MiniOS7 System Application Compilation Instructions

V2.2.0 Jan. 2024

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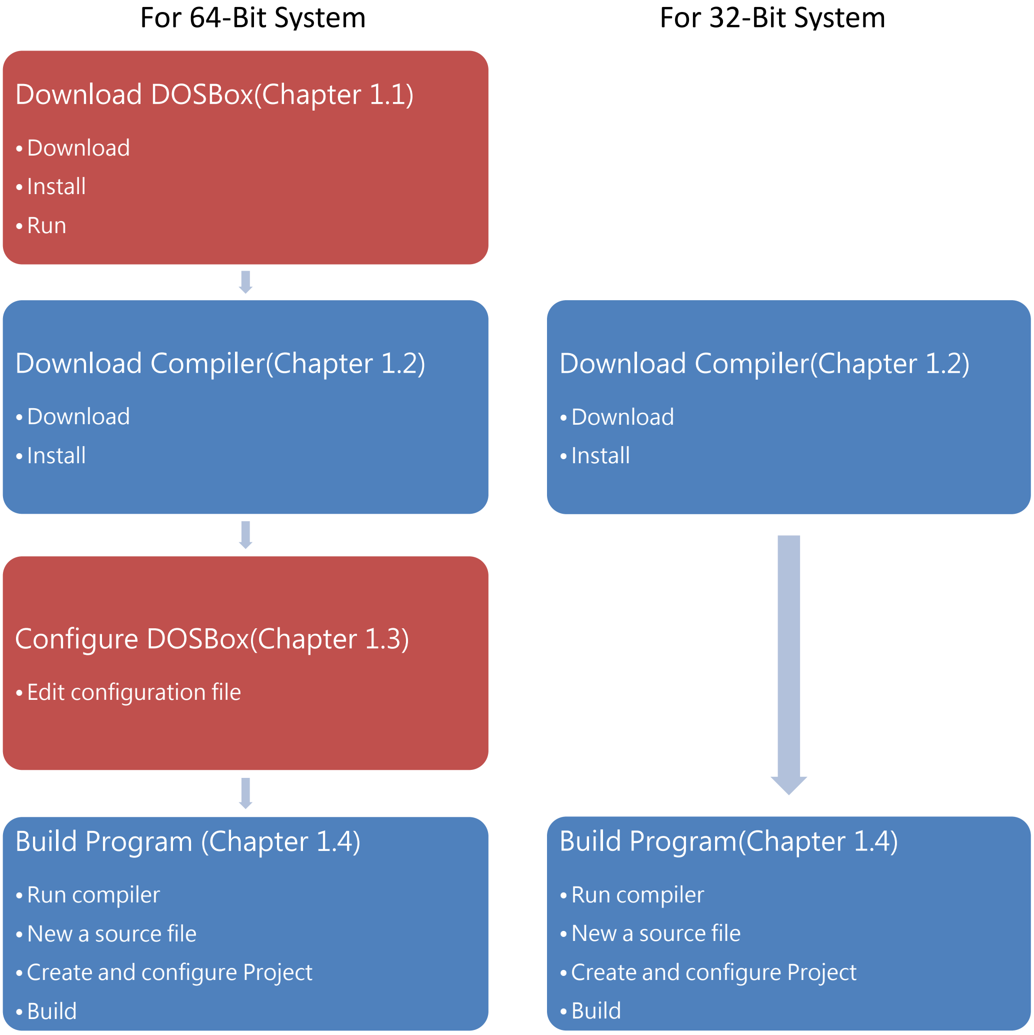
1. Building First Program – Hello World

This section will tell you how to build a program for MiniOS7 based controller.
Before start building the program, we need to figure out that which Operating System is being used on your computer, it is related to the process of developing the application.
If you are using a 32-bit Windows system such as Windows XP, please go to Chapter 1.2 to select the compiler and continue reading.
However, if you are using any 64-bit Windows system like Windows 7, Windows 8 or Windows 10, you will need an emulator, because the C compiler cannot be executed on these 64-bit systems directly.
Please check the following flow chart to understand the process of developing the application.


For 64-Bit System

For 32-Bit System

Download DOSBox(Chapter 1.1)
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- Install
- Run

Download Compiler(Chapter 1.2)
- Download
- Install

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- Run compiler
- New a source file
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- Build

Download Compiler(Chapter 1.2)
- Download
- Install

Build Program(Chapter 1.4)
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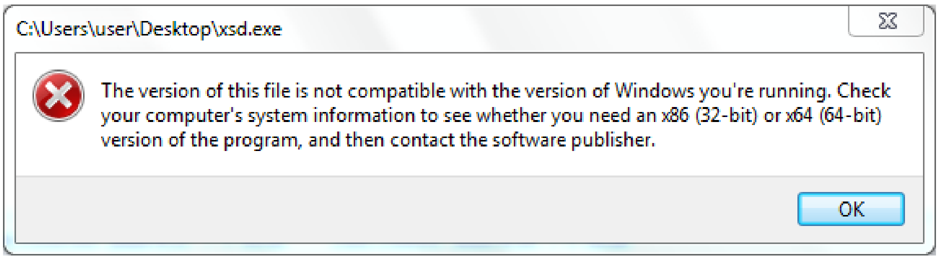
1.1. Downloading DOSBox

64-bit systems do not support 16-bit programs, 16-bit processes or 16-bit components.

Therefore, if you are running a 16-bit compiler on 64-bit Windows (such as Borland C ++ 3.1, Turbo C ++ 3.0 or a program compiled by a 16-bit compiler), you may get an error message like below photo.


C:\Users\user\Desktop\xsd.exe

The version of this file is not compatible with the version of Windows you're running. Check your computer's system information to see whether you need an x86 (32-bit) or x64 (64-bit) version of the program, and then contact the software publisher.

DOSBox is an excellent solution for running the C compiler on 64-bit systems.

DOSBox simulates the environment in which DOS and DOS used to run, including memory management and sound configuration, but has the functions of today’ s computers.

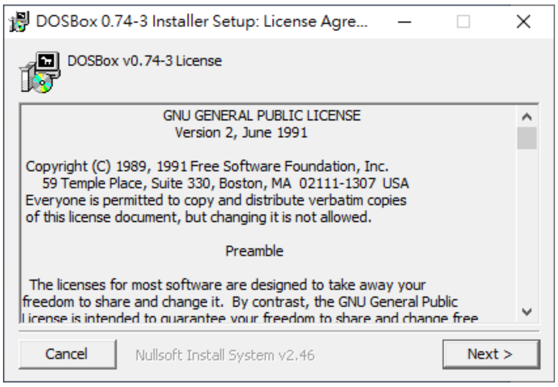
On this appendix we will show you how to execute the 16-bit compiler.

Step 1: Get the DOSBox Installer

The latest version of the DOSBox installer can be obtained from "SourceForge" web site.
http://sourceforge.net/projects/dosbox/

Step 2: Install the DOSBox

After the installation has been completed, there will be a new short-cut for DOSBox on the desktop.

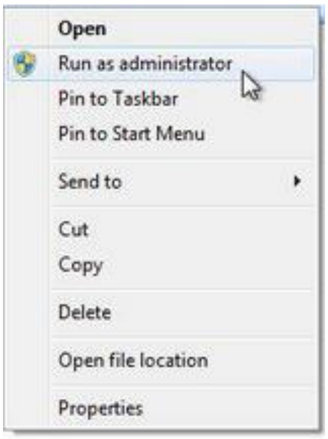

DOSBox 0.74-3 Installer Setup: License Agre...

DOSBox v0.74-3 License

```
GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.
   59 Temple Place, Suite 330, Boston, MA  02111-1307  USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

 The licenses for most software are designed to take away your
freedom to share and change it.  By contrast, the GNU General Public
License is intended to guarantee your freedom to share and change free
```

Step 3: Run the DOSBox

Right-click the DOSBox, and then click "**Run as administrator**".



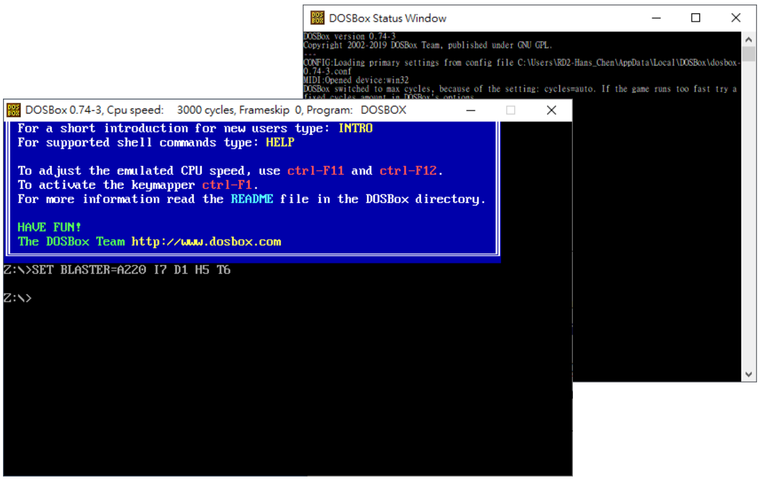
Tips & Warnings

If you do not execute DOSBox as an administrator, the installation of the compiler will fail.

Two windows will be displayed.

One is the DOSBox Status Windows,

And another one is the main execution window, which virtualizes a DOS operating environment.


DOSBox Status Window

```
DOSBox version 0.74-3
Copyright 2002-2019 DOSBox Team, published under GNU GPL.
---
CONFIG:Loading primary settings from config file C:\Users\RD2-Hans_Chen\AppData\Local\DOSBox\dosbox-
0.74-3.conf
MIDI:Opened device:win32
DOSBox switched to max cycles, because of the setting: cycles=auto. If the game runs too fast try a
fixed cycles amount in DOSBox's options.
```

DOSBox 0.74-3, Cpu speed: 3000 cycles, Frameskip 0, Program: DOSBOX

```
For a short introduction for new users type: INTRO
For supported shell commands type: HELP

To adjust the emulated CPU speed, use ctrl-F11 and ctrl-F12.
To activate the keymapper ctrl-F1.
For more information read the README file in the DOSBox directory.

HAVE FUN!
The DOSBox Team http://www.dosbox.com

Z:\>SET BLASTER=A220 I7 D1 H5 T6

Z:\>
```

1.2. Downloading Compiler

C is prized for its efficiency, and is the most popular programming language for writing applications.

Before writing your first program, ensure that you have the necessary C/C++ compiler and the corresponding functions library on your system.

Step 1: Download compiler

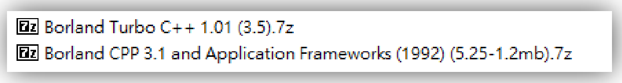
- Turbo C / C++(Borland Turbo C++ 1.01 (3.5))

  https://winworldpc.com/product/turbo-c/1x

- Borland C / C++ (Borland CPP 3.1 and Application Frameworks (1992) (5.25-1.2mb))

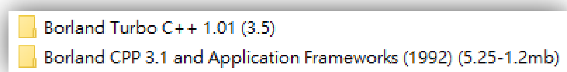
  https://winworldpc.com/product/borland-c/30

Step 2: Extract the file and install compiler



Borland Turbo C++ 1.01 (3.5).7z
Borland CPP 3.1 and Application Frameworks (1992) (5.25-1.2mb).7z

After you download the file, unzip it

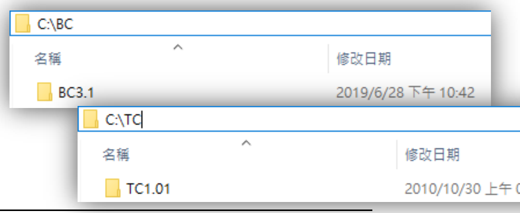


Borland Turbo C++ 1.01 (3.5)
Borland CPP 3.1 and Application Frameworks (1992) (5.25-1.2mb)

Tips & Warnings

Please rename the folder and move it to "C:\".

It will make the following installation steps easier.



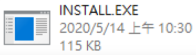
C:\BC

名稱	修改日期
BC3.1	2019/6/28 下午 10:42

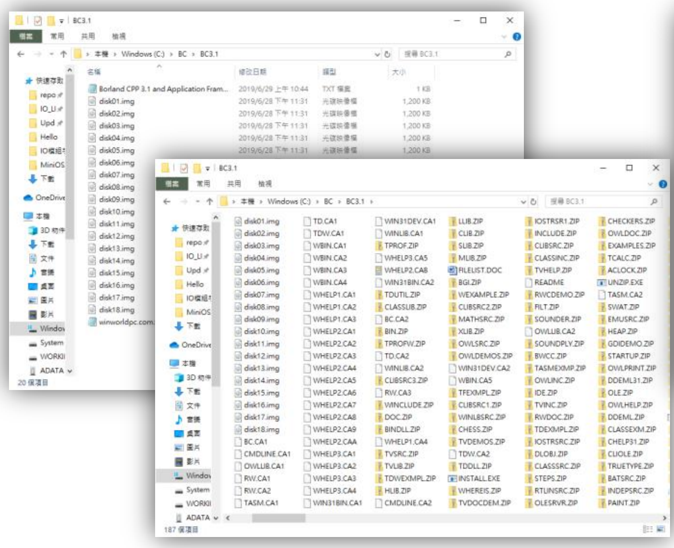
C:\TC

名稱	修改日期
TC1.01	2010/10/30 上午

Extract all .img files, there will be an "**install.exe**".



INSTALL.EXE
2020/5/14 上午 10:30
115 KB



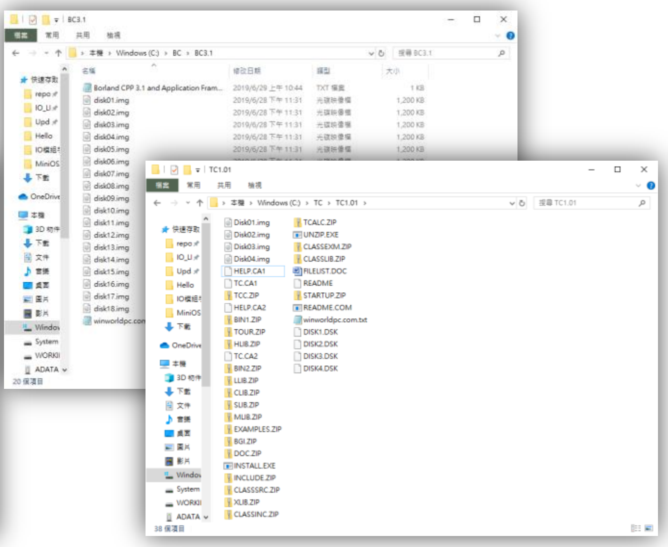
名稱	修改日期	類型	大小
Borland CPP 3.1 and Application Fram...	2019/6/29 上午 10:44	TXT 檔案	1 KB
disk01.img	2019/6/28 下午 11:31	光碟映像檔	1,200 KB
disk02.img	2019/6/28 下午 11:31	光碟映像檔	1,200 KB
disk03.img	2019/6/28 下午 11:31	光碟映像檔	1,200 KB
disk04.img	2019/6/28 下午 11:31	光碟映像檔	1,200 KB
disk05.img	2019/6/28 下午 11:31	光碟映像檔	1,200 KB
disk06.img			
disk07.img			
disk08.img			
disk09.img			
disk10.img			
disk11.img			
disk12.img			
disk13.img			
disk14.img			
disk15.img			
disk16.img			
disk17.img			
disk18.img			
winworldpc.com			

