

## Q1:

- a) (3 marks) Describe the reasons that Node.JS is able to outperform traditional web servers like apache while requiring less system resources?

**A: The drawback of traditional web servers using a thread pool is that, for the OS to context switch between threads results in wasted OS resources. On the other hand, Node.js is a single-threaded web server which handles huge number of concurrent requests. When numbers of requests come in (from client), Nginx(single-threaded) handles much more than Apache. And Apache needs to handle more threads when number of concurrent connections goes up, which consumes a lot of memory.**

- b) (0.5 marks) What is the command to install a package named express for use in your current Node.JS project?

**A: \$ npm install express (--save).**

- c) (0.5 marks) What is the command to install a package named express globally?

**A: \$ npm install express -g.**

- d) (0.5 marks) What is the command to install a package named express with the version number 4.16.4?

**A: “ ^ ” is to tell NPM that you area ok with any minor version changes; “ >= ” is that you accept any version equal to or higher than the one you specify; “ no symbol ” you accept only that specific version you specify (e.g. 1.2.1).**