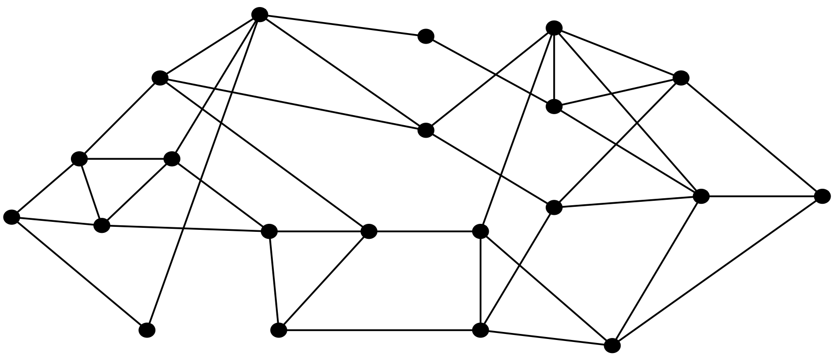
▶ **Problem 11.1-07**

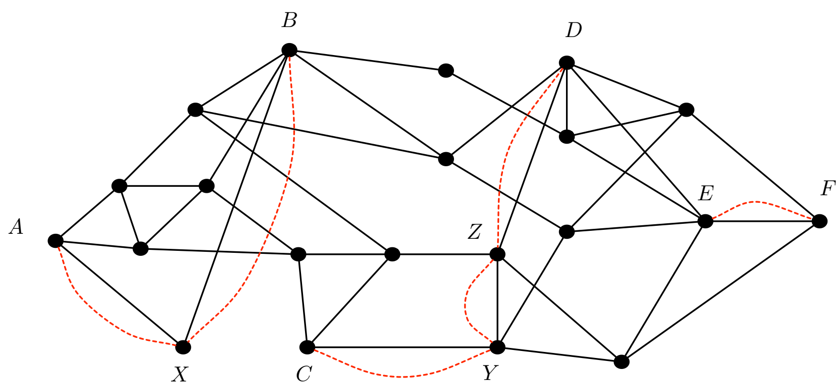
Solve the Chinese Postman Problem for the unweighted graph shown.



Solution. The six vertices of odd degree are A, B, C, D, E and F in the following figure. Now, the sum of lengths of shortest paths for all partitions of pairs are given as follows.

Partition into pairs		Sum of lengths of shortest paths	
$\{A,B\},\{C,D\},\{E,F\}$	$2+3+1=6$	$\{A,B\},\{C,E\},\{D,F\}$	$2+3+2=7$
$\{A,B\},\{C,F\},\{D,E\}$	$2+3+1=6$	$\{A,C\},\{B,D\},\{E,F\}$	$3+2+1=6$
$\{A,C\},\{B,E\},\{D,F\}$	$3+3+2=8$	$\{A,C\},\{B,F\},\{D,E\}$	$3+4+1=8$
$\{A,D\},\{B,C\},\{E,F\}$	$4+3+1=8$	$\{A,D\},\{B,E\},\{C,F\}$	$4+3+3=10$
$\{A,D\},\{B,F\},\{C,E\}$	$4+4+3=11$	$\{A,E\},\{B,C\},\{D,F\}$	$5+3+2=10$
$\{A,E\},\{B,D\},\{C,F\}$	$5+2+3=10$	$\{A,E\},\{B,F\},\{C,D\}$	$5+4+3=12$
$\{A,F\},\{B,C\},\{D,E\}$	$6+3+1=10$	$\{A,F\},\{B,D\},\{C,E\}$	$6+2+3=11$
$\{A,F\},\{B,E\},\{C,D\}$	$6+3+3=12$		

So we see that one solution is to add copies of edges AX, XB, CY, YZ, ZD, and EF, as shown.



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