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.