

# Techniques in Operations Research

## Assignment 1 – 2018

Your name, student Id

February 6, 2018

## 1 Introduction

### 1.1 Subsection

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#### 1.1.1 Subsubsection

This is refer to Subsection 1.1. The formulation is:



Figure 1: Logo

$$\max z = \sum_i a_i y_i \quad (1)$$

$$\text{subject to } y_i \leq \sum_{j \in N_i} x_j, \forall i \quad (2)$$

$$\sum_j x_j = p \quad (3)$$

$$0 \leq y_i \leq 1, \forall i \quad (4)$$

$$x_j \in \{0, 1\}, \forall j \quad (5)$$

where

$a_i$  is the demand at node  $i$ ;

$x_j$  is a binary variable, which is 1 if a facility is placed at site  $j$ ;

$y_i$  is a binary variable, which is 1 if node  $i$  is covered by one or more facilities;

$N_i$  is the set of sites whose distances to node  $i$  are within the coverage range  $R$ .

Figure 1 shows the logo of The University of Melbourne.

symbol	value	
$A$	3	5
$B$	9	8

Table 1: This is a table.

$$\nabla h(x^*, y^*)^T d = (2, 3) \begin{bmatrix} d_1 \\ d_2 \end{bmatrix} = 0$$

$$\Rightarrow 2d_1 + 3d_2 = 0$$

$$\Rightarrow d = \begin{bmatrix} d_1 \\ -\frac{2d_1}{3} \end{bmatrix}.$$

$$\begin{bmatrix} d_1 & 3 & 1 \\ d_2 & 8 & -1 \\ 3 & d_3 & 0 \end{bmatrix} = A^T \begin{bmatrix} 1 & 2 & 9 \\ 7 & 0 & 6 \\ -3 & 3 & 2 \end{bmatrix}.$$

## 1.2 Features

The key features of the model include:

- Donec et mi. Nam vulputate metus eu enim. Vestibulum pellentesque felis eu massa.
- Donec et mi. Nam vulputate metus eu enim. Vestibulum pellentesque felis eu massa.
  1. Donec et mi. Nam vulputate metus eu enim. Vestibulum pellentesque felis eu massa.
  2. Donec et mi. Nam vulputate metus eu enim. Vestibulum pellentesque felis eu massa.

This line has an equation  $x + y = \left(\frac{3}{2}\right)^c$  where  $c \in \mathbb{R}$ .

This line has an equation  $\alpha + \beta + \gamma - \epsilon = \left(\frac{3}{2}\right)^c$  where  $c \in \mathbb{R}$ .

Another line could be  $\eta \approx \pm 3$ ,  $\lambda = (2, \mp 4)$ .

$$\begin{aligned} x^* &= \lim_{k \rightarrow \infty} -\frac{\sqrt{1+4/k}}{2} \\ &= -\frac{1}{2}. \end{aligned}$$

This could be your Matlab code.

```
%  
n = 10  
for i = 1:n  
    i = i+1;  
end  
display(i);
```

## 2 Discussion

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## References

- [1] Bertsimas, Dimitris and Tsitsiklis, John. Introduction to Linear Optimization Athena Scientific, 1997