

Job Ready Assessment Blueprint

Computer Programming



Test Code: 4023 / Version: 01

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General Assessment Information

Blueprint Contents

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Test Type: The Computer Programming assessment is included in NOCTI's Job Ready assessment battery. Job Ready assessments measure technical skills at the occupational level and include items which gauge factual and theoretical knowledge. Job Ready assessments typically offer both a written and performance component and can be used at the secondary and post-secondary levels. Job Ready assessments can be delivered in an online or paper/pencil format.

Revision Team: The assessment content is based on input from secondary, post-secondary, and business/industry representatives from the states of California, Connecticut, and Pennsylvania.



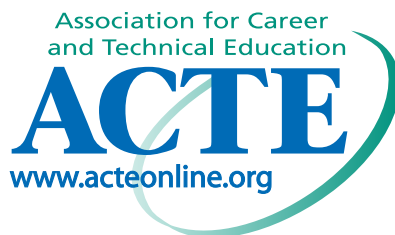
11.0201- Computer
Programming/Programmer,
General



Career Cluster 11-
Information Technology



15-1131.00- Computer
Programmers



The Association for Career and Technical Education (ACTE), the leading professional organization for career and technical educators, commends all students who participate in career and technical education programs and choose to validate their educational attainment through rigorous technical assessments. In taking this assessment you demonstrate to your school, your parents and guardians, your future employers and yourself that you understand the concepts and knowledge needed to succeed in the workplace. Good Luck!



NATIONAL COLLEGE CREDIT RECOMMENDATION SERVICE
University of the State of New York - Regents Research Fund

In the lower division
baccalaureate/associate degree
category, 3 semester hours in
Computer Programming,
Computer Science, or Computer
Information Systems

Written Assessment

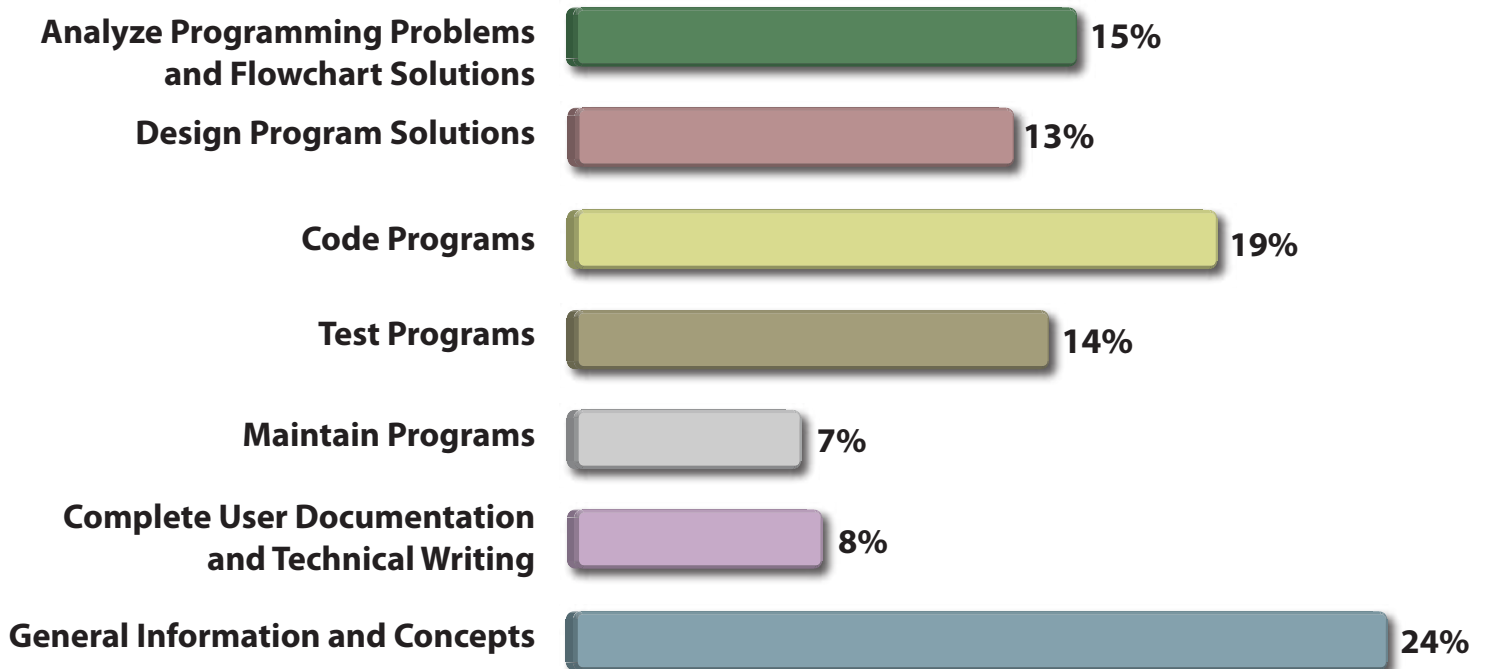
NOCTI written assessments consist of questions to measure an individual's factual theoretical knowledge.

