PureBasic

PureBasic is a commercially distributed procedural computer programming language and integrated development environment based on BASIC and developed by Fantaisie Software for Windows 32/64-bit, Linux 32/64-bit, and macOS. An Amiga version is available, although it has been discontinued and some parts of it are released as open source. The first public release of PureBasic for Windows was on 17 December 2000. It has been continually updated since.

PureBasic has a "lifetime license model". As cited on the website, the first PureBasic user (who registered in 1998) still has free access to new updates and this is not going to change.[1]

PureBasic compiles directly to x86, x86-64, PowerPC or 680x0 instruction sets, generating small standalone executables and DLLs which need no runtime libraries beyond the standard system libraries. Programs developed without using the platform-specific application programming interfaces (APIs) can be built easily from the same source file with little or no modification.

PureBasic supports inline assembly, allowing the developer to include FASM assembler commands within PureBasic source code, while using the variables declared in PureBasic source code, enabling experienced programmers to improve the speed of speed-critical sections of code. PureBasic supports and has integrated the OGRE 3D Environment. Other 3D environments such as the Irrlicht Engine are unofficially supported.

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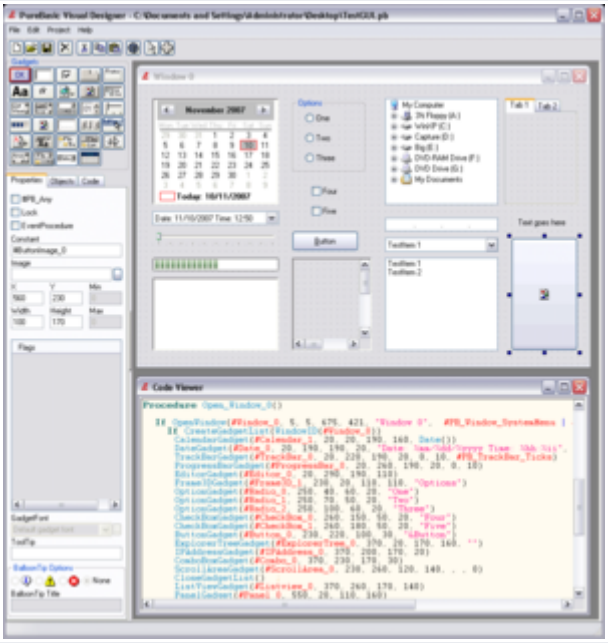

Paradigm	structured, imperative, procedural
Family	BASIC
Designed by	Fantaisie Software
Developer	Fantaisie Software
First appeared	1998 (AmigaOS) 2000 (Windows)
Stable release	5.73 LTS / November 23, 2020
OS	cross-platform: Microsoft Windows, Linux, macOS (active) AmigaOS (discontinued, open source)
License	commercial
Filename extensions	.pb, .pbi, .pbf, .pbp, .pbv
Website	www.purebasic.com (http://w

ww.purebasic.com)

Programming language

Characteristics

PureBasic is a native cross platform 32 bit and 64 bit BASIC compiler. Currently supported systems are Windows, Linux, macOS. The AmigaOS version is legacy and open-source. The compiler produces native executables and the syntax of PureBasic is simple and straightforward, comparable to plain C without the brackets and with native unicode string handling and a large library of built-in support functions.[2] It can compile console applications,[3] GUI applications,[4] and DLL files.[5]

Hello World example

The following single line of PureBasic code will create a standalone x86 executable (4.5 KiB (4,608 bytes) on Windows version) that displays a message box with the text "Hello World".

```
MessageRequester("Message Box", "Hello World")
```

And the following variant of the same code, which instead uses an inline Windows API call with no need for declarations or other external references, will create an even smaller 2.0 KiB (2,048 bytes) standalone x86 executable for Windows.

```
MessageBox_(0, "Hello World", "Message Box", 0)
```

The following is a console version of the Hello World example.

```
OpenConsole()          ; Open a console window.
Print("Hello, World!")
```

Procedural programming

PureBasic is a "Second generation BASIC" language, with structured conditionals and loops, and procedure-oriented programming supported. The user is not required to use procedures, so a programmer may opt for a coding style which includes `Goto, Gosub Label`, and `Return`.

