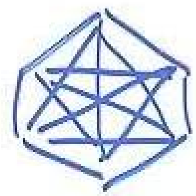
LEC 30 11/10/99

SOME SPECIAL GRAPHS

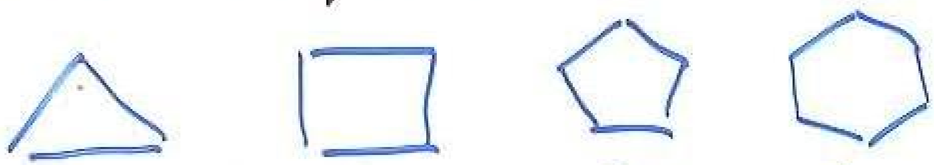
COMPLETE GRAPHS ON n VERTICES K_n

K_1 K_2 K_3 K_4

K_5  K_6  ... K_n 

ONE EDGE BETWEEN EACH PAIR OF DISTINCT VERTICES

CYCLES C_n, $n \geq 3$



C_3 C_4 C_5 C_6

$$C_n = \langle V, E \rangle; \quad V = \{v_1, \ldots, v_n\}$$
$$E = \{\{v_1, v_2\}, \{v_2, v_3\}, \ldots \{v_n, v_1\}\}$$

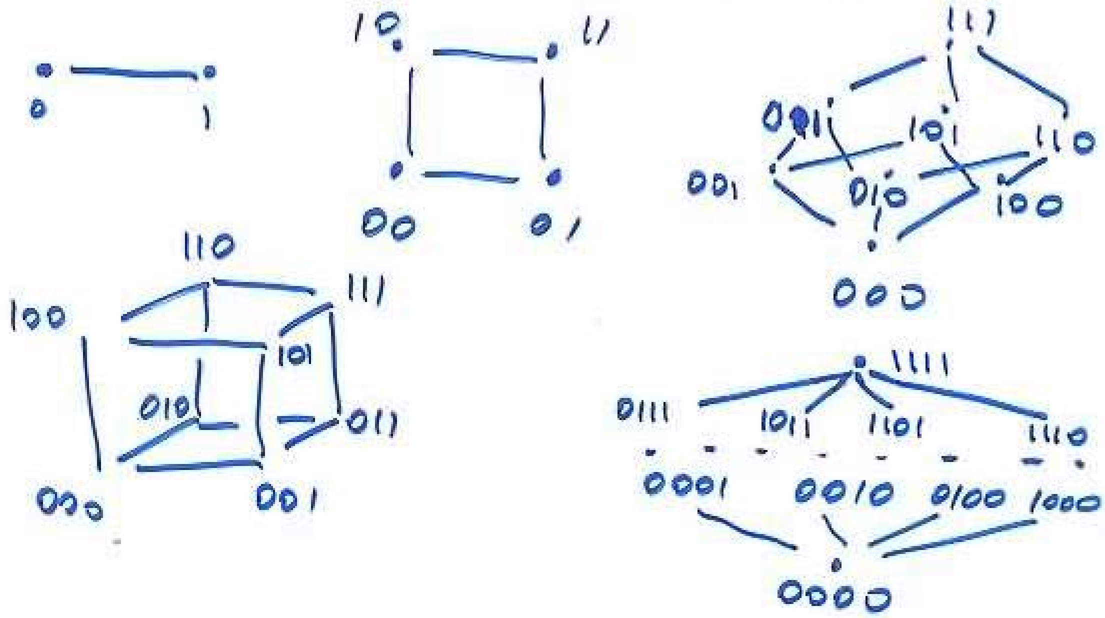
WHEELS: W_n

AN ADDITIONAL VERTEX TO C_n

CUBES: Q_n

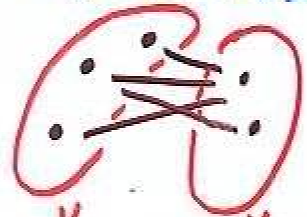
0-1 STRINGS OF LENGTH n

EDGES = CHANGING ONE BIT



def G IS **BIPARTITE** IF $V = V_1 \cup V_2$

SUCH THAT NO EDGE OF G CONNECTS TWO VERTICES IN V_1 OR TWO VERTICES IN V_2



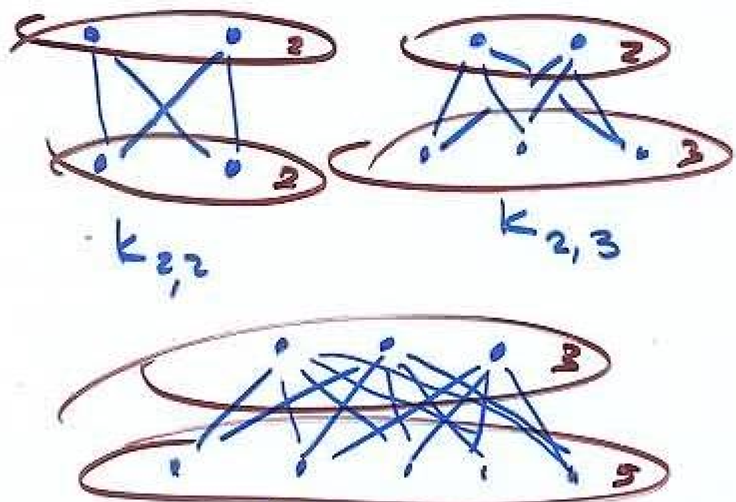
K_3

THE SIMPLIES NOT BIPARTITE

