



TORQ Analysis of Computer Programmers to Database Administrators

INPUT SECTION:

Transfer	Title	O*NET	Filters		
From Title:	Computer Programmers	15-1021.00	Abilities:	Importance Level: 50	Weight: 1
To Title:	Database Administrators	15-1061.00	Skills:	Importance Level: 69	Weight: 1
Labor Market Area:	Maine Statewide		Knowledge:	Importance Level: 69	Weight: 1

OUTPUT SECTION:

Grand TORQ:

83

Ability TORQ		Skills TORQ		Knowledge TORQ	
Level	 86	Level	 73	Level	 91

Gaps To Narrow if Possible				Upgrade These Skills				Knowledge to Add			
Ability	Level	Gap	Impt	Skill	Level	Gap	Impt	Knowledge	Level	Gap	Impt
Far Vision	48	38	50	Troubleshooting	74	4	76	No Knowledge Upgrades Required!			
Visualization	57	23	56	Active Listening	68	3	69				
Finger Dexterity	46	21	53								
Speech Clarity	50	13	65								
Mathematical Reasoning	50	15	56								
Speech Recognition	50	13	59								
Problem Sensitivity	60	9	84								
Category Flexibility	57	11	65								
Perceptual Speed	46	12	56								
Fluency of Ideas	57	9	65								
Flexibility of Closure	55	7	68								
Selective Attention	50	8	59								
Originality	57	4	72								
Written Comprehension	69	3	75								
Oral Expression	64	2	72								
Near Vision	60	1	75								

LEVEL and IMPT (IMPORTANCE) refer to the Target Database Administrators. GAP refers to level difference between Computer Programmers and Database Administrators.

ASK ANALYSIS



Ability Level Comparison - Abilities with importance scores over 50

Description	Computer Programmers	Database Administrators	Importance
Problem Sensitivity	51	60	84
Deductive Reasoning	59	59	81
Information Ordering	67	57	81
Inductive Reasoning	55	55	78
Written Comprehension	66	69	75
Near Vision	59	60	75
Oral Comprehension	66	60	72
Oral Expression	62	64	72
Originality	53	57	72
Flexibility of Closure	48	55	68
Written Expression	66	57	65
Fluency of Ideas	48	57	65
Category Flexibility	46	57	65
Speech Clarity	37	50	65
Selective Attention	42	50	59
Speech Recognition	37	50	59
Mathematical Reasoning	35	50	56
Perceptual Speed	34	46	56
Visualization	34	57	56
Finger Dexterity	25	46	53
Far Vision	10	48	50

Skill Level Comparison - Abilities with importance scores over 69

Description	Computer Programmers	Database Administrators	Importance
Active Learning	77	64	78
Troubleshooting	70	74	76
Critical Thinking	82	65	72
Active Listening	65	68	69
Coordination	62	62	69

Knowledge Level Comparison - Knowledge with importance scores over 69

Description	Computer Programmers	Database Administrators	Importance
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Computers and Electronics	89	85	81
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Experience & Education Comparison

Related Work Experience Comparison			Required Education Level Comparison		
Description	Computer Programmers	Database Administrators	Description	Computer Programmers	Database Administrators
10+ years	20%	0%	Doctoral	17%	0%
8-10 years	0%	14%	Professional Degree	0%	0%
6-8 years	2%	14%	Post-Masters Cert	0%	0%
4-6 years	0%	31%	Master's Degree	0%	1%
2-4 years	34%	23%	Post-Bachelor Cert	0%	0%
1-2 years	29%	4%	Bachelors	63%	50%
6-12 months	3%	6%	AA or Equiv	4%	3%
3-6 months	0%	5%	Some College	10%	41%
1-3 months	5%	0%	Post-Secondary Certificate	0%	0%
0-1 month	0%	0%	High School Diploma or GED	0%	3%
None	3%	0%	No HSD or GED	3%	0%

Computer Programmers	Database Administrators
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Most Common Educational/Training Requirement:

Bachelor's degree	Bachelor's degree
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Job Zone Comparison