20 個項目

BC3.1
本機 › Windows (C:) › BC › BC3.1 ›

```
disk01.img    TD.CA1        WIN31DEV.CA1  LLIB.ZIP      IOSTRSR1.ZIP  CHECKERS.ZIP
disk02.img    TDW.CA1       WINLIB.CA1    CLIB.ZIP      INCLUDE.ZIP   OWLDOC.ZIP
disk03.img    WBIN.CA1      TPROF.ZIP     SLIB.ZIP      CLIBSRC.ZIP   EXAMPLES.ZIP
disk04.img    WBIN.CA2      WHELP3.CA5    MLIB.ZIP      CLASSINC.ZIP  TCALC.ZIP
disk05.img    WBIN.CA3      WHELP2.CAB    FILELIST.DOC  TVHELP.ZIP    ACLOCK.ZIP
disk06.img    WBIN.CA4      WIN31BIN.CA2  BGI.ZIP       README        UNZIP.EXE
disk07.img    WHELP1.CA1    TDUTIL.ZIP    WEXAMPLE.ZIP  RWCDEMO.ZIP   TASM.CA2
disk08.img    WHELP1.CA2    CLASSLIB.ZIP  CLIBSRC2.ZIP  FILT.ZIP      SWAT.ZIP
disk09.img    WHELP1.CA3    BC.CA2        MATHSRC.ZIP   SOUNDER.ZIP   EMUSRC.ZIP
disk10.img    WHELP2.CA1    BIN.ZIP       XLIB.ZIP      OWLLIB.CA2    HEAP.ZIP
disk11.img    WHELP2.CA2    TPROFW.ZIP    OWLSRC.ZIP    SOUNDPLY.ZIP  GDIDEMO.ZIP
disk12.img    WHELP2.CA3    TD.CA2        OWLDEMOS.ZIP  BWCC.ZIP      STARTUP.ZIP
disk13.img    WHELP2.CA4    WINLIB.CA2    WIN31DEV.CA2  TASMEXMP.ZIP  OWLPRINT.ZIP
disk14.img    WHELP2.CA5    CLIBSRC3.ZIP  WBIN.CA5      OWLINC.ZIP    DDEML31.ZIP
disk15.img    WHELP2.CA6    RW.CA3        TFEXMPL.ZIP   IDE.ZIP       OLE.ZIP
disk16.img    WHELP2.CA7    WINCLUDE.ZIP  CLIBSRC1.ZIP  TVINC.ZIP     OWLHELP.ZIP
disk17.img    WHELP2.CA8    DOC.ZIP       WINLBSRC.ZIP  RWDOC.ZIP     DDEML.ZIP
disk18.img    WHELP2.CA9    BINDLL.ZIP    CHESS.ZIP     TDEXMPL.ZIP   CLASSEXM.ZIP
BC.CA1        WHELP2.CAA    WHELP1.CA4    TVDEMOS.ZIP   IOSTRSRC.ZIP  CHELP31.ZIP
CMDLINE.CA1   WHELP3.CA1    TVSRC.ZIP     TDW.CA2       DLOBJ.ZIP     CLIOLE.ZIP
OWLLIB.CA1    WHELP3.CA2    TVLIB.ZIP     TDDLL.ZIP     CLASSSRC.ZIP  TRUETYPE.ZIP
RW.CA1        WHELP3.CA3    TDWEXMPL.ZIP  INSTALL.EXE   STEPS.ZIP     BATSRC.ZIP
RW.CA2        WHELP3.CA4    HLIB.ZIP      WHEREIS.ZIP   RTLINSRC.ZIP  INDEPSRC.ZIP
TASM.CA1      WIN31BIN.CA1  CMDLINE.CA2   TVDOCDEM.ZIP  OLESRVR.ZIP   PAINT.ZIP
```

187 個項目



名稱	修改日期	類型	大小
Borland CPP 3.1 and Application Fram...	2019/6/29 上午 10:44	TXT 檔案	1 KB
disk01.img	2019/6/28 下午 11:31	光碟映像檔	1,200 KB
disk02.img	2019/6/28 下午 11:31	光碟映像檔	1,200 KB
disk03.img	2019/6/28 下午 11:31	光碟映像檔	1,200 KB
disk04.img	2019/6/28 下午 11:31	光碟映像檔	1,200 KB
disk05.img	2019/6/28 下午 11:31	光碟映像檔	1,200 KB
disk06.img			
disk07.img			
disk08.img			
disk09.img			
disk10.img			
disk11.img			
disk12.img			
disk13.img			
disk14.img			
disk15.img			
disk16.img			
disk17.img			
disk18.img			
winworldpc.com			

20 個項目

TC1.01
本機 › Windows (C:) › TC › TC1.01 ›
搜尋 TC1.01

```
Disk01.img    TCALC.ZIP
Disk02.img    UNZIP.EXE
Disk03.img    CLASSEXM.ZIP
Disk04.img    CLASSLIB.ZIP
HELP.CA1      FILELIST.DOC
TC.CA1        README
TCC.ZIP       STARTUP.ZIP
HELP.CA2      README.COM
BIN1.ZIP      winworldpc.com.txt
TOUR.ZIP      DISK1.DSK
HLIB.ZIP      DISK2.DSK
TC.CA2        DISK3.DSK
BIN2.ZIP      DISK4.DSK
LLIB.ZIP
CLIB.ZIP
SLIB.ZIP
MLIB.ZIP
EXAMPLES.ZIP
BGI.ZIP
DOC.ZIP
INSTALL.EXE
INCLUDE.ZIP
CLASSSRC.ZIP
XLIB.ZIP
CLASSINC.ZIP
```

38 個項目

For 32-bit system, you can just execute the "**install.exe**" and start to install the compiler.

But, for 64-bit system, you have to run this program in DOSBox, check the step 3 for more detail.

The following steps will use "Borland C" as an example.

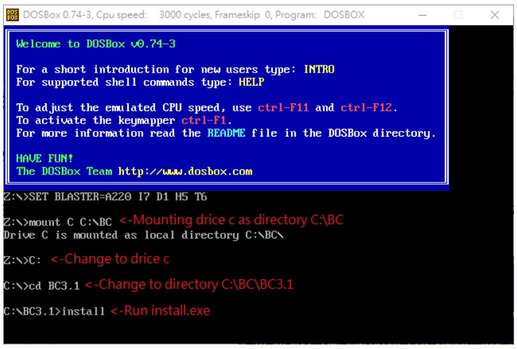
Step 3: Run the install.exe

For 32-bit system, run the install.exe will be fine.

Therefore, for 64-bit system, you need to run DOSBox and mounting a drive as a specific directory where you extract the files, then execute the "install.exe".

To install Borland C++, please type the commands below.

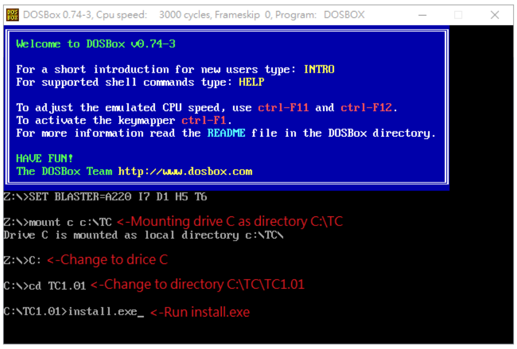
```
mount C C:\BC
C:
cd BC3.1
install.exe
```



```
Welcome to DOSBox v0.74-3

For a short introduction for new users type: INTRO
For supported shell commands type: HELP

To adjust the emulated CPU speed, use ctrl-F11 and ctrl-F12.
To activate the keymapper ctrl-F1.
For more information read the README file in the DOSBox directory.

HAVE FUN!
The DOSBox Team http://www.dosbox.com
Z:\>SET BLASTER=A220 I7 D1 H5 T6

Z:\>mount C C:\BC <-Mounting drice c as directory C:\BC
Drive C is mounted as local directory C:\BC\

Z:\>C:  <-Change to drice c

C:\>cd BC3.1 <-Change to directory C:\BC\BC3.1

C:\BC3.1>install <-Run install.exe
```

To install Turbo C++, please type the commands below.

```
mount C C:\TC
C:
cd TC1.01
install.exe
```

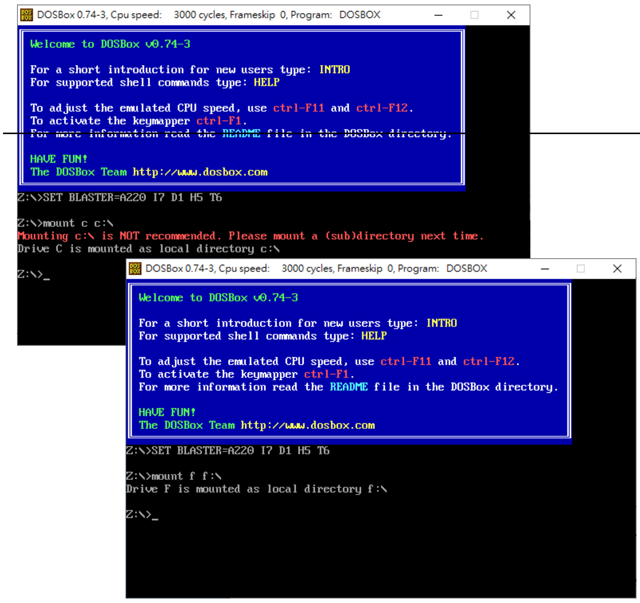


```
Welcome to DOSBox v0.74-3

For a short introduction for new users type: INTRO
For supported shell commands type: HELP

To adjust the emulated CPU speed, use ctrl-F11 and ctrl-F12.
To activate the keymapper ctrl-F1.
For more information read the README file in the DOSBox directory.

HAVE FUN!
The DOSBox Team http://www.dosbox.com
Z:\>SET BLASTER=A220 I7 D1 H5 T6

Z:\>mount c c:\TC <-Mounting drive C as directory C:\TC
Drive C is mounted as local directory c:\TC\

Z:\>C: <-Change to drice C

C:\>cd TC1.01 <-Change to directory C:\TC\TC1.01

C:\TC1.01>install.exe_  <-Run install.exe
```

Tips & Warnings

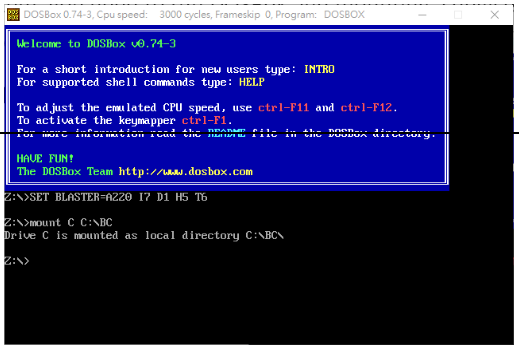
⚠ In some cases, the path "C:\" may not able to be mounted.

Try to type a different path like "C:\xxx", or mount another disk will be fine.



```
Welcome to DOSBox v0.74-3

For a short introduction for new users type: INTRO
For supported shell commands type: HELP

To adjust the emulated CPU speed, use ctrl-F11 and ctrl-F12.
To activate the keymapper ctrl-F1.
For more information read the README file in the DOSBox directory.

HAVE FUN!
The DOSBox Team http://www.dosbox.com
Z:\>SET BLASTER=A220 I7 D1 H5 T6

Z:\>mount c c:\
Mounting c:\ is NOT recommended. Please mount a (sub)directory next time.
Drive C is mounted as local directory c:\

Z:\>_
```

```
Welcome to DOSBox v0.74-3

For a short introduction for new users type: INTRO
For supported shell commands type: HELP

To adjust the emulated CPU speed, use ctrl-F11 and ctrl-F12.
To activate the keymapper ctrl-F1.
For more information read the README file in the DOSBox directory.

HAVE FUN!
The DOSBox Team http://www.dosbox.com
Z:\>SET BLASTER=A220 I7 D1 H5 T6

Z:\>mount f f:\
Drive F is mounted as local directory f:\

Z:\>_
```

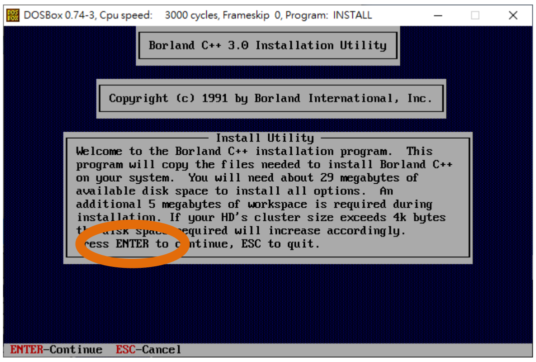


```
Welcome to DOSBox v0.74-3

For a short introduction for new users type: INTRO
For supported shell commands type: HELP

To adjust the emulated CPU speed, use ctrl-F11 and ctrl-F12.
To activate the keymapper ctrl-F1.
For more information read the README file in the DOSBox directory.

HAVE FUN!
The DOSBox Team http://www.dosbox.com
Z:\>SET BLASTER=A220 I7 D1 H5 T6

Z:\>mount C C:\BC
Drive C is mounted as local directory C:\BC\

Z:\>
```

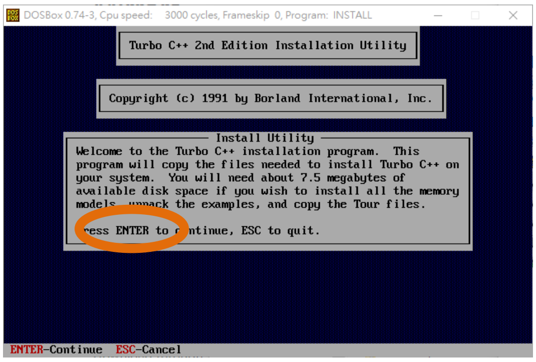
The following left side photos are screenshots of the Borland C++ installation process.

And the right side photos are screenshots of the Turbo C++ installation process.

Step 3: Press “Enter” to continue

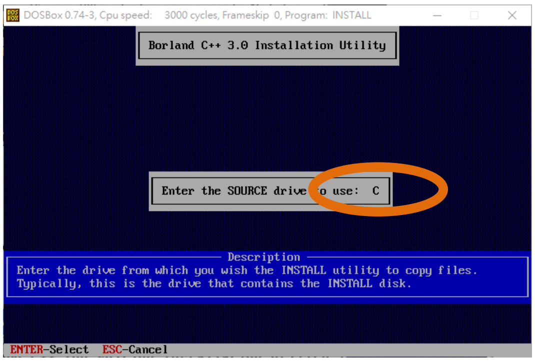


```
DOSBox 0.74-3, Cpu speed:   3000 cycles, Frameskip  0, Program:  INSTALL

Borland C++ 3.0 Installation Utility

Copyright (c) 1991 by Borland International, Inc.

Install Utility
Welcome to the Borland C++ installation program.  This
program will copy the files needed to install Borland C++
on your system.  You will need about 29 megabytes of
available disk space to install all options.  An
additional 5 megabytes of workspace is required during
installation. If your HD's cluster size exceeds 4k bytes
the disk space required will increase accordingly.
Press ENTER to continue, ESC to quit.

ENTER-Continue  ESC-Cancel
```

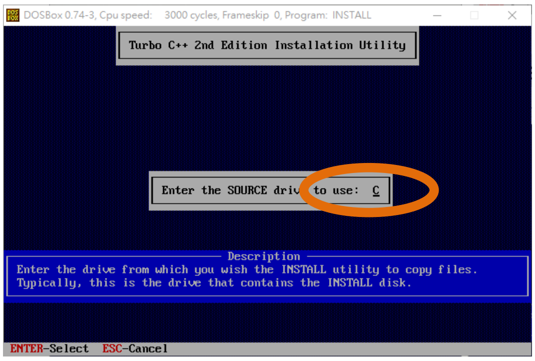


```
DOSBox 0.74-3, Cpu speed:   3000 cycles, Frameskip  0, Program:  INSTALL

Turbo C++ 2nd Edition Installation Utility

Copyright (c) 1991 by Borland International, Inc.

Install Utility
Welcome to the Turbo C++ installation program.  This
program will copy the files needed to install Turbo C++ on
your system.  You will need about 7.5 megabytes of
available disk space if you wish to install all the memory
models, unpack the examples, and copy the Tour files.

Press ENTER to continue, ESC to quit.

ENTER-Continue  ESC-Cancel
```

Step 4: Type the drive which the files are located

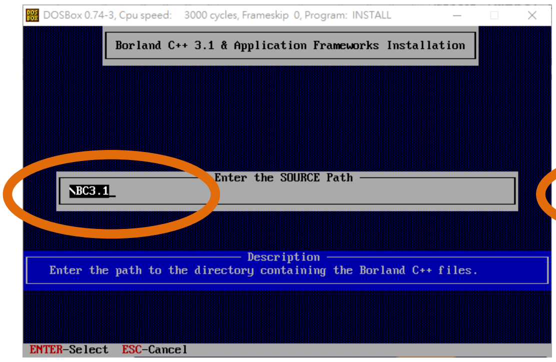


```
DOSBox 0.74-3, Cpu speed:   3000 cycles, Frameskip  0, Program:  INSTALL

Borland C++ 3.0 Installation Utility

Enter the SOURCE drive to use:  C

Description
Enter the drive from which you wish the INSTALL utility to copy files.
Typically, this is the drive that contains the INSTALL disk.

ENTER-Select  ESC-Cancel
```

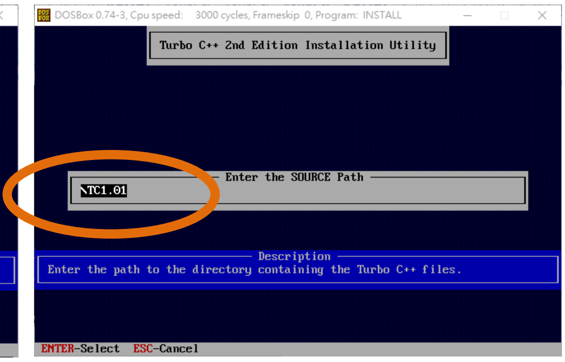


```
DOSBox 0.74-3, Cpu speed:   3000 cycles, Frameskip  0, Program:  INSTALL

Turbo C++ 2nd Edition Installation Utility

Enter the SOURCE drive to use:  C

Description
Enter the drive from which you wish the INSTALL utility to copy files.
Typically, this is the drive that contains the INSTALL disk.

ENTER-Select  ESC-Cancel
```

Step 5: Enter the path of the directory that the files are located

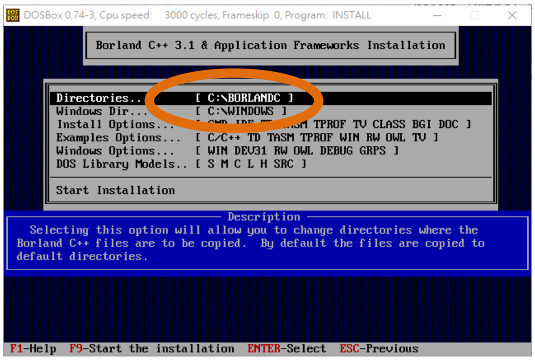


```
DOSBox 0.74-3, Cpu speed:   3000 cycles, Frameskip  0, Program:  INSTALL

Borland C++ 3.1 & Application Frameworks Installation

Enter the SOURCE Path
\BC3.1_

Description
Enter the path to the directory containing the Borland C++ files.

ENTER-Select  ESC-Cancel
```

