Alabama Supercomputer Center
Alabama Research and Education Network
The Alabama Supercomputer Center

- Computer related jobs
- Alabama Supercomputer Authority
- How supercomputers are used
Types of Jobs

- Technical Jobs at ASA
  - Web/Database Developer
  - Network Engineers
  - Systems Administrator
  - Technician
  - Help Desk Operators
  - HPC Analyst / HPC Systems Engineer
  - Other Software & Hardware Jobs
Web/Database Applications Developer

- **Web/Database Developer**
  - Involves scripting
    - C#, JavaScript, PHP, Ruby, Python
  - Database development
    - **SQL**: Oracle, MySQL, PostgreSQL
  - Job duties include
    - Developing and maintaining websites (html, scripting, databases)
  - Education: Bachelor’s Degree in Computer Science, Computer Engineering, or Information Systems
  - **Average Salary**: $71,459
  - Source: [http://www.salary.com](http://www.salary.com)
Network Engineers

- Network Engineers (I-III)
  - Designing LAN's and WAN's
    - Install, configure, and maintain AREN’s network (WAN). Consult with clients on LANs
    - Hardware - decide the type of computers (routers, hubs, and firewalls) that will be used to set up a network
    - No formal programming involved. Requires knowledge of router and CSU configurations.
  - Education: Bachelor’s Degree in Computer Engineering or Electrical Engineering
    - Subjects: Math, Science, Computer Classes, Communication Skills
    - Average Salary (I): $59,022
    - Average Senior (III): $90,543
Systems Administrator

- **Job Duties Include**
  - **Install** new software releases and system **upgrades**, evaluate and install **patches**, resolve software related problems, perform system **backups** and **recovery**, configure servers (web / email server) for Internet services, etc., **secure** systems (monitor for hackers)

- **Education:** Possibly a bachelor’s degree in a computer field (CS, CIS, CPE, etc.)
  - Subjects: Math, Science, Computer classes, Communication skills
  - Average Salary: **$71,813**
Technicians

- Provide hardware/software technical support
  - Maintain, analyze, **troubleshoot**, and repair computers, upgrade or replace hardware and software systems, make sure users can **access computers/printers** over the network, travel to client sites and install/configure hardware (routers, csu’s)

- **Education:** Associate’s degree in a computer field (CS, CIS, MIS, Electronics, etc.)
  - Subjects: Math, Science, Computer classes, Communication skills
  - Average Salary (I): $40,552
Help Desk Operator

- Provide support to clients on a variety of issues
  - Identify, research, and resolve technical problems; respond to telephone calls for technical support

- Education: Associate’s degree in a computer field (CS, CIS, MIS, Electronics, etc.)
  - Subjects: Math, Science, Computer classes, Communication skills
  - Average Salary (assistant): $39,666
HPC Analyst
HPC Systems Engineer

- Assist college professors & research scientists in leveraging HPC resources to perform research
- Education: Master’s or Doctorate in STEM related field
  - Subjects: Math, Science, Computer Science, Programming, Communication Skills
- Examples:
  - Researchers use computers to calculate pollution
  - Virtual Physics Modeling
  - HPC Application Tuning
  - Research & Development Average Salary (V): $103,541
Other Software and Hardware Jobs

- **Create Video Games**
  - Wii, PS, Xbox

- **Other types of software development**
  - i.e. scientific, or business applications
  - embedded software

- **Design Computers (make them smaller and faster)**
  - Computers (PC Boards)
    - Modems, Routers – Adtran, Cisco
    - Personal Computers - IBM, Dell, HP/Compaq, Intel

- **Computer Graphic Artists / Graphic Design**
  - Sometimes falls under web development & mobile applications

- **Sales & Management**
In 1991 the average wage for a male American worker with a bachelor's degree was 2.5 times that of a high-school drop-out; now (2013) the ratio is 3.4 to 1 (Source: BLS).
Computer Related Skillset and Job Attainment

- Go to college
- Take math classes
- Take computer classes
- Contribute/develop software
- Learn a programming language
- Try doing computer projects outside of class
Alabama Supercomputer Authority

- Supercomputer resources for academic use
- Network connections to schools
- Alabama Virtual Library (AVL)
- Alabama Learning Exchange (ALEX)
- ACCESS distance learning
- Software development
- Web & Email hosting
Dense Memory Cluster (DMC)

- 1,800 x86-64 Processors (AMD/Intel)
  - 16,462 GFLOPS Peak
- Shared/Distributed Memory Architecture
  - InfiniBand high speed/low latency network
- Memory (24-128GB per node)
  - 10,136 GB
- Disk Storage
  - 225 TB internal, 15 TB shared
- nVidia T10, T20, K20 GPUs
Alabama Supercomputer Applications

- Materials Science
- Computational Fluid Dynamics
- Computer Science
- Medical
- Social Science
- Education
- Electromagnetics
- Computational Chemistry
- Structural Dynamics
- Physics
- Earth Science
Supercomputer Accounts

- Accounts are free for faculty and students at public schools and universities in Alabama.

- The exception is that work being done by university researchers under contract to commercial companies is not free.

- Students can get accounts that last while they are in school, or class accounts that last for a single semester.
There are about 6,080 modeling and simulation jobs in Alabama (2004 survey by B. Schroer).

There are network and system administration jobs at companies, schools, and government agencies throughout the state.

In October 2014, there were over 150 of the jobs mentioned in this presentation listed at www.jobcentral.com just in Huntsville.
Alabama
Supercomputer
Authority

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