

Programming & Software Development Program Standards Criticality Survey 2014

1. Personal Qualities and People Skills				
Answer Choices	Nice to Know	Need to Know	Critical to Know	Rating Average
Demonstrate a positive work ethic by coming to work every day on time, a willingness to take direction, and motivation to accomplish the task at hand.				
Demonstrate integrity by abiding by workplace policies and laws and demonstrating honesty and reliability.				
Demonstrate teamwork skills by contributing to the success of the team, assisting others, and requesting help when needed.				
Demonstrate positive self-representation skills by dressing appropriately and using language and manners suitable for the workplace.				
Demonstrate diversity awareness by working well with all customers and co-workers.				
Demonstrate conflict-resolution skills by negotiating diplomatic solutions to interpersonal and workplace issues.				
Demonstrate creativity and resourcefulness by contributing new ideas and working with initiative.				
Answered				
Skipped				

2. Professional Knowledge and Skills				
Answer Choices	Nice to Know	Need to Know	Critical to Know	Rating Average
Demonstrate effective speaking and listening skills by communicating effectively with customers and employees and following directions.				
Demonstrate effective reading and writing skills by reading and interpreting workplace documents and writing clearly.				
Demonstrate critical-thinking and problem-solving skills by analyzing and resolving problems that arise in completing assigned tasks.				
Demonstrate healthy behaviors and safety skills by following safety guidelines and managing personal health.				
Demonstrate understanding of workplace organizations, systems, and climates by identifying "big picture" issues and fulfilling the mission of the workplace.				
Demonstrate lifelong-learning skills by continually acquiring new industry-related information and improving professional skills.				
Demonstrate job acquisition and advancement skills by preparing to apply for a job and seeking promotion.				
Demonstrate time, task, and resource management skills by organizing and implementing a productive plan of work.				
Demonstrate mathematical skills by using mathematical reasoning to accomplish tasks.				
Demonstrate customer service skills by identifying and addressing the needs of all customers and providing helpful, courteous, and knowledgeable service.				
Answered				
Skipped				

3. Technology Knowledge and Skills				
Answer Choices	Nice to Know	Need to Know	Critical to Know	Rating Average
Demonstrate proficiency with job-specific technologies by selecting and safely using technological resources to accomplish work responsibilities in a productive manner.				
Demonstrate proficiency with information technology by using computers, file management techniques, and software/programs effectively.				
Demonstrate proper Internet use and security by using the Internet appropriately for work.				
Demonstrate proficiency with telecommunications by selecting and using appropriate devices, services, and applications.				
Answered				
Skipped				

CONTENT STANDARD 1.0: UNDERSTAND PROGRAMMING PRINCIPLES				
Performance Standard 1.1: Demonstrate Critical Thinking and Problem-Solving Skills as they Apply to Programming				
Answer Choices	Nice to Know	Need to Know	Critical to Know	Rating Average
1.1.1 Apply basic programming principles.	0	4	25	2.86
1.1.2 Describe and differentiate procedural and object-oriented programming.	4	14	11	2.24
1.1.3 Apply the features of object-oriented programming languages.	3	9	17	2.48
1.1.4 Write a program that produces output.	2	6	21	2.66
1.1.5 Select identifiers to use within programs.	7	10	11	2.14
1.1.6 Improve programs by adding comments.	2	12	15	2.45
1.1.7 Write and run a program.	2	4	23	2.72
Answered				29
Skipped				0

CONTENT STANDARD 2.0: PROBLEM SOLVING THROUGH PROGRAMMING**Performance Standard 2.1: Demonstrate Ability to Use Variables, Data Types, and String Manipulation to Solve Computer Problems Programmatically**

	Answer Choices	Nice to Know	Need to Know	Critical to Know	Rating Average
2.1.1	Demonstrate the process of declaring variables.	0	7	22	2.76
2.1.2	Display variable values.	0	12	17	2.59
2.1.3	Apply integral data types.	1	12	16	2.52
2.1.4	Apply floating-point data types.	4	10	15	2.38
2.1.5	Apply arithmetic operators.	0	13	16	2.55
2.1.6	Apply Boolean data type.	0	10	19	2.66
2.1.7	Apply numeric type conversion.	2	11	16	2.48
2.1.8	Apply char data type.	3	10	16	2.45
2.1.9	Apply string data type.	1	11	17	2.55
2.1.10	Define named constants and enumerations.	4	12	13	2.31
Answered					29
Skipped					0

