Enterprise Computing

Opportunities for Student Participation

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Purpose & Introduction

• We want to add classes in Enterprise Computing at CSUN
• I am looking for a number of students (grads and undergrads) to join the project and work with me to
  – Set up software and hardware to work on large mainframe systems
  – Learn to program mainframe computers
  – Learn Enterprise computing technologies
  – Take part in programming contest (Master the Mainframe)
  – Create opportunities for themselves to enter a very attractive job market
  – Grads may be able to use this in Comp696/698
  – Undergrads can earn Independent study units (Comp499) to improve GPA
  – Stipends of $500-$1000 per semester based on effort and accomplishments
  – Project will start Oct 2012 and end Dec 2013
Why Learn Enterprise Computing?

• The World economy runs on Enterprise systems
  • Banks, brokerage, stock exchanges
    – Point of sell transactions
  • Travel sites, air line ticketing, supermarket stock control
  • Healthcare & Insurance systems
  • Large manufacturing and commerce systems
  • Government computing

• Enterprise systems run on **Mainframes**
  – Why? Speed, simplicity, reliability, scalability

• Good part of the software is based on legacy code
  – COBOL
What Does a Mainframe Look Like?

z/196 Enterprise System
World’s most powerful mainframe system
Mainframes are Ultra Powerful

Each CPU has 96 cores
5.8 GHz
System executes
50 Billion Instructions /Sec

z/OS®, z/VM®, z/VSE®,
z/TPF, Linux on System z,
AIX®, Linux on System x,
Microsoft Windows
Learning To Program Mainframes

• In this design clinic you will learn to program these mainframes
• Learn many different ways of accessing these systems
  – Remote access
  – Set up local virtualized mainframes
• Learn the “raw skills” needed to do systems programming using green screens(!)
Mainframes Are Greener

• Increasing number of server farms creates an environmental problem
• Mainframes use less energy & generate less heat- better for the environment

http://www.youtube.com/watch?v=VoYatTeav4E&feature=player_embedded
Independent Reports Support Mainframes for Business

• Forrester Research

• Edison Report

• There are many more studies on the benefits of using mainframe computers
  – look for them
## What Software?

- Many different Operating systems
- VM/Transaction processing
- Mainly business applications
- Database applications
- Transaction processing
- Much legacy reuse
  - COBOL
    - Over 220 Billion COBOL lines of code in world’s active code pool

## Who uses it?

- You do
  - ATM transactions
  - Insurance
  - Healthcare
  - Mission critical systems
  - Why
  - Reliability, Availability, Serviceability, Security
  - Scalable
Mainframe Jobs Pay More

Source: [http://www.indeed.com/salary?q1=IBM+cics+programmer&l1=](http://www.indeed.com/salary?q1=IBM+cics+programmer&l1=)

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<thead>
<tr>
<th>Job Title</th>
<th>Salary</th>
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<tbody>
<tr>
<td>Senior Mainframe Programmer Analyst</td>
<td>$109,000</td>
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<tr>
<td>Network Operations Center</td>
<td>$95,000</td>
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<tr>
<td>IT Systems Engineer</td>
<td>$119,000</td>
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<tr>
<td>Mainframe Programmer Analyst</td>
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<td>IT Software Engineer</td>
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<td>Senior Middleware Engineer</td>
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<td>Associate Software Engineer</td>
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<td>System Developer</td>
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<td>US IT Developer Engineer</td>
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<td>Software Engineer Engineer</td>
<td>$86,000</td>
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**In USD as of Aug 26, 2012**

IBM z/OS related job postings for students [www.SystemzJobs.com](http://www.SystemzJobs.com)

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<tr>
<td>Health Systems Analyst Programmer</td>
<td>$64,000</td>
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<tr>
<td>MySQL Database Engineer</td>
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<td>Senior Analytics Engineer</td>
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<td>Database Programmer Analyst</td>
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<td>Senior Software Engineer Developer</td>
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<td>IT Application Programmer</td>
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<td>Python Programmer</td>
<td>$93,000</td>
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<td>Senior Principal Software Engineer</td>
<td>$69,000</td>
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<td>Portal Programmer</td>
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<tr>
<td>Scientific Programmer</td>
<td>$68,000</td>
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<tr>
<td>Computer Analyst</td>
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<tr>
<td>Application Programmer</td>
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<tr>
<td>Coldfusion Programmer</td>
<td>$87,000</td>
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<tr>
<td>Senior MySQL Database Administrator</td>
<td>$100,000</td>
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<tr>
<td>E Commerce Web Developer</td>
<td>$65,000</td>
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Many Free Learning Resources

IBM Red Books cover the whole spectrum
Free PDF Download
Put it in Kindle or iPad
http://www.redbooks.ibm.com/

Many web based learning resources,
Do a Google search using search parameters:
z/OS, IBM Enterprise computing, RDz UT
Mainframe Use is Rising

• When in Doubt…. Follow the Money Trail

• Last year, Warren Buffet (the most famous and most successful investor in US) bought 4.5 million shares in IBM (approx $10 billion)

• 5% of IBM stocks

• Why did he invest?

• Buffet has a knack for finding future growth companies
What Will You Do? What Will You Gain?

• You will gain professional knowledge, build confidence, and be job ready by discovering and learning mainframe technologies. Gain opportunities for internships/jobs- locally and nationwide

• You will help establish an enterprise learning environment at CSUN (lab, Eclipse environment, Rational Development system, RDz/UT Virtual environment)

• You will learn mainframe programming including systems programming
  – Learn z/OS stuff
    • Systems Programming
    • Application Programming (COBOL/C/Java)
    • Transaction processing applications
    • DB2 and IMS database systems

• You will support development of Enterprise Computing Courseware

• You will take part in “Master the Mainframe” competition

• Stipend $500 to $1000 per semester based on effort and accomplishments

• Possible Comp499 (undergraduate) or Comp696/698 credits (graduate)
What Do You Need To Join The Project

• Excellent programming skills
• Ability to make progress on your own
  – Research tools and techniques, find solutions
• About 3.2-3.5 GPA in the Major subjects
• Recommendation email from a professor with whom you took a “serious” programming or SW eng class
  – Prof can email it to me shan@csun.edu
  – Can be from CSUN or elsewhere
How to Join?

• Send me an email (shan@csun.edu) with the following information
  – Subject line should say
    • Enterprise Computing Project- <Your last name>, <First name>
  – Body of the email should have
    • Your contact information (your email, phone #)
    • Name of the professor who is sending the reference and the class (class name, semester)
      – Give email if not from CSUN
  – Attach
    • A few focused statements stating why you are a strong candidate to join the team. This should be no more than 1 page. Bullets with some explanatory text for each bullet will be acceptable.
    • A copy of your DPR in PDF format
Related Videos

• Fastest z/Enterprise systems
  http://www-03.ibm.com/systems/z/hardware/

• What is the IBM enterprise system?
  http://www.youtube.com/watch?v=m9rC4yYbW2E
Amusing: What is a Mainframe

• Part 1: http://www.youtube.com/watch?v=d0-pLcgq-2M

• Part 2: http://www.youtube.com/watch?v=ewsaYde59C0

• How fast is a mainframe? http://www.youtube.com/watch?feature=endscreen&v=DMyKDPFuZoA&NR=1