TRENDS IN SOFTWARE TECHNOLOGIES: the DEVELOPER's VIEWPOINT

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TOPICS

- WHO IS A DEVELOPER: the BUREAU of LABOR STATISTICS

- TOP SOFTWARE TECHNOLOGIES

- THE (MODEST) SURGE OF FUNCTIONAL PROGRAMMING

- The DEVELOPER: A SATISFIED WORKER

BUREAU Of LABOR STATISTICS(1) -- Computer and Information Technologies Workers

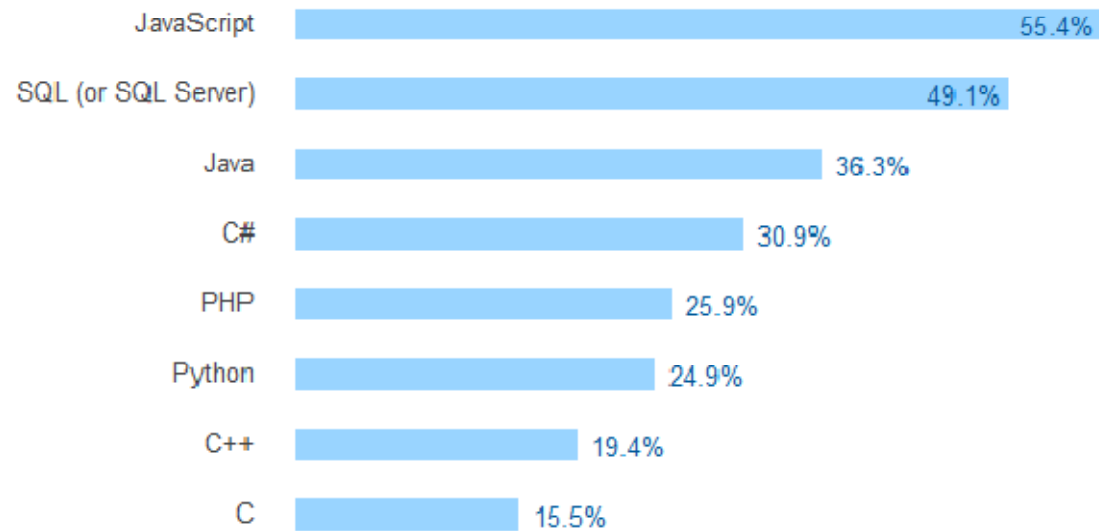|	
Computer and Information Research Scientists	Computer and information research scientists invent and design new approaches to computing technology and find innovative uses for existing technology. They study and solve complex problems in computing for business, medicine, science, and other fields.
Computer Network Architects	Computer network architects design and build data communication networks, including local area networks (LANs), wide area networks (WANs), and intranets. These networks range from small connections between two offices to next-generation networking capabilities such as a cloud infrastructure that serves multiple customers.
Computer Programmers	Computer programmers write and test code that allows computer applications and software programs to function properly. They turn the program designs created by software developers and engineers into instructions that a computer can follow.
Computer Support Specialists	Computer support specialists provide help and advice to people and organizations using computer software or equipment. Some, called computer network support specialists, support information technology (IT) employees within their organization. Others, called computer user support specialists, assist non-IT users who are having computer problems.
Computer Systems Analysts	Computer systems analysts study an organization's current computer systems and procedures and design information systems solutions to help the organization operate more efficiently and effectively. They bring business and information technology (IT) together by understanding the needs and limitations of both.
Database Administrators	Database administrators (DBAs) use specialized software to store and organize data, such as financial information and customer shipping records. They make sure that data are available to users and are secure from unauthorized access.