CONTENT STANDARD 3.0: USE LOGIC IN PROGRAMMING**Performance Standard 3.1: Demonstrate Effective Use of Selection Structures to Add Logic to Programs**

	Answer Choices	Nice to Know	Need to Know	Critical to Know	Rating Average
3.1.1	Demonstrate logic-planning tools and decision-making.	3	10	16	2.45
3.1.2	Make decision using the if statement.	0	7	22	2.76
3.1.3	Make decisions using the if-else statement.	0	9	20	2.69
3.1.4	Apply compound expressions in if statements.	2	12	15	2.45
3.1.5	Make decisions using the switch statement.	6	7	16	2.34
3.1.6	Apply the conditional operator.	2	7	19	2.61
3.1.7	Apply the NOT operator.	4	6	19	2.52
3.1.8	Describe how to avoid common errors when making decisions, and apply problem-solving skills in context.	0	11	18	2.62
Answered					29
Skipped					0

CONTENT STANDARD 4.0: PROGRAMMING AND VALIDATION					
Performance Standard 4.1: Demonstrate Ability to Test, Debug and Validate Programming Applications					
Answer Choices	Nice to Know	Need to Know	Critical to Know	Rating Average	
4.1.1	Locate a logic error by stepping through the code.	1	4	24	2.79
4.1.2	Locate logic errors using breakpoints.	2	7	20	2.62
4.1.3	Fix syntax and logic errors.	1	6	22	2.72
4.1.4	Select appropriate test data for an application.	4	11	14	2.34
				Answered	29
				Skipped	0

CONTENT STANDARD 5.0: UNDERSTAND REPETITION IN PROGRAMMING					
Performance Standard 5.1: Differentiate Between the Various Types of Repetition Structures and Use Each Repetition Structure Appropriately In Program Development					
Answer Choices	Nice to Know	Need to Know	Critical to Know	Rating Average	
5.1.1	Apply the loop structure.	0	7	20	2.74
5.1.2	Create loops using the while statement.	1	11	16	2.54
5.1.3	Create loops using the for statement.	1	11	16	2.54
5.1.4	Create loops using the do statement.	3	12	12	2.33
5.1.5	Apply nested loops.	2	13	13	2.39
5.1.6	Apply accumulators.	5	12	11	2.21
5.1.7	Understand and describe how to improve loop performance.	1	19	8	2.25
				Answered	28
				Skipped	1

CONTENT STANDARD 6.0: DEMONSTRATE PROGRAMMING FUNCTIONALITY				
Performance Standard 6.1: Use Methods to Increase Functionality and to Modularize Programs				
Answer Choices	Nice to Know	Need to Know	Critical to Know	Rating Average
6.1.1 Describe methods and implementation hiding.	6	10	12	2.21
6.1.2 Write methods with no parameters and no return value.	8	6	14	2.21
6.1.3 Write methods that require a single argument.	2	11	15	2.46
6.1.4 Write methods that require multiple arguments.	5	7	16	2.39
6.1.5 Write a method that returns a value.	1	9	18	2.61
6.1.6 Pass an array to a method.	4	12	12	2.29
6.1.7 Overload methods.	7	11	10	2.11
6.1.8 Demonstrate how to avoid methods.	13	10	4	1.67
6.1.9 Apply optional parameters.	8	13	7	1.96
Answered				28
Skipped				1

CONTENT STANDARD 7.0: UNDERSTAND ARRAYS AND STRUCTURE CONCEPTS				
Performance Standard 7.1: Demonstrate Understanding of Arrays and Structure and Apply Concepts In Program Development				
Answer Choices	Nice to Know	Need to Know	Critical to Know	Rating Average
7.1.1 Declare an array and assign values to array elements.	2	9	16	2.52
7.1.2 Access array elements.	1	9	17	2.59
7.1.3 Search an array using a loop.	2	10	14	2.46
7.1.4 Apply multidimensional arrays.	7	10	9	2.08
Answered				27
Skipped				2

