# Name of the use case

*Author: Name of the author(s)*

*Month, Year*

This is the documentation of the [name of the use case] use case, which is part of the [Learning Mip](https://mip-master.github.io/learning_mip/) project maintained by Mip Master.

## Concepts

* Concept 1
* Concept 2
* …

## Problem statement

A detailed definition of business problem being solved.

## Input data

Not required. Can be a description of the data or tables with sample input data.

## Formulation

Use normal font for comments, like this. And use this formatting to highlight the actual formulation.

### Input data model

Set of indices

Set of ...

Set of ...

Parameters

Cost ($/cu ft) of …

### Decision variables

Definition of the decision variables used to formulate the problem.

Decision variables:

equal if consulting is chosen, otherwise

### Constraints

Write and comment one constraint, or set of constraints, at a time.

Constraints – Short description of the first constraint:

Constraints – Short description of the second constraint:

Constraints – Short description of the third constraint:

General concepts can be emphasized with a box.

Statement: If , then .

Formulation: .

Assumptions: is a binary and is a constant.

### Objective

The objective function.

Objective:

### Final formulation

Put everything together.

Final formulation:

## Implementation and optimization

Below is the implementation of the formulation using *gurobipy*. The code is available in the Mip Master repository on GitHub [link].



Maybe some comments, observations, or clarification about the code.

* In Line 1, ...
* In Line 3, …

The output is this:

y = **{**1**:** 50**,** 2**:** 135**,** 3**:** 270**,** 4**:** 90**,** 5**:** 0**,** 6**:** 55**,** 7**:** 50**}**

revenue 43185.0

penalty 920.0

## Challenge yourself

1. Challenge 1
2. Challenge 2

## Takeaways

1. Takeaway 1
2. Takeaway 2