<p>4 - Job Zone Four: Considerable Preparation Needed A minimum of two to four years of work-related skill, knowledge, or experience is needed for these occupations. For example, an accountant must complete four years of college and work for several years in accounting to be considered qualified.</p> <p>Most of these occupations require a four - year bachelor's degree, but some do not.</p> <p>Employees in these occupations usually need several years of work-related experience, on-the-job training, and/or vocational training.</p>	<p>4 - Job Zone Four: Considerable Preparation Needed A minimum of two to four years of work-related skill, knowledge, or experience is needed for these occupations. For example, an accountant must complete four years of college and work for several years in accounting to be considered qualified.</p> <p>Most of these occupations require a four - year bachelor's degree, but some do not.</p> <p>Employees in these occupations usually need several years of work-related experience, on-the-job training, and/or vocational training.</p>
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Tasks

Computer Programmers	Database Administrators
<p style="text-align: center; background-color: #f2f2f2; margin: -5px -5px 5px -5px;">Core Tasks</p> <p>Generalized Work Activities:</p> <ul style="list-style-type: none"> Interacting With Computers - Using computers and computer systems (including hardware and software) to program, write software, set up functions, enter data, or process information. Organizing, Planning, and Prioritizing Work - Developing specific goals and plans to prioritize, organize, and accomplish your work. Making Decisions and Solving Problems - Analyzing information and evaluating results to choose the best solution and 	<p style="text-align: center; background-color: #f2f2f2; margin: -5px -5px 5px -5px;">Core Tasks</p> <p>Generalized Work Activities:</p> <ul style="list-style-type: none"> Interacting With Computers - Using computers and computer systems (including hardware and software) to program, write software, set up functions, enter data, or process information. Processing Information - Compiling, coding, categorizing, calculating, tabulating, auditing, or verifying information or data. Analyzing Data or Information - Identifying the underlying principles, reasons, or facts of information by



solve problems.

- Getting Information - Observing, receiving, and otherwise obtaining information from all relevant sources.
- Updating and Using Relevant Knowledge - Keeping up-to-date technically and applying new knowledge to your job.

Specific Tasks

Occupation Specific Tasks:

- Assign, coordinate, and review work and activities of programming personnel.
- Collaborate with computer manufacturers and other users to develop new programming methods.
- Compile and write documentation of program development and subsequent revisions, inserting comments in the coded instructions so others can understand the program.
- Conduct trial runs of programs and software applications to be sure they will produce the desired information and that the instructions are correct.
- Consult with and assist computer operators or system analysts to define and resolve problems in running computer programs.
- Consult with managerial, engineering, and technical personnel to clarify program intent, identify problems, and suggest changes.
- Correct errors by making appropriate changes and rechecking the program to ensure that the desired results are produced.
- Investigate whether networks, workstations, the central processing unit of the system, or peripheral equipment are responding to a program's instructions.
- Perform or direct revision, repair, or expansion of existing programs to increase operating efficiency or adapt to new requirements.
- Perform systems analysis and programming tasks to maintain and control the use of computer systems software as a systems programmer.
- Prepare detailed workflow charts and diagrams that describe input, output, and logical operation, and convert them into a series of instructions coded in a computer language.
- Train subordinates in programming and program coding.
- Write or contribute to instructions or manuals to guide end users.
- Write, analyze, review, and rewrite programs, using workflow chart and diagram, and applying knowledge of computer capabilities, subject matter, and symbolic logic.
- Write, update, and maintain computer programs or software packages to handle

breaking down information or data into separate parts.

- Communicating with Supervisors, Peers, or Subordinates - Providing information to supervisors, co-workers, and subordinates by telephone, in written form, e-mail, or in person.
- Identifying Objects, Actions, and Events - Identifying information by categorizing, estimating, recognizing differences or similarities, and detecting changes in circumstances or events.

Specific Tasks

Occupation Specific Tasks:

- Approve, schedule, plan, and supervise the installation and testing of new products and improvements to computer systems such as the installation of new databases.
- Develop data model describing data elements and how they are used, following procedures and using pen, template or computer software.
- Develop methods for integrating different products so they work properly together such as customizing commercial databases to fit specific needs.
- Develop standards and guidelines to guide the use and acquisition of software and to protect vulnerable information.
- Establish and calculate optimum values for database parameters, using manuals and calculator.
- Identify and evaluate industry trends in database systems to serve as a source of information and advice for upper management.
- Modify existing databases and database management systems or direct programmers and analysts to make changes.
- Plan, coordinate and implement security measures to safeguard information in computer files against accidental or unauthorized damage, modification or disclosure.
- Review procedures in database management system manuals for making changes to database.
- Review project requests describing database user needs to estimate time and cost required to accomplish project.
- Review workflow charts developed by programmer analyst to understand tasks computer will perform, such as updating records.
- Revise company definition of data as defined in data dictionary.
- Select and enter codes to monitor database performance and to create production database.
- Specify users and user access levels for each segment of database.



programs or software packages to perform specific jobs such as tracking inventory, storing or retrieving data, or controlling other equipment.

