NOCTI

Job Ready Credential Blueprint

Computer Programming

General Assessment Information

Blueprint Contents

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Test Type: The Computer Programming industry-based credential 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 Idaho, Missouri, New Jersey, New York, and Pennsylvania.
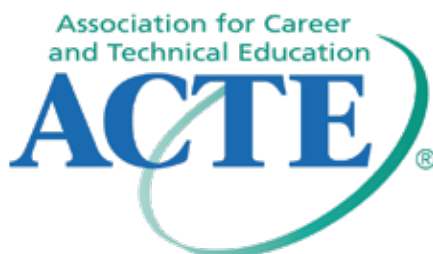
CIP
Code

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11.1006- Computer
Support Specialist

Career Cluster 11-
Information Technology

15-1131.00- Computer
Programmers

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

Association for Career
and Technical Education
ACTE®

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!
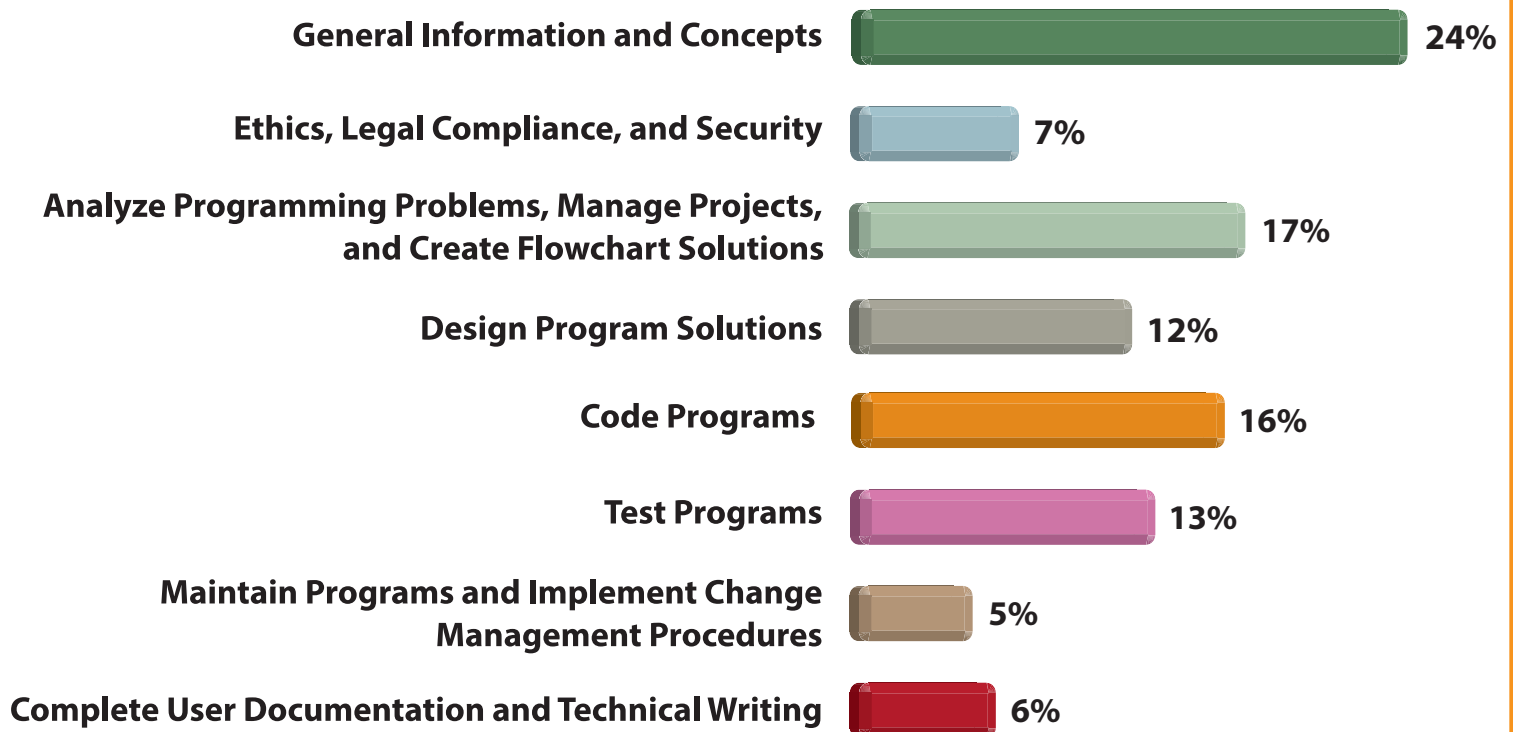
Written Assessment

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

Administration Time: 3 hours
Number of Questions: 173
Number of Sessions: This assessment may be administered in one, two, or three sessions.

