

1) When a computer goes down, there is a 75% chance that it is due to an overload and 15% chance that it is due to a software problem. There is a 85% chance it is due to overload or software problem.

- a) What is the probability that both these problems are at fault?
- b) What is the probability that there is a software problem but no overload?

2. Among employees of a certain firm 70% know C/C++, 60% know Fortran, and 50% know both languages. What proportion of programmers;

- a) do not know Fortran?
- b) Do not know Fortran and C/C++?
- c) Know C/C++ but not Fortran?
- d) Know Fortran but not C/C++?

3. A primary computer system is backed up by two secondary systems. They operate independently of one another and each is 90% reliable. What is the probability that

- a) All three systems
 - b) At least one system
- will be operable at the time of the launch?

4. A student takes a quiz consisting of 5 multiple choice questions. Each question has 3 possible answers. If a student is guessing the answers at random, and answers to different questions are independent, find the probability of giving at least one correct answer.

5. A sprinkler system has three activation devices, D1, D2 and D3, which operate independently. In case of fire, if at least one device operates correctly, the sprinkler system is turned on. In case of fire, D1, D2 and D3 operate with probabilities 0.8, 0.82 and 0.85 respectively. Find the probability that in case of fire, the sprinkler system will come on.

6. Two towns are connected by a network of communication channels. The probability of a channel's failure-free operation is R , and channel failures are independent. Minimal level of communication between towns can be guaranteed provided at least one path containing properly functioning channels exists. Given the network of the following figure determine the probability that two towns will be able to communicate.

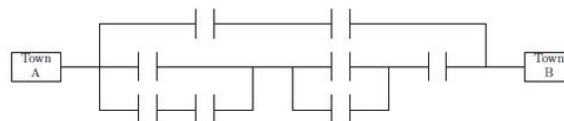


FIGURE 1. Figure for question 6