CONTENT STANDARD 8.0: UNDERSTAND CLASSES IN PROGRAMMING**Performance Standard 8.1: Students will demonstrate understanding of Object-Oriented Programming Concepts**

Answer Choices	Nice to Know	Need to Know	Critical to Know	Rating Average
8.1.1 Describe and apply class concepts.	2	4	21	2.70
8.1.2 Create classes from which objects can be instantiated.	1	6	20	2.70
8.1.3 Create objects.	1	5	20	2.73
8.1.4 Create properties, including auto-implemented properties.	4	11	13	2.32
8.1.5 Use public fields and private methods.	4	10	14	2.36
8.1.6 Define the "this" reference.	4	11	13	2.32
8.1.7 Write constructors.	4	9	15	2.39
8.1.8 Use object initializers.	4	13	11	2.25
8.1.9 Overload operators.	12	7	9	1.89
8.1.10 Declare an array of objects.	4	15	9	2.18
8.1.11 Use sorting methods with an array of objects.	6	12	10	2.14
8.1.12 Write destructors.	9	12	7	1.93
8.1.13 Describe and demonstrate inheritance	4	9	15	2.39
8.1.14 Extend classes.	4	14	10	2.21
8.1.15 Override base class methods.	6	12	10	2.14
8.1.16 Describe how a derived class object "is an" instance of the base class.	5	15	8	2.11
8.1.17 Define the object class.	6	14	8	2.07
8.1.18 Use base class constructors.	8	12	8	2.00
8.1.19 Create abstract classes.	11	10	7	1.86
8.1.20 Create use interfaces.	8	9	11	2.11
8.1.21 Apply extension methods.	12	9	7	1.82
8.1.22 Describe the benefits of inheritance.	3	12	13	2.36
8.1.23 Recognize inheritance in GUI applications.	10	10	8	1.93
Answered				28
Skipped				1

CONTENT STANDARD 9.0: UNDERSTAND PROGRAMMING AND EXCEPTIONS**Performance Standard 9.1: Demonstrate Exception-Handling in Program Development**

	Answer Choices	Nice to Know	Need to Know	Critical to Know	Rating Average
9.1.1	Compare and demonstrate traditional and object-oriented error-handling methods.	2	13	12	2.37
9.1.2	Cast data types.	6	11	10	2.15
9.1.3	Catch multiple exceptions.	6	14	7	2.04
9.1.4	Apply the finally block.	7	11	9	2.07
9.1.5	Handle exceptions thrown from outside methods.	5	14	8	2.11
9.1.6	Trace exceptions through the call stack.	4	13	10	2.22
9.1.7	Create exception classes.	10	11	6	1.85
9.1.8	Re-throw exceptions.	8	13	6	1.93
Answered					27
Skipped					2

CONTENT STANDARD 10.0: UNDERSTAND PROGRAMMING AND EVENTS**Performance Standard 10.1: Use Event Handlers in Programs**

	Answer Choices	Nice to Know	Need to Know	Critical to Know	Rating Average
10.1.1	Define and apply event handling.	4	12	12	2.29
10.1.2	Define and describe delegates.	6	18	3	1.89
10.1.3	Declare own events and handlers.	6	17	5	1.96
10.1.4	Use built-in event handlers.	2	17	9	2.25
10.1.5	Handle control component events.	10	14	4	1.79
10.1.6	Handle mouse and keyboard events.	7	15	6	1.96
10.1.7	Manage multiple controls.	9	14	5	1.86
10.1.8	Explain how to find more information on controls and events.	6	12	10	2.14
Answered					28
Skipped					1