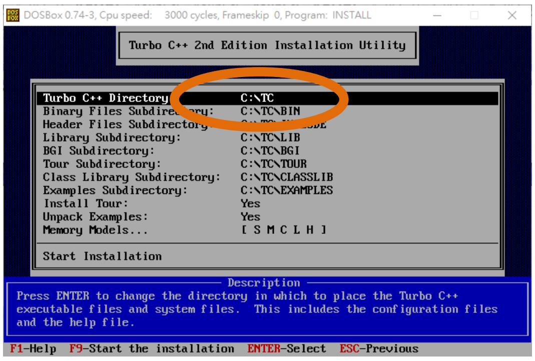


```
DOSBox 0.74-3, Cpu speed:   3000 cycles, Frameskip  0, Program:  INSTALL

Turbo C++ 2nd Edition Installation Utility

Enter the SOURCE Path
\TC1.01

Description
Enter the path to the directory containing the Turbo C++ files.

ENTER-Select  ESC-Cancel
```

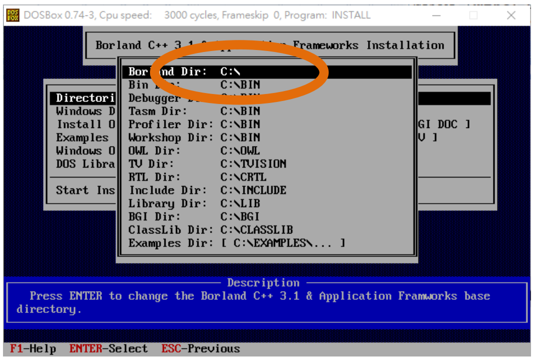
Step 6: Change directory to C:\ and Start installation



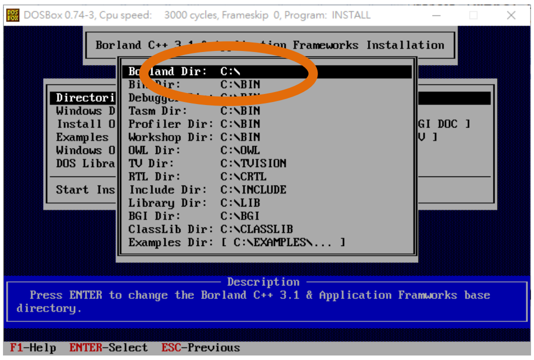
```
DOSBox 0.74-3, Cpu speed:    3000 cycles, Frameskip  0, Program:  INSTALL

            Borland C++ 3.1 & Application Frameworks Installation

      Directories..           [ C:\BORLANDC ]
      Windows Dir...          [ C:\WINDOWS ]
      Install Options...      [ CMD IDE TD TASM TPROF TV CLASS BGI DOC ]
      Examples Options...     [ C/C++ TD TASM TPROF WIN RW OWL TV ]
      Windows Options...      [ WIN DEV31 RW OWL DEBUG GRPS ]
      DOS Library Models..    [ S M C L H SRC ]

      Start Installation

 ──────────────────────────── Description ────────────────────────────
   Selecting this option will allow you to change directories where the
 Borland C++ files are to be copied.  By default the files are copied to
 default directories.

F1-Help  F9-Start the installation  ENTER-Select  ESC-Previous
```



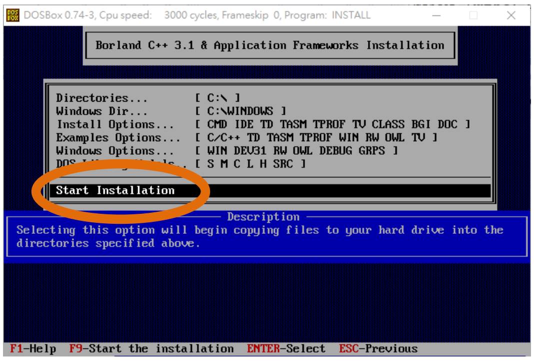
```
DOSBox 0.74-3, Cpu speed:    3000 cycles, Frameskip  0, Program:  INSTALL

               Turbo C++ 2nd Edition Installation Utility

    Turbo C++ Directory                  C:\TC
    Binary Files Subdirectory:           C:\TC\BIN
    Header Files Subdirectory:           C:\TC\INCLUDE
    Library Subdirectory:                C:\TC\LIB
    BGI Subdirectory:                    C:\TC\BGI
    Tour Subdirectory:                   C:\TC\TOUR
    Class Library Subdirectory:          C:\TC\CLASSLIB
    Examples Subdirectory:               C:\TC\EXAMPLES
    Install Tour:                        Yes
    Unpack Examples:                     Yes
    Memory Models...                     [ S M C L H ]

    Start Installation

 ──────────────────────────── Description ────────────────────────────
 Press ENTER to change the directory in which to place the Turbo C++
 executable files and system files.  This includes the configuration files
 and the help file.

F1-Help  F9-Start the installation  ENTER-Select  ESC-Previous
```



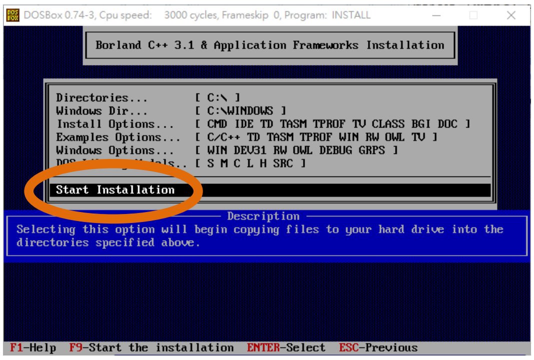
```
DOSBox 0.74-3, Cpu speed:    3000 cycles, Frameskip  0, Program:  INSTALL

            Borland C++ 3.1 & Application Frameworks Installation

      Directori   Borland Dir:   C:\
      Windows D   Bin Dir:       C:\BIN
      Install O   Debugger Dir:  C:\BIN                          GI DOC ]
      Examples    Tasm Dir:      C:\BIN                          V ]
      Windows O   Profiler Dir:  C:\BIN
      DOS Libra   Workshop Dir:  C:\BIN
                  OWL Dir:       C:\OWL
      Start Ins   TV Dir:        C:\TVISION
                  RTL Dir:       C:\CRTL
                  Include Dir:   C:\INCLUDE
                  Library Dir:   C:\LIB
                  BGI Dir:       C:\BGI
                  ClassLib Dir:  C:\CLASSLIB
                  Examples Dir:  [ C:\EXAMPLES\... ]

 ──────────────────────────── Description ────────────────────────────
   Press ENTER to change the Borland C++ 3.1 & Application Framworks base
 directory.

F1-Help  ENTER-Select  ESC-Previous
```



```
DOSBox 0.74-3, Cpu speed:    3000 cycles, Frameskip  0, Program:  INSTALL

            Borland C++ 3.1 & Application Frameworks Installation

      Directori   Borland Dir:   C:\
      Windows D   Bin Dir:       C:\BIN
      Install O   Debugger Dir:  C:\BIN                          GI DOC ]
      Examples    Tasm Dir:      C:\BIN                          V ]
      Windows O   Profiler Dir:  C:\BIN
      DOS Libra   Workshop Dir:  C:\BIN
                  OWL Dir:       C:\OWL
      Start Ins   TV Dir:        C:\TVISION
                  RTL Dir:       C:\CRTL
                  Include Dir:   C:\INCLUDE
                  Library Dir:   C:\LIB
                  BGI Dir:       C:\BGI
                  ClassLib Dir:  C:\CLASSLIB
                  Examples Dir:  [ C:\EXAMPLES\... ]

 ──────────────────────────── Description ────────────────────────────
   Press ENTER to change the Borland C++ 3.1 & Application Framworks base
 directory.

F1-Help  ENTER-Select  ESC-Previous
```

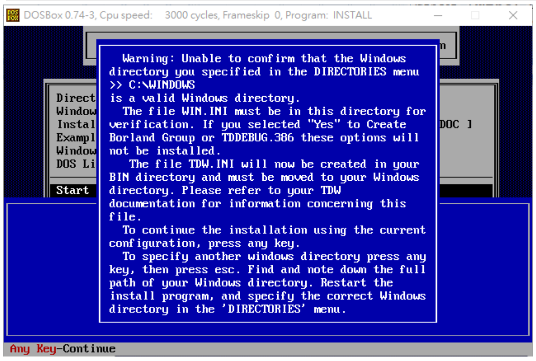


```
DOSBox 0.74-3, Cpu speed:    3000 cycles, Frameskip  0, Program:  INSTALL

            Borland C++ 3.1 & Application Frameworks Installation

      Directories...          [ C:\ ]
      Windows Dir...          [ C:\WINDOWS ]
      Install Options...      [ CMD IDE TD TASM TPROF TV CLASS BGI DOC ]
      Examples Options...     [ C/C++ TD TASM TPROF WIN RW OWL TV ]
      Windows Options...      [ WIN DEV31 RW OWL DEBUG GRPS ]
      DOS Library Models..    [ S M C L H SRC ]

      Start Installation

 ──────────────────────────── Description ────────────────────────────
 Selecting this option will begin copying files to your hard drive into the
 directories specified above.

F1-Help  F9-Start the installation  ENTER-Select  ESC-Previous
```

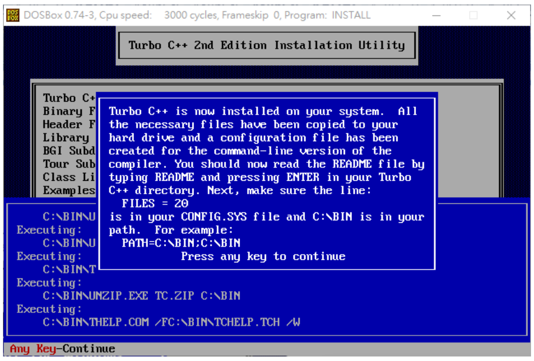


```
DOSBox 0.74-3, Cpu speed:    3000 cycles, Frameskip  0, Program:  INSTALL

            Borland C++ 3.1 & Application Frameworks Installation

      Directories...          [ C:\ ]
      Windows Dir...          [ C:\WINDOWS ]
      Install Options...      [ CMD IDE TD TASM TPROF TV CLASS BGI DOC ]
      Examples Options...     [ C/C++ TD TASM TPROF WIN RW OWL TV ]
      Windows Options...      [ WIN DEV31 RW OWL DEBUG GRPS ]
      DOS Library Models..    [ S M C L H SRC ]

      Start Installation

 ──────────────────────────── Description ────────────────────────────
 Selecting this option will begin copying files to your hard drive into the
 directories specified above.

F1-Help  F9-Start the installation  ENTER-Select  ESC-Previous
```

Step 7: Press any key to continue

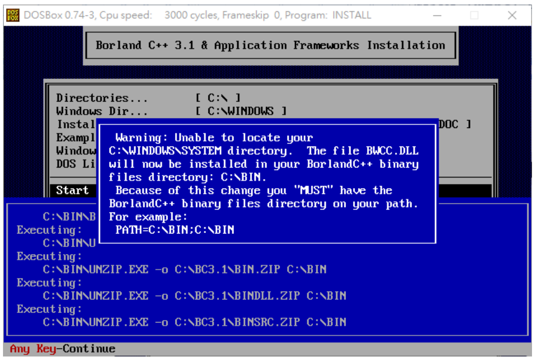


```
DOSBox 0.74-3, Cpu speed:    3000 cycles, Frameskip  0, Program:  INSTALL

      Direct    Warning: Unable to confirm that the Windows
      Window   directory you specified in the DIRECTORIES menu
      Instal   >> C:\WINDOWS
      Exampl   is a valid Windows directory.
      Window     The file WIN.INI must be in this directory for
      DOS Li   verification. If you selected "Yes" to Create    DOC ]
               Borland Group or TDDEBUG.386 these options will
      Start    not be installed.
                  The file TDW.INI will now be created in your
               BIN directory and must be moved to your Windows
               directory. Please refer to your TDW
               documentation for information concerning this
               file.
                 To continue the installation using the current
               configuration, press any key.
                 To specify another windows directory press any
               key, then press esc. Find and note down the full
               path of your Windows directory. Restart the
               install program, and specify the correct Windows
               directory in the 'DIRECTORIES' menu.

Any Key-Continue
```

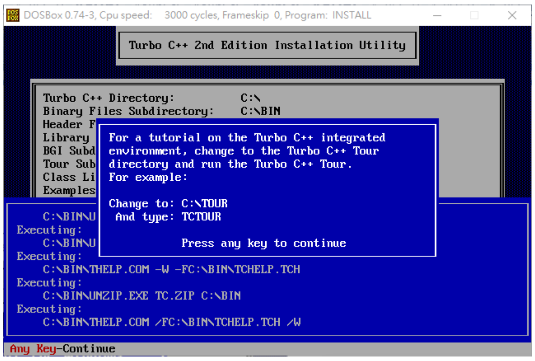


```
DOSBox 0.74-3, Cpu speed:    3000 cycles, Frameskip  0, Program:  INSTALL

               Turbo C++ 2nd Edition Installation Utility

    Turbo C+   Turbo C++ is now installed on your system.  All
    Binary F   the necessary files have been copied to your
    Header F   hard drive and a configuration file has been
    Library    created for the command-line version of the
    BGI Subd   compiler. You should now read the README file by
    Tour Sub   typing README and pressing ENTER in your Turbo
    Class Li   C++ directory. Next, make sure the line:
    Examples     FILES = 20
      C:\BIN\U is in your CONFIG.SYS file and C:\BIN is in your
  Executing:   path.  For example:
      C:\BIN\U   PATH=C:\BIN;C:\BIN
  Executing:               Press any key to continue
      C:\BIN\T
  Executing:
      C:\BIN\UNZIP.EXE TC.ZIP C:\BIN
  Executing:
      C:\BIN\THELP.COM /FC:\BIN\TCHELP.TCH /W

Any Key-Continue
```

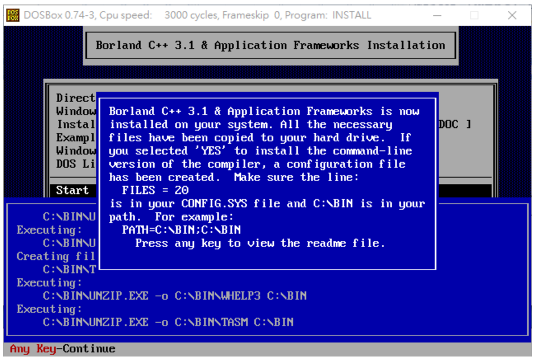
✉E-mail: service@icpdas.com


DOSBox 0.74-3, Cpu speed: 3000 cycles, Frameskip 0, Program: INSTALL

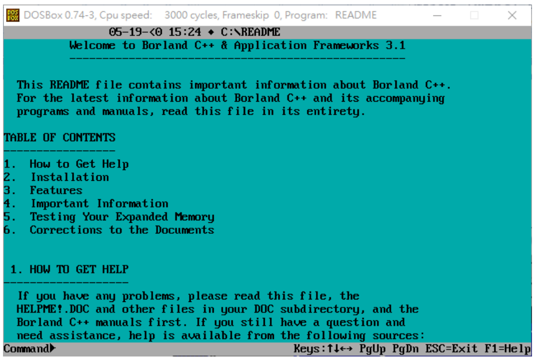
```
 Borland C++ 3.1 & Application Frameworks Installation

 Directories...          [ C:\ ]
 Windows Dir...          [ C:\WINDOWS ]
 Instal                                                DOC ]
 Exampl   Warning: Unable to locate your
 Window  C:\WINDOWS\SYSTEM directory.  The file BWCC.DLL
 DOS Li  will now be installed in your BorlandC++ binary
         files directory: C:\BIN.
 Start    Because of this change you "MUST" have the
         BorlandC++ binary files directory on your path.
    C:\BIN\B  For example:
 Executing:  PATH=C:\BIN;C:\BIN
    C:\BIN\U
 Executing:
    C:\BIN\UNZIP.EXE -o C:\BC3.1\BIN.ZIP C:\BIN
 Executing:
    C:\BIN\UNZIP.EXE -o C:\BC3.1\BINDLL.ZIP C:\BIN
 Executing:
    C:\BIN\UNZIP.EXE -o C:\BC3.1\BINSRC.ZIP C:\BIN
Any Key-Continue
```


