

Computer Programming

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Test Type: The Computer Programming assessment is included in NOCTI's Teacher assessment battery. Teacher assessments measure an individual's technical knowledge and skills in a proctored proficiency examination format. These assessments are used in a large number of states as part of the teacher licensing and/or certification process, assessing competency in all aspects of a particular industry. NOCTI Teacher tests typically offer both a written and performance component that must be administered at a NOCTI-approved Area Test Center. Teacher assessments can be delivered in an online or paper/pencil format.

Revision Team: The assessment content is based on input from subject matter experts representing the following states: Idaho, Missouri, New Jersey, New York, and Pennsylvania.



11.0201- Computer
Programming/Programmer,
General



Career Cluster -
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

Written Assessment

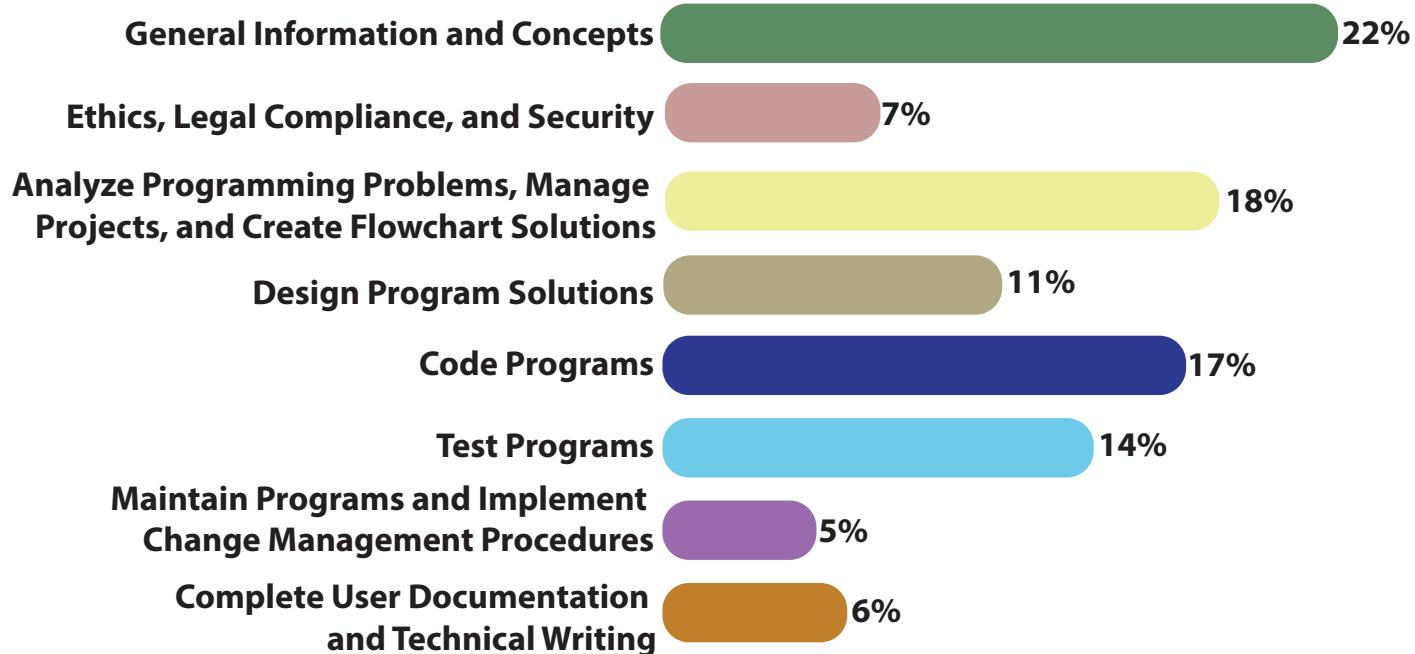
NOCTI written assessments consist of questions to measure an individual's factual theoretical knowledge.

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 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

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

(Continued on the following page)

Specific Standards and Competencies (continued)

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

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 H₂O
- 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

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

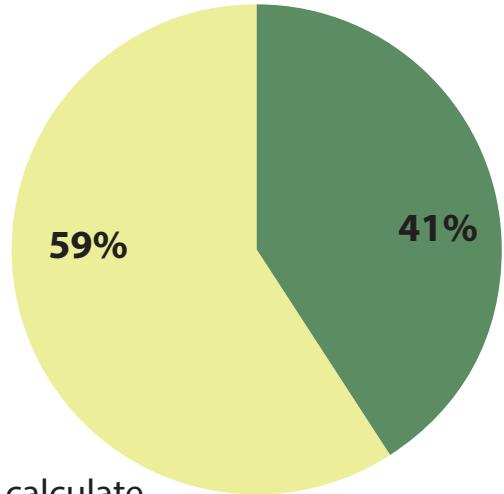
Areas Covered:

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.