Detailed Tasks

Detailed Work Activities:

- adjust computer operation system
- analyze workflow
- assist co-workers with software problems
- communicate technical information
- configure computers in industrial or manufacturing setting
- consult with customers concerning needs
- consult with managerial or supervisory personnel
- design computer hardware or software interface
- design computer programs or programming tools
- develop computer performance standards
- develop mathematical or computer languages
- develop or maintain databases
- develop records management system
- develop tables depicting data
- direct and coordinate activities of workers or staff
- distinguish details in graphic arts material
- encode equations for processing
- evaluate computer system user requests or requirements
- follow data security procedures
- follow data storage procedures
- identify color or balance
- implement computer system changes
- install computer programs
- maintain client-server database
- maintain or repair computers or related equipment
- monitor computer operation
- prepare instruction manuals
- prepare technical reports or related documentation
- prepare workflow chart
- program computers for electronic engineering applications
- program computers for management analysis applications
- program computers for medical applications
- program computers for social science applications
- program computers using existing software
- program mainframe computer
- provide customer service

- Test programs or databases, correct errors and make necessary modifications.
- Train users and answer questions.
- Work as part of a project team to coordinate database development and determine project scope and limitations.
- Write and code logical and physical database descriptions and specify identifiers of database to management system or direct others in coding descriptions.

Detailed Tasks

Detailed Work Activities:

- adjust computer operation system
- analyze programs using workflow chart or diagram
- communicate technical information
- confer with personnel to discuss security violations or programming
- design data security systems
- develop computer performance standards
- develop management control systems
- develop mathematical simulation models
- develop or maintain budgeting databases
- develop or maintain databases
- develop records management system
- develop tables depicting data
- establish and maintain relationships with team members
- estimate time needed for project
- evaluate computer system user requests or requirements
- follow data security procedures
- follow data storage procedures
- implement computer system changes
- install computer programs
- install hardware, software, or peripheral equipment
- install security measures
- maintain client-server database
- maintain or repair computers or related equipment
- monitor computer operation
- operate computer networks
- plan computer security measures
- prepare cost estimates
- prepare instruction manuals
- program mainframe computer
- provide technical computer training
- provide technical support to computer users
- revise or correct errors in computer programs, software, or systems
- test computer programs or systems



- provide customer service
- provide technical computer training
- provide technical support to computer users
- recommend software or hardware purchases
- resolve computer program operational problems
- resolve symbolic formulations in data processing applications
- revise or correct errors in computer programs, software, or systems
- supervise programming personnel
- test computer programs or systems
- test data communications hardware or software
- use computer application flow charts
- use computer graphics design software
- use computer programming language
- use computers to enter, access or retrieve data
- use creativity in graphics
- use differential equations in computer programming
- use geographical information system (GIS) software
- use graphic arts techniques
- use interpersonal communication techniques
- use knowledge of mainframe computers
- use object-oriented computer programming techniques
- use project management techniques
- use relational database software
- use spreadsheet software
- use structural analysis techniques to analyze computer systems
- use word processing or desktop publishing software
- write computer software, programs, or code
- write documentation for computer programming

Technology - Examples

Analytical or scientific software

- SAS software
- Simulation program with integrated circuit emphasis SPICE

Application server software

- Application server software
- IBM WebSphere

Charting software

- Microsoft Office Visio

- understand computer equipment operating manuals
- use computer application flow charts
- use computer networking technology
- use computer programming language
- use computers to enter, access or retrieve data
- use geographical information system (GIS) software
- use interpersonal communication techniques
- use knowledge of mainframe computers
- use mathematical or statistical methods to identify or analyze problems
- use object-oriented computer programming techniques
- use project management techniques
- use relational database software
- use spreadsheet software
- use structural analysis techniques to analyze computer systems
- use word processing or desktop publishing software
- work as a team member
- write administrative procedures services manual
- write computer software, programs, or code
- write documentation for computer programming