CONTENT STANDARD 11.0: SYSTEMS PLANNING AND DEVELOPMENT				
Performance Standard 11.1: Apply Concepts and Principles of Systems Planning and Development				
Answer Choices	Nice to Know	Need to Know	Critical to Know	Rating Average
11.1.1 Describe the information systems development life cycle (SDLC).	9	9	10	2.04
11.1.2 Discuss how to evaluate off-the-shelf software.	17	4	7	1.64
11.1.3 Explain reuse and its role in software development.	3	11	14	2.39
11.1.4 Describe the skills required to be an effective project manager.	18	7	3	1.46
11.1.5 List and describe the skill and activities of a project manager during project initiation, planning, execution, and closedown.	20	5	3	1.39
11.1.6 Describe the steps for identifying and selecting projects and initiating and planning projects.	18	6	4	1.50
11.1.7 Explain the need for and contents of a project scope statement.	12	8	8	1.86
11.1.8 Compare various methods for assessing project feasibility.	16	8	4	1.57
Answered				28
Skipped				1

CONTENT STANDARD 12.0: SYSTEMS ANALYSIS**Performance Standard 12.1: Demonstrate Competency with Systems Analysis Tools and Concepts**

	Answer Choices	Nice to Know	Need to Know	Critical to Know	Rating Average
12.1.1	Compare options for designing and conducting interviews to determine system requirements.	13	12	3	1.64
12.1.2	Develop a plan for conducting an interview to determine system requirements.	17	8	3	1.50
12.1.3	Explain the advantages and pitfalls of observing workers and analyzing business documents to determine system requirements.	16	10	2	1.50
12.1.4	Plan a joint application design session.	16	10	2	1.50
12.1.5	Use prototyping during requirements determination.	14	8	6	1.71
12.1.6	Select appropriate methods to elicit system requirements.	13	12	3	1.64
12.1.7	Describe how requirements determination techniques apply to development of Internet applications.	17	8	3	1.50
12.1.8	Demonstrate the logical modeling of processes through studying examples of data-flow diagrams, pseudo code, and flowcharts.	8	11	9	2.04
				Answered	28
				Skipped	1

CONTENT STANDARD 13.0: PRINCIPLES OF DESIGN**Performance Standard 13.1: Demonstrate Knowledge of Application Design Principles**

	Answer Choices	Nice to Know	Need to Know	Critical to Know	Rating Average
13.1.1	Explain the process of designing interfaces and dialogues and the deliverables for their creation.	8	16	4	1.86
13.1.2	Apply the general guidelines for interface design, including guidelines for layout design, structuring data-entry fields, providing feedback, and system help.	11	14	3	1.71
13.1.3	Concisely define each of the following key database design terms: relation, primary key, functional dependency, foreign key, referential integrity, field, data type, null value, denormalization, file organization, index, and secondary key.	3	12	12	2.33
13.1.4	Explain the role of designing databases in the analysis and design of an information system.	3	16	9	2.21
13.1.5	Transform an entity-relation (E-R) diagram into an equivalent set of well-structured (normalized) relations.	10	13	5	1.82
13.1.6	Merge normalized relations from separate user views into a consolidated set of well-structured relations.	15	8	5	1.64
13.1.7	Choose storage formats for fields in database tables.	6	13	9	2.11
13.1.8	Translate well-structured relations into efficient database tables.	5	14	9	2.14
13.1.9	Explain when to use different types of file organizations to store computer files.	14	11	3	1.61
13.1.10	Describe the purpose indexes and the important considerations in selecting attributes to be indexed.	5	15	8	2.11
Answered					28
Skipped					1

CONTENT STANDARD 14.0: IMPLEMENTATION AND SUPPORT**Performance Standard 14.1: Demonstrate Knowledge of Application Implementation and Identify the Need for Ongoing Application Support**

	Answer Choices	Nice to Know	Need to Know	Critical to Know	Rating Average
14.1.1	Describe the process of coding, testing, and converting an organizational information system.	11	11	6	1.82
14.1.2	Outline the deliverables and outcomes of an organizational information system.	16	8	4	1.57
14.1.3	List the deliverables for documenting the system and for training and supporting users.	13	13	2	1.61
14.1.4	Compare the many modes available for organizational information system training, including self-training and electronic performance support systems.	18	9	1	1.39
14.1.5	Discuss the issues of providing support for end users.	11	13	4	1.75
14.1.6	Explain why application implementation sometimes fails.	14	9	5	1.68
14.1.7	Describe several factors that influence the cost of maintaining an application.	10	13	5	1.82
Answered					28
Skipped					1