

For this problem, there are four (4) locations which are:

- 1.) Manila
- 2.) Tacloban
- 3.) Puerto Princessa
- 4.) Davao

Let  $n = 4$

Then,  $(4-1)!$

$$(3)! = 6$$

So,  $\frac{(n-1)!}{2} = \frac{6}{2} = 3$  There are 3 possible paths, and the other 3 are only the reverse of the prior path

### First Route

Manila - Tacloban, Tacloban - Davao, Davao - Puerto Princessa, Puerto Princessa - Manila

$$₱1,000 + ₱2,000 + ₱4,000 + ₱8,000 = ₱15,000$$

### Second Route

Manila - Tacloban, Tacloban - Puerto Princessa, Puerto Princessa - Davao, Davao - Manila

$$₱1,000 + ₱1,500 + ₱4,000 + ₱5,000 = ₱11,500$$

### Third Route

Manila - Davao, Davao - Tacloban, Tacloban - Puerto Princessa, Puerto Princessa - Manila

$$₱5,000 + ₱2,000 + ₱1,500 + ₱8,000 = ₱16,500$$

Therefore, the optimal route for minimizing ~~route~~ cost is the second route with the total cost of ₱11,500.

ANSWER:

MANILA > TACLOBAN > PUERTO PRINCESSA > DAVAO > MANILA

COST: ₱11,500