Below is a sample procedure for sorting an array, although SortArray is now a built-in function of PureBasic.

```
1  Procedure bubbleSort(Array a(1))
2    Protected i, itemCount, hasChanged
3
```

```
    itemCount = ArraySize(a())
    Repeat
      hasChanged = #False
      itemCount - 1
      For i = 0 To itemCount
        If a(i) > a(i + 1)
          Swap a(i), a(i + 1)
          hasChanged = #True
        EndIf
      Next
    Until hasChanged = #False
  EndProcedure
```

Below is a sample program that displays a sizeable text editor with two menu items.

```
;Create Window:
OpenWindow(0, #PB_Ignore, #PB_Ignore, 800, 600, "Simple Text Editor", #PB_Window_SystemMenu |
#PB_Window_MinimizeGadget | #PB_Window_MaximizeGadget | #PB_Window_SizeGadget)

;Add 2 menus:
CreateMenu(0, WindowID(0))
MenuItem(1, "&OK")
MenuItem(2, "&Cancel")

;Add Editor:
EditorGadget(0, 0, 0, 0, 0)
SetGadgetFont(0, LoadFont(0, "Courier New", 10))

;Process window messages until closed:
Repeat
    Select WaitWindowEvent()
    Case #PB_Event_Menu
        Select EventMenu()
        Case 1: MessageRequester("OK clicked directly or with '&' mnemonic.",
GetGadgetText(0))
        Case 2: Break
        EndSelect
    Case #PB_Event_SizeWindow: ResizeGadget(0, 0, 0, WindowWidth(0,
#PB_Window_InnerCoordinate), WindowHeight(0, #PB_Window_InnerCoordinate))
    Case #PB_Event_CloseWindow: Break
    EndSelect
ForEver
```

Note that PureBasic does not escape double quotes in strings so these must be concatenated with `Chr(34)`.

Object-oriented programming

Fred, the developer of PureBasic, has stated that PureBasic will never be object oriented.[6] However, numerous users have created object oriented support systems.[7][8][9]

Data types

Variable data type specified when you first use it (and optionally - in the future), and is separated from the name of the point. There is a set of basic types - `.f`, `.d` (float and double numbers), `.b`, `.c`, `.w`, `.l`, `.q` (integers - from single-byte and 8-byte), `.s` - strings.

Type	Suffix	Memory usage	Numerical range
Byte	b	1 byte (8 bits)	−128 ... +127
Ascii	a	1 byte (8 bits)	0 ... +255
Character	c	1 byte (8 bits) (ascii)	0 ... +255
Word	w	2 bytes (16 bits)	−32768 ... +32767
Unicode	u	2 bytes (16 bits)	0 ... +65535
Character	c	2 bytes (16 bits) (unicode)	0 ... +65535
Long	l	4 bytes (32 bits)	−2147483648 ... +2147483647
Integer	i	4 bytes (32 bits) x86	−2147483648 ... +2147483647
Float	f	4 bytes (32 bits)	Depending on the ratio of the decimal number.
Integer	i	8 bytes (64 bits) x64	−9223372036854775808 ... +9223372036854775807
Quad	q	8 bytes (64 bits)	−9223372036854775808 ... +9223372036854775807
Double	d	8 bytes (64 bits)	Depending on the ratio of the decimal number.
String	s	(String length + 1) * SizeOf(Character)	No limit.
Fixed String	s{length}	(String length) * SizeOf(Character)	No limit.

- Note: `Len(String)` used to count the length of a string will not exceed the first null character (`Chr(0)`).

In addition to basic types, the user can define the type of construction via

```
Structure type_name
   field_name.type ; Single field. Perhaps the structures attachment.
   field_name[count].type ; Static arrays.
   ; ...
   ; Optional construction StructureUnion .. EndStructureUnion allows you
   ; to combine multiple fields into one area of memory
   ; that is sometimes required for the conversion types.
   StructureUnion
      type_name.type
      ; ...
   EndStructureUnion
EndStructure
```

Variables can be single (actually, standard variables), dynamic array (declared using the `Dim var_name.type_name (size1, size2, ... )`, a linked list (`List() var_name.type_name`), an associative array (in new versions of language) (`Map var_name.type_name()`)

Form Designer RAD

PureBasic has its own form designer to aid in the creation of forms for applications, but other third-party solutions are also available.[10][11][12] The original non-integrated *Visual Designer* was replaced with a new integrated *Form Designer* on 14 Feb 2013.[13]

