



Computer Programming IB Python

EXAM INFORMATION

Items

39

Points

40

Prerequisites

COMPUTER PROGRAMMING IA

Grade Level

10-12

Course Length

ONE SEMESTER

Career Cluster

INFORMATION TECHNOLOGY

Performance Standards

NONE

Certificate Available

YES

DESCRIPTION

Computer Programming IB is an intermediate assessment in computer programming/software engineering and applications. It reviews and builds on the concepts introduced in Computer Programming IA and introduces students to more complex data structures and their uses, including sequential files, arrays, and classes.

EXAM BLUEPRINT

STANDARD	PERCENTAGE OF EXAM
1- Arrays	17%
2- Object-Oriented Programming Techniques	12%
3- Commands and Operations	10%
4- Programming Skills as a Team	3%



STANDARD 1

STUDENTS WILL LEARN ABOUT ARRAYS

- Objective 1** Demonstrate the ability to use arrays in programs.
1. Declare arrays all applicable types.
 2. Initialize arrays.
 3. Input data into arrays.
 4. Output data from arrays.
 5. Perform operations on arrays.
 6. Perform sequential searches on arrays.
- Objective 2** Demonstrate the ability to use dynamic arrays (e.g., vectors, Array Lists, or generic lists).
1. Declare a dynamic array.
 2. Add and remove items from the array.
 3. Output data from arrays.
 4. Perform operations on arrays.
 5. Iterate through the loop (e.g., for each loop).
- Objective 3** Demonstrate the ability to use strings in programs.
1. Compare string identifiers.
 2. Find the length of a string.
 3. Copy part or all of string identifiers into other strings.
 4. Concatenate string identifiers.
 5. Locate and delete sub-string positions.
 6. Insert strings into other strings.

Standard 1 Performance Evaluation included below (Optional)

STANDARD 2

STUDENTS WILL PROPERLY EMPLOY OBJECT-ORIENTED PROGRAMMING TECHNIQUES

- Objective 1** Demonstrate the ability to use classes.
1. Instantiate objects.
 2. Use object data members.
 3. Use object member functions (methods).
- Objective 2** Demonstrate the ability to create user-defined classes.
1. Create and use data members.
 2. Create a constructor to initialize the data members.
 3. Create and use instance functions (methods).
- Objective 3** Demonstrate proper design principles with classes.
1. Create classes that are well encapsulated (data members private).
 2. Properly use modifiers and accessors (getters and setters).



3. Understand private and public modifiers.

Standard 2 Performance Evaluation included below (Optional)

STANDARD 3

STUDENTS WILL PROPERLY USE SEQUENTIAL FILES

Objective 1 Demonstrate the ability to use sequential files in programs.

1. Create and initialize sequential files.
2. Store data to sequential files.
3. Retrieve data from sequential files.
4. Update sequential files.

Standard 3 Performance Evaluation included below (Optional)

STANDARD 4

STUDENTS WILL APPLY APPROPRIATE PROGRAMMING SKILLS AS AN EFFECTIVE MEMBER OF A TEAM

Objective 1 Demonstrate the ability to apply knowledge to a programming project.

1. Formalize specifications.
2. Choose proper input parameters.
3. Choose appropriate data structures and processing.
4. Design appropriate output.
5. Use appropriate test data.
6. Write good documentation.

Objective 2 Demonstrate the ability to use teamwork and collaboration in a programming project.

1. Divide a project among programmers.
2. Present work to a group.
3. Coordinate work with others in the group.
4. Complete assigned work according to predetermined deadlines.
5. Participate in a peer performance evaluation.
6. Demonstrate professionalism in team relationships, communication, timeliness, and attitude.

Standard 4 Performance Evaluation included below (Optional)



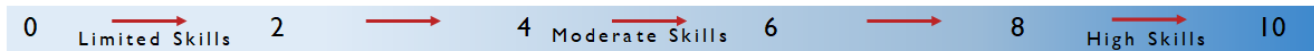
Computer Programming IB Python Performance Standards (Optional)

Performance assessments may be completed and evaluated at any time during the course. The following performance skills are to be used in connection with the associated standards and exam. To pass the performance standard the student must attain a performance standard average of **8 or higher** on the rating scale. Students may be encouraged to repeat the objectives until they average **8 or higher**.

Students Name _____

Class _____

PERFORMANCE RATING SCALE



STANDARD 1 Arrays

Score:

- Demonstrate the ability to use atomic data types, static arrays, and strings

STANDARD 2 Object Oriented Programming Techniques

Score:

- Demonstrate the ability to use classes, including objects, object data members and member method (functions)
- Demonstrate the ability to create and use user-defined classes including user-defined data members and methods

STANDARD 3 Sequential Files

Score:

- Demonstrate the ability to create, initialize, update sequential files
- Demonstrate the ability to store and retrieve data from sequential files

STANDARD 4 Programming Skills in a Team

Score:

- Demonstrate the ability to work as an effective member of a development team completing assigned work according to predetermined time lines with professionalism and a good attitude
- Develop a software application as a member of a team

PERFORMANCE STANDARD AVERAGE SCORE: