

### **Extrapolation**

It is known that in 2006 your company's servers were exposed to 350 DDoS attacks, in 2007 – 347, in 2008 – 354, in 2009 – 363, in 2010 – 364, in 2011 – 360, in 2012- 369, in 2013 – 389. As a specialist in information security, using the method of extrapolation on the current average annual growth rate in the number of attacks, make a forcast about the number of DDoS attacks on the servers of your company in 2014.



## **Simulation modeling**

The number of failures of the software when working over the last 100 hours

The number of failures in 1 hour	0	1	2	3	4	5	
Frequency	30	15	20	10	15	10	100

Using a random number, selected using random number generators, it is necessary to simulate the occurrence of failures of the software within 8 hours

## **Iinear interpolation**

Experts of Department of the threats analysis examined 4 companies and got the following results on the dependence between the number of leakage channels and the damage

The number of leakage channels	1	3	7	8
Damage \$	250	435	680	710

Using linear interpolation, find the value of any damages, if the company has 5 channels of leakage.

### **EXPONENTIAL SMOOTHING**

# The number of confidential information leakage from the public authorities of the region for the last 5 months

Month	1	2	3	4	5
Number of conf. inf. leakage	12	8	13	13	17

For the 1st month a forecast of 14 leaks was given (by information security professionals). Using a simple exponential smoothing model, give the forecast on the number of leaks on the 6th month, if the smoothing constant  $\alpha = 0.65$ 

#### **EVALUATION OF THE FORECAST RELIABILITY**

You must provide the CEO report on the reliability of forecasts in the 1 part of the 2014,

provided that

the information security specialists predicted the emergence of 47 new types of malicious programs,

and as a result, the monitoring system discovered 62 new species of malicious program,

41 of them coincided with the experts forecasts.



### **PRODUCTION**

Calculate the average and marginal product of the company, using the following data:

The number of employees	Total production
1	30
2	70
3	100
4	120
5	130

When the decreasing savings from scale occurred?

### **PRODUCTION**

The production technology of firms described by a production function  $Q = K^{0,5}L^2$ ,

- Q the annual production volume,
- K- the volume of capital assets,
- L labor force.

Define marginal product of labor, marginal product of capital and the marginal rate of technical substitution of labor and capital, if K = 9, L = 4.