

Fun with Graphs

Problem # 4

"U2" have a concert that starts in 17 minutes and they must all cross a bridge to get there. All four men begin on the same side of the bridge. You must help them across to the other side. It is night. There is one flashlight. A maximum of two people can cross at one time. Any party who crosses, either 1 or 2 people, must have the flashlight with them. The flashlight must be walked back and forth, it cannot be thrown, etc.. Each band member walks at a different speed. A pair must walk together at the rate of the slower man's pace:

Bono: 1 minute to cross

Edge: 2 minutes to cross

Adam: 5 minutes to cross

Larry: 10 minutes to cross

For example: If Bono and Larry walk across first, 10 minutes have elapsed when they get to the other side of the bridge. If Larry then returns with the flashlight, a total of 20 minutes have passed and you have failed the mission.

How would you use a graph search method to find a way to get the four men across in 17 minutes (or less)? Try to define what the nodes and edges of your graph, and then search it.

Note: This is based on a question Microsoft gives to all prospective employees. Microsoft expects you to answer this question in under 5 minutes!