

BASIC RULER MEASUREMENT TEST Manual

basic ruler measurement test is an essential skill that forms the foundation for many everyday tasks and academic subjects, especially in math and science. Whether you're a student learning how to accurately measure objects or a professional needing precise measurements for a project, understanding how to properly use a ruler is crucial. This test not only assesses your ability to read measurements correctly but also evaluates your understanding of different types of rulers, units of measurement, and measurement techniques. In this comprehensive guide, we will explore everything you need to know about the basic ruler measurement test, including the importance of accurate measurement, the types of rulers, how to prepare for the test, and tips to improve your measurement skills.

Understanding the Importance of the Basic Ruler Measurement Test

Measuring accurately with a ruler is a fundamental skill that underpins many other skills and knowledge areas. Here's why mastering this test is important:

The Role of Accurate Measurement in Everyday Life

- Cooking and Baking: Precise measurements ensure recipes turn out as intended.
- Home Improvement: Accurate measurements are vital when cutting materials or installing fixtures.
- Fashion and Sewing: Proper measurement ensures clothes fit perfectly.
- Crafts and DIY Projects: Precise measurements lead to professional-looking results.

Academic and Professional Significance

- Mathematics and Science: Many experiments and calculations require exact measurements.
- Engineering and Architecture: Precise measurements are crucial for designing structures.
- Art and Design: Accurate sizing impacts the quality of creative projects.

Types of Rulers and Their Uses

Understanding the different types of rulers available helps in selecting the appropriate tool for specific measurements.

Common Types of Rulers

- **Standard Ruler:** Usually 12 inches (30 cm) long, made of wood, plastic, or metal. Used in school settings for general measurements.
- **Metric Ruler:** Typically 30 cm or 12 inches long, marked in centimeters and millimeters. Common in scientific and international contexts.
- **Flexible Ruler:** Made of flexible plastic or metal, useful for measuring curved surfaces.
- **Steel or Metal Ruler:** Durable and precise, often used by engineers and architects.
- **Fabric or Tailor's Measure:** Soft, flexible tape measure used for measuring body dimensions or fabric lengths.

Choosing the Right Ruler for Your Measurement Test

- For basic school-level tests, a standard or metric ruler suffices.
- For detailed or professional work, consider using a metal or specialized ruler.
- Always ensure the ruler is straight and free of damage for accurate readings.

Preparing for the Basic Ruler Measurement Test

Proper preparation can boost confidence and improve accuracy during your test.

Gather Necessary Materials

- A clean, straight-edged ruler
- A flat, stable surface
- A pencil or pen for marking (if allowed)
- A calculator (for conversions, if needed)

Familiarize Yourself with Measurement Units

- Understand the difference between inches and centimeters/millimeters.
- Practice reading measurements on different types of rulers.
- Learn how to identify the zero mark and other key measurement points.

Practice Basic Measurement Techniques

- Align the object precisely with the zero mark.
- Ensure the ruler is straight and level.
- Read the measurement at the eye level to avoid parallax errors.

- Record measurements accurately, including fractional parts if applicable.

Step-by-Step Guide to Taking Accurate Measurements

Mastering the correct technique is essential for success in the ruler measurement test.

Measuring Length of an Object

- Place the object on a flat, stable surface.
- Align one end of the object with the zero mark on the ruler.
- Ensure the ruler is straight and not tilted.
- Read the measurement at the point where the object ends, at eye level.
- If the object extends beyond the ruler, note the full length accordingly.

Measuring Width, Height, or Depth

- Use the same technique, ensuring the ruler is perpendicular to the object.
- For small or irregular objects, use calipers for greater precision.

Converting Measurements

- Understand how to convert between units (e.g., inches to centimeters).
- Use conversion factors: 1 inch = 2.54 cm.
- Use a calculator for precise conversions, especially in scientific contexts.

Common Challenges and How to Overcome Them

Even experienced users can encounter issues when measuring. Here are some common challenges and solutions:

Parallax Error

- Problem: Reading the measurement from an angle causes inaccuracies.
- Solution: Always position your eyes directly above the measurement mark.

Damaged or Worn Rulers

- Problem: Cracks, warps, or worn markings can lead to incorrect readings.
- Solution: Use a new or well-maintained ruler for accuracy.

