

# [Stat 2](https://assignbuster.com/stat-2/)

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STATISTICAL PROGRAMMING Pure integer programming problem is a linear programming whereby all the variables are required to be integers (Render, et al. 2012). The Linear programming problem below is a pure integer LP problem but also has mixed sets of integers, thus mixed integer linear programming.
Minimize Z= 8X12+4X1X2+12X22
Subject to: 6X1+X2≥50
X1+X2≥40
A statistical programming that uses a scale of 0-1 is a simple and powerful integer scale. Zero-one linear programming involves problems (Braaksma, et al, 2012)), in which the variables are restricted to be either 0 or 1 for instance,
Minimize Z= 8X1+6X2
Subject to: 4X1+5X2≥10
X1+X2≤3
X1 X2 ≥0
X1 X2= 0 or 1
A mixed integer programming problem is a linear programming in which only some of the variables are required to be integers, for instance,
Maximize Z= 5x1+6X1X2+2x2
Subject to: 3x2+2x2≥6
X1+x2≤8
X1, x2 ≥0
Sometimes, it is evident statistically that most decision making problems have multiple objectives that cannot be optimized simultaneously because of the conflicting nature of the objectives or goals. Goal programming is used to solve programming problems with several objective functions (goals) or constraints (Tanlamai, 2011). The linear problem below represents a goal programming problem, and also represents a non-linear programming problem whereby the program is defined by systems of equalities and inequalities (constraints) with real variables X1 and X2.
Maximize Z= 10X1+5X2
Subject to: 8X1+10X2= 10
4X1+6X2≥5
X1 X2 Integers
References
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Lo, Q., & Chai, K. (2012). Quantitative analysis of quality management literature published in total quality management and business excellence (1996–2010). Total Quality Management & Business Excellence, 23(5/6), 629-651.
Render, B., Stair, R. M., Jr., & Hanna, M. E. (2012). Quantitative analysis for management (11th ed.). Upper Saddle River, NJ: Prentice Hall.
Tanlamai, A. (2011). Implementation of Quantitative Management Techniques and Organization Performance. Journal of Global Business Issues, 5(1), 43-50.