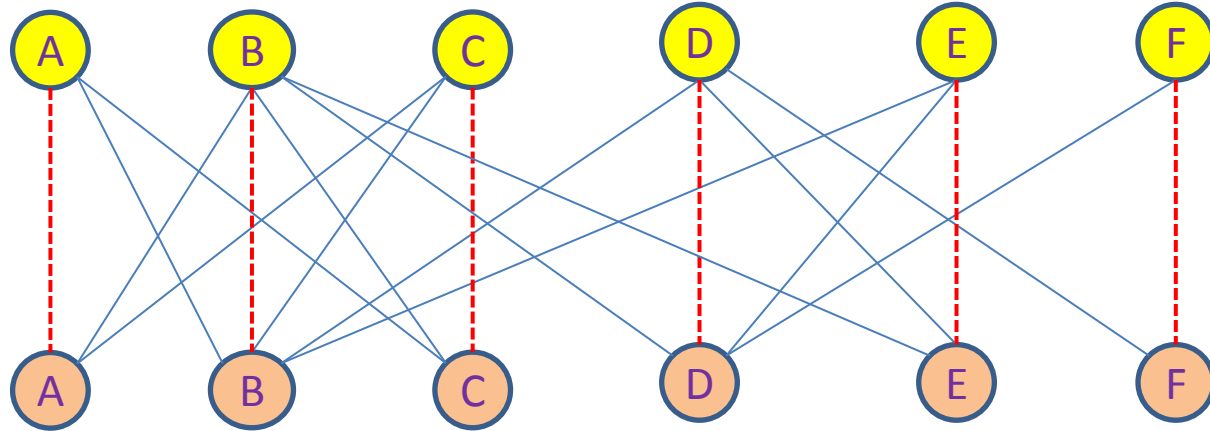
$\{\langle\{B,E,F\},1\rangle,$
 $\langle A,C\rangle,2\rangle\}$

$\{\langle\{B,D\},1\rangle,$
 $\langle A,C,F\rangle,2\rangle\}$

$\{\langle\{D\},1\rangle,$
 $\langle B,E\rangle,2\rangle\}$

Map

Reduce



Round 2:

$\{\langle\{B,C\},1\rangle,$
 $\langle\{D,E\},2\rangle\}$

$\{\langle\{A,C,D,E\},1\rangle,$
 $\langle\{F\},2\rangle\}$

$\{\langle\{A,B\},1\rangle,$
 $\langle\{D,E\},2\rangle\}$

$\{\langle\{B,E,F\},1\rangle,$
 $\langle A,C\rangle,2\rangle\}$

$\{\langle\{B,D\},1\rangle,$
 $\langle A,C,F\rangle,2\rangle\}$

$\{\langle\{D\},1\rangle,$
 $\langle B,E\rangle,2\rangle\}$

B: $\{\langle\{A,C,D,E\},2\rangle,$
 $\langle\{F\},3\rangle\}$

A: $\{\langle\{B,C\},2\rangle,$
 $\langle\{D,E\},3\rangle\}$

A: $\{\langle\{B,C\},2\rangle,$
 $\langle\{D,E\},3\rangle\}$

B: $\{\langle\{A,C,D,E\},2\rangle,$
 $\langle\{F\},3\rangle\}$

B: $\{\langle\{A,C,D,E\},1\rangle,$
 $\langle\{F\},2\rangle\}$

C: $\{\langle\{A,B\},2\rangle,$
 $\langle\{D,E\},3\rangle\}$

C: $\{\langle\{A,B\},2\rangle,$
 $\langle\{D,E\},3\rangle\}$

B: $\{\langle\{A,C,D,E\},2\rangle,$
 $\langle\{F\},3\rangle\}$

E: $\{\langle\{B,D\},2\rangle,$
 $\langle A,C,F\rangle,3\rangle\}$

D: $\{\langle\{B,E,F\},1\rangle,$
 $\langle A,C\rangle,2\rangle\}$

D: $\{\langle\{B,E,F\},1\rangle,$
 $\langle A,C\rangle,2\rangle\}$

D: $\{\langle\{B,E,F\},1\rangle,$
 $\langle A,C\rangle,2\rangle\}$

E: $\{\langle\{B,D\},2\rangle,$
 $\langle A,C,F\rangle,3\rangle\}$

F: $\{\langle\{D\},2\rangle,$
 $\langle\{B,E\},3\rangle\}$

EMIT

$\{\langle\{B,C\},1\rangle,$
 $\langle\{D,E\},2\rangle,$
 $\langle\{F\},3\rangle\}$

