



## Information Technology Job Family: **Programmer/Analyst Progression**

These generic job title summaries are intended to indicate the kinds of tasks and levels of work complexity that will be required of positions classified to any of these titles and are not intended to be construed as declaring the specific duties and responsibilities of any particular position. The use of particular expressions or illustrations describing functions within a specific job title does not exclude other duties of a similar kind and/or level of complexity. Positions are classified to a particular job title based upon the predominant level of expected work complexity. ***A position that is classified into this title and band must meet the Cornell requirements for exemption under the FLSA***

**May use programming languages such as, but not limited to: ASP/.NET, PHP, JavaScript, DHTML, Perl, SQL, MySQL, XML, XSL, AJAX, ColdFusion, C#, Java**  
**This title progression includes applications developed for the web and mobile applications.**

**COMPUTER/TECHNICAL:** The work in this title progression includes responsibilities in the following areas at increasing levels of complexity:

Applications Programmer	Software Engineer	Systems Engineer
Database Administrator	IT Security Infrastructure	
Business Intelligence - Warehousing	User Interface/User Experience	
Project Management	Technical Writing	

### GENERIC JOB PROFILE SUMMARIES

Programmer/Analyst II INDIVIDUAL CONTRIBUTOR	Programmer/Analyst III INDIVIDUAL CONTRIBUTOR	Programmer/Analyst Senior INDIVIDUAL CONTRIBUTOR	Programmer/Analyst Specialist INDIVIDUAL CONTRIBUTOR	Programmer/Analyst Lead INDIVIDUAL CONTRIBUTOR
Use established procedures and basic skills to support, analyze and evaluate existing or proposed applications and systems of low to moderate complexity.	Use more advanced skills to support, analyze and evaluate existing or proposed applications and systems of moderate complexity.	Use advanced skills to support, analyze and evaluate complex existing or proposed applications and systems.	Use advanced skills in area of specialization to support, analyze and evaluate highly complex existing or proposed applications and systems.	Direct, analyze, and evaluate the most complex existing or proposed applications and systems at the highest level of all phases.
Assist in working with users in determining problem analysis and resolution.	May communicate with users for needs analysis and provide resolution.	Work with users for needs analysis and provide resolution.	Work with and may be responsible to users for needs analysis and provide resolution.	Responsible for and coordinate with users for needs analysis and provide resolution.

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Design, code, test, debug, document programs, systems or web applications of low to moderate complexity.	Design, code, test, debug, develop tools and document and maintain programs, systems or web applications of moderate complexity.	Design, code, test, debug, develop tools and document and maintain complex programs, systems or web applications.	Design, code, test, debug, develop tools and document and maintain highly complex programs, systems or web applications.	Design, code, test, debug, document and maintain extremely complex programs, systems or web applications; may serve as resource to others.
Assist in research and fact-finding to develop or modify software systems of low to moderate complexity.	Formulate and define system scope and objectives to develop or modify moderately complex software systems.	Formulate, define system scope and objectives to develop or modify complex software systems.	Formulate, define system scope and objectives to develop or modify highly complex software systems.	Formulate, define system scope and objectives to develop or modify extremely complex software systems.
May assist in implementing, tracking and/or reporting on low to moderately complex projects; document project phases.	May assist in planning, implementing, tracking and/or reporting on low to moderately complex projects; complete and document phases of projects.	Define projects; organize a project team and direct project activities and document phases of projects.	Define, create, manage and implement project specifications/plans for projects with significant inter-dependency with other systems and/or projects; organize a project team and direct project activities and ensure documentation of the project phases.	Define, create, lead and implement projects, define project standards and methodologies; direct project activities and team; ensure documentation of the project. Guide workgroup with a high level of mentoring.
		May provide functional and/or line supervision; regularly provides guidance and training to less experienced programmer/ analysts.	May provide functional and/or line supervision; may have duties instructing, directing, and reviewing the work of other programmer/ analysts.	Provide functional and/or line supervision. Possess exceptionally strong leadership skills; instruct, direct, and review the work of other programmer/ analysts.
		Assist in the development, implementation and maintenance of complex IT services/products including stakeholder management, integration and sourcing of resources.	Manage the development, implementation and maintenance of highly complex IT services/ products including stakeholder management, integration and sourcing of resources.	Lead the development, implementation and maintenance of extremely complex IT services/ products including stakeholder management, integration and sourcing of resources.
Assist with the development and support of IT systems/products.	Provide data and functional analysis, design, development, support and training to IT systems and products.	Provide data and functional analysis, design, development, support and training to IT systems and products.	Provide data and functional analysis and design for complex IT services/products.	