Improper Alignment

- Problem: Not aligning the object properly with the zero mark affects measurement.
- Solution: Double-check the alignment before reading.

Measuring Curved or Irregular Objects

- Solution: Use a flexible measuring tape or string to conform to the shape, then straighten it to measure.

Tips to Improve Your Measurement Accuracy

Practicing good habits can significantly enhance your measurement skills.

- Always measure at eye level to avoid parallax errors.
- Use the right type of ruler for the task.
- Ensure the ruler is clean and free of damage.
- Take multiple measurements for consistency.
- Practice measuring different objects to build confidence.

Sample Questions to Practice the Basic Ruler Measurement Test

Practicing with sample questions can prepare you for real test scenarios.

- Measure the length of a pencil using a standard ruler. Record your measurement.
- Determine the width of a book in centimeters.
- Convert a measurement of 7 inches to centimeters.
- Estimate and measure the diameter of a circular object.
- Measure the height of a small plant using a flexible tape measure.

Conclusion

The **basic ruler measurement test** is a fundamental assessment that evaluates your ability to use a ruler accurately and confidently. Developing proficiency in measuring objects precisely is a

valuable skill that benefits many areas of daily life and professional work. By understanding the different types of rulers, mastering proper measurement techniques, and practicing regularly, you can excel in this test and ensure your measurements are accurate every time. Remember, patience and attention to detail are key?practice consistently, follow the correct procedures, and you'll master the art of measurement in no time.

Basic Ruler Measurement Test: An Essential Skill for Accurate Measurement

Understanding how to accurately measure using a ruler is a fundamental skill that underpins many activities in education, craftsmanship, engineering, and everyday life. The basic ruler measurement test serves as a vital assessment to evaluate one's ability to read measurements precisely, interpret markings correctly, and utilize rulers effectively. Whether you're a student learning the basics of measurement, a teacher gauging student proficiency, or a professional ensuring precision, mastering the concepts behind the ruler measurement test is crucial. This article explores the key aspects of the basic ruler measurement test, its importance, the skills involved, and tips for preparation and success.

Understanding the Basic Ruler Measurement Test

The basic ruler measurement test assesses an individual's ability to read a ruler accurately, understand the units of measurement, and apply this knowledge to real-world scenarios. The test typically includes tasks such as measuring objects, converting between units, and interpreting fractional and decimal readings on a ruler.

Why is this test important?

Accurate measurement is foundational in many disciplines. A mistake in reading a ruler can lead to errors in construction, design, or scientific experiments. Therefore, this test not only measures raw skill but also emphasizes the importance of attention to detail and precision.

Core Components of the Test:

- Reading measurements from standard rulers (inches and centimeters)
- Understanding the scale and subdivisions
- Converting measurements between different units
- Applying measurements to solve real-world problems
- Recognizing common measurement errors and pitfalls

Key Skills Assessed in the Ruler Measurement Test

The test evaluates several interrelated skills, which together determine a person's competency in measurement.

1. Reading the Scale Accurately

The foundation of the test involves correctly interpreting the markings on the ruler. Rulers typically feature primary divisions (whole units) and secondary subdivisions (tenths, sixteenths, eighths, etc.).

Important Points:

- Identifying the correct unit (inches or centimeters)
- Reading between the smallest divisions
- Understanding fractional parts and converting them to decimals if needed

2. Understanding Measurement Units

Participants should be familiar with both metric and imperial units and their conversions.

Features:

- Recognizing the difference between inches, fractions, and decimal equivalents
- Converting centimeters to millimeters or inches to fractions
- Applying appropriate units based on the context

3. Measuring Objects Correctly

Beyond reading a ruler, the test often involves physically measuring objects, ensuring proper alignment and positioning.

Skills include:

- Aligning the object properly with the zero mark
- Ensuring the ruler is straight and steady
- Recording measurements precisely

4. Converting and Comparing Measurements

The ability to switch between measurement systems and compare different measurements is

crucial, especially in multidisciplinary contexts.

Examples:

- Converting 3.5 inches to centimeters
- Comparing measurements in different units

5. Error Identification and Troubleshooting

Recognizing common mistakes like misreading fractions or misaligning objects helps improve accuracy.

Features of the Basic Ruler Measurement Test

The design of the test incorporates various features to evaluate different aspects of measurement skills.

