ITEC451
Activity 16-3

[Integer Programming] Radford Network Corp. plans to design a system to launch a new cloud computing service. The systems consists of seven servers which have been rated according to their (1) CPU power in 64 GHz; (2) memory size (RAM) in 1 TB; (3) maximum number of users it can support in hundred persons; and (4) fault tolerance capability. The services that each server can support are listed in the table below. The five-servers, which will be up as an initial set for the system, must satisfy the following restrictions:

a) At least four servers must be able to support the service 1, at least two servers must be able to support the service 2, and least one server must be able to support the service 3.
b) The average CPU power in 64 GHz must be at least 2 and the average of memory size (RAM) in 1 TB and the average of maximum number of users it can support in hundred persons must be at least 2 as well respectively.
c) If server 3 is included in the initial set, then server 6 can not included in the initial set.
d) If server 2 is included in the initial set, then servers 4 and 5 must both be included in the initial set.
e) Either server 2 or server 3 must be included in the initial set.

Server	Possible Services	CPU power in 64 GHz	Memory (RAM) in 1 TB	Maximum # of users it can support at the same time in hundred persons	Fault tolerance capability
1	1	3	3	1	3
2	3	2	1	3	2
3	1, 2	2	3	2	2
4	2, 3	1	3	3	1
5	1, 2	3	3	3	3
6	2, 3	3	1	2	3
7	1, 2	3	2	2	1

Given these constraints, Radford Network Corp. wants to maximize the fault tolerance capability of the initial set. Formulate an Integer Programming that will help it choose a set of servers in the initial set.