Technology - Examples

Access software

- Access management software

Analytical or scientific software

- Test data generator software

Application server software

- IBM WebSphere

Backup or archival software

- Acronis Recovery Expert
- Backup and archival software
- BMC Catalog Manager
- BMC Recovery Manager RMAN

- Database cloning software

- Hewlett-Packard HP Omniback II

- IBMADSTAR

- Legato NetWorker

- Oracle Data Guard



Compiler and decompiler software

- Code generator software
- Command interpreters
- Compilers
- Decompilers
- Incremental compiler software
- Inline code expander software
- Interpreter software
- Just-in-time compiler
- Mixed code generator
- One pass compiler software
- Partial class generator software
- Retargetable compiler
- Stage compiler
- Threaded code compiler
- Xerces2 Java Parser

Configuration management software

- IBM Rational ClearCase
- Revision control software

Content workflow software

- Workflow software

Data base management system software

- CAST SQL Builder
- Computer Associates integrated data management system CA-IDMS
- Data definition language DDL
- Data manipulation language DML
- dBase Plus
- IBM DB2
- Microsoft Access
- Microsoft SQL Server
- mSQL software
- MySQL software
- Oracle procedural language/structured query language PL/SQL

- Storage management software
- Systems and data disaster recovery software
- VERITAS NetBackup

Clustering software

- Cluster server software
- Oracle Real Application Cluster RAC

Computer based training software

- Computer based training software

Configuration management software

- Deployment software

Data base management system software

- BMC Change Manager
- Catalog navigation software
- Concurrency control software
- Data definition language DDL
- Data manipulation language DML
- Data transformation services DTS software
- Database design software
- Database management software
- Embarcadero Technologies DBArtisan
- IBM DB2
- Index tuning software
- Microsoft SQL Server
- MySQL software
- Oracle DBMS
- Oracle Enterprise Manager
- Oracle procedural language/structured query language PL/SQL
- Quest Central
- Relational database management software
- Sybase Replication Server
- Sybase SQL Server