Features include:

- Multiple-choice questions on reading scales
- Practical measurement tasks with real objects
- Conversion exercises between units
- Error analysis exercises
- Timed assessments to evaluate efficiency

Pros of the Test:

- Standardized format for consistent evaluation
- Covers a broad range of measurement skills
- Suitable for learners of various levels
- Can be administered individually or in groups

Cons of the Test:

- May be simplistic for advanced learners
- Focused mainly on basic skills, not complex measurements
- Time constraints can induce anxiety, affecting performance

Preparation Tips for the Ruler Measurement Test

Success in the test depends heavily on preparation. Here are some practical tips:

Practice Regularly

- Use different rulers (metal, plastic, vintage) to familiarize yourself with various scales.
- Measure everyday objects like paper, books, or furniture.

Understand the Scale

- Learn to interpret fractional divisions and convert them to decimals.
- Familiarize yourself with both metric and imperial units.

Work on Accuracy

- Practice aligning objects properly.
- Use a steady hand and ensure the ruler is straight.

Learn Conversion Techniques

- Memorize common conversion factors (e.g., 1 inch = 2.54 cm).
- Practice quick conversions to build confidence.

Take Practice Tests

- Simulate test conditions to improve speed and accuracy.
- Review mistakes to avoid repeating them.

Common Challenges and How to Overcome Them

Many learners face specific hurdles when preparing for or taking the ruler measurement test.

Misreading Fractions or Decimals

- Solution: Practice converting fractions to decimals and vice versa regularly.

Misaligning the Object

- Solution: Use a flat, stable surface and ensure the object is flush with the zero mark.

Speed vs. Accuracy

- Solution: Focus on accuracy first; gradually reduce measurement time with practice.

Understanding Different Units

- Solution: Create a conversion chart for quick reference.

Applications of Ruler Measurement Skills

Proficiency in ruler measurement extends beyond tests into practical applications:

- Educational Activities: Science experiments, art projects, and math problems.
- Construction and Carpentry: Precise measurements are critical for cutting and assembling.
- Design and Engineering: Ensuring components fit accurately.
- Cooking and Baking: Measuring ingredients precisely.
- Everyday Tasks: Measuring furniture for fitting, sewing, or DIY projects.

Conclusion: The Significance of the Basic Ruler Measurement Test

Mastering the basic ruler measurement test and the underlying skills is a vital step toward developing accurate measurement habits. It fosters attention to detail, enhances spatial awareness, and builds confidence in handling measurements in various contexts. While the test may seem straightforward, it encapsulates fundamental skills that are essential across countless disciplines and daily activities. With consistent practice, understanding of measurement principles, and awareness of common pitfalls, learners can excel in this assessment and apply their skills effectively in practical situations.

Whether you're a student aiming for good grades, an educator designing curriculum, or a professional requiring precise measurements, honing your ruler reading skills and preparing thoroughly for the measurement test will serve you well. Remember, accuracy is key?precise

measurements can make the difference between success and error in many endeavors.

Question What is the primary purpose of a basic ruler measurement test? The primary purpose is to assess a person's ability to accurately measure objects using a standard ruler, ensuring they understand units like inches and centimeters. Which skills are typically evaluated in a basic ruler measurement test? The test evaluates skills such as reading measurements accurately, understanding different units, and measuring objects precisely without errors. What are common mistakes to avoid during a ruler measurement test? Common mistakes include misreading the measurement scale, not aligning the ruler properly, and recording measurements incorrectly or with improper units. How can students improve their accuracy in a basic ruler measurement test? Students can improve by practicing regularly, paying close attention to the measurement scales, ensuring the ruler is aligned correctly, and double-checking their readings. Why is understanding basic ruler measurement important in everyday life? It is important because it helps with tasks like cooking, DIY projects, shopping, and understanding specifications in various contexts, making daily activities more precise and efficient.

Related keywords: measurement skills, ruler accuracy, length measurement, metric system, imperial units, measurement test, ruler reading, beginner measurement, measurement assessment, classroom measurement

C Visual Basic Download

c visual basic download is a popular query among developers and hobbyists interested in creating applications using Visual Basic programming language integrated with C environments. Whether you're a beginner exploring software development or an experienced programmer looking to expand your toolkit, understanding how to download and set up C Visual Basic environments is essential for efficient coding and project management.

