

COS 301 Prelim 1 Fall 2012
Essay Question
Discussion / Essay Question

This question is 10 points of your Prelim 1 exam grade. Submit printed copies in class Tuesday Oct 23 at 11AM (or electronic copies by email if unable to attend class). Answers should be roughly 1-2 printed 1.5-spaced pages; more is acceptable. Cite references if you use them; answering questions with your own knowledge without using references is fine. The grade will be 50% content and 50% technical writing.

1. It has been stated (although not proven in class) that all computer languages are fundamentally equivalent in terms of the problems that they can solve – none are more powerful than a Turing machine. Yet there exist clear reasons to choose one language over another for programming or part of a system.

Select one of the systems listed below indicate what the criteria for selecting a programming language might be and select one more suitable languages. You may simply list criteria but you can also argue for a particular language if desired. You may find reasons to use different languages for different parts of any one system.

A. An online simulated foreign exchange trading market that allows users with virtual money to trade currencies as if they were trading in the real market. Trade prices are determined by real market prices.

B. A system for apple growers that accepts input describing weather on an hourly basis, climactic conditions, soil types, fertility analysis and other factors affecting fruit production in order to provide advice on cultivation, irrigation, pest control, etc. with the goal of maximizing fruit production.

C. A proxy cache for internet service providers designed to cache recently accessed web pages from other domains in order to reduce bandwidth usage.

D. A wifi-linked safety system for natural-gas fired hot water furnaces that monitors water flow, pressure and temperature, gas pressure, heating chamber temperatures, etc. that will shut the system down if needed and send text or email alerts to designated addresses.