User community

PureBasic provides an online forum for users to ask questions and share knowledge. On 6 May 2013 the English language forum had 4,769 members and contained 44,043 threads comprising 372,200 posts since 17 May 2002.[14]

Numerous code sharing sites show PureBasic is used to create tools[15] and games in a fast and easy way,[16] and share large amounts of open-source code.[17]

Further reading

- Willoughby, Gary (2006). *Purebasic: A Beginner s Guide to Computer Programming*. ISBN 1-4276-0428-2.
- Logsdon, John. *Programming 2D Scrolling Games*.This book is now freely downloadable (http://www.purebasic.fr/english/viewtopic.php?f=14&t=58232)
- *Basic Compilers: QuickBASIC, PureBasic, PowerBASIC, Blitz Basic, XBasic, Turbo Basic, Visual Basic, FutureBASIC, REALbasic, FreeBASIC*. ISBN 1-155-32445-5.

References

1. FAQ (http://www.purebasic.com/faq.php) lifetime licence details
2. PureBasic home page (http://www.purebasic.com/index.php)
3. PureBasic - Console (http://www.purebasic.com/documentation/console/index.html)
4. PureBasic - Gadget (http://www.purebasic.com/documentation/gadget/index.html)
5. Building a DLL (http://www.purebasic.com/documentation/reference/dll.html)
6. PureBasic won't be object oriented (http://www.purebasic.fr/english/viewtopic.php?p=403070#p403070)
7. PureObject: PureBasic OOP support (http://www.purebasic.fr/english/viewtopic.php?t=30236)
8. OOP tutorial (http://www.purebasic.fr/english/viewtopic.php?t=36255)
9. Another OOP PreCompiler (http://www.purebasic.fr/english/viewtopic.php?t=30774)
10. PureVision (http://purevision.reelmedia.org/), Professional form design for PureBASIC.
11. ProGUI (http://www.progui.co.uk/), DLL library comprising more than 100 well documented commands to quickly incorporate rich, customizable GUI components into your applications.
12. PureFORM (http://gnozal.ucoz.com/), Freeware form designer.
13. PureBasic 5.10 is released (http://www.purebasic.fr/english/viewtopic.php?f=14&t=53464)
14. English forum (http://www.purebasic.fr/english), Official forum.
15. Horst Schaeffer's Software Pages (http://www.horstmuc.de/win.htm)
16. PureArea (http://www.purearea.net/)
17. Andre Beer's code archive. (http://www.purearea.net/pb/CodeArchiv/English.html)

General references

- Hale Ligh, Michael (2010). *Malware Analysts Cookbook Tools for Thwarting Malicious Attacks*. Indianapolis, IN: John Wiley & Sons Inc. p. 241. ISBN 978-0-470-61303-0.
- Galbreath, Nick (2002). *Cryptography for Internet and database applications : developing secret and public key techniques with Java* (https://archive.org/details/cryptographyfori00gal

b/page/300). Indianapolis, Ind.: Wiley. pp. 300 (https://archive.org/details/cryptographyfori00galb/page/300). ISBN 978-0-471-21029-0.
- "Learning to Crack Code" (https://i.imgur.com/0jZ8noC.jpg/). *Manly Daily*. 25 June 2004.
- Georges, Philippe. "La programmation avec PureBasic" (http://www.programmez.com/magazine_articles.php?titre=La-programmation-avec-PureBasic&id_article=1538&magazine=141). *PROgrammez* (141).
- Svoboda, Luboš (2012). *Překvapivý PureBasic (Surprising PureBasic: A Czech ebook for prospective users of PureBasic)* (http://people.fsv.cvut.cz/~svobodal/pure/index.htm). p. 89.

External links

- Official website (http://www.purebasic.com)
- Official Purebasic Forums (English) (https://www.purebasic.fr/english/)
- PureBasic (https://curlie.org/Computers/Programming/Languages/BASIC/PureBasic) at Curlie

Articles

- PureBasic - The Perfect Cross-Platform & Native Development Language (http://www.codeproject.com/Articles/853831/PureBasic-The-Perfect-Cross-Platform-Native-Develo) (2015)
- A little PureBasic review (https://freeshell.de/~luis/purebasic/about/index.php) (2019)

Libraries and Open Source Code Archives

- Andre Beer's Open Source PB code archive (http://www.purearea.net/pb/CodeArchiv/English.html)
