

ITEC451

Activity 12

[Linear Programming] Extremely-Fast corp. is an internet service provider which must determine how many OC-768 communication cables need to be leased to TYPE-1 clients and TYPE-2 clients, respectively. (The OC-768 is a fiber optic network cable with transmission speeds of up to 39,813.12 Mbits/s.) One OC-768 can provide a network service to 25 TYPE-1 clients and requires 10 hours of maintenance and customer services per week. One OC-768 cable can support 10 TYPE-2 clients and requires 4 hours of maintenance and customer services. All TYPE-1 channels can be leased at \$200 per week, and all TYPE-2 channel can be leased at \$300 per week. Seven OC-768 cables and 40 hours per week of labor for maintenance and customer services are available. The company regulations require that at least 30 TYPE-2 clients be supported during any weeks. Let x_1 = number of the cables with TYPE-2 clients, and x_2 = number of cables with TYPE-1 clients. Using these decision variables, formulate LP whose solution will tell Extremely-Fast corp. how to maximize the total profit from TYPE-1 and TYPE-2 clients.

(Based on Problem 1 in Page 55 of the textbook)