Introduction to C Visual Basic

Before diving into the download process, it's important to understand what C Visual Basic is and how it differs from traditional Visual Basic.

What is C Visual Basic?

C Visual Basic is not an official language but rather a conceptual combination where developers utilize Visual Basic's ease of use within a C-based development environment. Often, this refers to integrating Visual Basic components or libraries into C projects or using Visual Basic.NET within

Visual Studio, which is built on a C++ foundation.

Why Use C Visual Basic?

- Ease of Development: Visual Basic offers a straightforward syntax ideal for rapid application development.
- Integration with .NET: Visual Basic.NET seamlessly integrates with the .NET framework, allowing access to extensive libraries.
- Cross-language Compatibility: Combining C and Visual Basic in projects allows leveraging strengths of both languages.

How to Download C Visual Basic

Downloading C Visual Basic involves obtaining the appropriate IDEs, SDKs, or runtime libraries needed for development. The most common and official route is via Microsoft Visual Studio.

Step 1: Choose the Right Development Environment

There are multiple options depending on your needs:

- Visual Studio Community Edition: Free, feature-rich IDE suitable for most developers.
- Visual Studio Professional/Enterprise: Paid versions with advanced features.
- Other IDEs: Such as JetBrains Rider or Visual Studio Code with extensions, though Visual Studio is recommended for full Visual Basic support.

Step 2: Download Visual Studio

Official Download Link

Visit the [Microsoft Visual Studio official download page](<https://visualstudio.microsoft.com/downloads/>) to acquire the latest version.

Installation Process

- Select the Edition: Choose either Community (free), Professional, or Enterprise.
- Run the Installer: Download and execute the installer.
- Choose Workloads: During setup, select relevant workloads such as:

- ".NET desktop development"
 - "Desktop Development with C++" (if needed)
 - "Universal Windows Platform development" (for UWP apps)
- Install: Proceed with the installation, which may take some time depending on your system.

Step 3: Install Visual Basic Components

Visual Basic components are included in the ".NET desktop development" workload. Ensure this is selected during installation.

Step 4: Verify the Installation

Open Visual Studio and create a new project:

- Go to File > New > Project
- Search for Visual Basic templates, such as "Console App (.NET Framework)" or "Windows Forms App (.NET Framework)."

If Visual Basic templates are available, the installation was successful.

Alternative Methods to Download C Visual Basic Components

While Visual Studio remains the standard platform, here are other options:

Using Visual Studio Code

- Visual Studio Code is a lightweight editor.
- Install the .NET SDK from [Microsoft's official .NET download page](<https://dotnet.microsoft.com/download>).
- Add extensions like OmniSharp for C support.
- For Visual Basic, support is limited; thus, Visual Studio is recommended.

Using .NET SDKs and Command Line Tools

- Download the .NET SDK directly from [Microsoft's .NET downloads](<https://dotnet.microsoft.com/download>).

- Use command-line interfaces to create and manage projects with Visual Basic.

System Requirements for Downloading and Running C Visual Basic

Ensure your system meets the following requirements:

| Requirement | Minimum Specification |

|-----|-----|

| Operating System | Windows 10 or later (recommended) |

| RAM | 4 GB (8 GB recommended) |

| Disk Space | 20 GB free space |

| Processor | Dual-core 2 GHz or higher |

Tips for Smooth Download and Installation

- Stable Internet Connection: Download sizes can be large; a reliable connection speeds up the process.
- Administrator Rights: Run installers with administrator privileges.
- Update Windows: Ensure your OS is up to date for compatibility.
- Disable Antivirus Temporarily: Sometimes, security software may interfere; disable temporarily if issues arise.

Learning Resources for C Visual Basic

Once you've downloaded and installed the development environment, consider exploring these resources:

- Microsoft Documentation: Comprehensive guides on Visual Basic and C integration.
- Online Tutorials: Websites like Microsoft Learn, Udemy, and Coursera offer courses on Visual Basic and C.
- Community Forums: Stack Overflow, Reddit's r/learnprogramming, and Microsoft Developer Community are valuable for troubleshooting.

Common Issues and Troubleshooting

Issue 1: Missing Visual Basic Templates

Solution: Ensure during installation that the ".NET desktop development" workload is selected.

Issue 2: Installation Fails or Crashes

Solution: Check system requirements, run the installer as administrator, and disable conflicting security software.