$\{\langle\{A,C,D,E\},1\rangle,$
 $\langle\{F\},2\rangle\}$

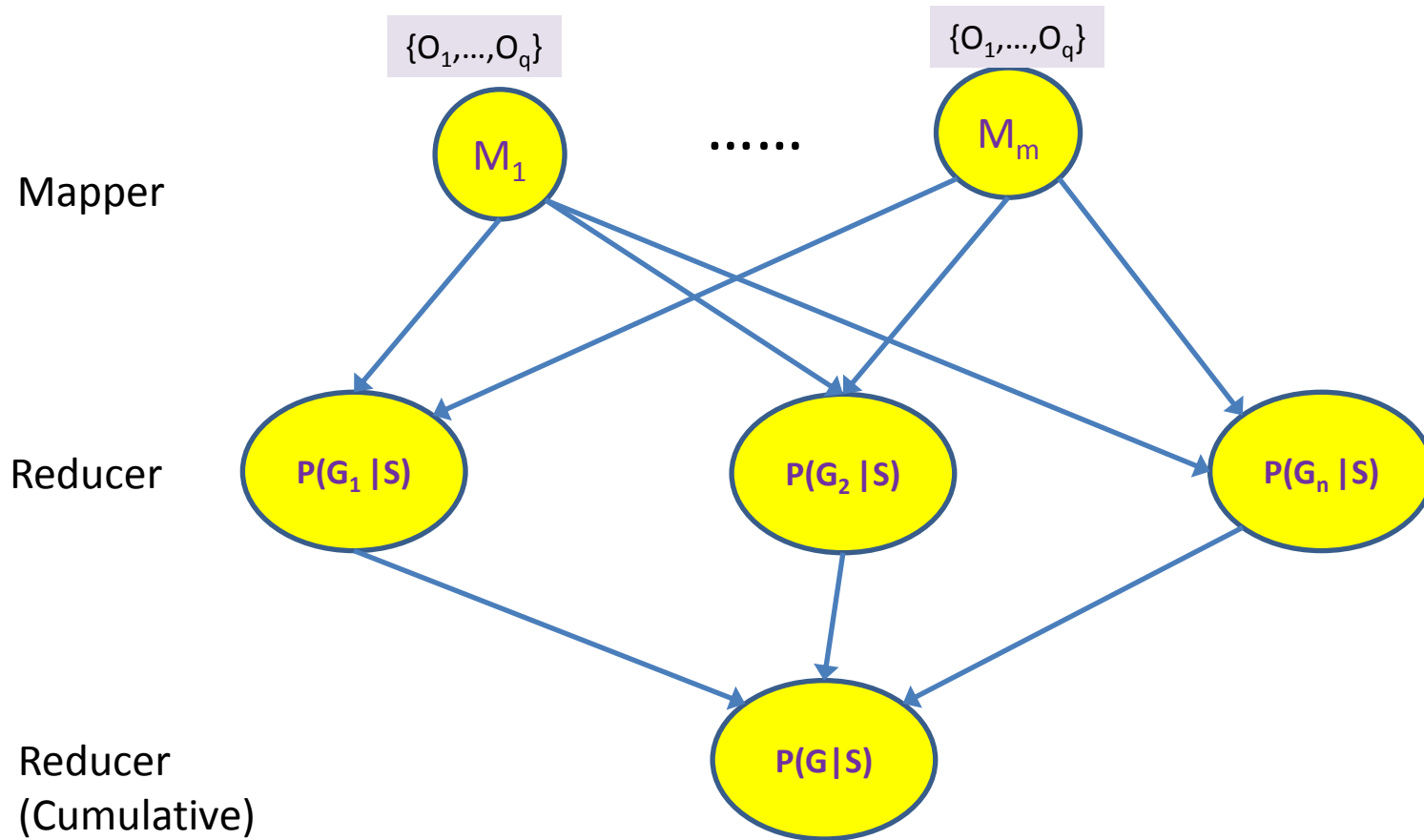
$\{\langle\{A,B\},1\rangle,$
 $\langle\{D,E\},2\rangle,$
 $\langle\{F\},3\rangle\}$