DOSBox 0.74-3, Cpu speed: 3000 cycles, Frameskip 0, Program: INSTALL

```
 Turbo C++ 2nd Edition Installation Utility

 Turbo C++ Directory:          C:\
 Binary Files Subdirectory:    C:\BIN
 Header F
 Library   For a tutorial on the Turbo C++ integrated
 BGI Subd  environment, change to the Turbo C++ Tour
 Tour Sub  directory and run the Turbo C++ Tour.
 Class Li  For example:
 Examples
    C:\BIN\U  Change to: C:\TOUR
 Executing:    And type: TCTOUR
    C:\BIN\U
 Executing:               Press any key to continue
    C:\BIN\THELP.COM -W -FC:\BIN\TCHELP.TCH
 Executing:
    C:\BIN\UNZIP.EXE TC.ZIP C:\BIN
 Executing:
    C:\BIN\THELP.COM /FC:\BIN\TCHELP.TCH /W
Any Key-Continue
```

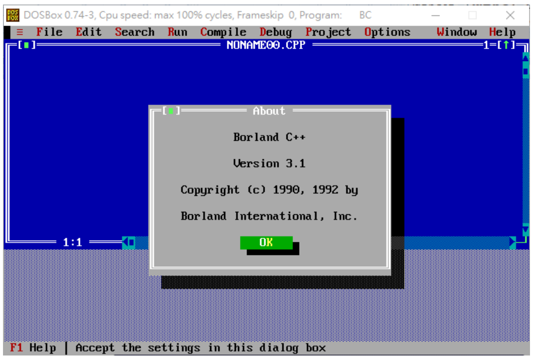

DOSBox 0.74-3, Cpu speed: 3000 cycles, Frameskip 0, Program: INSTALL

```
 Borland C++ 3.1 & Application Frameworks Installation

 Direct  Borland C++ 3.1 & Application Frameworks is now
 Window  installed on your system. All the necessary
 Instal  files have been copied to your hard drive.  If    DOC ]
 Exampl  you selected 'YES' to install the command-line
 Window  version of the compiler, a configuration file
 DOS Li  has been created.  Make sure the line:
          FILES = 20
 Start   is in your CONFIG.SYS file and C:\BIN is in your
         path.  For example:
    C:\BIN\U  PATH=C:\BIN;C:\BIN
 Executing:     Press any key to view the readme file.
    C:\BIN\U
 Creating fil
    C:\BIN\T
 Executing:
    C:\BIN\UNZIP.EXE -o C:\BIN\WHELP3 C:\BIN
 Executing:
    C:\BIN\UNZIP.EXE -o C:\BIN\TASM C:\BIN
Any Key-Continue
```


DOSBox 0.74-3, Cpu speed: 3000 cycles, Frameskip 0, Program: README

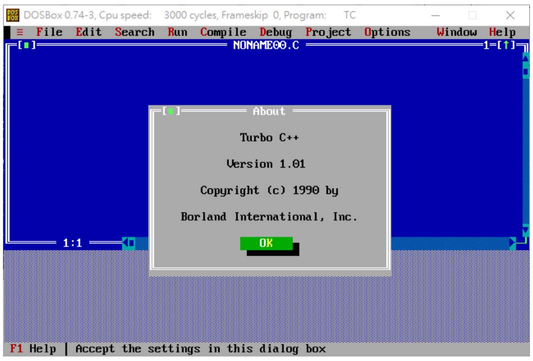
```
              05-19-<0 15:24 ♦ C:\README
          Welcome to Borland C++ & Application Frameworks 3.1
          ------------------------------------------------

  This README file contains important information about Borland C++.
  For the latest information about Borland C++ and its accompanying
  programs and manuals, read this file in its entirety.

TABLE OF CONTENTS
-----------------
1.  How to Get Help
2.  Installation
3.  Features
4.  Important Information
5.  Testing Your Expanded Memory
6.  Corrections to the Documents


 1. HOW TO GET HELP
 ------------------
  If you have any problems, please read this file, the
  HELPME!.DOC and other files in your DOC subdirectory, and the
  Borland C++ manuals first. If you still have a question and
  need assistance, help is available from the following sources:
Command▸                                Keys:↑↓←→ PgUp PgDn ESC=Exit F1=Help
```

Step 8: Installation is complete


DOSBox 0.74-3, Cpu speed: max 100% cycles, Frameskip 0, Program: BC
≡ File Edit Search Run Compile Debug Project Options Window Help
NONAME00.CPP
1:1
About
OK
F1 Help

```
Borland C++

Version 3.1

Copyright (c) 1990, 1992 by

Borland International, Inc.
```

Accept the settings in this dialog box


DOSBox 0.74-3, Cpu speed: 3000 cycles, Frameskip 0, Program: TC
≡ File Edit Search Run Compile Debug Project Options Window Help
NONAME00.C
1:1
About
OK
F1 Help

```
Turbo C++

Version 1.01

Copyright (c) 1990 by

Borland International, Inc.
```

Accept the settings in this dialog box

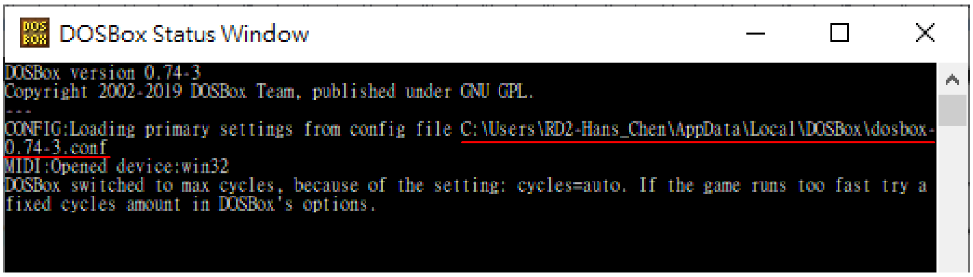
1.3. Configuring DOSBox

Edit the configuration file to automatically run the compiler every time the DOSBox is executed.

The following steps will take Borland C++ as an example.

Step 1: Edit the configuration file of the DOSBox

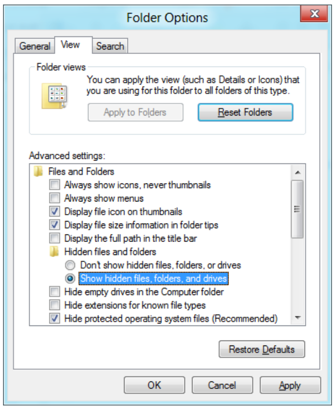
The path of configuration file can be found in the Status Windows.



```
DOSBox version 0.74-3
Copyright 2002-2019 DOSBox Team, published under GNU GPL.
---
CONFIG:Loading primary settings from config file C:\Users\RD2-Hans_Chen\AppData\Local\DOSBox\dosbox-
0.74-3.conf
MIDI:Opened device:win32
DOSBox switched to max cycles, because of the setting: cycles=auto. If the game runs too fast try a
fixed cycles amount in DOSBox's options.
```

Tips & Warnings

If you can’t find the configuration file in the location, you’ll have to enable the “**show hidden files**” option in the window properties to display the hidden files.



Folder views

You can apply the view (such as Details or Icons) that you are using for this folder to all folders of this type.

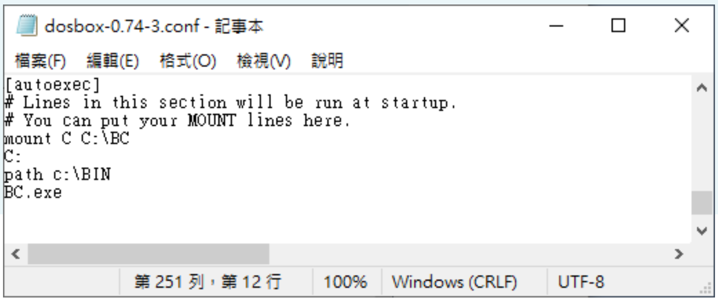
Advanced settings:

Files and Folders
- □ Always show icons, never thumbnails
- □ Always show menus
- ☑ Display file icon on thumbnails
- ☑ Display file size information in folder tips
- □ Display the full path in the title bar
- Hidden files and folders
  - ○ Don't show hidden files, folders, or drives
  - ● Show hidden files, folders, and drives
- □ Hide empty drives in the Computer folder
- □ Hide extensions for known file types
- ☑ Hide protected operating system files (Recommended)

Step 2: Scroll down to the bottom of the configuration file and Type the commands to mount the drive and set path

For example:

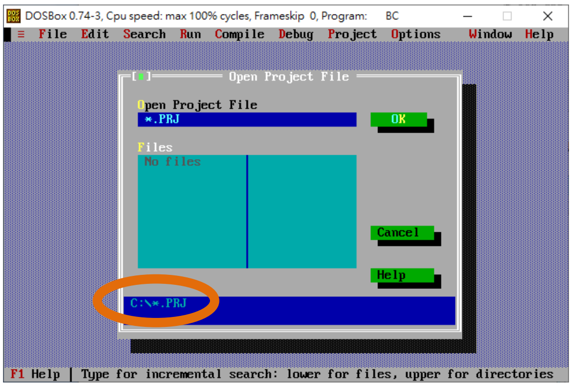
```
[autoexec]
# Lines in this section will be run at startup.
# You can put your MOUNT lines here.
Mount C C:\BC
C:
path C:\BIN
BC.exe
```



```
[autoexec]
# Lines in this section will be run at startup.
# You can put your MOUNT lines here.
mount C C:\BC
C:
path c:\BIN
BC.exe
```

Save the configuration file and restart DOSBox.

It will automatically execute the compiler.


DOSBox 0.74-3, Cpu speed: max 100% cycles, Frameskip 0, Program: BC
≡ File Edit Search Run Compile Debug Project Options Window Help
Open Project File
Open Project File
*.PRJ
OK
Files
No files
Cancel
Help
C:\*.PRJ

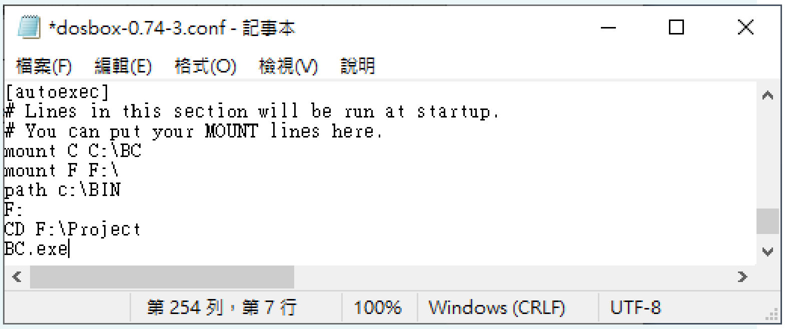
F1 Help | Type for incremental search: lower for files, upper for directories

Tips & Warnings

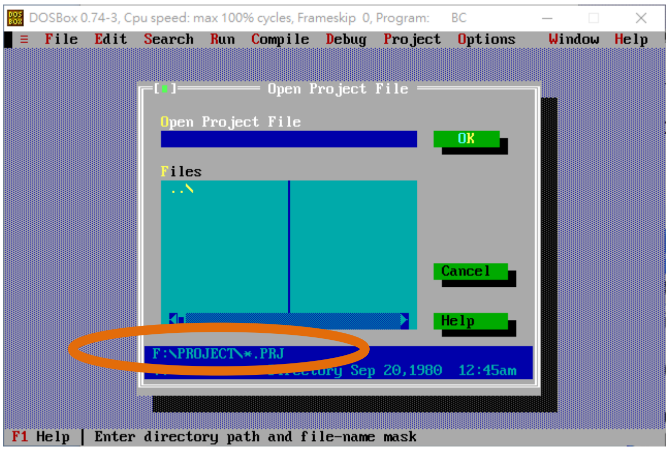
⚠ If you want to specify the directoey every time you start the DOSBox.

Add "CD" command to change the directory.

```
[autoexec]
# Lines in this section will be run at startup.
# You can put your MOUNT lines here.
mount C C:\BC
mount F F:\
path C:\BIN
F:\
CD F:\Project
BC.exe
```


*dosbox-0.74-3.conf - 記事本
檔案(F) 編輯(E) 格式(O) 檢視(V) 說明
第 254 列，第 7 行 100% Windows (CRLF) UTF-8

```
[autoexec]
# Lines in this section will be run at startup.
# You can put your MOUNT lines here.
mount C C:\BC
mount F F:\
path c:\BIN
F:
CD F:\Project
BC.exe
```


DOSBox 0.74-3, Cpu speed: max 100% cycles, Frameskip 0, Program: BC
≡ File Edit Search Run Compile Debug Project Options Window Help
Open Project File
Open Project File
OK
Files
..\
Cancel
Help
F:\PROJECT\*.PRJ
Directory Sep 20,1980 12:45am

F1 Help | Enter directory path and file-name mask

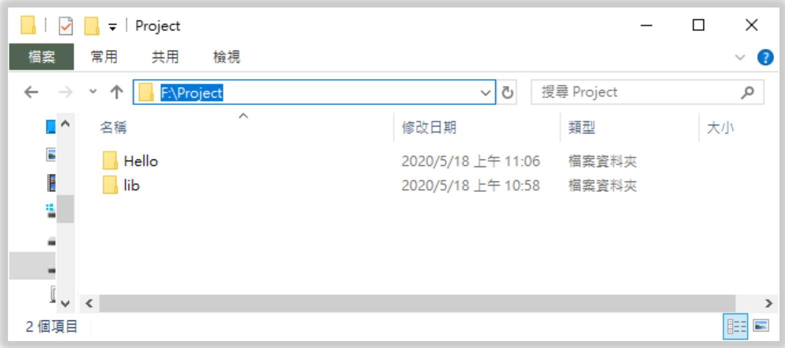
1.4. Building Program

There are several APIs for customizing the standard features and integrating with other applications, devices and services.

Before creating the application, ensure them that you have installed.

Here we assume you have installed the Borland C++ under the C driver root folder and the iPAC-8000 APIs under the F driver root folder.

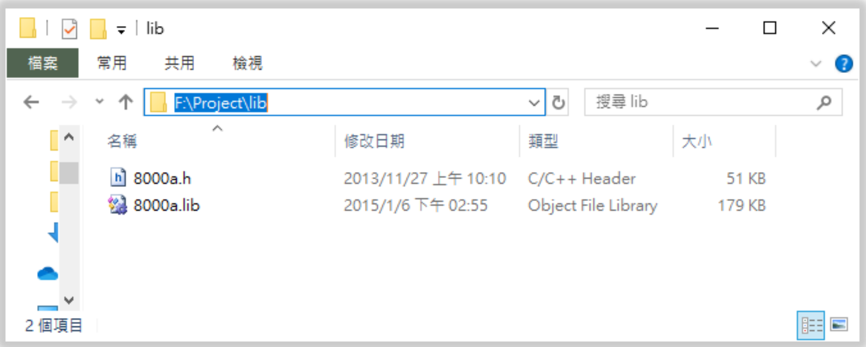
Then create a "Hello" folder for the following demonstrate.



F:\Project

名稱	修改日期	類型	大小
Hello	2020/5/18 上午 11:06	檔案資料夾	
lib	2020/5/18 上午 10:58	檔案資料夾	

2 個項目



F:\Project\lib

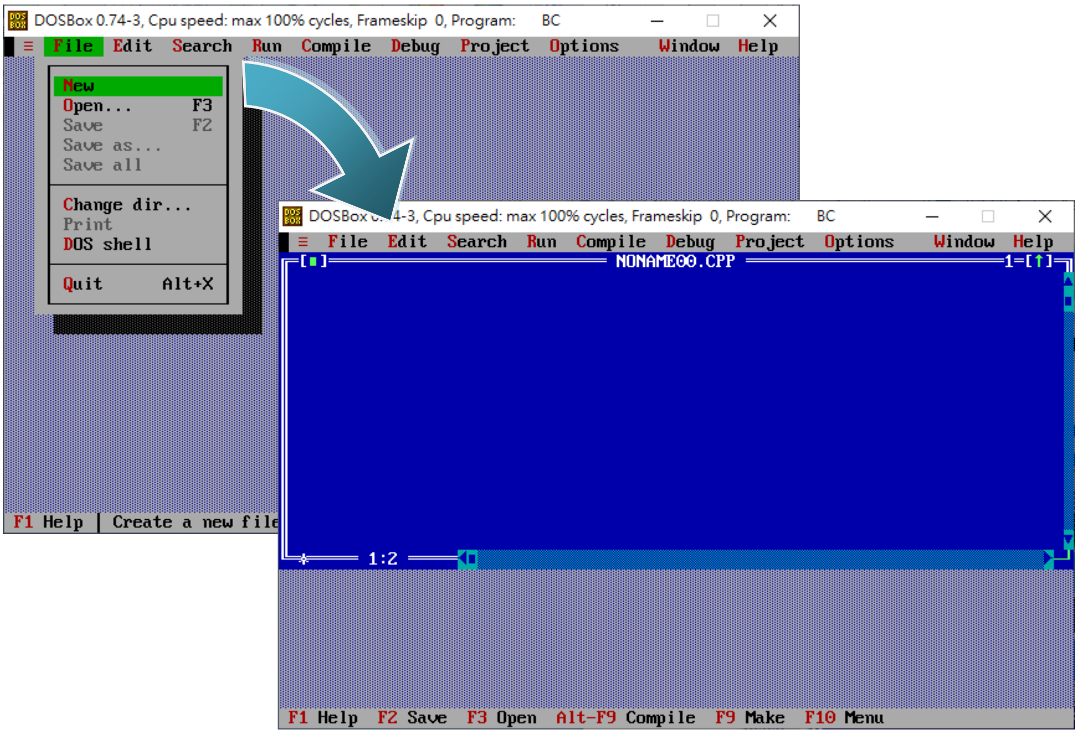
名稱	修改日期	類型	大小
8000a.h	2013/11/27 上午 10:10	C/C++ Header	51 KB
8000a.lib	2015/1/6 下午 02:55	Object File Library	179 KB

2 個項目

Step 1: Run DOSBox and Compiler

After edit the configuration file, the compiler should be executed automatically.

