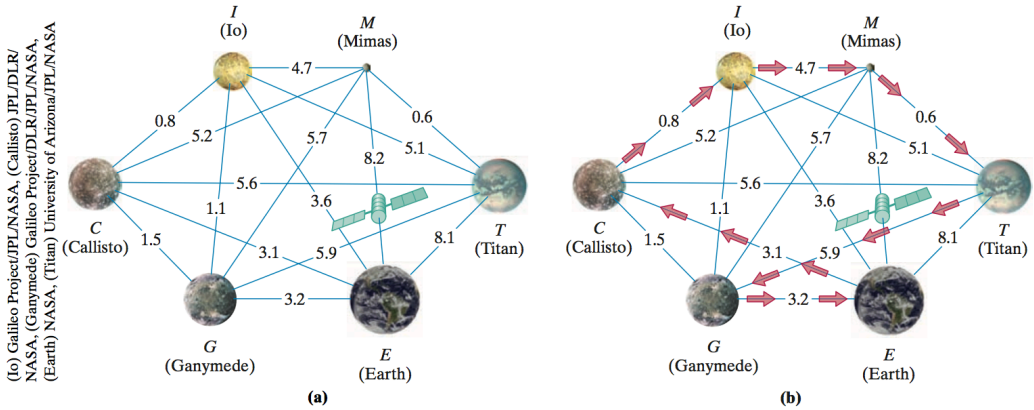
Assignment 2

Due 9/25/17

(1) Finish the example from class: Find the optimal tour, starting from E, and assuming the first stop is C. One example of an optimal tour is below (total length of the tour is 18.3 years). (a) Explain (using a table) why this is a optimal tour. (b) Find another optimal tour.



(Io) Galileo Project/JPL/NASA, (Callisto) JPL/DLR/ NASA, (Ganymede) Galileo Project/DLR/JPL/NASA, (Earth) NASA, (Titan) University of Arizona/JPL/NASA

2 Hamilton Paths and Circuits

1. For the graph shown in Fig. 19,

(a) find three different Hamilton circuits.

(b) find a Hamilton path that starts at A and ends at B.

(c) find a Hamilton path that starts at D and ends at F.

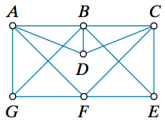


FIGURE 19

4. Find all possible Hamilton circuits in the graph in Fig. 22. Write your answers using A as the starting/ending vertex.

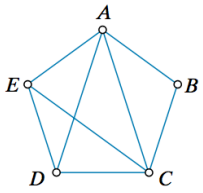


FIGURE 22

16. Explain why the graph shown in Fig. 32 has no Hamilton circuit but does have a Hamilton path.

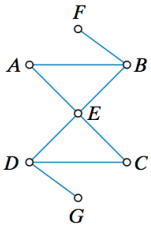


FIGURE 32

20. For the weighted graph shown in Fig. 36,

(a) find a Hamilton path that starts at B and ends at D, and give its weight.

(b) find a second Hamilton path that starts at B and ends at D, and give its weight.

(c) find the optimal (least weight) Hamilton path that starts at B and ends at D, and give its weight.

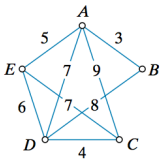


FIGURE 36

28. Find an optimal tour for the TSP given in Fig. 38, and give its cost.

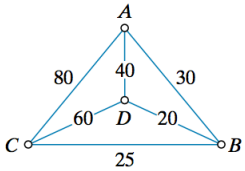


FIGURE 38

32. An unmanned rover must be routed to visit four sites labeled A, B, C, and D on the surface of the moon. Table 7 shows the distance (in kilometers) between any two sites. Assuming the rover landed at C, find an optimal tour.

	A	B	C	D
A	0	4	18	16
B	4	0	17	13
C	18	17	0	7
D	16	13	7	0

TABLE 7