Can Submarines Swim?

Objectives

Explain the process by which link-state routers learn about other networks.

Scenario

Edsger Wybe Dijkstra was a famous computer programmer and theoretical physicist. One of his most famous quotes was: “The question of whether computers can think is like the question of whether submarines can swim.” Dijkstra’s work has been applied, among other things, to routing protocols. He created the Shortest Path First (SPF) algorithm for network routing.

- Visit the Association for Computing Machinery’s (ACM) website at http://amturing.acm.org/award_winners/dijkstra_1053701.cfm. Read the article about the life of Dijkstra. List five facts from the article you found interesting about him and his work.
- Next, view Dijkstra’s animation of how to find the shortest path first located at http://upload.wikimedia.org/wikipedia/commons/5/57/Dijkstra_Animation.gif. While viewing the animation, pay close attention to what is occurring in it. Note three observations about the animation.
- Lastly, view the graphic located at http://upload.wikimedia.org/wikipedia/commons/3/37/Ricerca_operativa_percorso_minimo_01.gif. Take a few moments to view the visual and notate three observations you have made about the visual. (Note: Use a web translator if you do not know the Italian words “Casa” and “Ufficio”.)

Now, open the PDF provided with this activity and answer the reflection questions. Save your work.

Get together with two of your classmates to compare your answers.

Resources

- Internet connection
- Internet browser

Reflection

1. List five facts you found interesting about Edsger Wybe Dijkstra’s life.

2. List three observations about the animation found at http://upload.wikimedia.org/wikipedia/commons/5/57/Dijkstra_Animation.gif.

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3. List three observations about the visual shown at http://commons.wikimedia.org/wiki/File:Ricerca_operativa_percorso_minimo_01.gif.

4. Distance vector routing protocols basically depend on number of hops to find the best route from source to destination. If you apply the information you learned from this introductory activity to routing, would hops be the main factor in finding the best path from source to destination? If compared to network communication, could it possibly be better to find the best path using a different metric than hop count? Justify your answer.

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