Issue 3: Cannot Find C Visual Basic in IDE

Solution: Verify that Visual Basic components are installed and enabled in Visual Studio settings.

Conclusion

C Visual Basic download is a straightforward process primarily centered around obtaining Microsoft Visual Studio, which provides a comprehensive environment for developing with Visual Basic and integrating C. By choosing the right edition, verifying system requirements, and following installation best practices, developers can quickly set up their environment to start creating robust applications. Remember to keep your IDE updated, utilize available learning resources, and participate in community forums to enhance your programming skills. Whether you're developing simple desktop apps or complex enterprise solutions, mastering the download and setup process is the first step toward successful software development with C and Visual Basic.

C Visual Basic Download: A Comprehensive Guide to Getting Started with Visual Basic in C Environment

Introduction to C Visual Basic and Its Significance

Visual Basic (VB) has long been a popular programming language for rapid application development, especially within the Microsoft ecosystem. Historically, it was a standalone language designed for creating Windows applications with a graphical user interface (GUI). However, many developers and learners are now interested in integrating Visual Basic capabilities into C or C++ projects, or leveraging Visual Basic's ease of use within a C environment.

C Visual Basic download refers to obtaining the tools, libraries, or environments necessary to develop, run, and integrate Visual Basic code within C projects or environments. This process involves understanding the compatibility, available tools, and how to set up a development environment that supports both languages effectively.

Understanding the Relationship Between C and Visual Basic

Before diving into the download process, it's essential to clarify the relationship between C and Visual Basic:

- Different Paradigms: C is a procedural programming language, emphasizing low-level memory management and system-level programming. Visual Basic, on the other hand, is event-driven and designed for rapid application development with a focus on GUI design.
- Interoperability: Modern development often requires integrating components written in different languages. Visual Basic can be used to create COM components or DLLs that are callable from C code.
- Bridging the Gap: To enable C programs to use Visual Basic components, developers often utilize COM interfaces, DLLs, or .NET interoperability features.

Prerequisites for Downloading and Using Visual Basic in a C Environment

Before downloading any tools or SDKs, ensure your system meets the following prerequisites:

- Operating System: Windows (since Visual Basic and related tools are primarily Windows-based)
- Development Environment: Visual Studio IDE (Community, Professional, or Enterprise editions)
- .NET Framework/SDK: Depending on the version of Visual Basic you intend to use
- C Compiler: Visual C++ or other compatible C compilers that support interoperability

Sources for Downloading Visual Basic and Related Tools

Several official sources and packages are available for downloading Visual Basic components and tools that enable integration with C. Here are the primary options:

- Visual Studio IDE

Visual Studio is the primary development environment for Visual Basic, C, and C#. It includes all necessary SDKs, compilers, and tools to develop and interoperate between languages.

- Download Link:

<https://visualstudio.microsoft.com/downloads/>

- Versions Available:
- Community (free)
- Professional

- Enterprise

What's included:

- Visual Basic development tools
- C/C++ development tools
- .NET Framework and SDKs
- COM component creation and registration tools

- Visual Basic Runtime Libraries

For existing Visual Basic applications or components, you might need the runtime libraries installed on your system.

- Download Link: Usually included with Visual Studio installation
- Alternatively: Windows Update or Microsoft's official runtime installers

- .NET SDKs and Frameworks

If you plan to work with Visual Basic .NET (VB.NET), then installing the appropriate SDKs is essential.

- Download Link: <https://dotnet.microsoft.com/download>

- COM and Interop Libraries

For integrating Visual Basic components into C, you might need to register COM libraries.

- Use regsvr32.exe for registration
- Use tlbimp.exe (Type Library Importer) to generate interop assemblies for C

Step-by-Step Guide to Downloading and Setting Up Visual Basic for C Projects

Step 1: Download and Install Visual Studio

- Visit the official Visual Studio download page.
- Choose the version suited for your needs (preferably the Community edition for beginners).
- Run the installer and select the following components:
 - ".NET desktop development" workload (for VB.NET)
 - "Desktop development with C++" workload (for C/C++)
- Complete the installation process.

Step 2: Install Additional SDKs and Runtime Libraries

- Ensure that the latest .NET Framework or .NET Core/5+ SDK is installed if working with VB.NET components.
- For legacy VB6 applications, download the VB6 Runtime from Microsoft.