Bureau of Labor Stats (2)

Information Security Analysts	Information security analysts plan and carry out security measures to protect an organization's computer networks and systems. Their responsibilities are continually expanding as the number of cyberattacks increases.
Network and Computer Systems Administrators	Computer networks are critical parts of almost every organization. Network and computer systems administrators are responsible for the day-to-day operation of these networks.
Software Developers	Software developers are the creative minds behind computer programs. Some develop the applications that allow people to do specific tasks on a computer or another device. Others develop the underlying systems that run the devices or that control networks.
Web Developers	Web developers design and create websites. They are responsible for the look of the site. They are also responsible for the site's technical aspects, such as its performance and capacity, which are measures of a website's speed and how much traffic the site can handle. In addition, web developers may create content for the site.

BLS (3)

- SALARY RANGE

  RESEARCH SCIENTISTS 150K

  WEB Developers and

  System Administrators 70K

- MEAN SALARY : 81K (vs 36K for all jobs)

- JOB GROWTH PROJECTION

  2014   3.9 MILLION

  2024   4.4 MILLION

TOP SOFTWARE TECHNOLOGIES (49,000 respondents)

Technology	Percentage
JavaScript	55.4%
SQL (or SQL Server)	49.1%
Java	36.3%
C#	30.9%
PHP	25.9%
Python	24.9%
C++	19.4%
C	15.5%

JAVASCRIPT, SQL, JAVA

- JAVASCRIPT: SCRIPTING LANGUAGE

- SQL: DATABASE LANGUAGE

- JAVA: PROGRAMMING LANGUAGE

COMPUTER LANGUAGES (1)

- SCRIPTING LANGUAGE

  "small" programs in a run-time environments

  Javascript, used by web browsers, "interpreted"

  Writing, debugging, and testing easy

- DATABASE LANGUAGE.

  SQL is the "DEFACTO" DATABASE LANGUAGE
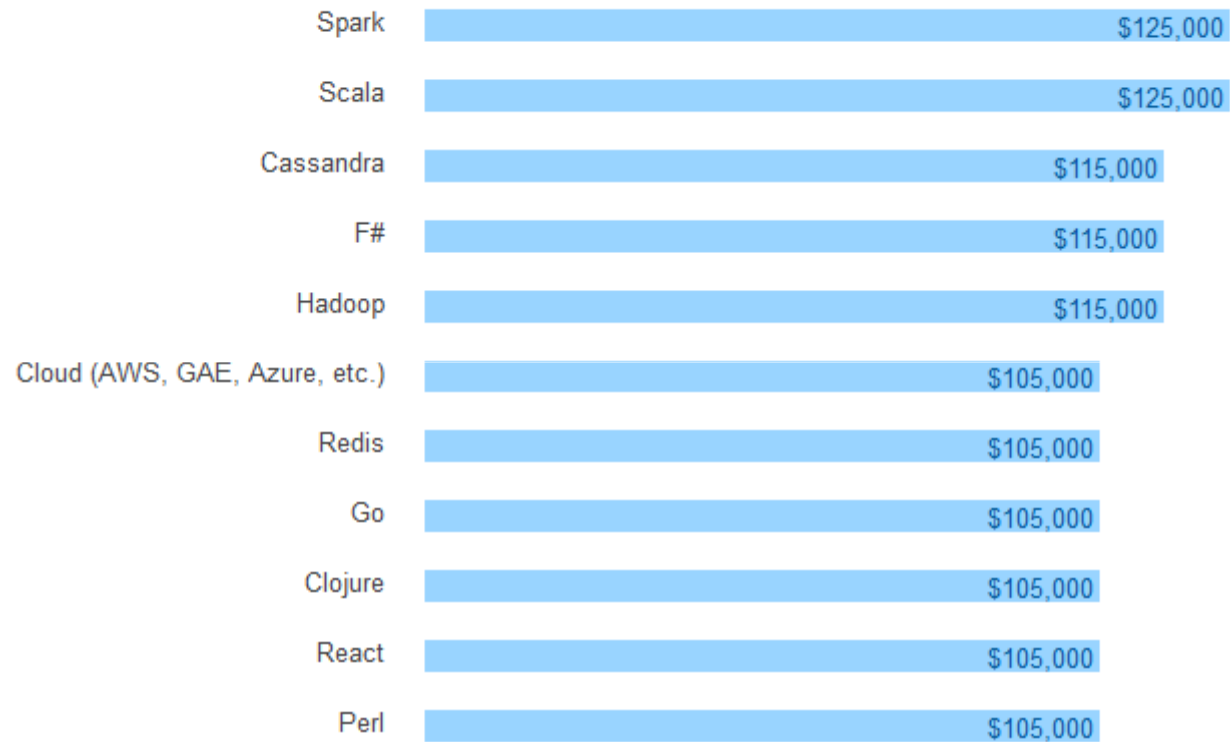
  CREATES DATABASES