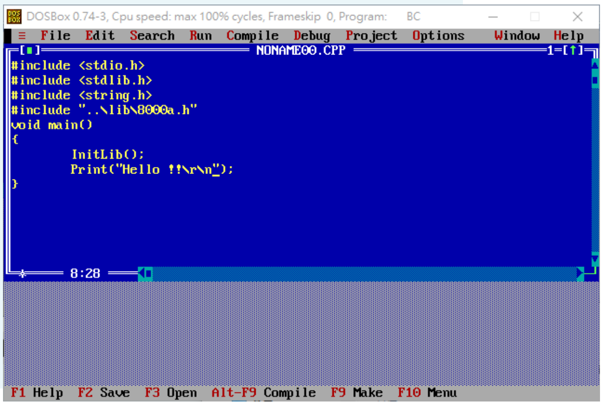
Step 2: Select “New” from the “File” menu to create a new source file


DOSBox 0.74-3, Cpu speed: max 100% cycles, Frameskip 0, Program: BC
≡ File Edit Search Run Compile Debug Project Options Window Help
New
Open... F3
Save F2
Save as...
Save all
Change dir...
Print
DOS shell
Quit Alt+X
F1 Help | Create a new file
NONAME00.CPP
1:2
F1 Help F2 Save F3 Open Alt-F9 Compile F9 Make F10 Menu

Step 3: Type the following code.

Note that the code is case-sensitive.

```
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#include “..\lib\8000a.h”
/* Include the header file that allows 8000a.lib functions to be used */
void main(void)
{
        /* Initiate the 8000a library */
        InitLib();
        /* Print the message on the screen */
        Print( “Hello !!\r\n” );
}
```


DOSBox 0.74-3, Cpu speed: max 100% cycles, Frameskip 0, Program: BC
≡ File Edit Search Run Compile Debug Project Options Window Help
NONAME00.CPP
8:28
F1 Help F2 Save F3 Open Alt-F9 Compile F9 Make F10 Menu

```
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#include "..\lib\8000a.h"
void main()
{
        InitLib();
        Print("Hello !!\r\n");
}
```

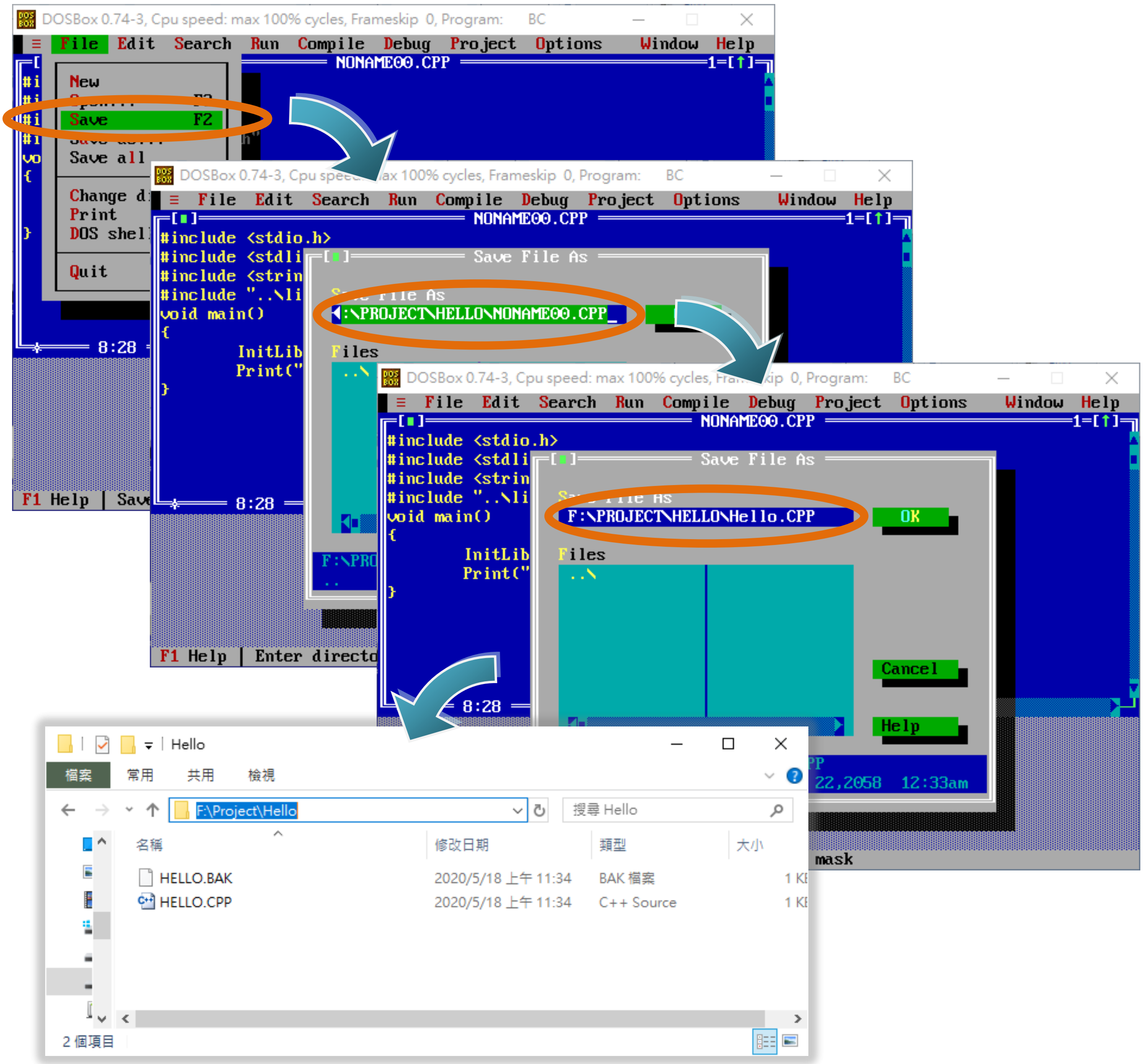
Step 4: Save the source file in the Hello folder

(1) Select “Save” from the “File” menu

(2) Find the “Hello” folder

(3) Named the file as “Hello.cpp”

(4) Cilck “OK”



```
#include <stdio.h>
#include <stdli
#include <strin
#include "..\li
void main()
{
        InitLib
        Print("
}
```

Save File As: F:\PROJECT\HELLO\NONAME00.CPP

Save File As: F:\PROJECT\HELLO\Hello.CPP

F:\Project\Hello

名稱	修改日期	類型	大小
HELLO.BAK	2020/5/18 上午 11:34	BAK 檔案	1 KB
HELLO.CPP	2020/5/18 上午 11:34	C++ Source	1 KB

Tips & Warnings

⚠ You can write the code with any text editor that you are used to.

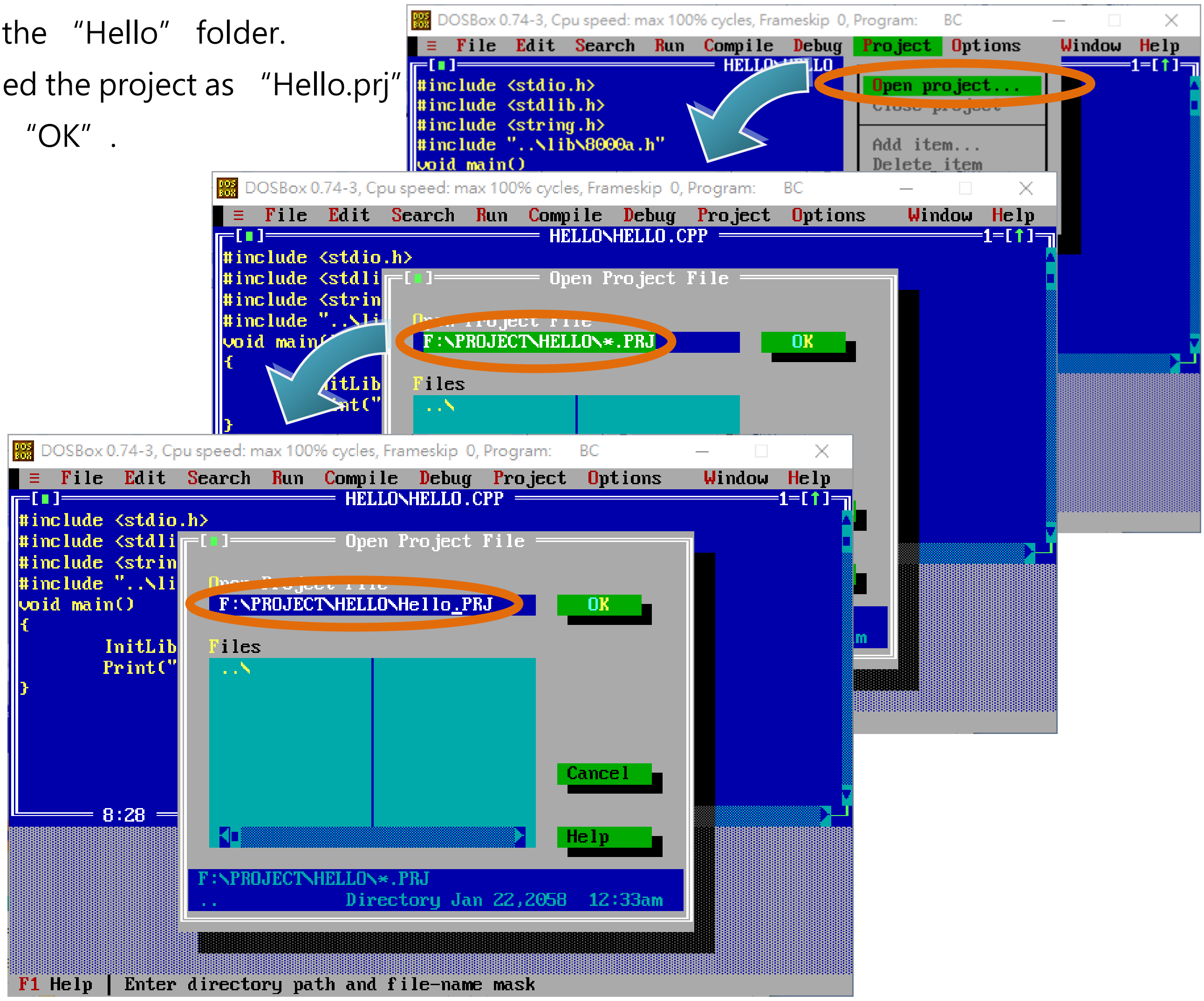
Step 5: Create a project (*.prj)

(1) Select “Open project...” from the “Project” menu.

(2) Find the “Hello” folder.

(3) Named the project as “Hello.prj”

(4) Click “OK” .


DOSBox 0.74-3, Cpu speed: max 100% cycles, Frameskip 0, Program: BC
≡ File Edit Search Run Compile Debug Project Options Window Help
Open project...
Close project
Add item...
Delete item
HELLO\HELLO.CPP
Open Project File
OK
Cancel
Help
Files

```
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#include "..\lib\8000a.h"
void main()
{
        InitLib
        Print("
}
```

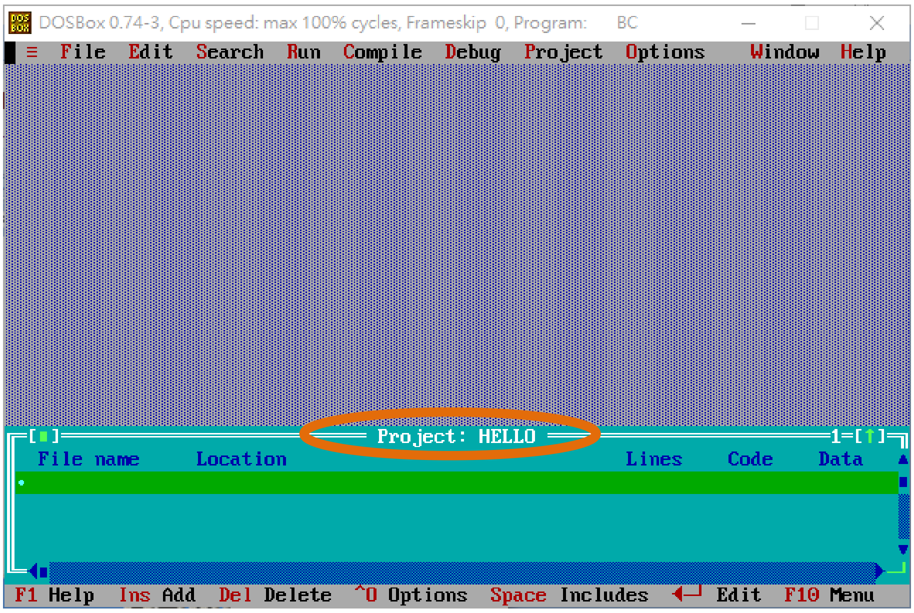
Open Project File: F:\PROJECT\HELLO\*.PRJ

Open Project File: F:\PROJECT\HELLO\Hello.PRJ

Files: ..\

F:\PROJECT\HELLO\*.PRJ
.. Directory Jan 22,2058 12:33am

F1 Help | Enter directory path and file-name mask

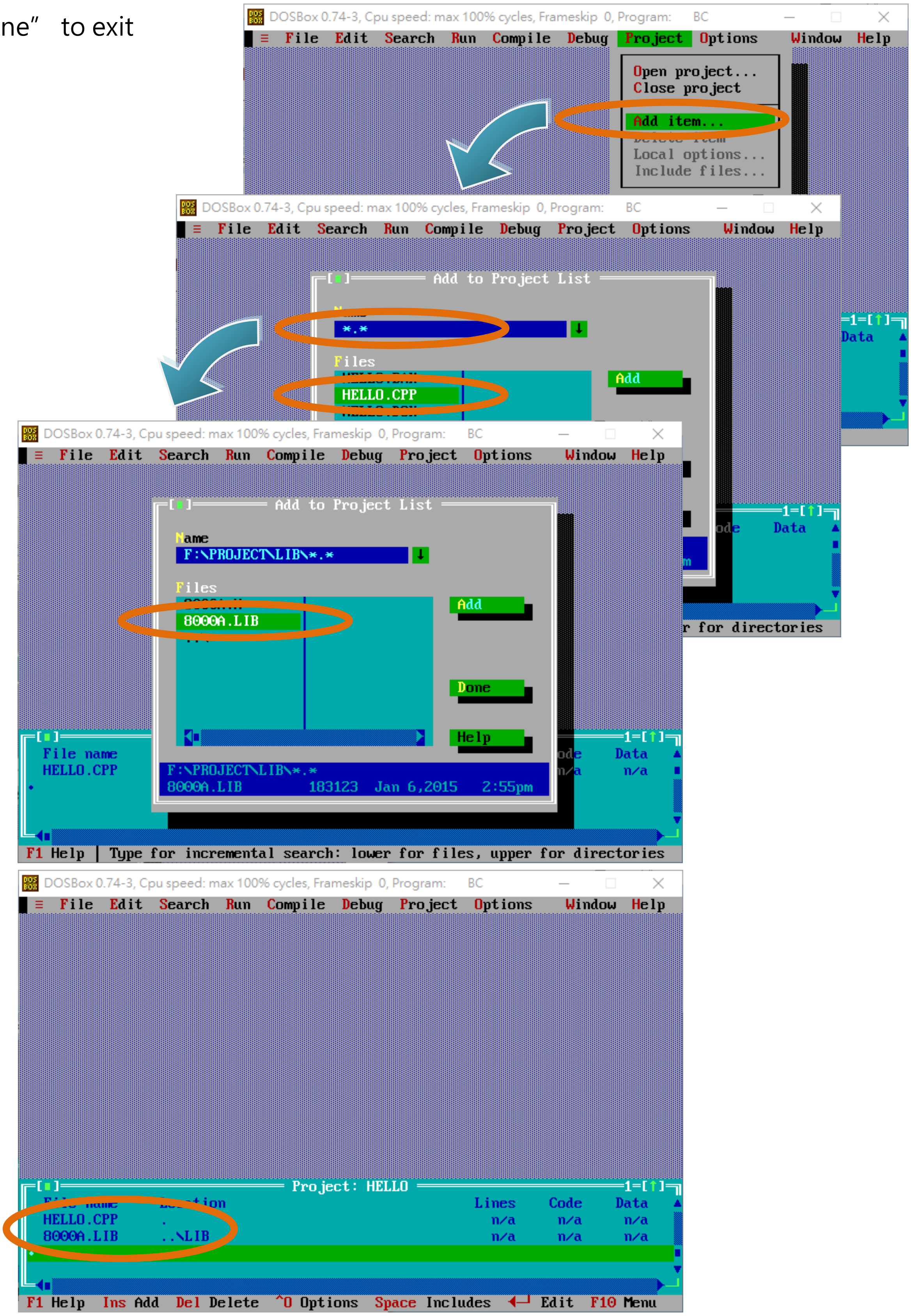

DOSBox 0.74-3, Cpu speed: max 100% cycles, Frameskip 0, Program: BC
≡ File Edit Search Run Compile Debug Project Options Window Help
Project: HELLO
File name Location Lines Code Data
F1 Help Ins Add Del Delete ^O Options Space Includes ⏎ Edit F10 Menu

Step 6: Add the necessary function libraries to the project (*.lib)

(1) Select "Add item..." from the "Project" menu.

