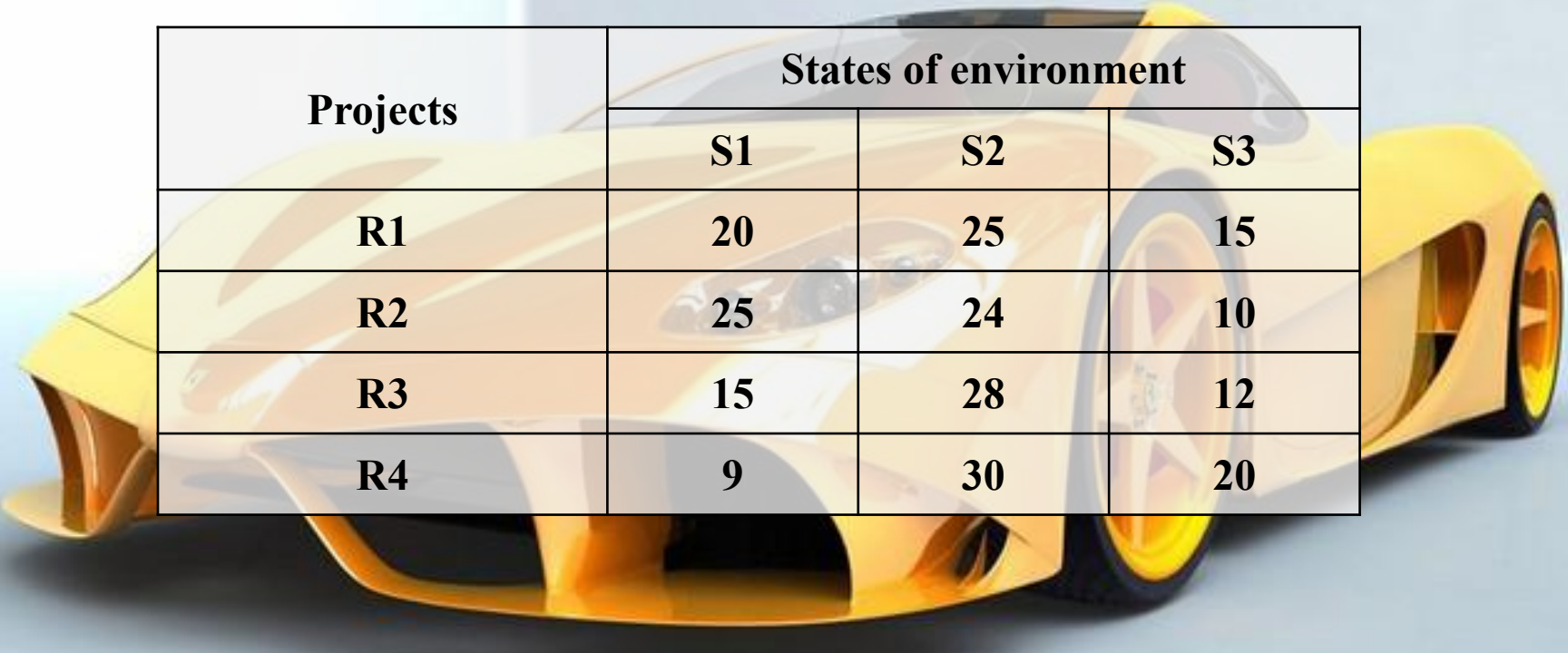Large-scale production of cars: There are four possible projects for the car Rj. Economic efficiency Vji of each project depending on profitability is defined. Three states of environment Si are defined. The values of