  RETRIEVES DATA

  UPDATES DATA

  DATABASES ARE CENTRAL to most INFORMATION SYSTEMS

COMPUTER LANGUAGES (2). JAVA

- Java released in 1995 by Sun Microsystems (Today part of Oracle)
- USAGE

    website development (frontend and backend),

    mobile development (Android)

    large corporate programs.

- Well-Designed

    extensive library for graphical applications

    often taught as first programming language

TOP PAYING TECH

Technology	Salary
Spark	$125,000
Scala	$125,000
Cassandra	$115,000
F#	$115,000
Hadoop	$115,000
Cloud (AWS, GAE, Azure, etc.)	$105,000
Redis	$105,000
Go	$105,000
Clojure	$105,000
React	$105,000
Perl	$105,000

FUNCTIONAL PROGRAMMING (1)

- SCALA, CLOJURE, F#

  =(in part) functional programming languages

- WOULD INCREASE SPEED OF PROGRAM

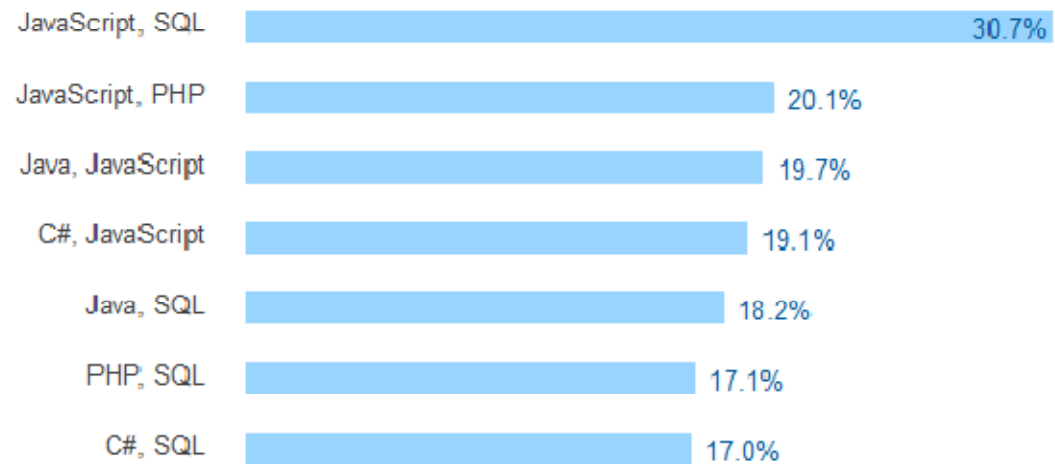 BY PARALLEL COMPUTATIONS

- So FAR NOT POPULAR

  UNUSUAL PARADIGM FOR PROGRAMMERS

  MOORE's LAW: doubling of the POWER of
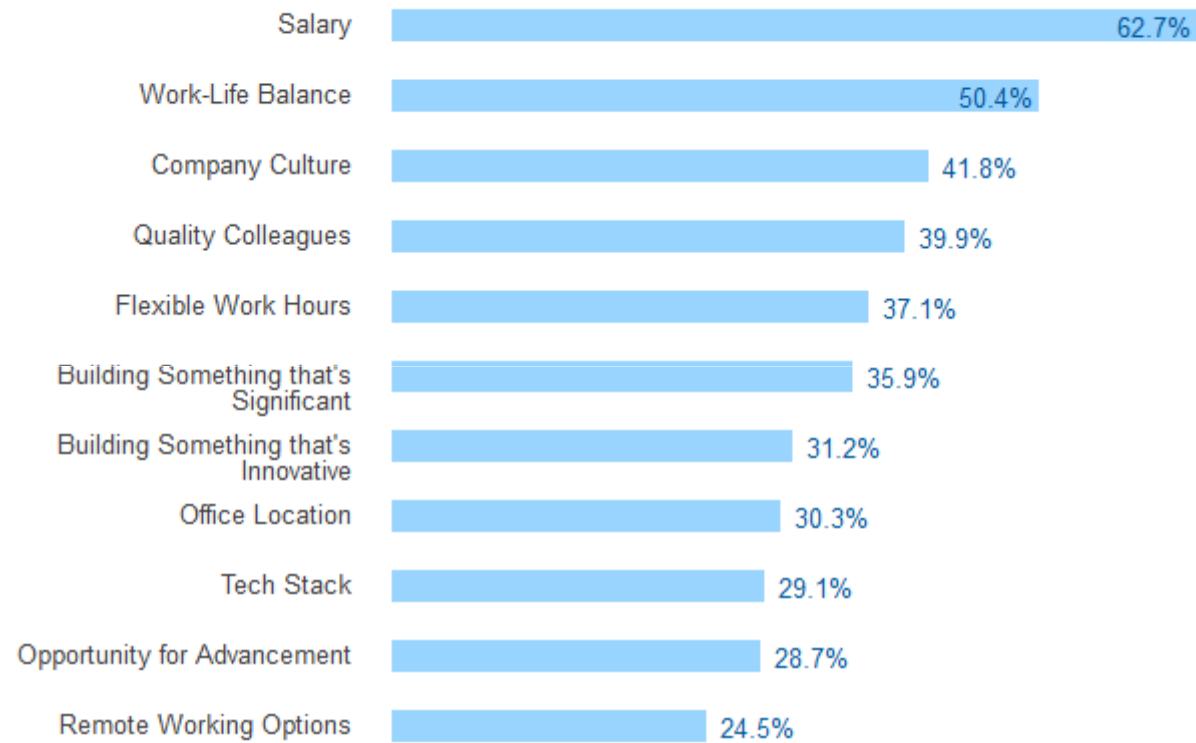 TRADITIONAL PROCESSORS EVERY TWO YEARS

FUNCTIONAL PROGRAMMING (2)