Data base reporting software

- Oracle Reports
- Oracle SQL Loader



- Pick software

- Relational database management software

- Sybase SQL Server

Data base reporting software

- ReCrystallize Crystal Reports

Data base user interface and query software

- Structured query language SQL

Development environment software

- A programming language APL

- Activity based costing ABC

- Ada

- Adobe Systems Adobe PostScript

- Algorithmic language ALGOL

- American National Standards Institute ANSI C

- Assembler

- AWK

- B

- Basic combined programming language BCPL

- Beginner's all-purpose symbolic instruction code BASIC

- Borland Delphi software

- C

- Class oriented ring associated language CORAL

- Clipper

- CLU

- Code munger software

- Combined programming language CPL

- Common business oriented language COBOL

- Eclipse software

- Extensible markup language XML

- Extensible stylesheet language XSL

- Flow-Matic

- Formula translation/translator FORTRAN

- FORTH

- Oracle SQL Plus

- ReCrystallize Crystal Reports

Data base user interface and query software

- Database query language

- Structured query language SQL

Development environment software

- C

- Microsoft Visual Basic

- Microsoft Visual Basic Scripting Edition VBScript

- Prolog

- Restructured extended executor REXX

Enterprise application integration software

- Enterprise application integration EAI software

Enterprise resource planning ERP software

- Enterprise resource planning ERP software

- SAP software

Information retrieval or search software

- Data validation software

Metadata management software

- AllFusion ERwin Data Modeler

- Data dictionary software

- Data mapping software

- Data modeling software

- IBM Rational Data Architect

- Visual Paradigm DB Visual ARCHITECT

Network security or virtual private network VPN management software

- Database security software

Object or component oriented development software

- Microsoft Visual Basic .NET

- Microsoft Visual C# .NET

- Practical extraction and reporting language Perl

- Sun Microsystems Java

- Sybase PowerBuilder

Object oriented data base management software



- Haskell
- Icon
- Interface definition language IDL
- J
- Kernel
- List processing language LISP
- Logo
- Microsoft .NET Framework
- Microsoft Extensible Application Markup Language (XAML)
- Microsoft Visual Basic
- Microsoft Visual Basic Scripting Edition VBScript
- Microsoft Visual Studio
- ML
- MUMPS M
- Parlog
- Pascal
- Programming language one PL/I
- Prolog
- Restructured extended executor REXX
- Ruby
- Scheme
- Source code migration software
- String oriented symbolic language SNOBOL
- Symantec Visual Caf
- Tier generator software
- Web service definition language WDSL
- Document management software
 - Virage VS Archive
- Enterprise resource planning ERP software
 - Advanced business application programming ABAP
- Graphical user interface development software
 - Basis BBx VisualPRO/5

- IBM Informix
- Object database management system ODBMS software
- PostgreSQL software

Operating system software

- DOS shell script
- Shell script

Presentation software

- Microsoft PowerPoint

Program testing software

- Computer Associates Log Analyzer
- Database testing software

Requirements analysis and system architecture software

- Database capacity planning software

Spreadsheet software

- Microsoft Excel

Storage networking software

- Storage area network SAN software

Transaction security and virus protection software

- Encryption software

Web platform development software

- Hypertext markup language HTML
- Oracle Designer

Word processing software

- Microsoft Word

Tools - Examples

- Desktop computers
- Redundant array of independent disks RAID systems
- Hard disk drives
- Mainframe computers
- Notebook computers
- Tape libraries



- Graphical user interface GUI development software

Object or component oriented development software

- BETA
- C++
- Categorical abstract machine language CAML
- Common extended self-containing prolog CESP
- DRAGOON software
- E++
- Eiffel
- Emerald
- Extended self-containing Prolog ESP
- Greatis Object Inspector
- Lisp object-oriented programming system LOOPS
- Microsoft Visual Basic.NET
- Microsoft Visual C# .NET
- Modula
- Oberon
- Objective-C
- Oblog
- Polka
- PowerSoft PowerBuilder
- Practical extraction and reporting language Perl
- Python
- Sather
- Self
- Simulation language SIMULA
- Smalltalk
- Sun Microsystems Java

Object oriented data base management software

- Microsoft Visual FoxPro

Operating system software

- Bourne Shell



- Job control language JCL

Program testing software

- Debugging software
- Low-level debugger software
- Source code editor software

- Symbolic debugger software

Project management software

- Microsoft Project

Requirements analysis and system architecture software

- Unified modeling language UML

Spreadsheet software

- Microsoft Excel

Transaction server software

- Customer information control system CICS software

Web platform development software

- Adobe Systems Adobe Cold Fusion
- Adobe Systems Adobe Flex
- Apache Struts
- Asynchronous JavaScript and XML AJAX
- Cascading Style Sheets CSS
- Hypertext markup language HTML
- JavaScript
- Microsoft Active Server Pages ASP
- Microsoft ASP.NET
- Microsoft Silverlight
- Microsoft Visual C#
- PHP: Hypertext Preprocessor
- Ruby on Rails
- Sun Microsystems Java server pages JSP

Word processing software

- Microsoft Word

Tools - Examples

- Computer servers
- Desktop computers



- Mainframe computers
- Serial port cards

Labor Market Comparison

Description	Computer Programmers	Database Administrators	Difference
Median Wage	\$ 58,240	\$ 60,260	\$ 2,020
10th Percentile Wage	\$ 39,650	\$ 36,360	\$(3,290)
25th Percentile Wage	N/A	N/A	N/A
75th Percentile Wage	\$ 77,420	\$ 77,990	\$ 570
90th Percentile Wage	\$ 95,710	\$ 93,840	\$(1,870)
Mean Wage	\$ 62,540	\$ 61,700	\$(840)
Total Employment - 2007	720	300	-420
Employment Base - 2006	761	329	-432
Projected Employment - 2016	670	395	-275
Projected Job Growth - 2006-2016	-11.9 %	20.1 %	32.0 %
Projected Annual Openings - 2006-2016	16	11	-5

National Job Posting Trends

Trend for Computer Programmers

Trend for Database Administrators

Job Trends from Indeed.com

— Computer Programmer — Database Administrator

Data from [Indeed](http://Indeed.com)



Recommended Programs

Computer and Information Sciences, General

Computer and Information Sciences, General. A general program that focuses on computing, computer science, and information science and systems as part of a broad and/or interdisciplinary program. Such programs are undifferentiated as to title and content and are not to be confused with specific programs in computer science, information science, or related support services.

