

# Exam 98-361: Software Development Fundamentals – Skills Measured

## Audience Profile

Candidates for this exam are seeking to prove core software development skills. It is recommended that candidates be familiar with the concepts of and have hands-on experience with the technologies described here either by taking relevant training courses or by working with tutorials and samples available on MSDN and in Microsoft Visual Studio. Candidates are expected to have some experience with C# or Microsoft Visual Basic .NET.

## Skills Measured

NOTE: The bullets that appear below each of the skills measured are intended to illustrate how we are assessing that skill. This list is not definitive or exhaustive.

NOTE: In most cases, exams do NOT cover preview features, and some features will only be added to an exam when they are GA (General Availability).

## Understanding core programming (15-20%)

### Understand computer storage and data types

- how a computer stores programs and the instructions in computer memory, memory stacks and heaps, memory size requirements for the various data storage types, numeric data and textual data

### Understand computer decision structures

- various decision structures used in all computer programming languages; If decision structures; multiple decision structures, such as If...Else and switch/Select Case; reading flowcharts; decision tables; evaluating expressions

### Identify the appropriate method for handling repetition

- For loops, While loops, Do...While loops, and recursion

### Understand error handling

- structured exception handling

## **Understanding object-oriented programming (20-25%)**

### **Understand the fundamentals of classes**

- properties, methods, events, and constructors; how to create a class; how to use classes in code

### **Understand inheritance**

- inheriting the functionality of a base class into a derived class

### **Understand polymorphism**

- extending the functionality in a class after inheriting from a base class, overriding methods in the derived class

### **Understand encapsulation**

- creating classes that hide their implementation details while still allowing access to the required functionality through the interface, access modifiers

## **Understanding general software development (15-20%)**

### **Understand application life cycle management**

- phases of application life cycle management, software testing

### **Interpret application specifications**

- reading application specifications and translating them into prototypes, code, select appropriate application type, and components

### **Understand algorithms and data structures**

- arrays, stacks, queues, linked lists, and sorting algorithms; performance implications of various data structures; choosing the right data structure

## **Understanding web applications (15-20%)**

### **Understand web page development**

- HTML, Cascading Style Sheets (CSS), JavaScript

### **Understand Microsoft ASP.NET web application development**

- page life cycle, event model, state management, client-side versus server-side programming

### **Understand web hosting**

- creating virtual directories and websites, deploying web applications, understanding the role of Internet Information Services

### **Understand web services**

- web services that will be consumed by client applications, accessing web services from a client application, SOAP and Web Service Definition Language (WSDL)

## **Understanding desktop applications (15-20%)**

### **Understand Windows apps**

- UI design guideline categories, characteristics and capabilities of Store Apps, identify gestures

### **Understand console-based applications**

- characteristics and capabilities of console-based applications

### **Understand Windows Services**

- characteristics and capabilities of Windows Services

## **Understanding databases (15-20%)**

### **Understand relational database management systems**

- characteristics and capabilities of database products, database design, Entity Relationship Diagrams (ERDs), normalization concepts

### **Understand database query methods**

- Structured query language (SQL), creating and accessing stored procedures, updating data and selecting data

### **Understand database connection methods**

- connecting to various types of data stores, such as flat file; XML file; in-memory object; resource optimization