(2) Add the source file (hello.cpp) and library (8000a.lib).

(3) Select "Done" to exit



DOSBox 0.74-3, Cpu speed: max 100% cycles, Frameskip 0, Program: BC
≡ File Edit Search Run Compile Debug Project Options Window Help
Open project...
Close project
Add item...
Delete item
Local options...
Include files...
Add to Project List
Name
Files
Add
Done
Help

```
Name
*.*

Files
HELLO.CPP
```

```
Name
F:\PROJECT\LIB\*.*

Files
8000A.LIB

F:\PROJECT\LIB\*.*
8000A.LIB          183123  Jan 6,2015    2:55pm

F1 Help │ Type for incremental search: lower for files, upper for directories
```

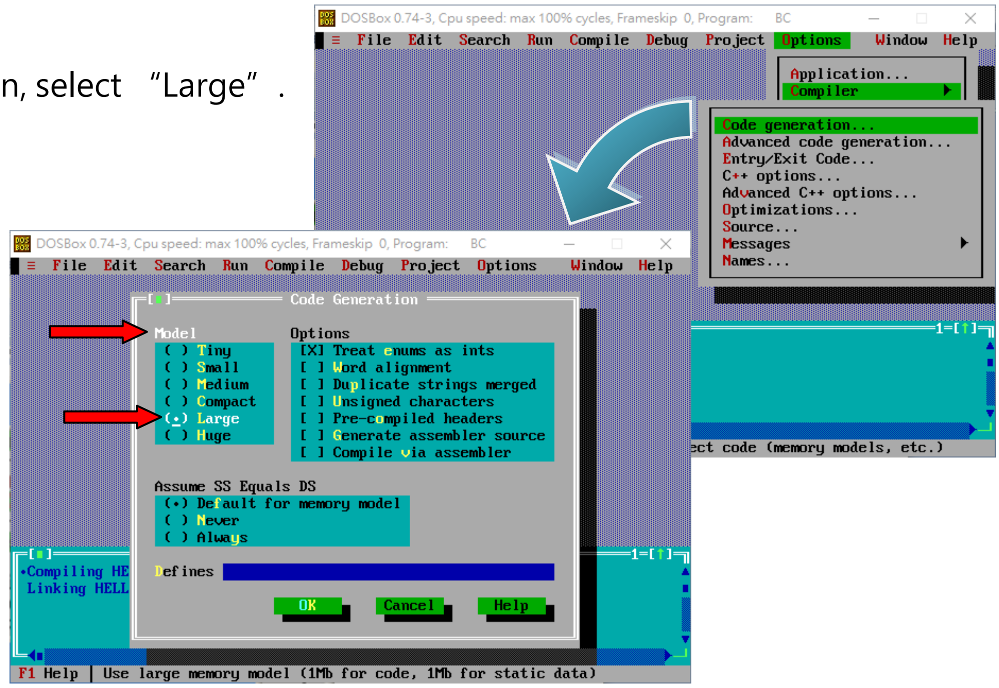
```
Project: HELLO
File name     Location                 Lines   Code   Data
HELLO.CPP     .                          n/a    n/a    n/a
8000A.LIB     ..\LIB                     n/a    n/a    n/a

F1 Help  Ins Add  Del Delete  ^O Options  Space Includes  ↵ Edit  F10 Menu
```

Step 7: Set the memory model to large

(1) Select "Compiler" from the "Options" menu, then select "Code generation..." .

(2) On "Model" option, select "Large" .

(3) Select "OK" .


DOSBox 0.74-3, Cpu speed: max 100% cycles, Frameskip 0, Program: BC
≡ File Edit Search Run Compile Debug Project Options Window Help
Application...
Compiler
Code generation...
Advanced code generation...
Entry/Exit Code...
C++ options...
Advanced C++ options...
Optimizations...
Source...
Messages
Names...
ect code (memory models, etc.)
•Compiling HE
Linking HELL

```
[■]═══════════ Code Generation ═══════════
Model              Options
 ( ) Tiny           [X] Treat enums as ints
 ( ) Small          [ ] Word alignment
 ( ) Medium         [ ] Duplicate strings merged
 ( ) Compact        [ ] Unsigned characters
 (•) Large          [ ] Pre-compiled headers
 ( ) Huge           [ ] Generate assembler source
                    [ ] Compile via assembler

Assume SS Equals DS
 (•) Default for memory model
 ( ) Never
 ( ) Always

Defines

      OK        Cancel        Help
```

F1 Help | Use large memory model (1Mb for code, 1Mb for static data)

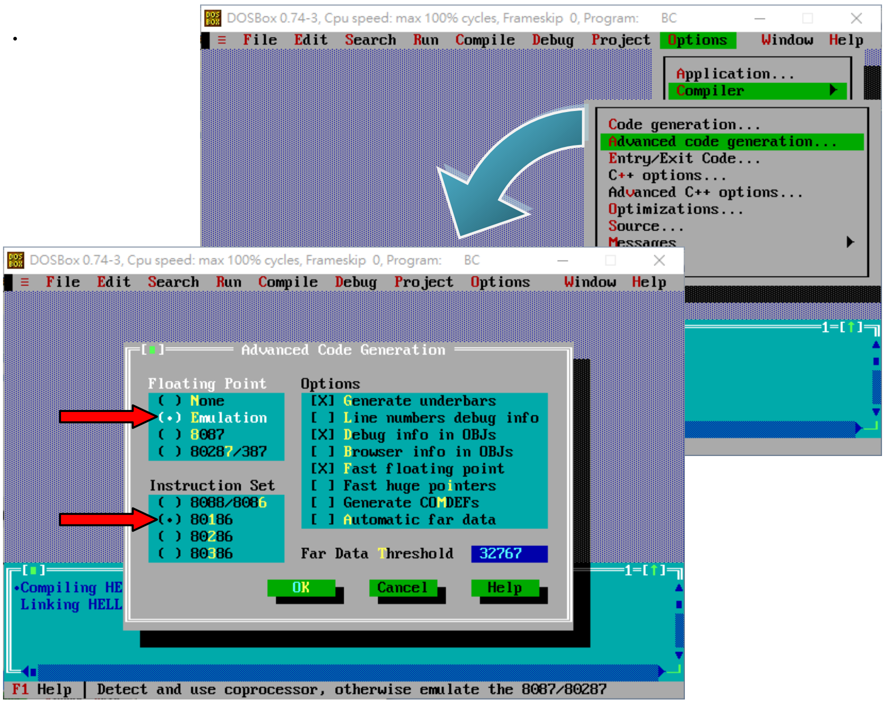
Step 8: Set the Floating Point to Emulation and the Instruction Set to 80186

(1) Select "Compiler" from the "Options" menu and then select "Advanced code generation..." .

(2) On "Floating Point" option, select "Emulation" .

(3) On "Instruction Set" option, select "80186" .

(4) Select "OK" .


DOSBox 0.74-3, Cpu speed: max 100% cycles, Frameskip 0, Program: BC
≡ File Edit Search Run Compile Debug Project Options Window Help
Application...
Compiler
Code generation...
Advanced code generation...
Entry/Exit Code...
C++ options...
Advanced C++ options...
Optimizations...
Source...
Messages
•Compiling HE
Linking HELL

```
[■]═══════ Advanced Code Generation ═══════
Floating Point      Options
 ( ) None            [X] Generate underbars
 (•) Emulation       [ ] Line numbers debug info
 ( ) 8087            [X] Debug info in OBJs
 ( ) 80287/387       [ ] Browser info in OBJs
                     [X] Fast floating point
Instruction Set      [ ] Fast huge pointers
 ( ) 8088/8086       [ ] Generate COMDEFs
 (•) 80186           [ ] Automatic far data
 ( ) 80286
 ( ) 80386           Far Data Threshold  32767

      OK        Cancel        Help
```

F1 Help | Detect and use coprocessor, otherwise emulate the 8087/80287

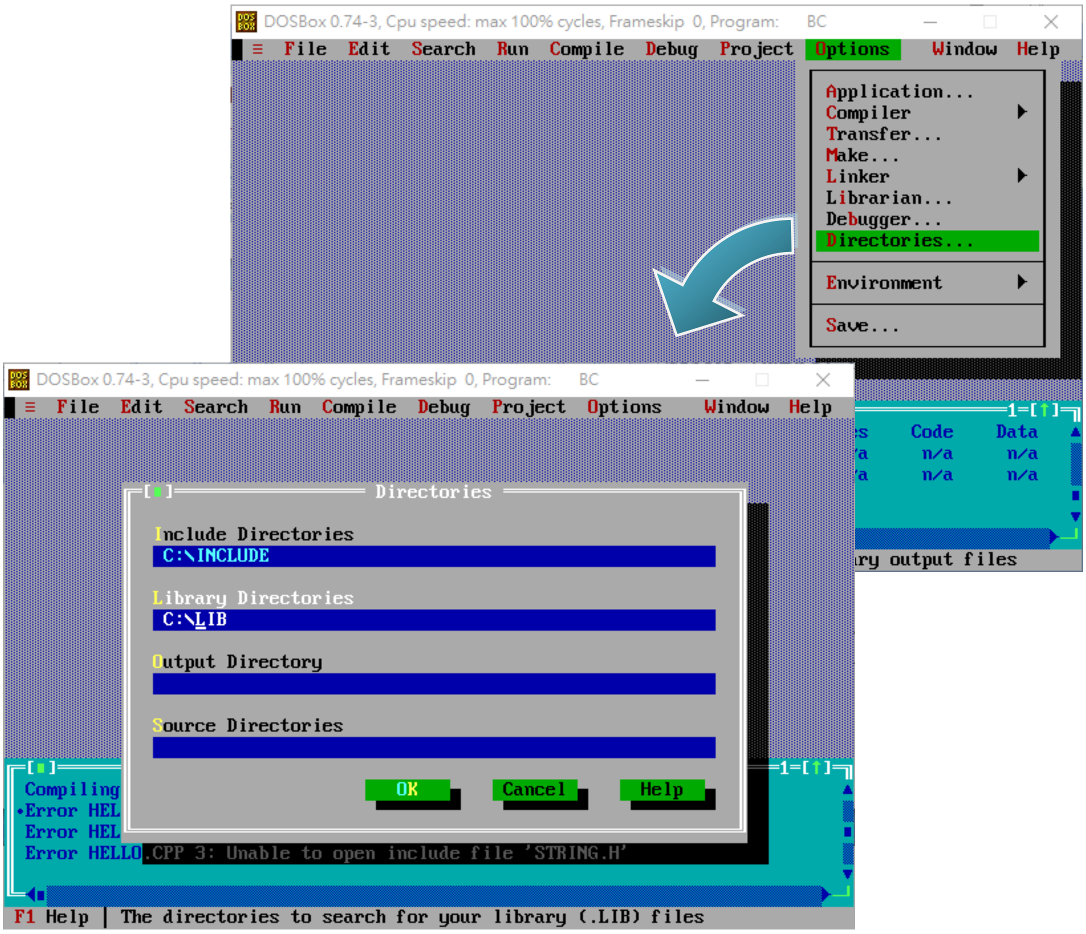
Step 9: Set the include and library directories

(1) Select “Directories...” from the “Options” menu .

(2) On “Include Directories” option, specify the header file.

(3) On “Library Directories” option, specify the function library file.

(4) Select “OK” .



Include Directories: C:\INCLUDE

Library Directories: C:\LIB

Output Directory:

Source Directories:

```
Compiling
•Error HEL
Error HEL
Error HELLO.CPP 3: Unable to open include file 'STRING.H'
```

ry output files

F1 Help | The directories to search for your library (.LIB) files

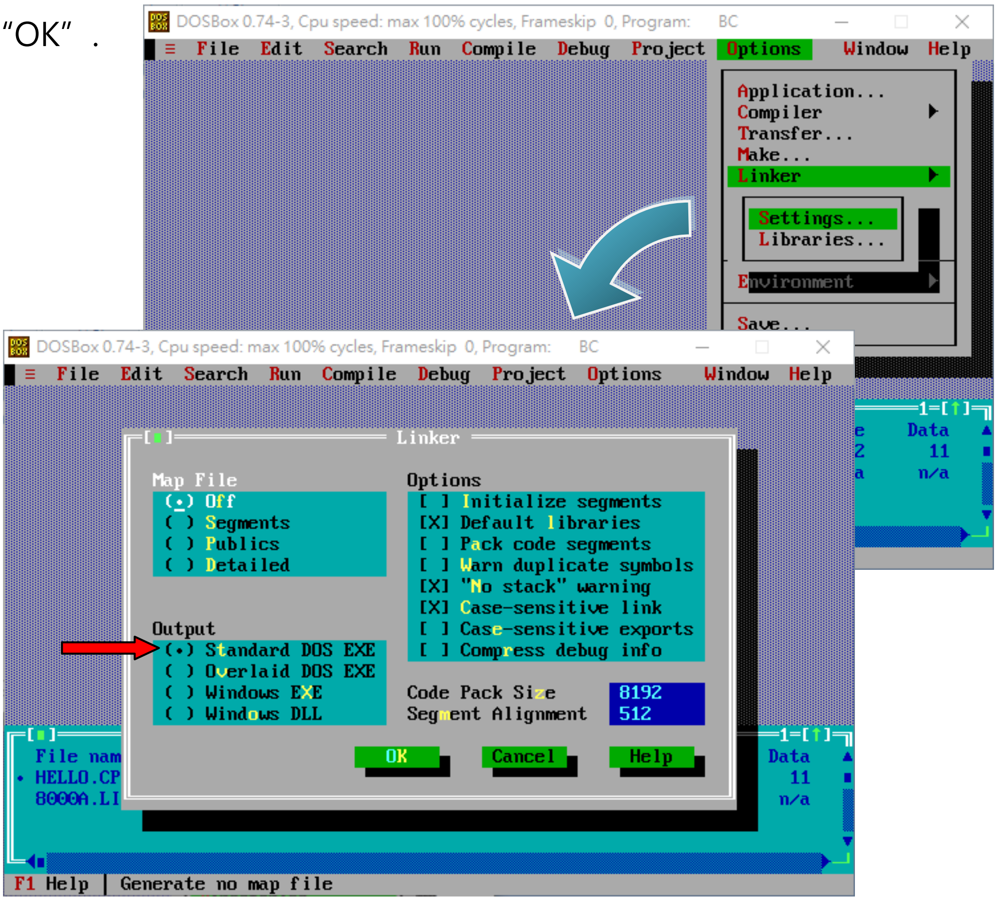
Step 10: Set Linker Output to [Standard DOS EXE]

(1) Select “Linker” from the “Options” menu .

(2) Select “Setting” from the “Linker” menu .

(3) Set the “Output” as [Standard DOS EXE].

(4) Select “OK” .


