

## COMPUTER & DATA PROCESSING

Businesses depend on information technology to operate more efficiently and often rely on the computer and data processing services industry to keep up with the changing technology. The industry requires a diverse and well-educated workforce to provide a variety of services that include computer programming services and applications and systems software design, data processing, Internet services, development and management of databases, and many more.

Although employment is projected to grow rapidly, annual job openings will be moderate because most of these occupations are small. Word processors and typists are predicted to lose considerable employment over the next decade but will still create the most job openings due to replacement needs. Computer systems analysts are also targeted to be a leader in terms of providing future job opportunities.

Many of these occupations require at least a Bachelor's degree, but a few need only moderate on-the-job training. The average pay rises as the education and training level increases. In terms of educational attainment, all occupations require at least some college.

Educational attainment clusters are designed to reflect the multiple paths leading into an occupation and are not intended to replace the education and training requirements. Clusters are defined on the basis of the distribution of educational attainment across occupations.

For additional information on computer-related occupations, visit [www.hiwi.org](http://www.hiwi.org).

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## Career Directions



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A Brief Look at  
Jobs ~ Outlook ~ Wages ~ Education



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QUALITY INFORMATION FOR INFORMED DECISIONS

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COMPUTER & DATA PROCESSING Occupation/Description by Education and Training Level	Projected Employment	10-year Growth	Avg. Ann. Openings	Annual Wage	Educational Attainment*
<b>Bachelor's plus work experience: Exper. in related non-managerial position which requires bachelor's</b>					
<b>Computer &amp; Information Systems Managers:</b> Plan, direct, or coordinate activities in such fields as electronic data processing, information systems, systems analysis, and computer programming.	880	33.3%	30	\$86,420	SC/C
<b>Bachelor's degree: At least four years of full-time academic study beyond high school</b>					
<b>Computer Systems Analysts:</b> Analyze science, engineering, business, and all other data processing problems for application to electronic data processing systems. Analyze user requirements, procedures, and problems to automate or improve existing systems and review computer system capabilities, workflow, and scheduling limitations.	2,140	22.3%	60	\$66,960	SC/C
<b>Network Systems &amp; Data Communications Analysts:</b> Analyze, design, test, and evaluate network systems, such as local area networks (LAN), wide area networks (WAN), Internet, intranet, and other data communications systems. Perform network modeling, analysis, and planning.	980	46.3%	40	\$53,780	SC/C
<b>Network &amp; Computer Systems Administrators:</b> Install, configure, and support an organization's local area network (LAN), wide area network (WAN), and Internet system or a segment of a network system. Maintain network hardware and software.	940	38.2%	30	\$58,190	SC/C
<b>Computer Software Engineers, Systems Software:</b> Research, design, develop, and test operating systems-level software, compilers, and network distribution software for medical, industrial, military, communications, aerospace, business, scientific, and general computing applications. Set operational specifications and formulate and analyze software requirements.	510	45.7%	20	\$79,830	C
<b>Computer Software Engineers, Applications:</b> Develop, create, and modify general computer applications software or specialized utility programs. Analyze user needs and develop software solutions. Design or customize software for client with aim of optimizing operational efficiency.	510	37.8%	20	\$67,980	C
<b>Computer Programmers:</b> Convert project specifications and statements of problems and procedures to detailed logical flow charts for coding into computer language. Develop and write computer programs to store, locate, and retrieve specific documents, data, and information.	820	7.9%	20	\$57,570	SC/C
<b>Data Base Administrators:</b> Coordinate changes to computer databases, test and implement the database applying knowledge of database management systems.	400	42.9%	10	\$58,560	SC/C
<b>Associate's degree: At least 2 years of full-time academic study beyond high school</b>					
<b>Computer Support Specialists:</b> Provide technical assistance to computer system users. Answer questions or resolve computer problems for clients in person, via telephone or from remote location.	1,540	25.2%	50	\$38,400	SC/C
<b>Postsecondary vocational award: Programs vary in length, ranging from several weeks to a year or more</b>					
<b>Computer, Automated Teller &amp; Office Machine Repairers:</b> Repair, maintain, or install computers, word processing systems, automated teller machines, and electronic office machines.	550	3.8%	10	\$30,320	HS/SC/C
<b>Moderate-term on-the-job training: 1-12 months of combined on-the-job exper. and informal training</b>					
<b>Word Processors &amp; Typists:</b> Use word processor/computer or typewriter to type letters, reports, forms, or other material from rough draft, corrected copy, or voice recording.	1,680	-42.3%	60	\$27,260	HS/SC
<b>Data Entry Keyers:</b> Operate data entry device, such as keyboard or photo composing perforator. Duties may include verifying data and preparing materials for printing.	790	-10.2%	20	\$23,690	HS/SC
<b>Computer Operators:</b> Monitor and control electronic computer and peripheral electronic data processing equipment to process business, scientific, engineering, and other data according to operating instructions.	630	-19.2%	20	\$32,130	HS/SC/C

\*Educational Attainment: HS=high school, SC=some college, C=college.

Sources: 1) Education and Training: Bureau of Labor Statistics, U.S. Dept. of Labor; 2) Occupation/Description: Standard Occupational Classification System, Bureau of Labor Statistics, U.S. Dept. of Labor, 2000, [www.bls.gov/soc/](http://www.bls.gov/soc/); 3) Employment, growth, and openings: Employment Outlook for Industries & Occupations, 2002-2012 revised, Hawaii State Dept. of Labor & Industrial Relations, <http://www.hiwi.org/?PAGEID=67&SUBID=128>; 4) Wage: State Occupational Employment and Wage Estimates, November 2004, Bureau of Labor Statistics, U.S. Dept. of Labor, [http://www.bls.gov/oes/current/oes\\_hi.htm](http://www.bls.gov/oes/current/oes_hi.htm).