CS 420 – Operating Systems

Homework 4

Cameron Stark

1.)

Snapshot 1: available 12 – 10 = 2

P2 2 <= 2 ? true, available 6

P3 3 <= 6 ? true, available 11

P4 2 <= 11 ? true, available 11

P1 3 <= 11 ? true, available 12

Snapshot 2: available 12 – 11 = 1

P1 3 <= 1 ? false

P2 2 <= 1 ? false

P3 2 <= 1 ? false

P4 2 <= 1 ? false

Snapshot 3: available 12 – 11 - 1

P1 2 <= 1 ? false

P2 3 <= 1 ? false

P3 2 <= 1 ? false

2.) The pros are that if a resource that is required for a process is currently being used it will be blocked and the process will wait, which prevents a deadlock, and also if a process is not able to get enough resources to complete its task it will not take the partial amount of resources which will others that don’t require as many resources to complete their respected tasks. The cons are that it can be wasteful with the utilization of resources for other processes.

3.)

a.) The 4th one will be shared and rotated between them if each resource is assigned to a process therefore no, and if two are currently in the process of running a third will for them to finish and have the resource open up.

b.) such that every process has the capability of having no more then 1 resource, and any extra resources can be used by other processes as needed, thus R > M \* (N-1)

c.) taking the previous equation in part c and solving for n, will get the below equation.

N < (R + M)/ M