DOSBox 0.74-3, Cpu speed: max 100% cycles, Frameskip 0, Program: BC
≡ File Edit Search Run Compile Debug Project Options Window Help
Application...
Compiler
Transfer...
Make...
Linker
Settings...
Libraries...
Environment
Save...
DOSBox 0.74-3, Cpu speed: max 100% cycles, Frameskip 0, Program: BC
≡ File Edit Search Run Compile Debug Project Options Window Help
File nam
HELLO.CP
8000A.LI
Data
11
n/a
OK
Cancel
Help
F1 Help | Generate no map file

Linker

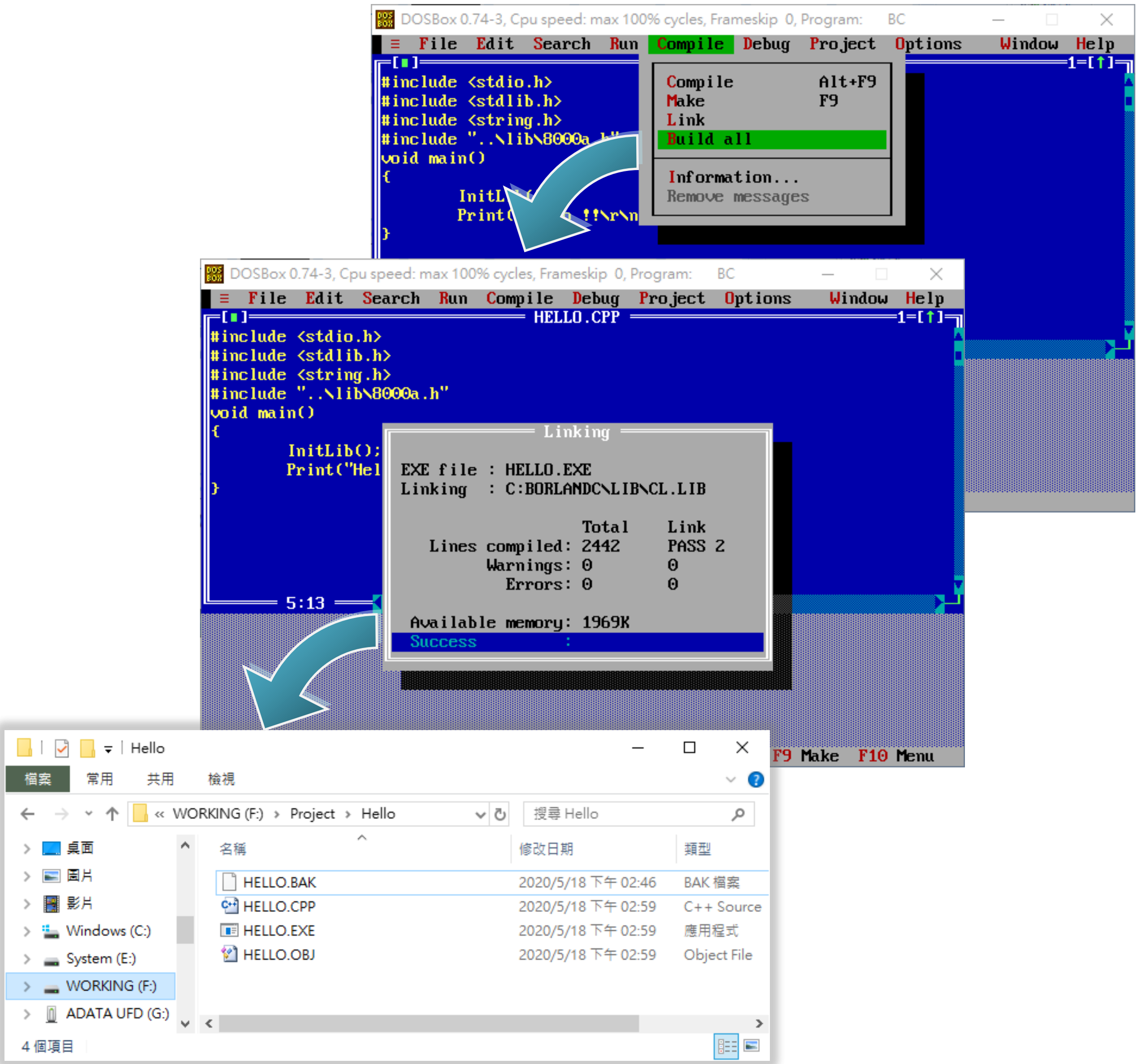
Map File
(•) Off
( ) Segments
( ) Publics
( ) Detailed

Output
(•) Standard DOS EXE
( ) Overlaid DOS EXE
( ) Windows EXE
( ) Windows DLL

Options
[ ] Initialize segments
[X] Default libraries
[ ] Pack code segments
[ ] Warn duplicate symbols
[X] "No stack" warning
[X] Case-sensitive link
[ ] Case-sensitive exports
[ ] Compress debug info

Code Pack Size 8192
Segment Alignment 512

Step 11: Select “Build all” from the “Compile” menu to build the project



```
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#include "..\lib\8000a.h"
void main()
{
        InitLib();
        Print("Hel
}
```

```
                 Linking
 EXE file  : HELLO.EXE
 Linking   : C:\BORLANDC\LIB\CL.LIB

                    Total    Link
   Lines compiled: 2442     PASS 2
         Warnings: 0        0
           Errors: 0        0

  Available memory: 1969K
  Success          :
```

名稱	修改日期	類型
HELLO.BAK	2020/5/18 下午 02:46	BAK 檔案
HELLO.CPP	2020/5/18 下午 02:59	C++ Source
HELLO.EXE	2020/5/18 下午 02:59	應用程式
HELLO.OBJ	2020/5/18 下午 02:59	Object File

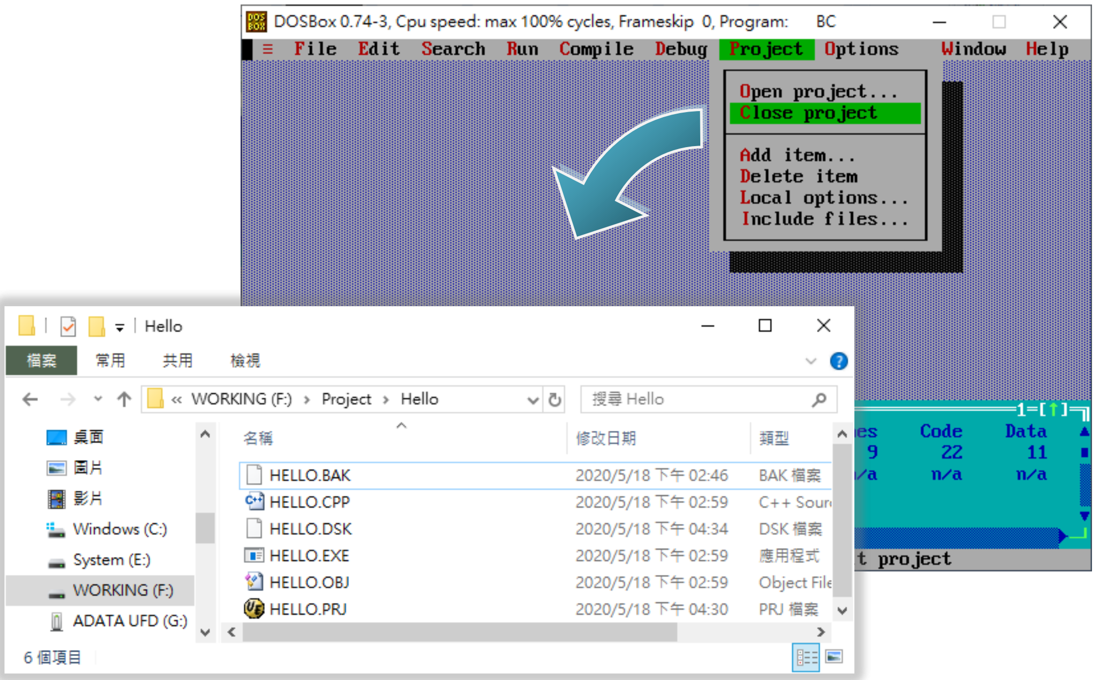
Tips & Warnings

⚠ The execute file will be named the same as the project name.

Step 12: Select “Close project” from the “Project” menu to close the project

Close the project before exit DOSBox or Compiler.

The project file will be generated after the project is closed.



名稱	修改日期	類型
HELLO.BAK	2020/5/18 下午 02:46	BAK 檔案
HELLO.CPP	2020/5/18 下午 02:59	C++ Sour
HELLO.DSK	2020/5/18 下午 04:34	DSK 檔案
HELLO.EXE	2020/5/18 下午 02:59	應用程式
HELLO.OBJ	2020/5/18 下午 02:59	Object File
HELLO.PRJ	2020/5/18 下午 04:30	PRJ 檔案

Tips & Warnings

⚠ Do not click the “X” at the right-top corner of the window before you close the project.

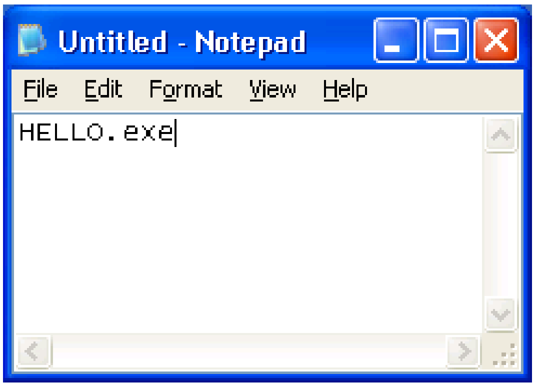
Otherwise, the project will not be generated or saved.

Step 13: Create an autoexec.bat file

(1) Open the "Notepad"

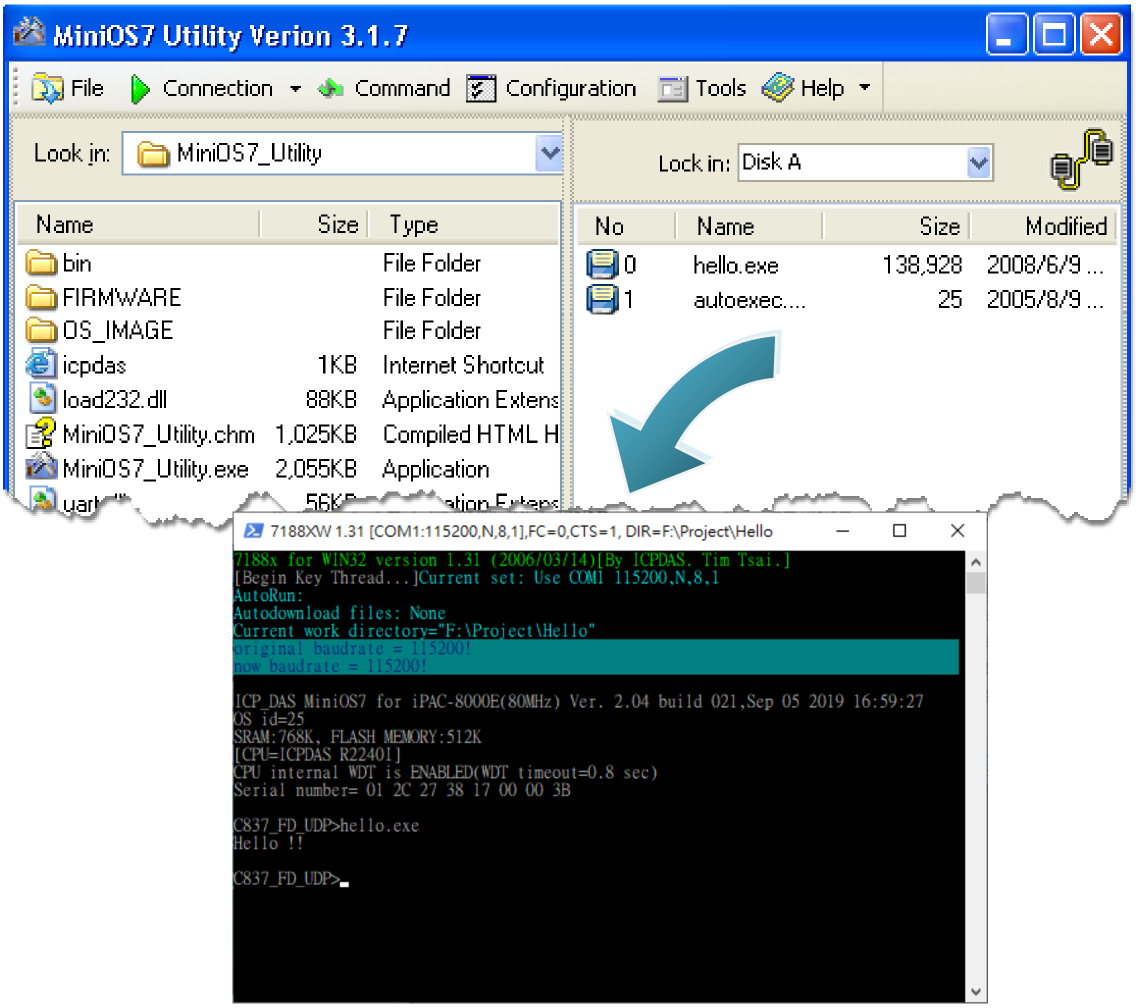
(2) Type the "HELLO.exe"

(3) Save the file and named it as autoexec.bat



```
HELLO.exe
```

Step 14: Upload programs to controller using MiniOS7 Utility



Name	Size	Type
bin		File Folder
FIRMWARE		File Folder
OS_IMAGE		File Folder
icpdas	1KB	Internet Shortcut
load232.dll	88KB	Application Extens
MiniOS7_Utility.chm	1,025KB	Compiled HTML H
MiniOS7_Utility.exe	2,055KB	Application
uart	56KB	ation Extens

No	Name	Size	Modified
0	hello.exe	138,928	2008/6/9 ...
1	autoexec....	25	2005/8/9 ...

7188XW 1.31 [COM1:115200,N,8,1],FC=0,CTS=1, DIR=F:\Project\Hello

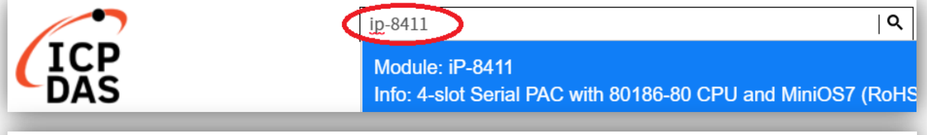
```
7188x for WIN32 version 1.31 (2006/03/14)[By ICPDAS. Tim Tsai.]
[Begin Key Thread...]Current set: Use COM1 115200,N,8,1
AutoRun:
Autodownload files: None
Current work directory="F:\Project\Hello"
original baudrate = 115200!
now baudrate = 115200!

ICP_DAS MiniOS7 for iPAC-8000E(80MHz) Ver. 2.04 build 021,Sep 05 2019 16:59:27
OS id=25
SRAM:768K, FLASH MEMORY:512K
[CPU=ICPDAS R22401]
CPU internal WDT is ENABLED(WDT timeout=0.8 sec)
Serial number= 01 2C 27 38 17 00 00 3B

C837_FD_UDP>hello.exe
Hello !!

C837_FD_UDP>
```

2. Rebuilding Demos

Every MiniOS7 product provide its own demos, they can be download in the product website, the following steps will show you how to download and rebuild them, this section will take the demos of iP-8411 as an example..

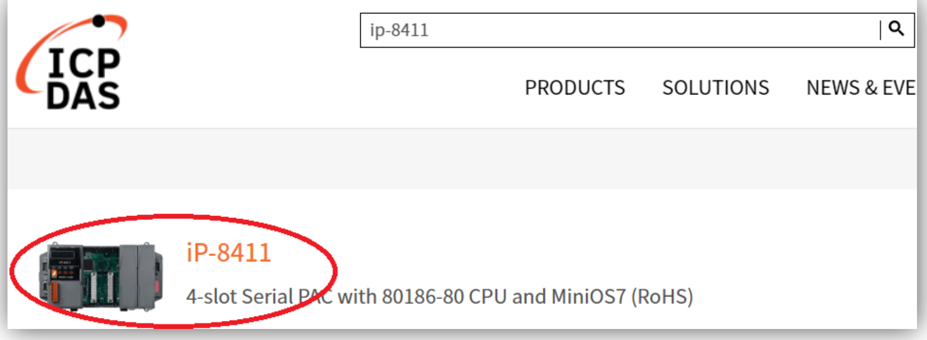
Step 1: Download Demos

Go to the ICP DAS website and search for "iP-8411".



ip-8411

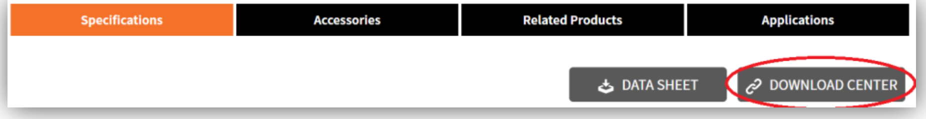
Module: iP-8411
Info: 4-slot Serial PAC with 80186-80 CPU and MiniOS7 (RoHS



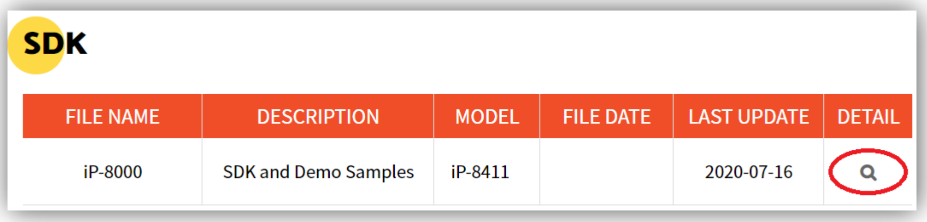
ip-8411

iP-8411
4-slot Serial PAC with 80186-80 CPU and MiniOS7 (RoHS)

Click "DOWNLOAD CENTER" butter In the middle of the iP-8411 product website.



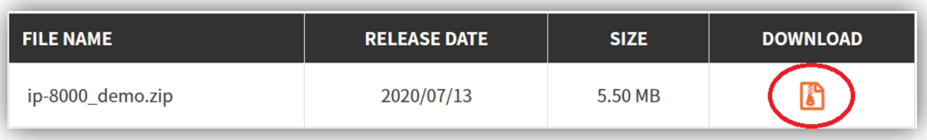
Stroll down to the "SDK" table and click the picture of magnifier.



SDK

FILE NAME	DESCRIPTION	MODEL	FILE DATE	LAST UPDATE	DETAIL
iP-8000	SDK and Demo Samples	iP-8411		2020-07-16	🔍

Then, download demos.



FILE NAME	RELEASE DATE	SIZE	DOWNLOAD
ip-8000_demo.zip	2020/07/13	5.50 MB	

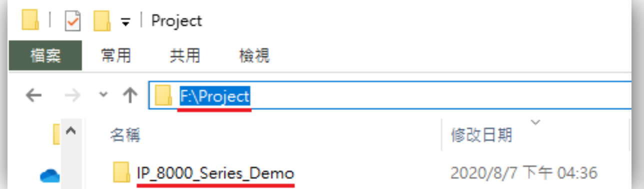
Step 2: Open Project

After downloading the demo, unzip it to the location set in DOSBOX profile, it will be easier for operating.