Institution	Address	City	URL
University of Maine at Augusta	46 University Dr	Augusta	www.uma.maine.edu/
University of Maine at Augusta	46 University Dr	Augusta	www.uma.maine.edu/
University of Maine at Augusta	46 University Dr	Augusta	www.uma.maine.edu/
Husson College	One College Circle	Bangor	www.husson.edu
Husson College	One College Circle	Bangor	www.husson.edu
Thomas College	180 W River Rd	Waterville	www.thomas.edu
Thomas College	180 W River Rd	Waterville	www.thomas.edu

Information Sciences and Systems

Information Science/Studies. A program that focuses on the theory, organization, and process of information collection, transmission, and utilization in traditional and electronic forms. Includes instruction in information classification and organization; information storage and processing; transmission, transfer, and signaling; communications and networking; systems planning and design; human interfacing and use analysis; database development; information policy analysis; and related aspects of hardware, software, economics, social factors, and capacity.

Institution	Address	City	URL
Eastern Maine Community College	354 Hogan Rd	Bangor	www.emcc.edu

Computer Systems Analysis/Analyst

Computer Systems Analysis/Analyst. A program that prepares individuals to apply programming and systems analysis principles to the selection, implementation, and troubleshooting of customized computer and software installations across the life cycle. Includes instruction in computer hardware and software; compilation, composition, execution, and operating systems; low- and high-level languages and language programming; programming and debugging techniques; installation and maintenance testing and documentation; process and data flow analysis; user needs analysis and documentation; cost-benefit analysis; and specification design.

No schools available for the program

Data Modeling/Warehousing and Database Administration

Data Modeling/Warehousing and Database Administration. A program that prepares individuals to design and manage the construction of databases and related software programs and applications, including the linking of individual data sets to create complex searchable databases (warehousing) and the use of analytical search tools (mining). Includes instruction in database theory, logic, and semantics; operational and warehouse modeling; dimensionality; attributes and hierarchies; data definition; technical architecture; access and security design; integration; formatting and extraction; data delivery; index design; implementation problems; planning and budgeting; and client and networking issues.

No schools available for the program

Computer and Information Systems Security

Computer and Information Systems Security. A program that prepares individuals to assess the security needs of computer and network systems, recommend safeguard solutions, and manage the implementation and maintenance of security devices, systems, and procedures. Includes instruction in computer architecture, programming, and systems analysis; networking; telecommunications; cryptography; security system design; applicable law and regulations; risk assessment and policy analysis; contingency planning; user access issues; investigation techniques; and troubleshooting.

No schools available for the program

Management Information Systems and Business Data P



Management Information Systems, General. A program that generally prepares individuals to provide and manage data systems and related facilities for processing and retrieving internal business information; select systems and train personnel; and respond to external data requests. Includes instruction in cost and accounting information systems, management control systems, personnel information systems, data storage and security, business systems networking, report preparation, computer facilities and equipment operation and maintenance, operator supervision and training, and management information systems policy and planning.

Institution	Address	City	URL
Kennebec Valley Community College	92 Western Ave	Fairfield	www.kvcc.me.edu
Kennebec Valley Community College	92 Western Ave	Fairfield	www.kvcc.me.edu
Andover College	901 Washington Ave	Portland	WWW.ANDOVERCOLLEGE.edu
Andover College	901 Washington Ave	Portland	WWW.ANDOVERCOLLEGE.edu
York County Community College	112 College Drive	Wells	www.yccc.edu