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May assist with creating models for new database development and/or changes to existing ones.	Create models for new database development and/or changes to existing ones; conduct research and make recommendations on database products, services, protocols and standards	Create models for new database development and/or changes to existing ones; conduct research and make recommendations on database products, services, protocols and standards	Design, implement, and/or manage others in the creation of models for new database development and/or changes to existing ones; conduct research and make recommendations on database products, services, protocols and standards	Design, implement and/or lead others in the creation of models for new database development; lead the creation of technical requirements and design deliverables
	Assist with designing and implementing systems, policies, procedures for disaster recovery and data archiving to ensure effective protection and integrity of data assets	Assist with designing and implementing systems, policies, procedures for disaster recovery and data archiving to ensure effective protection and integrity of data assets	Design and implement systems, policies, procedures for disaster recovery and data archiving to ensure effective protection and integrity of data assets	Design and implement systems, policies, procedures for disaster recovery and data archiving to ensure effective protection and integrity of data assets
	Plan and coordinate data migrations between systems	Plan and coordinate data migrations between systems	Plan and coordinate data migrations between systems	Manage and plan data migrations between systems
Assist with the creation, review and tuning of SQL and PL/SQL code	Create, review and tune SQL and PL/SQL code	Create, review and tune SQL and PL/SQL code	Create, review and tune SQL and PL/SQL code	Create, review and tune SQL and PL/SQL code
		Work with DBAs to move applications into system test and production environments	Work with DBAs to move large scale applications into system test and production environments	Work with DBAs to move complex large scale applications into system test and production environments
Review and enforce information security policy, standards and guidelines.	Define, review and enforce information security policy, standards and guidelines.	Define, review and enforce information security policy, standards and guidelines.	Develop, implement, manage and disseminate standard approaches and solutions for securing systems.	Lead, support and manage the development, implementation and dissemination of standard approaches, solutions and best practices for securing the campus IT infrastructure; develop and implement appropriate security controls to maintain compliance with security and/or privacy legislation.

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	Work closely with appropriate vendors to resolve issues and evaluate new products.	Work closely with appropriate vendors to resolve issues and evaluate new products.	Negotiate with vendors for hardware and software licenses for campus availability, including configurations, numbers of individual licenses, pricing and availability dates (pre-releases); work closely with appropriate vendors to resolve issues and evaluate new products.	
			Participate in and contribute to relevant discussion groups and national technical forums to validate Cornell's technical direction with representatives from peer institutions.	Participate in and contribute to relevant discussion groups and national technical forums to validate Cornell's technical direction with representatives from peer institutions.
Create HTML/CSS based static pages for implementing final pages to be used in templates; may develop templates in content management systems and web applications.	Create HTML/CSS based static pages for implementing final pages to be used in templates; develop templates in content management systems and web applications.	Create HTML/CSS based static pages for implementing final pages to be used in templates; develop templates in content management systems and web applications.	Develop templates in content management systems and web applications.	
Review code written by peers to ensure that it is valid, is properly structured, meets project standards and is compatible with browsers, devices, or operating systems	Evaluate code to ensure that it is valid, is properly structured, meets standards and is compatible with browsers, devices, or operating systems	Evaluate code to ensure that it is valid, is properly structured, meets standards and is compatible with browsers, devices, or operating systems	Evaluate code to ensure that it is valid, is properly structured, meets standards and is compatible with browsers, devices, or operating systems	Sets standards for coding and documentation.
Validate test routines and schedules to ensure that test cases mimic external interfaces and support all client configurations.	May develop and validate test routines and schedules to ensure that test cases mimic external interfaces and support all client configurations.	Develop and validate test routines and schedules to ensure that test cases mimic external interfaces and support all client configurations.	Develop and validate test routines and schedules to ensure that test cases mimic external interfaces and support all client configurations.	
	Interview end users, domain experts, and clients to gather information for applications and/or site architecture and user interface design.	Interview end users, domain experts, and clients to gather information for applications and/or site architecture and user interface design.	Interview end users, domain experts, and clients to gather information for applications and/or site architecture and user interface design.	Interview domain experts and clients to gather information for applications and/or site architecture and user interface design.

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Conduct usability testing on prototypes.	Conduct and analyze usability testing on prototypes; recommend and implement solutions.	Conduct and analyze usability testing on prototypes; recommend and implement solutions.	Conduct and analyze usability testing on prototypes; recommend and implement solutions.	
Ensure navigation and usability meet standards of presentation and user friendliness; ensure functionality on supported platforms.	Ensure navigation and usability meet standards of presentation and user friendliness; ensure functionality on supported platforms.	Ensure navigation and usability meet standards of presentation and user friendliness; ensure functionality on supported platforms.	Review and approve tools created that ensure navigation and usability meet standards of presentation and user friendliness; ensure functionality on supported platforms.	