Tips & Warnings

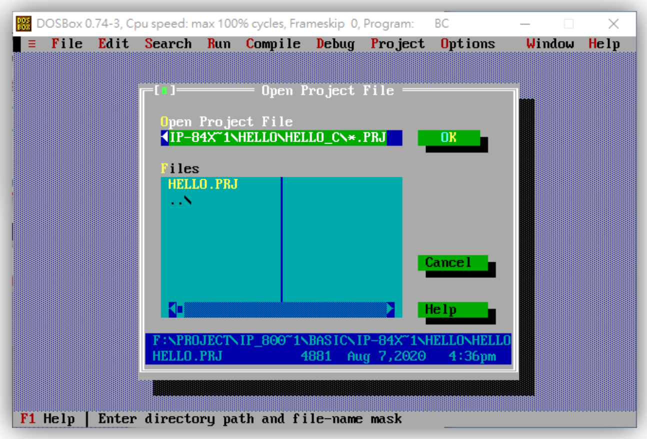
In my case, I have installed Borland C++ to disk C, and mounted C as location “C:\BC” , mounted F as location “F:\” , please refer to Page 11 for more detail.

Here we take F:\Project\IP_8000_Series_Demo\Basic\iP-84x1_iP-88x1\Hello\Hello_C\HELLO.PRJ as an example, and use BC.exe to open the example.



F:\Project

名稱	修改日期
IP_8000_Series_Demo	2020/8/7 下午 04:36


DOSBox 0.74-3, Cpu speed: max 100% cycles, Frameskip 0, Program: BC
≡ File Edit Search Run Compile Debug Project Options Window Help
OK
Cancel
Help

Open Project File

Open Project File
IP-84X~1\HELLO\HELLO_C\*.PRJ

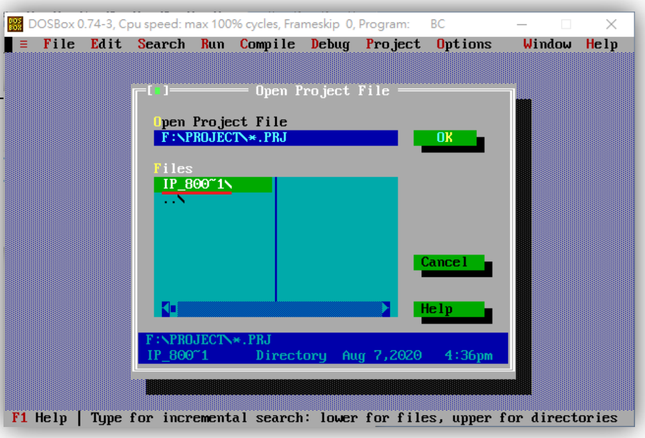
Files
HELLO.PRJ
..\

F:\PROJECT\IP_800~1\BASIC\IP-84X~1\HELLO\HELLO
HELLO.PRJ 4881 Aug 7,2020 4:36pm

F1 Help | Enter directory path and file-name mask

Tips & Warnings

In the DOSBox environment, the name of a folder or file has a length limit, and once it exceeds the name displayed on the window, it will be abbreviated.


DOSBox 0.74-3, Cpu speed: max 100% cycles, Frameskip 0, Program: BC
≡ File Edit Search Run Compile Debug Project Options Window Help
OK
Cancel
Help

Open Project File

Open Project File
F:\PROJECT\*.PRJ

Files
IP_800~1\
..\

F:\PROJECT\*.PRJ
IP_800~1 Directory Aug 7,2020 4:36pm

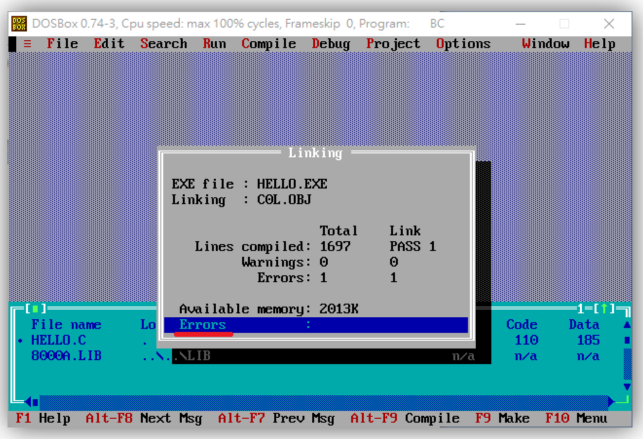
F1 Help | Type for incremental search: lower for files, upper for directories

Step 3: Rebuild Project

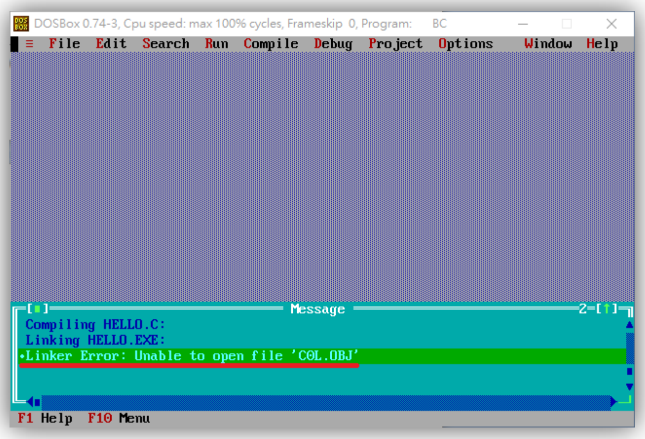
Normally, those demos are totally functional,

The code has been completed and the project has been set up as well.

But, if you build it, you may get errors like following photos.


DOSBox 0.74-3, Cpu speed: max 100% cycles, Frameskip 0, Program: BC
≡ File Edit Search Run Compile Debug Project Options Window Help
Linking
File name
HELLO.C
8000A.LIB
Code Data
110 185
n/a n/a
F1 Help Alt-F8 Next Msg Alt-F7 Prev Msg Alt-F9 Compile F9 Make F10 Menu

```
EXE file : HELLO.EXE
Linking  : C0L.OBJ

                 Total    Link
Lines compiled:  1697     PASS 1
      Warnings:  0        0
        Errors:  1        1

 Available memory: 2013K
 Errors          :
```

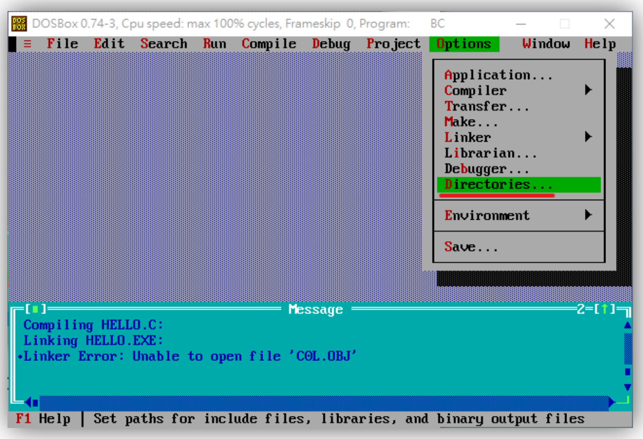

DOSBox 0.74-3, Cpu speed: max 100% cycles, Frameskip 0, Program: BC
≡ File Edit Search Run Compile Debug Project Options Window Help
Message
F1 Help F10 Menu

```
Compiling HELLO.C:
Linking HELLO.EXE:
•Linker Error: Unable to open file 'C0L.OBJ'
```

It is because the "Include Directories" and "Library Directories" are wrong for your Borland C.

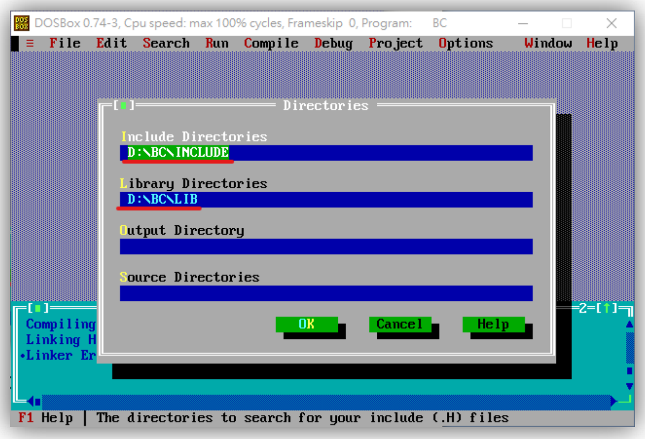
They can be found in the "Options -> Directories…" of the tool bar.

Change these directories to the path where you have installed Borland C and mounted in DOSBOX.


DOSBox 0.74-3, Cpu speed: max 100% cycles, Frameskip 0, Program: BC
≡ File Edit Search Run Compile Debug Project Options Window Help
Application...
Compiler
Transfer...
Make...
Linker
Librarian...
Debugger...
Directories...
Environment
Save...
Message
F1 Help

```
Compiling HELLO.C:
Linking HELLO.EXE:
•Linker Error: Unable to open file 'C0L.OBJ'
```

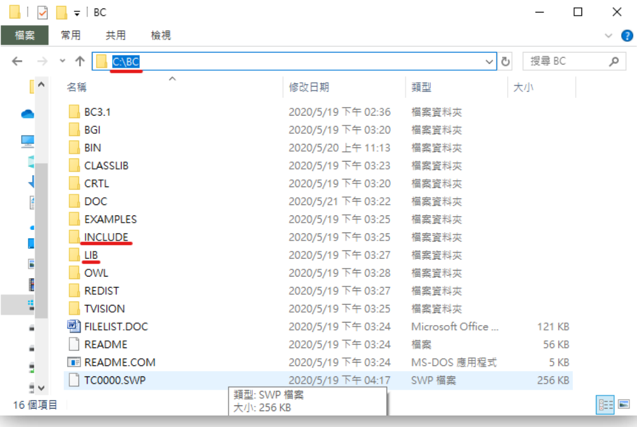
Set paths for include files, libraries, and binary output files


DOSBox 0.74-3, Cpu speed: max 100% cycles, Frameskip 0, Program: BC
≡ File Edit Search Run Compile Debug Project Options Window Help
Directories
OK
Cancel
Help
F1 Help

```
Include Directories
D:\BC\INCLUDE

Library Directories
D:\BC\LIB

Output Directory

Source Directories
```

The directories to search for your include (.H) files

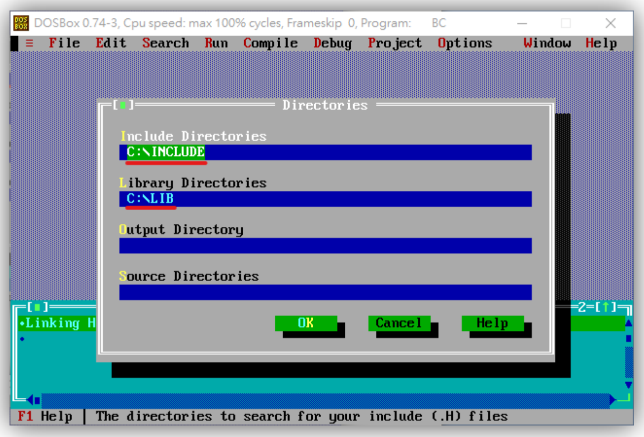
In my case, the right directories are “C:\INCLUDE” and “C:\LIB” .



名稱	修改日期	類型	大小
BC3.1	2020/5/19 下午 02:36	檔案資料夾	
BGI	2020/5/19 下午 03:20	檔案資料夾	
BIN	2020/5/20 上午 11:13	檔案資料夾	
CLASSLIB	2020/5/19 下午 03:23	檔案資料夾	
CRTL	2020/5/19 下午 03:20	檔案資料夾	
DOC	2020/5/21 下午 03:22	檔案資料夾	
EXAMPLES	2020/5/19 下午 03:25	檔案資料夾	
INCLUDE	2020/5/19 下午 03:25	檔案資料夾	
LIB	2020/5/19 下午 03:27	檔案資料夾	
OWL	2020/5/19 下午 03:28	檔案資料夾	
REDIST	2020/5/19 下午 03:27	檔案資料夾	
TVISION	2020/5/19 下午 03:25	檔案資料夾	
FILELIST.DOC	2020/5/19 下午 03:24	Microsoft Office ...	121 KB
README	2020/5/19 下午 03:24	檔案	56 KB
README.COM	2020/5/19 下午 03:24	MS-DOS 應用程式	5 KB
TC0000.SWP	2020/5/19 下午 04:17	SWP 檔案	256 KB

類型: SWP 檔案
大小: 256 KB

16 個項目



DOSBox 0.74-3, Cpu speed: max 100% cycles, Frameskip 0, Program: BC
≡ File Edit Search Run Compile Debug Project Options Window Help
Directories

Include Directories: C:\INCLUDE

Library Directories: C:\LIB

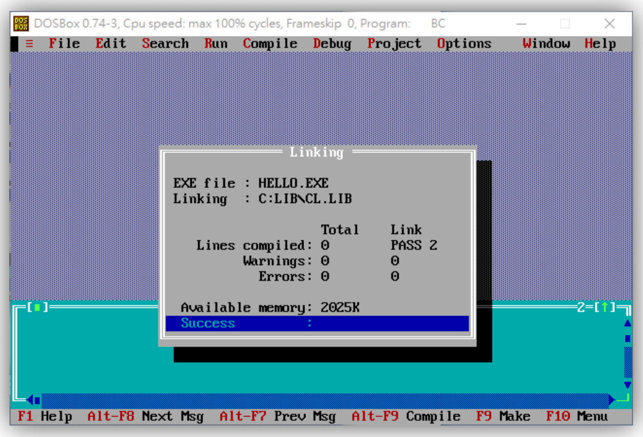
Output Directory:

Source Directories:

OK
Cancel
Help
•Linking H

F1 Help | The directories to search for your include (.H) files

After changing the path, rebuild the project and it will succeed.



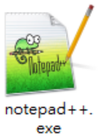
DOSBox 0.74-3, Cpu speed: max 100% cycles, Frameskip 0, Program: BC
≡ File Edit Search Run Compile Debug Project Options Window Help
Linking

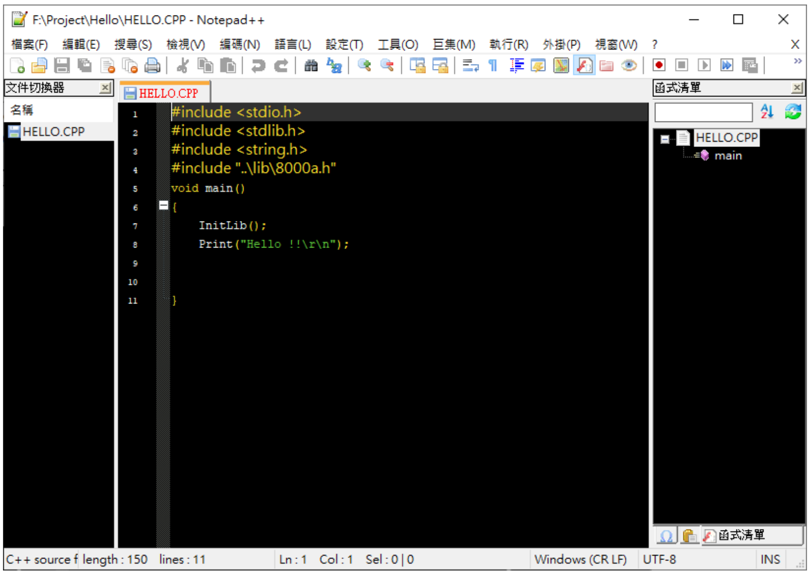
```
EXE file : HELLO.EXE
Linking  : C:LIB\CL.LIB

                     Total     Link
   Lines compiled:   0         PASS 2
         Warnings:   0         0
           Errors:   0         0

  Available memory: 2025K
  Success        :
```

F1 Help Alt-F8 Next Msg Alt-F7 Prev Msg Alt-F9 Compile F9 Make F10 Menu

Tips

1. For develop application,
   Use a text editor instead of the BC/TC user interface; it will be more convenient to write code.
   EX: notepad ++.exe




F:\Project\Hello\HELLO.CPP - Notepad++
檔案(F) 編輯(E) 搜尋(S) 檢視(V) 編碼(N) 語言(L) 設定(T) 工具(O) 巨集(M) 執行(R) 外掛(P) 視窗(W) ?
文件切換器
名稱
HELLO.CPP
HELLO.CPP
函式清單
HELLO.CPP
main
函式清單
C++ source f length : 150 lines : 11
Ln : 1 Col : 1 Sel : 0 | 0
Windows (CR LF)
UTF-8
INS

```
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#include "..\lib\8000a.h"
void main()
{
    InitLib();
    Print("Hello !!\r\n");


}
```

History

V2.2.0 Jan 2024

Modify descript

V2.1.0 Aug 2020

Add chapter 2 Rebuild Demos

Add chapter 3 Tips

Add chapter History

V2.0.0 May 2020

Modify layout

V1.0.0 Date Unknown

First release