Project title: Creating the DeathStarBench

Brief Description of Design Project Goals:

Overview: Microservices are a new paradigm in cloud computing services. Instead of the traditional monolithic application design, where all functionality is included in a single binary, cloud applications under the microservices programming model consist of 100s or 1000s of very small services, each responsible for a small fraction of the overall application functionality. The benefit of microservices is that they are much simpler to develop and debug. The disadvantage is that they complicate scheduling and resource management substantially since the cluster scheduler needs to consider a complex graph of dependencies between microservices. The goal of this project is to design a few representative end-to-end applications based on microservices that we can use to explore new scheduling and resource management mechanisms.

Specific MEng Contribution:
- Starting from a set of applications already developed in the lab, students will design 1-2 end-to-end cloud applications based on microservices and use them to evaluate different scheduling approaches.

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Project Web Site: Contact Christina for more details.

Number of MEng Students Needed: 2 - 3

Required Skills: Experience in C++/Python, Linux, networking, basic distributed systems principles. Experience with distributed programming, e.g., Thrift or Finagle would be preferable, but not required.

Estimated Project Time Frame:
2017-18 Academic Year, Two (2) Semesters