$\{\langle\{B,E,F\},1\rangle,$
 $\langle A,C\rangle,2\rangle\}$

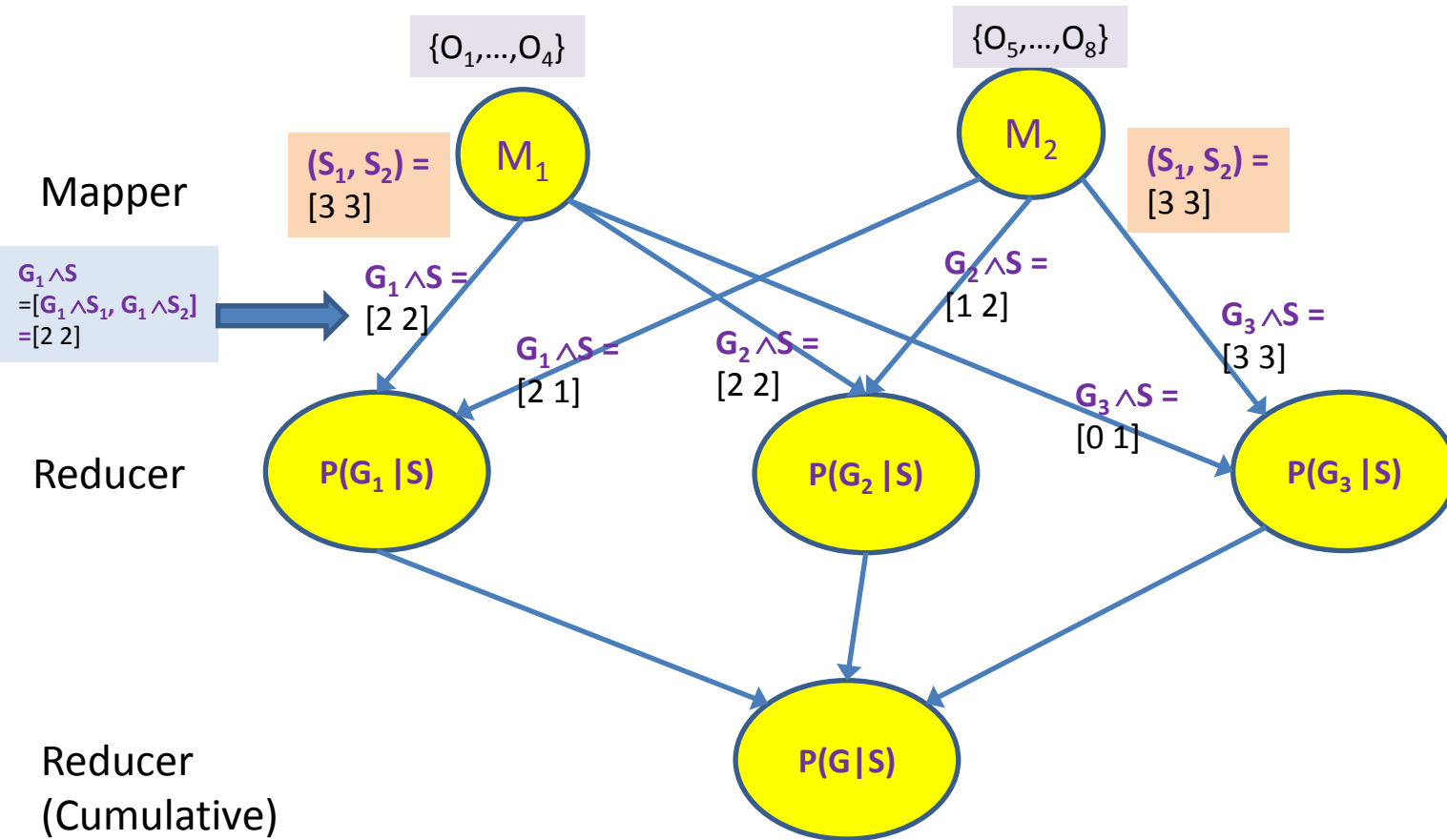
$\{\langle\{B,D\},1\rangle,$
 $\langle A,C,F\rangle,2\rangle\}$

$\{\langle\{D\},1\rangle,$
 $\langle\{B,E\},2\rangle,$
 $\langle A,C\rangle,3\rangle\}$

Question 2



Question 2



Question 2