Step 3: Create or Obtain Visual Basic Components

- Develop your Visual Basic components (ActiveX DLLs, COM objects, or .NET assemblies).
- Compile the VB code within Visual Studio.
- Register the compiled DLLs or EXEs using regsvr32.exe if they are COM components.

Step 4: Setting Up C Projects to Use Visual Basic Components

- Use Type Libraries (.tlb) to generate interop assemblies.
- Use TLBIMP to create a .NET interop assembly if necessary:

...

```
tlbimp YourVBComponent.tlb /out:InteropYourVBComponent.dll
```

...

- Reference the generated assembly in your C project (if using C) or import the COM component in C++.

Step 5: Build and Test Integration

- Write C code that calls the Visual Basic components via COM interfaces or DLL exports.
- Debug and ensure proper communication between the C and VB components.

Alternatives and Additional Tools for C Visual Basic Download

While Visual Studio remains the primary platform, other options include:

- SharpDevelop: An open-source IDE supporting .NET languages, including VB.NET.
- Command-Line Tools: Use SDKs like MSBuild, TLBIMP, or Regsvr32 for scripting and automation.
- Third-Party Libraries: Some libraries facilitate easier interoperability, such as COM Interop Libraries.

Common Challenges and Troubleshooting

- Compatibility Issues: Ensure that VB components are built targeting the correct runtime (32-bit vs. 64-bit).
- Registration Problems: Make sure COM components are registered correctly with administrator privileges.
- Interoperability Errors: Use proper marshaling attributes and ensure method signatures match across languages.
- Version Mismatches: Keep SDKs and runtime libraries updated and consistent across development environments.

Best Practices for Using Visual Basic in C Projects

- Always create clear interfaces between C and VB components.
- Use type libraries for smooth COM interoperability.
- Maintain proper registration of COM components.
- Document all interfaces and dependencies thoroughly.
- Test integration on all target platforms (32-bit and 64-bit).

Conclusion: Is Downloading Visual Basic Necessary for C Developers?

Downloading and setting up Visual Basic tools is essential if you aim to develop or integrate Visual Basic components into C projects. Whether creating ActiveX controls, COM objects, or leveraging VB.NET assemblies, having the right IDE, SDKs, and runtime libraries is crucial.

By following the detailed steps outlined above, developers can efficiently obtain and set up the necessary tools for seamless C and Visual Basic integration. This setup not only expands the capabilities of C projects but also opens avenues for rapid application development, automation, and leveraging existing Visual Basic codebases.

Final Words

C Visual Basic download is more than just obtaining files; it's about understanding the ecosystem, compatibility considerations, and effective integration techniques. With the right tools and knowledge, developers can harness the strengths of both languages, creating robust, flexible, and efficient applications. Always keep your development environment updated, consult official documentation, and participate in developer communities for best practices and troubleshooting.

Happy coding!

Question Where can I download the latest version of Visual Basic for C development? You can download the latest Visual Basic development tools through the official Microsoft Visual Studio website, which includes Visual Basic as part of the Visual Studio IDE. **Is Visual Basic available for free download?** Yes, Visual Basic is available for free as part of the Visual Studio Community Edition, which is free for individual developers, open-source projects, and small teams. **What are the system requirements for downloading Visual Basic C?** System requirements depend on the version of Visual Studio you choose. Generally, a Windows 10 or later OS, at least 4 GB RAM, and 20 GB of free disk space are recommended. **Can I download Visual Basic for C programming online?** While Visual Basic and C are different programming languages, you can download Visual Studio, which supports both languages. Visual Basic is included in the Visual Studio IDE for C and Visual Basic development. **Are there any free alternatives to download Visual Basic for C development?** Yes, besides Visual Studio Community Edition, you can explore other free IDEs like MonoDevelop or SharpDevelop that support Visual Basic programming. **How do I install Visual Basic after downloading Visual Studio?** After downloading Visual Studio from the official website, run the installer, select the '.NET desktop development' workload, and follow the on-screen instructions to install Visual Basic support.

Related keywords: Visual Basic download, VB download, Visual Basic IDE, Visual Basic compiler, VB runtime download, Visual Basic projects, VB programming, Visual Basic setup, VB.net

download, Visual Basic tutorials

Read the full article online: [C visual basic download](#)