COMPLETE BIPARTITE $K_{m,n}$: (USUALLY ASSUMED $m \leq$

$V = V_1 \cup V_2 \qquad |V_1| = m \quad |V_2| = n$

THE IS ONE EDGE BETWEEN ANY $v_1 \in V_1, v_2 \in V_2$

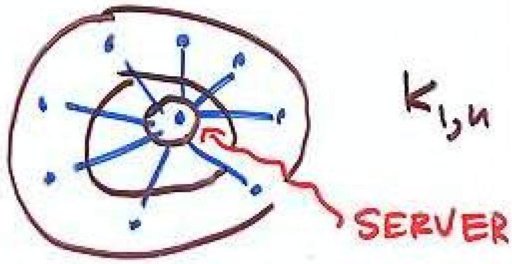


$K_{2,2}$ $K_{2,3}$

$K_{3,5}$

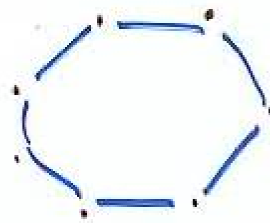
NETWORKS AS GRAPHS

STAR TOPOLOGY



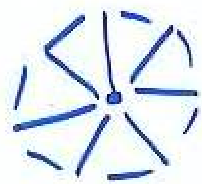
$K_{1,n}$

RING TOPOLOGY



C_n

HYPRID TOPOLOGIES



W_n

LINEAR ARRAYS

(MULTIPROCESSOR CONNECTION)

TWO-DIMENSIONAL ARRAYS

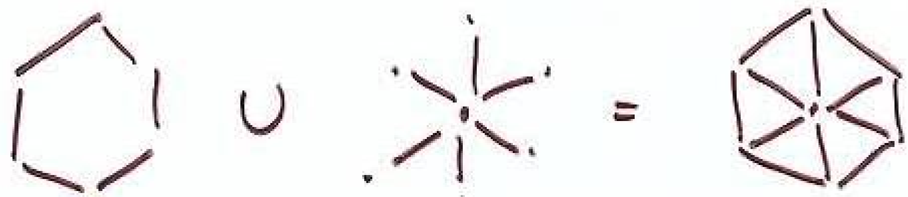
HYPERCUBES, ETC.

SUBGRAPH: $H=(W,F)$ IS A SUBGRAPH OF $G=(V,E)$ IF $W\subseteq V$, $F\subseteq E$

 IS A SUBGRAPH OF 

C_5 IS A SUBGRAPH OF W_5 IS SUBGRAPH OF $K_{1,5}$ IS SUBGRAPH OF K_6

UNION OF GRAPHS $(V_1,E_1)\cup(V_2,E_2)=$
$=(V_1\cup V_2,\ E_1\cup E_2)$



C_6 $K_{1,6}$ W_6

HW 7.2: 8 18b,c 24