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to find an optimal solution with linear programming form the constraint equations sketch the constraint equations find the vertices of the feasible region substitute the coordinates of the vertices into the objective function the optimal solution is the vertex at which the maximum or minimum value is obtained linear programming is a mathematical concept that is used to find the optimal solution of the linear function this method uses simple assumptions for optimizing the given function linear programming has a huge real world application and it is used to solve various types of problems linear programming is an optimization technique for a system of linear constraints and a linear objective function an objective function defines the quantity to be optimized and the goal of linear programming is to find the values of the variables that maximize or minimize the objective function a factory manufactures doodads and whirligigs and so no feasible solution has cost higher than 2 3 so the solution $x_1 = 1, x_2 = 1, x_3 = 2$ is optimal as we will see in the next lecture this trick of summing inequalities to verify the optimality of a solution is part of the very general theory of duality of linear programming linear programming is a set of techniques used in mathematical programming sometimes called mathematical optimization to solve systems of linear equations and inequalities while maximizing or minimizing some linear function the optimal solution is the point that maximizes or minimizes the objective function and the optimal value is the maximum or minimum value of the function the context of a problem determines whether we want to know the objective function's maximum or the minimum value formulate maximization linear programming problems graph feasibility regions for maximization linear programming problems determine optimal solutions for maximization linear programming problems 6 046j lecture 15 linear programming linear programming lp is a method to achieve the optimum outcome under some requirements represented by linear relationships more precisely lp can solve the problem of maximizing or minimizing a linear objective function subject to some linear constraints linear programming lp also called linear optimization is a method to achieve the best outcome such as maximum profit or lowest cost in a mathematical model whose requirements and objective are represented by linear relationships linear programming is a special case of mathematical programming also known as mathematical optimization 2 1 simplex method a preview optimal solutions consider the following linear program maximize $z = 0x_1 + 0x_2 + 3x_3 + 4x_4$ subject to $x_1 + 3x_3 + 3x_4 \leq 6$, $x_2 + 8x_3 + 4x_4 \leq 2$, $x_j \geq 0$, $j = 1, 2, 3, 4$ note that as stated the problem has a very special form it satisfies the following 3 12k subscribers subscribed 176 32k views 7 years ago modelling with linear relationships in this video i explain what the optimal solution is and demonstrate a step by step process to identify the optimal solution from the optimal simplex tableau in the last chapter we used the geometrical method to solve linear programming problems but the geometrical approach will not work for problems that have more than two variables thus lp will be used to get the optimal solution which will be the shortest route in this example linear programming formula a linear programming problem will consist of decision variables an objective function constraints and non negative restrictions a feasible solution to the linear programming problem should satisfy the constraints and non negativity restrictions a feasible solution to an lpp with a maximization problem becomes an optimal solution when the objective function value is the largest maximum learning objectives after completing this chapter you should be able to describe where an optimal solution can be located in the feasible region of a linear programming problem identify the different possibilities for how many optimal solutions a linear programming problem can have in two dimensional case the linear optimization linear programming is specified as follows find the values x, y such that the goal function $g(x, y) = ax + by$ eq 1 is maximized or minimized subject to the linear inequalities anywhere in the feasible zone is a viable solution for the objective function step 6 choosing the optimal point choose the point for which the given function has maximum or minimum values solved problems of linear programming problems question 1 a factory manufactures two types of gadgets regular and premium in computer science program optimization code optimization or software optimization is the process of modifying a software system to make some aspect of it work more efficiently or use fewer resources 1 when z has an optimal value maximum or minimum where the variables x and y are subject to constraints described by linear inequalities this optimal value must occur at a corner point vertex of the feasible region theorem 2 let r be the feasible region for a linear programming problem and let $z = ax + by$ be the objective function 4 3 linear programming maximization applications page id rupinder sekhon and roberta bloom de anza college table of contents no headers learning objectives in this section you will learn to recognize the typical form of a linear programming problem formulate maximization linear programming problems

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linear programming is a mathematical concept that is used to find the optimal solution of the linear function this method uses simple assumptions for optimizing the given function linear programming has a huge real world application and it is used to solve various types of problems

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linear programming is an optimization technique for a system of linear constraints and a linear objective function an objective function defines the quantity to be optimized and the goal of linear programming is to find the values of the variables that maximize or minimize the objective function a factory manufactures doodads and whirligigs

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and so no feasible solution has cost higher than 2 3 so the solution $x_1 = 1, x_2 = 1$ is optimal as we will see in the next lecture this trick of summing inequalities to verify the optimality of a solution is part of the very general theory of duality of linear programming

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linear programming is a set of techniques used in mathematical programming sometimes called mathematical optimization to solve systems of linear equations and inequalities while maximizing or minimizing some linear function

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the optimal solution is the point that maximizes or minimizes the objective function and the optimal value is the maximum or minimum value of the function the context of a problem determines whether we want to know the objective function's maximum or the minimum value

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6.046j lecture 15 linear programming linear programming lp is a method to achieve the optimum outcome under some requirements represented by linear relationships more precisely lp can solve the problem of maximizing or minimizing a linear objective function subject to some linear constraints

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linear programming lp also called linear optimization is a method to achieve the best outcome such as maximum profit or lowest cost in a mathematical model whose requirements and objective are represented by linear relationships linear programming is a special case of mathematical programming also known as mathematical optimization

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2 1 simplex method a preview optimal solutions consider the following linear program maximize $z = 0x_1 + 0x_2 + 3x_3 + 4x_4 + 20$ objective 1 subject to $x_1 + 3x_3 + 3x_4 \leq 6$ $x_2 + 8x_3 + 4x_4 \leq 4$ $x_j \geq 0$ $j = 1, 2, 3, 4$ note that as stated the problem has a very special form it satisfies the following

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identify the optimal solution from the optimal simplex tableau in the last chapter we used the geometrical method to solve linear programming problems but the geometrical approach will not work for problems that have more than two variables

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thus lp will be used to get the optimal solution which will be the shortest route in this example linear programming formula a linear programming problem will consist of decision variables an objective function constraints and non negative restrictions

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a feasible solution to the linear programming problem should satisfy the constraints and non negativity restrictions a feasible solution to an lpp with a maximization problem becomes an optimal solution when the objective function value is the largest maximum

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learning objectives after completing this chapter you should be able to describe where an optimal solution can be located in the feasible region of a linear programming problem identify the different possibilities for how many optimal solutions a linear programming problem can have

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in two dimensional case the linear optimization linear programming is specified as follows find the values x, y such that the goal function $g(x, y) = ax + by$ eq 1 $g(x, y) = ax + by$ eq 1 is maximized or minimized subject to the linear inequalities

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in computer science program optimization code optimization or software optimization is the process of modifying a software system to make some aspect of it work more efficiently or use fewer resources 1

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when z has an optimal value maximum or minimum where the variables x and y are subject to constraints described by linear inequalities this optimal value must occur at a corner point vertex of the feasible region theorem 2 let r be the feasible region for a linear programming problem and let $z = ax + by$ be the objective function

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