南方科技大学
SOUTHERN UNIVERSITY OF SCIENCE AND TECHNOLOGY

Lab 13 - Practice Maximum Flow

CS208 Algorithm Design and Analysis

Instructor: Yang Xu, xuyang@sustech.edu.cn

Blood donation

There are some patients in need of emergent blood transfusion. The number of patients is 169 and the hospital has supplies of 170 units of whole blood, and each patient requires a transfusion of 1 unit of blood. The number of units for each blood type and the distribution of blood types among patients are summarized in the table.

Blood type	A	B	O	AB
Supply	46	34	45	45
Demand	39	38	42	50

Type A patients can only receive type A or O; type B patients can receive only type B or O; type O patients can receive only type O; and type AB patients can receive any of the four types.

Questions:
1) Give a max flow formulation that satisfies the demands of a maximum number of patients.
2) Find a cut in your graph of value smaller than 169. Explain why not all of the patients can receive blood from the available supply

Grading

- To be graded in a week
- Total point: 1