CS15-319 / 15-619
Cloud Computing

Recitation 1
Course Overview and Introduction
August 27th & 29th 2013

http://www.qatar.cmu.edu/~msakr/15319-f13/
Course content is on the Open Learning Initiative. Students are automatically registered:

- [http://oli.cmu.edu](http://oli.cmu.edu)
- **Course Key:** CC-f13
- Access through Blackboard
  - Course Content
Course Objectives

Students will learn:

• the fundamental ideas behind Cloud Computing;
• the basic ideas and principles in data center design and management;
• the resource sharing and virtualization techniques that serve in offering software, computation and storage services on the cloud;
• about cloud storage technologies and relevant distributed file systems;
• the variety of programming models and develop working experience in one of them.
Syllabus

• Updated on webpage
• Provides details on:
  – Course Objectives
  – Learning Outcomes
  – Policies
  – Grading
  – Tentative Schedule
Target Audience

- Technical Majors
- Juniors / Seniors / Masters
- Pre-requisites:
  - 15213 – Introduction to Computer Systems
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Course Organization

Course Units

Course Projects

Weekly Recitations

Discussions on Piazza
<table>
<thead>
<tr>
<th>Unit #</th>
<th>Title</th>
<th>Modules and Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td><strong>Introduction</strong></td>
<td>Introduction to Cloud Computing&lt;br&gt;Building Blocks and Service Models in Cloud Computing</td>
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<tr>
<td>2</td>
<td><strong>Data centers</strong></td>
<td>Historical Perspective&lt;br&gt;Datacenter Components&lt;br&gt;Design Considerations</td>
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<tr>
<td>3</td>
<td><strong>Virtualization</strong></td>
<td>Resource Abstraction&lt;br&gt;Resource Sharing&lt;br&gt;Sandboxing&lt;br&gt;Case Study: Amazon EC2</td>
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<tr>
<td>4</td>
<td><strong>Cloud Storage</strong></td>
<td>Introduction to Storage Systems&lt;br&gt;Cloud Storage Concepts&lt;br&gt;Distributed File Systems&lt;br&gt;Cloud Databases&lt;br&gt;Case Studies: HDFS, PVFS, Cassandra, HBASE, S3</td>
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<tr>
<td>6</td>
<td><strong>Programming Models</strong></td>
<td>Introduction to Programming Models&lt;br&gt;Variety of Programming Models&lt;br&gt;Case Study: MapReduce, Pregel, GraphLab</td>
</tr>
</tbody>
</table>
Projects

• Four Projects (all on AWS):
  0. Primer (Complete by Sunday, September 1st)
  1. Big Data
  2. Elasticity
  3. Cloud Storage
  4. Programming Models
Special Note on Amazon EC2

- Paid Cloud Service – billed by the hour.
- Start a resource only when you need them.
- You can keep one micro instance running 24x7.
- Terminate all other resources as soon as you are done with them.
- Students will be penalized for over usage.
Check AWS Services Charges
Check AWS Services Charges

This Month's Activity as of August 26, 2013

The statement period for this report is August 1 - August 31, 2013. The charges on this page currently show activity through approximately 08/26/2013 10:01:03 GMT.

Select a different statement: Current Statement

Summary

AWS Service Charges $0.00

Usage Charges and Recurring Fees (More Info)

View estimated charges

Total new charges for this statement $0.00

All charges this month will be paid for by AWS Account 9392-2385-3384.

Details

Expand All Services/Legacy All Services

AWS Service Charges $0.00

Amazon Elastic Compute Cloud

EDU_Course_Sakr_CarnegieMellon_Summer2013 Credit -4.94

US East (Northern Virginia) Region

Amazon EC2 running Linux/UNIX

$0.060 per Hr Standard Small (m1.small) Linux/UNIX instance-hour (or partial hour) 4.36 3.60

$0.006 per Micro Instance (t1.micro) instance-hour (or partial hour) (blended price)* 650 Hrs 4.04

Amazon EC2 EBS

$0.080 per GB-month of provisioned storage under monthly free tier (blended price)* 6.785 GB-Mo 0.54

$0.00 for the first 2 million I/O requests under monthly free tier 115,945 I/Os 0.00

Amazon CloudWatch

$0.00 per request - first 1,000,000 requests 7 Requests 0.00

Amazon SimpleDB

Download Usage Report =

$0.00
## Grading

<table>
<thead>
<tr>
<th>Course Elements</th>
<th>#</th>
<th>Weight</th>
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</thead>
<tbody>
<tr>
<td>Projects</td>
<td>4</td>
<td>75%</td>
</tr>
<tr>
<td>OLI Unit Checkpoint Quizzes</td>
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<td>25%</td>
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<tr>
<td>Date</td>
<td>OLI Content</td>
<td>Quiz</td>
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<tr>
<td>26-Aug-13</td>
<td>Unit 1 - Introduction</td>
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<tr>
<td>2-Sep-13</td>
<td>Unit 2 - Datacenters</td>
<td>Unit 1 Checkpoint Quiz</td>
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<td>9-Sep-13</td>
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<td>30-Sep-13</td>
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<td>7-Oct-13</td>
<td>Unit 3 - Virtualization</td>
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<td>28-Oct-13</td>
<td>Unit 4 - Cloud Storage</td>
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<td>Unit 4 Checkpoint Quiz</td>
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<td>11-Nov-13</td>
<td>Unit 5 - Programing Models</td>
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<td>25-Nov-13</td>
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<tr>
<td>2-Dec-13</td>
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<td>Unit 5 Checkpoint Quiz</td>
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15-619 Students

• Students are registered for 3 extra units:
  – Project module additions
  – Stay tuned for details
This Week

• Become familiar with OLI
  – Content (Units 1 through 5)
  – Projects (Primer, 1 through 4)
• Enroll in Piazza
• Create an account on AWS
  – Submit your AWS account number here
• Complete Project Primer by Sunday
• Start reading Unit 1
Questions?