1. Implement Travelling salesman Problem

2. Implement the 0/1 knapsack problem using dynamic programming

3. A furniture company produces chairs and tables from two resources, wood and metal. The company has 125 units of wood and 80 units of metal available. Each chair requires 1 unit of wood and 3 units of metal, while each table requires 5 units of wood and 1 unit of metal. The profit from selling a chair is 20 dollars, and the profit from selling a table is 30 dollars. How many chairs and tables should the company produce to maximize its profit? What is the maximum profit? Implement using linear programming package

4. A farmer has a field of 60 acres in which he plants two crops, wheat and barley. The farmer has to plant at least 20 acres of wheat and at least 10 acres of barley. He has 1200 pounds of fertilizer and 600 pounds of insecticide available. Each acre of wheat requires 20 pounds of fertilizer and 10 pounds of insecticide, while each acre of barley requires 10 pounds of fertilizer and 15 pounds of insecticide. The profit from an acre of wheat is 200 dollars, and the profit from an acre of barley is 150 dollars. How many acres of each crop should the farmer plant to maximize his profit? What is the maximum profit? Implement using linear programming package

5 A bakery sells two types of cakes, chocolate and vanilla. The bakery has a daily budget of 500 dollars and can produce at most 400 cakes per day. Each chocolate cake costs 2 dollars to make and sells for 5 dollars, while each vanilla cake costs 1 dollar to make and sells for 3 dollars. The bakery also has to satisfy the demand of at least 100 chocolate cakes and at least 50 vanilla cakes per day. How many cakes of each type should the bakery make to maximize its revenue? What is the maximum revenue? Implement using linear programming package

6 Solve the following without using linear programming package

**Maximize**

p=2u1​+3u2​+u3​

**Subject to**

u1​+u2​+u3​≤4

u1​+2u2​−u3​≥2

u1​,u2​,u3​≥0