Administration Time: 3 hours

Number of Questions: 166

Number of Sessions: This assessment may be administered in one, two, or three sessions.

Areas Covered



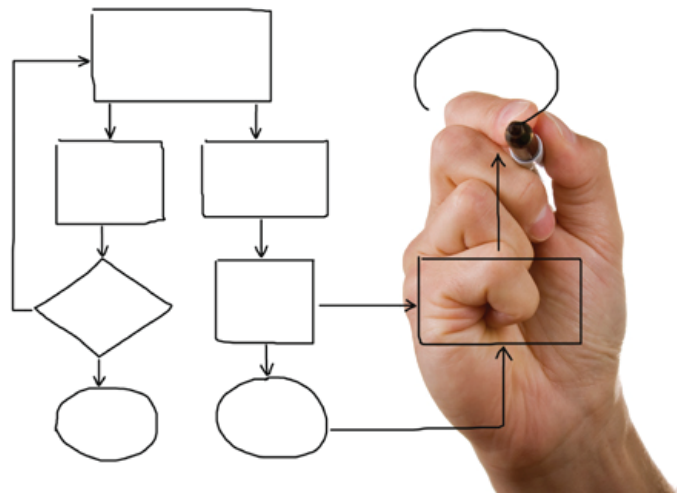
Specific Competencies and Skills Tested in this Assessment

Analyze Programming Problems and Flowchart Solutions

- Analyze user requirements for a given outcome
- Determine input and output formats for a program
- Determine the flow of data through network
- Identify and describe a data flow diagram
- Identify and describe a process logic diagram
- Describe the system development cycle (i.e., code management, ongoing revisions)

Design Program Solutions

- Determine where data is to be accessed/stored
- Design data storage and layout
- Apply principles of quality, efficient programming
- Explain the importance of a design review
- Apply implementation plans for a new system
- Assess ongoing impact of existing systems



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Specific Competencies and Skills (continued)

Code Programs

- Determine the variables and data types for a program
- Prepare and code routines using structured logic
- Identify various programming languages
- Apply appropriate computer language syntax
- Explain unit testing requirements
- Document appropriate comments and programmer notes

Test Programs

- Explain system testing requirements
- Design and analyze test plan for use in program testing
- Test programs and evaluate results for accuracy
- Correct programming errors discovered during testing
- Identify appropriate debugging tools



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Specific Competencies and Skills (continued)

Maintain Programs

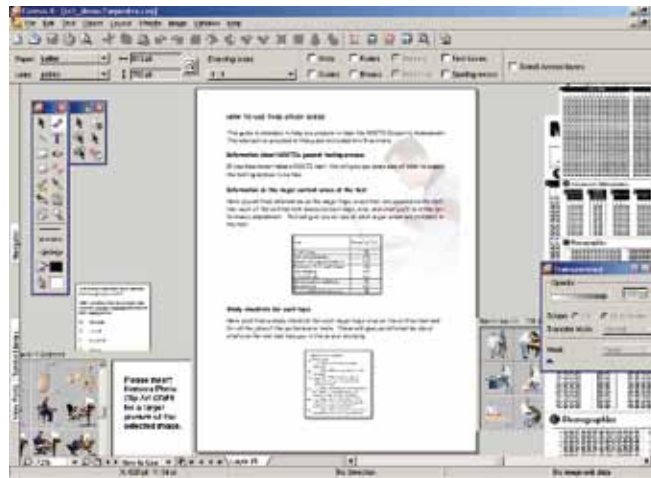
- Change existing programs when requirements change
- Correct existing program errors
- Update documentation for existing programs
- Provide user instructions on program modifications