Maine Statewide Promotion Opportunities for Computer Programmers

O* NET Code	Title	Grand TORQ	Job Zone	Employment	Median Wage	Difference	Growth	Annual Job Openings
15-1021.00	Computer Programmers	100	4	720	\$58,240.00	\$0.00	-12%	16
15-1031.00	Computer Software Engineers, Applications	89	4	1,060	\$63,750.00	\$5,510.00	30%	47
15-1032.00	Computer Software Engineers, Systems Software	88	4	290	\$73,410.00	\$15,170.00	11%	8
15-1051.00	Computer Systems Analysts	86	4	1,650	\$69,340.00	\$11,100.00	20%	78
15-1061.00	Database Administrators	83	4	300	\$60,260.00	\$2,020.00	20%	11
15-1081.00	Network Systems and Data Communications Analysts	79	3	610	\$59,790.00	\$1,550.00	47%	54
15-2031.00	Operations Research Analysts	78	5	180	\$64,140.00	\$5,900.00	12%	6
11-3021.00	Computer and Information Systems Managers	78	5	870	\$83,130.00	\$24,890.00	8%	21
17-2071.00	Electrical Engineers	77	4	260	\$73,050.00	\$14,810.00	-10%	6
13-2051.00	Financial Analysts	76	4	210	\$71,380.00	\$13,140.00	10%	4
17-2072.00	Electronics Engineers, Except Computer	76	4	210	\$76,420.00	\$18,180.00	-26%	4



13-2052.00	Personal Financial Advisors	74	3	360	\$94,100.00	\$35,860.00	10%	13
19-1041.00	Epidemiologists	73	5	20	\$58,250.00	\$10.00	20%	1
17-2112.00	Industrial Engineers	73	4	580	\$68,350.00	\$10,110.00	11%	22
19-2012.00	Physicists	72	5	50	\$93,210.00	\$34,970.00	-4%	1

Top Industries for Database Administrators

Industry	NAICS	% in Industry	Employment	Projected Employment	% Change
Computer systems design and related services	541500	13.39%	15,987	23,684	48.14%
Management of companies and enterprises	551100	6.88%	8,212	10,387	26.49%
Colleges, universities, and professional schools, public and private	611300	5.07%	6,057	7,435	22.75%
Local government, excluding education and hospitals	939300	3.29%	3,932	4,847	23.26%
Management, scientific, and technical consulting services	541600	2.90%	3,460	6,778	95.88%
Federal government, excluding postal service	919999	2.57%	3,074	3,188	3.72%
Data processing, hosting, and related services	518200	2.54%	3,029	4,493	48.33%
Research and development in the physical, engineering, and life sciences	541710	2.29%	2,736	3,203	17.06%
Depository credit intermediation	522100	2.29%	2,731	3,056	11.87%
Employment services	561300	2.26%	2,694	3,740	38.87%
State government, excluding education and hospitals	929200	2.18%	2,605	2,805	7.67%
Software publishers	511200	1.94%	2,313	3,267	41.28%
Wired telecommunications carriers	517100	1.58%	1,889	1,627	-13.86%
Securities and commodity contracts, brokerages, and exchanges	5231-2	1.54%	1,844	2,978	61.44%
General medical and surgical hospitals, public and private	622100	1.53%	1,830	2,223	21.47%

Top Industries for Computer Programmers

Industry	NAICS	% in Industry	Employment	Projected Employment	% Change
Computer systems design and related services	541500	30.52%	132,767	143,405	8.01%
Software publishers	511200	4.26%	18,545	19,103	3.01%
Management of companies and enterprises	551100	3.78%	16,457	15,177	-7.78%
Colleges, universities, and professional schools, public and private	611300	3.67%	15,950	14,275	-10.50%



Employment services	561300	2.94%	12,805	12,965	1.25%
Professional and commercial equipment and supplies merchant wholesalers	423400	2.83%	12,306	11,476	-6.75%
Self-employed workers, primary job	000601	2.61%	11,368	9,689	-14.77%
Data processing, hosting, and related services	518200	2.38%	10,362	11,206	8.15%
State government, excluding education and hospitals	929200	2.14%	9,330	7,325	-21.50%
Management, scientific, and technical consulting services	541600	1.92%	8,356	11,933	42.82%
Federal government, excluding postal service	919999	1.89%	8,206	6,206	-24.37%
Local government, excluding education and hospitals	939300	1.65%	7,193	6,464	-10.13%
Direct insurance (except life, health, and medical) carriers	524120	1.41%	6,151	5,143	-16.38%
Depository credit intermediation	522100	1.31%	5,698	4,648	-18.44%
Self-employed workers, secondary job	000602	1.31%	5,682	4,525	-20.36%