Student Name: **Student Number:**

1. Consider a computer system with *one CPU* and *one disk* used to support a database server. To guarantee acceptable QoS levels, at most *two users* are allowed to be logged onto the database system at any one time. A typical transaction requires a total of *400 ms* of CPU time and *800 ms* of disk time. Use MVA and find the following:
   a. Utilization of resources
   b. System throughput
   c. System response time

2. Consider a database server which consists of *one CPU* and *one disk*. The workload of the database server is characterized by two types of transactions: Query and Update. Suppose that the query workload of the database server is described as an open class, with arrival rate equal to *2 tps* and the update workload is described as a closed class, with *N equal to 1.* The service demands of each type of transaction at each resource are given at Table 1. Use MVA and find the system throughput and system response time for query and update transactions.

Workload	Service Demands (sec)	
	CPU	Disk
Query	0.12	0.22
Update	0.28	0.48

Table1. Data for exercise 2