economic efficiency are given in the following table
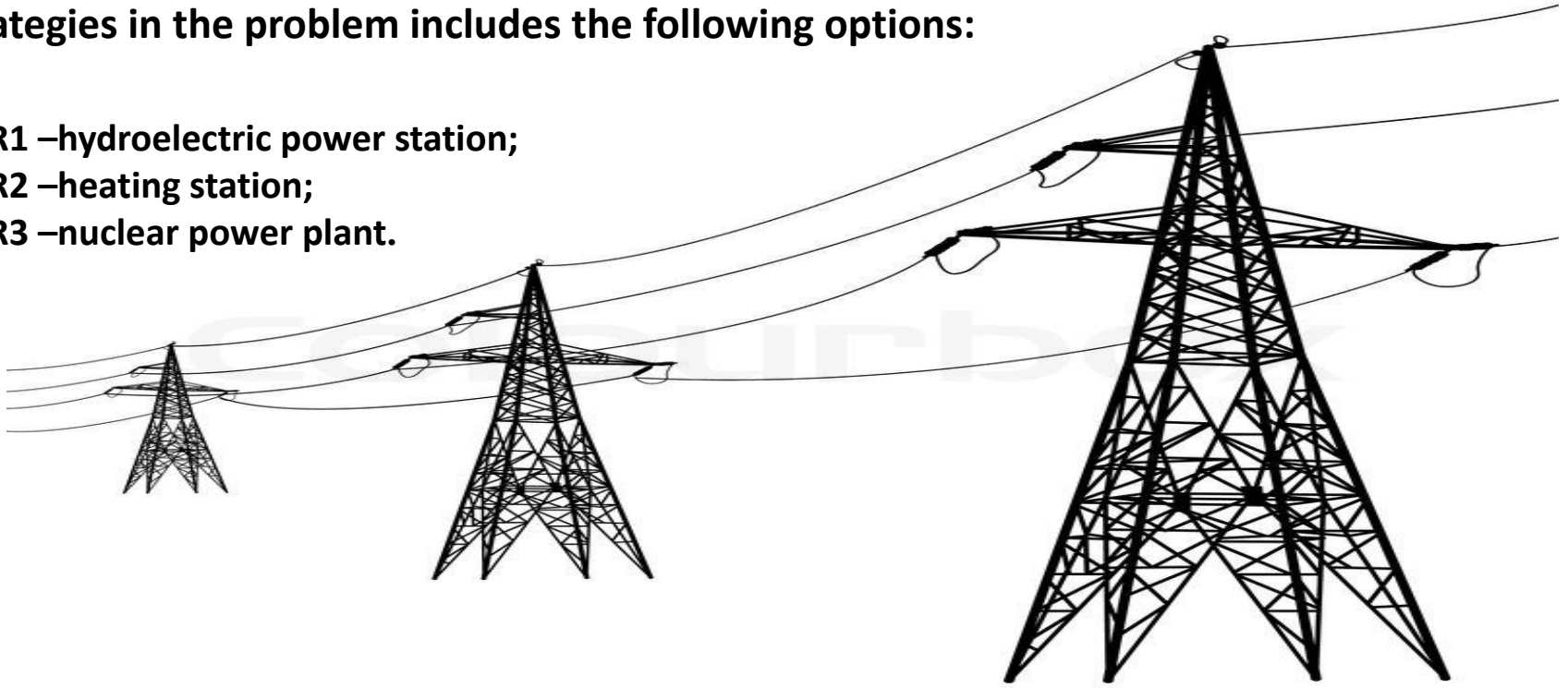
| Projects | States of environment | | |
|---|---|---|---|
| | S1 | S2 | S3 |
| R1 | 20 | 25 | 15 |
| R2 | 25 | 24 | 10 |
| R3 | 15 | 28 | 12 |
| R4 | 9 | 30 | 20 |

