

General information and requirements for
Programming Task 3

Stages

The programming task consists of the following stages:

1. You are working in Team within you worked for programming Task 1 & 2.
 2. Define Transportation Problem that has 3 sources and 4 destinations (balanced problem , i.e. summation of demand and supply are equal).
 3. Perform the main task (write program to find initial basic feasible solution for given problem by using North-West corner method, Vogel’s approximation method, and Russell’s approximation method).
 4. Test your code on 3 different problems. (You **MUST** include these problems in your report)
 5. Report by Team leader.
 6. Submit to Moodle. All members should submit in Moodle.

1. Team up

The same team as programming task 1 & 2. You can not work individually.

2. Search for tools/platform

Here, you need to select a programming language and search for platform. Platform should be free access.

3. Specify your transportation problem.

Define Transportation Problem that has 3 sources and 4 destinations (balanced problem , i.e. summation of demand and supply are equal).

Parameter table for the transportation problem					
	Cost per Unit Distributed				Supply
	Destination				
	1	2	...	n	
1	c_{11}	c_{12}	...	c_{1n}	s_1
2	c_{21}	c_{22}	...	c_{2n}	s_2
⋮				⋮
m	c_{m1}	c_{m2}	...	c_{mn}	s_m
Demand	d_1	d_2	...	d_n	

Figure 1: Parameter Table of Transportation Problem

4. Perform the main task

Perform the main task. Write program to find initial basic feasible solution for given problem by using

1. North-West corner method,
2. Vogel’s approximation method,
3. Russell’s approximation method.

5. Testing

Test your code on different supply, demand and costs. **It MUST be included in your report.**

6. Report by Team leader

Team leader should provide a short report about the contribution of team members. He/she should give grades to team members. Grade range is "0 to 5". "0" means no contribution and "5" means the highest contribution. For example, if all members were active, then the team leader should give "5" to all members.

7. Submit to Moodle.

Run your code, create a pdf from it and submit pdf and the link to the repository (for example Github) to Moodle for assessment before the deadline. All members should submit to Moodle before the deadline.

Notes:

- You can not solve programming tasks alone. You must be a member of a team.
- You cannot change your team during the whole course.
- Be sure that the link you provide works, otherwise your programming task will not be graded.

Instructions

1. Write a computer program in any programming language (e.g. Python, C++) to find initial basic feasible solution for given transportation problem by using
 - (a) North-West corner method,
 - (b) Vogel's approximation method,
 - (c) Russell's approximation method..
2. Test your code on different supply, demand and costs (3 different problems).

Input format

The input contains:

- A vector of coefficients of supply - S .
- A matrix of coefficients of costs - C .
- A vector of coefficients of demand - D .

Output format

The output contains:

1. The string "The method is not applicable!"
or
2. The string "The problem is not balanced!"
or
3. Print (demonstrate) input parameter table (a table constructed using matrix C , vectors S and D).

4. 3 vectors of initial basic feasible solution - x^0 using North-West corner method, Vogel's approximation method, and Russell's approximation method.

Report

Use the template provided for prog. task 1. Tests **MUST** be included in your report.