Areas Covered

Area	Percentage
General Information and Concepts	24%
Ethics, Legal Compliance, and Security	7%
Analyze Programming Problems, Manage Projects, and Create Flowchart Solutions	17%
Design Program Solutions	12%
Code Programs	16%
Test Programs	13%
Maintain Programs and Implement Change Management Procedures	5%
Complete User Documentation and Technical Writing	6%

Specific Standards and Competencies Included in this Assessment

General Information and Concepts
- Apply general design and programming concepts
- Identify various hardware platforms and runtime 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

Ethics, Legal Compliance, and Security
- Identify concepts of ethics and legal compliance
- Identify security concepts
- Identify appropriate safety procedures

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Specific Standards and Competencies (continued)

Analyze Programming Problems, Manage Projects, and Create Flowchart Solutions
- Analyze user requirements for a given outcome
- Determine input and output formats for a given code segment
- Identify and describe a data flow diagram
- Identify and describe a process logic diagram
- Describe steps in the system development cycle
- Describe steps and roles in the project management life cycle
- Define key terminology related to computer programming

Design Program Solutions
- Determine appropriate data types and requirements
- Determine where data is to be accessed or stored
- Design data storage and layout
- Apply principles of quality, efficient programming
- Explain the importance of a design review
- Assess impact of changes on existing systems

Code Programs
- Distinguish and identify different types of programming languages
- Determine the variables and data types for a program
- Prepare and code routines using structured logic
- Apply appropriate computer language syntax
- Create and identify unit testing requirements
- Document appropriate comments and programmer notes

Specific Standards and Competencies (continued)

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
- Apply implementation plans for a new system

Maintain Programs and Implement Change Management Procedures
- Change existing programs as requirements change
- Update documentation for changes made to existing programs
- Provide user instructions on changes made to existing programs

Complete User Documentation and Technical Writing
- Develop documentation narrative
- Document data use and storage
- Develop help resources for users

Sample Questions

Arranging data elements into a sequence to facilitate processing is called
- A. merging
- B. sorting
- C. classifying
- D. summarizing

When querying fields in a database, one or more records will be
- A. inserted
- B. selected
- C. updated
- D. deleted

What federal law protects developers of software programs?
- A. Copyright Act of 1976
- B. The Intellectual Act of 2001
- C. The Software Act of 1976
- D. The Federal Law of Software

The purpose of a substring function is to
- A. separate an alpha field into smaller parts
- B. have one part of a header appear under a main heading
- C. be able to print a formula such as H_2O
- D. have a string of data underneath another string of data in a report

A "divide-by-zero" error is a _____ error.
- A. runtime
- B. compiling
- C. system
- D. user

Sample Questions (continued)

Understanding and eliminating code bottlenecks is known as
        A. optimization
        B. debugging
        C. documentation
        D. implementation

When developing program comments, the programmer should use terms that are
        A. relevant to the Boolean Logic
        B. familiar to other programmers
        C. familiar to the general public
        D. relevant to the business environment

A _____ error occurs during program execution.
        A. compiling
        B. linking
        C. runtime
        D. shutdown

The user's manual should be updated
        A. when minor changes are made to the system
        B. any time system changes affect the user in any way
        C. any time the user enters different data
        D. when major changes are made to the server

Documentation standards should be
        A. changed frequently
        B. defined up front
        C. determined by the end users
        D. determined by the programmer

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.

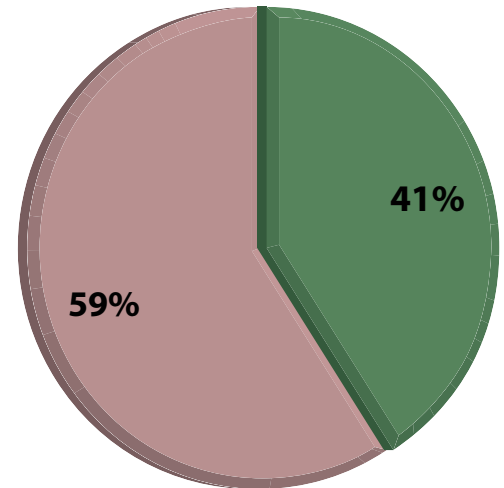**Administration Time:** 2 hours
Number of Jobs: 2

Areas Covered:

41% Design Solution Logic
Participant will read input file until end of File (EOF), list name and date of birth in each record, count number of people in the file, calculate age of each person in the file, calculate average age of group, produce a Summary Line, and produce a hard copy of the logic flow diagram to present to the evaluator.

59% Write a Program
Participant will create a program to track customer purchases, create a data file, perform calculations, print to the command line, print the source code, data file, and print screen of the output, and submit to the evaluator.

Sample Job

Design Solution Logic

Maximum Time: 1 hour

Participant Activity: Participant will read input file until end of File (EOF), list name and date of birth in each record, count number of people in the file, calculate age of each person in the file, calculate average age of group, produce a Summary Line (indicating total number of people and average age for the group), and produce a hard copy of the logic flow diagram to present to the evaluator.