Choose the best project for the production, using the Wald criterion, Savage, Hurwitz under coefficient of pessimism of 0.1. Make conclusions

Determine what type of power plant to build to meet the energy needs of complex large industrial enterprises. The number of possible strategies in the problem includes the following options:

R1 –hydroelectric power station;
R2 –heating station;
R3 –nuclear power plant.

The economic efficiency of the facilities depends on the influence of random factors forming the set of States of environment Si. The results of calculation of economic efficiency are shown in the table

| Type | State of environment | | | | |
|------|------|------|------|------|------|
| | S1 | S2 | S3 | S4 | S5 |
| R1 | 40 | 70 | 30 | 25 | 45 |
| R2 | 60 | 50 | 45 | 20 | 30 |
| R3 | 50 | 30 | 40 | 35 | 60 |

The theatre's administration need to decide how many programs to order. The cost of the order is 200$ plus 30 cents per item. The programs are sold at 60 cents per item, and moreover the additional income from advertising will be 300$.
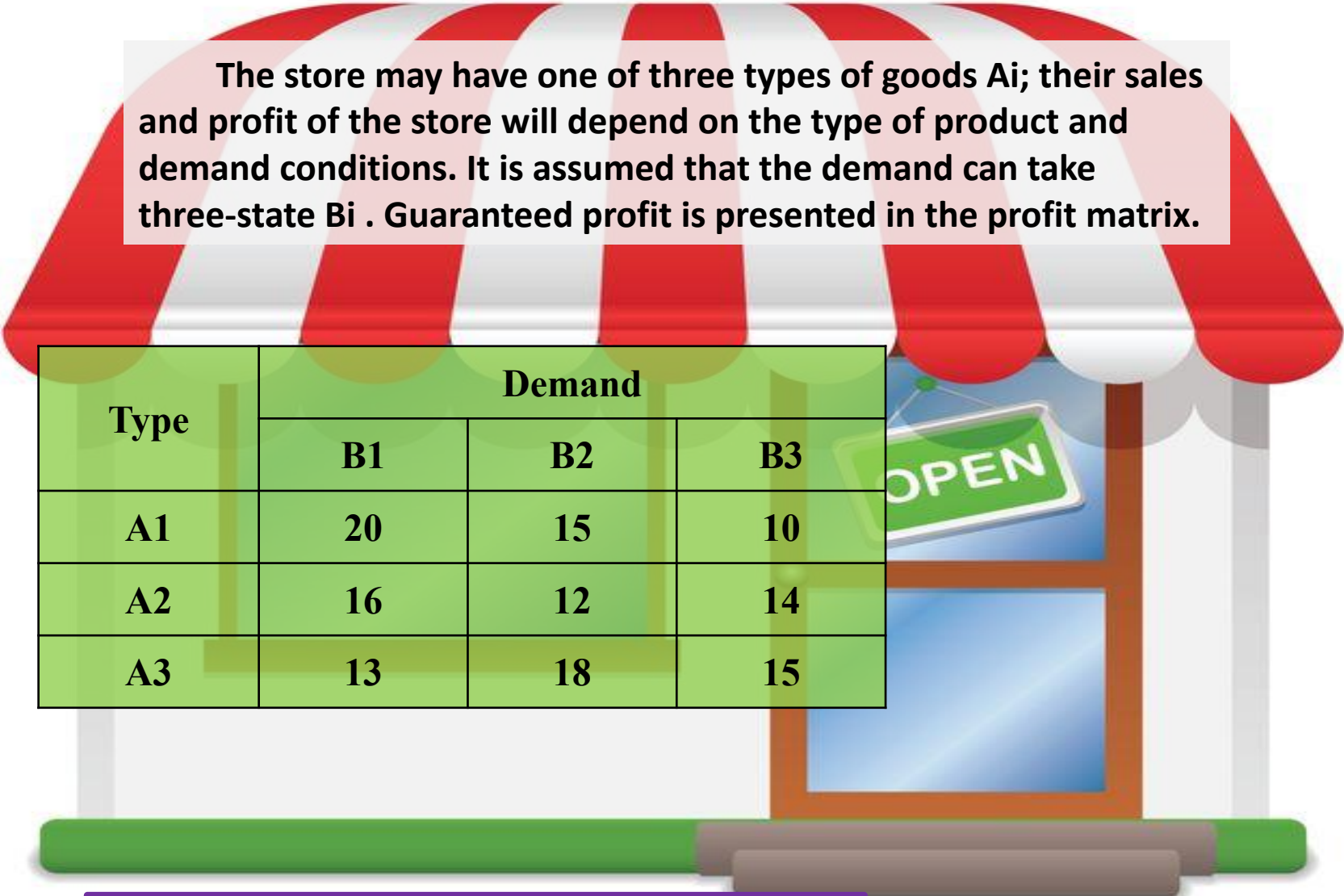From the past experience we known the attendance of the theatre



| Attendance | 4000 | 4500 | 5000 | 5500 | 6000 |
|---|---|---|---|---|---|
| Probability | 0,1 | 0,3 | 0,3 | 0,2 | 0,1 |

It is expected that 40% of programs will be sold.
1. Using the criteria of Wald, Hurwitz and Savage, determine how many items should order the administration of the theater.
2. Let's say that advertisers will increase the amount from 300 to 400$, and the number of visitors will be more 5250, besides the demand for the programs will be fully satisfied. How will it affect the recommendations in paragraph 1?

The store may have one of three types of goods Ai; their sales and profit of the store will depend on the type of product and demand conditions. It is assumed that the demand can take three-state Bi . Guaranteed profit is presented in the profit matrix.

| Type | Demand | | |
|------|--------|--------|--------|
|      | B1 | B2 | B3 |
| A1 | 20 | 15 | 10 |
| A2 | 16 | 12 | 14 |
| A3 | 13 | 18 | 15 |

Determine which product should get the store

The bakery bakes bread for sale. The cost of a loaf is 30 pence, it is sold for 40 pence. The table shows demand data for the last 50 days:

| Demand (thousands) | | 10 | 12 | 14 | 16 | 18 |
|---|---|---|---|---|---|---|
| Number of days | | 5 | 10 | 15 | 15 | 5 |

If the loaf is baked, but not sold, the losses amount to 20 pence per item. Using the criteria of Wald, Savage, Hurwitz (with coefficients: 0.4 probability of the maximum purchase, 0.6 – probability of the minimum purchase), determine how many loafs you need to bake a day

The management of the company decides whether to create for new products large-scale production, small enterprise or sell the patent to another firm. The payout, of the company depends on favorable or unfavorable market conditions (table). Based on the payoff tables construct a decision tree

| Projects | Profit under favorable circumstances, $ | Profit under adverse circumstances, $ |
|---|---|---|
| Large-scale production | 200000 | -180000 |
| Small enterprise | 100000 | -20000 |
| Selling the patent | 10000 | 10000 |

**To Finance the project businessman needs to take 15000$ for a one year period. the Bank may lend him the money at 15% or invest in a business with 100% refund of the money but at 9%.**
**The banker knows that 4% of these customers do not return the loan.**
**What to do? To give him a loan or not?**