Complete User Documentation and Technical Writing

- Develop documentation narrative
- Define data use and storage
- Develop online help for users

General Information and Concepts

- Apply general design and programming concepts
- Identify various hardware platforms and run-time environments
- Identify human aspects in information systems
- Identify general information technology (IT) definitions and terms
- Adhere to best programming practices and methodologies
- Exhibit understanding of data hierarchy, access methods, and manipulation



Sample Questions

Data that is represented in a tagged-format language is

- A. delimited
- B. fixed-length
- C. XML
- D. binary

Large programs used by many different people should be stored on a

- A. server
- B. personal computer
- C. DVD drive
- D. tape backup

Each module in top-down programming should

- A. be well distributed
- B. represent a loop
- C. represent a program function
- D. contain a procedure call

Test data should be developed that will

- A. execute the program properly the first time
- B. validate the operating system
- C. contain only invalid data
- D. generate the answers wanted by users

Documentation standards should be

- A. changed frequently
- B. defined up front
- C. dictated by the end users
- D. determined by the programmer

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Sample Questions (continued)

The requirements, design, implementation, and testing phases are part of the

- A. programming phase sequence
- B. software development life cycle
- C. extreme programming development
- D. linear design phase

A structured code walk-through

- A. ensures that the code follows in-house standards
- B. ensures that there are sufficient lines of code
- C. increases the user friendliness of the program
- D. should only be performed by the original programmer

Compile errors can be caused by bad syntax, typing errors, or

- A. input data
- B. incorrect user specification
- C. illegal function calls
- D. insufficient test data

One technique for handling runtime errors gracefully to prevent the application from crashing is to

- A. make use of exception handling
- B. use an interpreter not a compiler
- C. limit user input and output
- D. compile the code a second time

The process of laying out a web page on poster board is called

- A. outlining
- B. storyboarding
- C. copying
- D. processing

Performance Assessment

NOCTI performance assessments allow individuals to demonstrate their acquired skills by completing actual jobs using the tools, materials, machines, and equipment related to the technical area.

Administration Time: 3 hours

Number of Jobs: 2

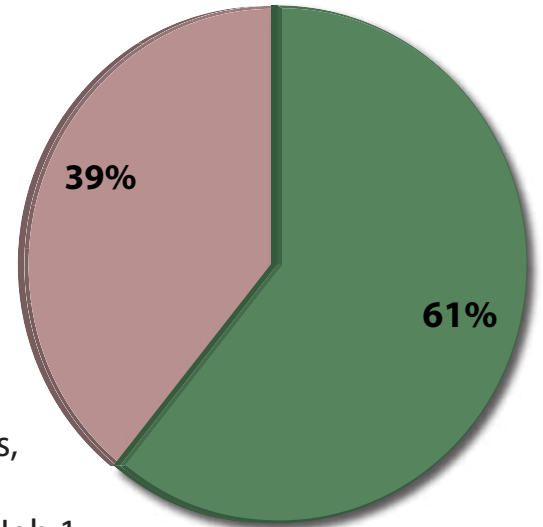
Areas Covered:

61% Write a Program

Create an order form to track CD purchases from a website, set up a GUI panel-type form, enter each set of given test data, perform appropriate calculations, display results in a table on the GUI panel, print out source code and output report, and time to complete Job 1.

39% Design Solution Logic

Read the provided programming situation, create a flowchart of pseudocode that solves the programming situation, and time to complete Job 2.



Sample Job

Design Solution Logic

Maximum Time: 30 minutes

Participant Activity: The participant will be provided a programming situation. Create a flowchart or pseudocode that solves the programming situation (problem definition).