- SURGING (in a MODEST WAY) –WHY?
- END OF MOORE's LAW
  - NEED TO INCREASE SPEED by PARALLELISM
- BIG DATA PROCESSING REQUIRES LOT of POWER
- HARDWARE PARALLELISM: MULTIPLE CORE PROCESSORS
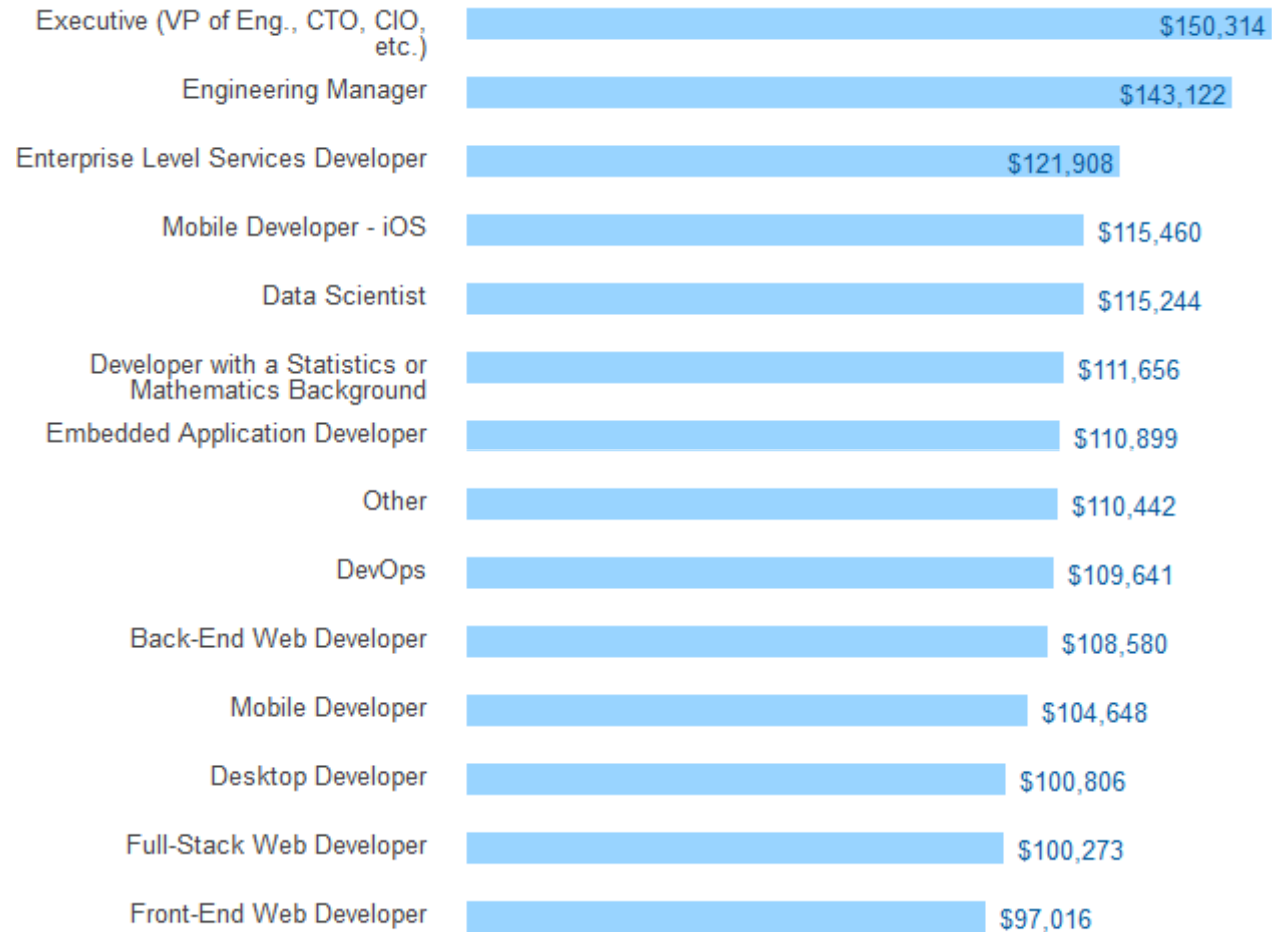- PARALLEL ARCHITECTURE: HADOOP

CORRELATED TECHNOLOGIES

JOB PRIORITIES

SALARIES

Role	Salary
Executive (VP of Eng., CTO, CIO, etc.)	$150,314
Engineering Manager	$143,122
Enterprise Level Services Developer	$121,908
Mobile Developer - iOS	$115,460
Data Scientist	$115,244
Developer with a Statistics or Mathematics Background	$111,656
Embedded Application Developer	$110,899
Other	$110,442
DevOps	$109,641
Back-End Web Developer	$108,580
Mobile Developer	$104,648
Desktop Developer	$100,806
Full-Stack Web Developer	$100,273
Front-End Web Developer	$97,016

CONCLUSION

- TOP SOFTWARE TECHNOLOGIES

    JAVASCRIPT,   SQL,   JAVA

- MODEST SURGE OF FUNCTIONAL PROGRAMMING

        END of MOORE's LAW ?

        BIG DATA DEMANDs

        NEW HARDWARE

DEVELOPERS

        HIGH SALARIES

        PROJECTED GROWTH

        DESIRABLE WORK FEATUES