## JOB FACTOR PROFILE TABLE

FACTOR PROFILE	10744 PROGRAMMER/ANALYST II, BAND E	10745 PROGRAMMER/ANALYST III, BAND F	10749 PROGRAMMER/ANALYST SENIOR, BAND F	10748 PROGRAMMER/ANALYST SPECIALIST, BAND G	10746 PROGRAMMER/ANALYST LEAD, BAND H
MINIMUM EDUCATION AND EXPERIENCE EQUIVALENCY	Bachelor's degree; up to 2 years experience or equivalent	Bachelor's degree; more than 2 year and less than 4 years experience or equivalent	Bachelor's degree; more than 3 year and less than 5 years experience or equivalent	Bachelor's degree; more than 5 year and less than 7 years experience or equivalent	Bachelor's degree; more than 7 year and less than 10 years experience or equivalent
IMPACT	Moderate impact	Moderate impact	Substantial impact	Substantial impact	Substantial impact
CONTACTS - INSIDE	Assist others Cooperation of task completion	Provides guidance to others Coordinates activities	Persuade others to take particular course of action Coordinate major activities	Persuade others to take particular course of action Coordinate major activities	May involve sensitive issues Coordinate major activities
CONTACTS - OUTSIDE	Provide/receive guidance, advice or information that must be analyzed and developed by the position	Provide/receive guidance, advice or information that must be analyzed and developed by the position	Provide/receive guidance, advice or information that must be analyzed and developed by the position	Develop and make presentations and negotiate with others	Develop and make presentations and negotiate with others
CONTACTS - STUDENTS	Limited contact	Limited contact	Limited contact	Limited contact	Limited contact

<b>FACTOR PROFILE</b>	<b>10744 PROGRAMMER/ANALYST II, BAND E</b>	<b>10745 PROGRAMMER/ANALYST III, BAND F</b>	<b>10749 PROGRAMMER/ANALYST SENIOR, BAND F</b>	<b>10748 PROGRAMMER/ANALYST SPECIALIST, BAND G</b>	<b>10746 PROGRAMMER/ANALYST LEAD, BAND H</b>
<b>SUPERVISION</b>	Provides guidance, counsel, and information in specific support areas	Provides guidance, counsel, and information in specific support areas	Provide on-the-job training, guidance, advice and counsel to other employees in the group and others in a similar position	Provide on-the-job training, guidance, advice and counsel to other employees in the group and others in a similar position	Provide on-the-job training, guidance, advice and counsel to other employees in the group and others in a similar position
<b>COMPLEXITY</b>	Frequently adapt, combine, or make improvements to services, products, processes, & programs. Work requires reasoning skills and judgment	Occasionally required to develop new innovative solutions, services, products, processes, & programs. Work requires sophisticated reasoning skills	Occasionally required to develop new innovative solutions, services, products, processes, & programs. Work requires sophisticated reasoning skills	Continually required to develop new innovative solutions, services, products, processes, & programs. Work requires conceptual and imaginative thinking in a highly complex environment	Continually required to develop new innovative solutions, services, products, processes, & programs. Work requires conceptual and imaginative thinking in a highly complex environment
<b>LEVEL OF DECISION MAKING</b>	Assist in and influence decisions concerning policy-setting, research, planning, or students	Assist in and influence decisions concerning policy-setting, research, planning, or students	Assist in and influence decisions concerning policy-setting, research, planning, or students	Assist in and influence decisions concerning policy-setting, research, planning, or students	Responsible for making decision regarding policy-setting, research, planning, or students
<b>FREEDOM OF ACTION</b>	General supervision Some interpretation of established work policies and procedures is required	Very general supervision Interpretation of work policies and procedures, and, at times deviation from standard work practice	Very general supervision Interpretation of work policies and procedures, and, at times deviation from standard work practice	Very general supervision Interpretation of work policies and procedures, and, at times deviation from standard work practice	Little direct supervision Considerable latitude for exercising judgment and self-direction
<b>EFFECT OF DECISION MAKING</b>	Directly effects multiple functional areas Limited effect on students and employees	Directly effects entire department Moderate effect on students and employees	Directly effects entire department Moderate effect on students and employees	Directly effects several depts within a college Significant effect on students and employees	Directly affect entire college or school administrative unit Critical effect on students and employees
<b>WORKING CONDITIONS</b>	Normal working conditions, including limited or no exposure to hazardous conditions/materials/equipment. Safety gear may sometimes be required	Normal working conditions, including limited or no exposure to hazardous conditions/materials/equipment. Safety gear may sometimes be required	Normal working conditions, including limited or no exposure to hazardous conditions/materials/equipment. Safety gear may sometimes be required	Normal working conditions, including limited or no exposure to hazardous conditions/materials/equipment. Safety gear may sometimes be required	Normal working conditions, including limited or no exposure to hazardous conditions/materials/equipment. Safety gear may sometimes be required