

bc_shell

User Guide

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Purpose

dc_shell is a simple Unix shell that supports:

- running simple commands
- redirecting stdin, stdout, and stderr

Installing

Obtaining

```
git clone https://github.com/Bnyaoo/bc\_shell.git
```

Building

```
cmake -S . -B build
cmake --build build
```

The compiler can be specified by passing one of the following to cmake:

- `-DCMAKE_C_COMPILER="gcc" -DCMAKE_CXX_COMPILER="g++"`
- `-DCMAKE_C_COMPILER="clang" -DCMAKE_CXX_COMPILER="clang++"`

Installing

```
gcc main.c -o bc_shell
```

Running

```
./bc_shell
```

Environment Variables

The following environment variables alter the behaviour of dc_shell:

Variable	Purpose
PATH	The directories to search for commands
STATUS	The state of execution, (builtin, standard, I/O redirection)

Features

- dc_shell only supports executing simple commands with optional I/O redirection.
- The PATH environment variable is searched for each command.

Built-in Commands

dc_shell supports the following built-in commands:

Command	Purpose
cd	Change working directory
exit	Exit the shell

Limitations

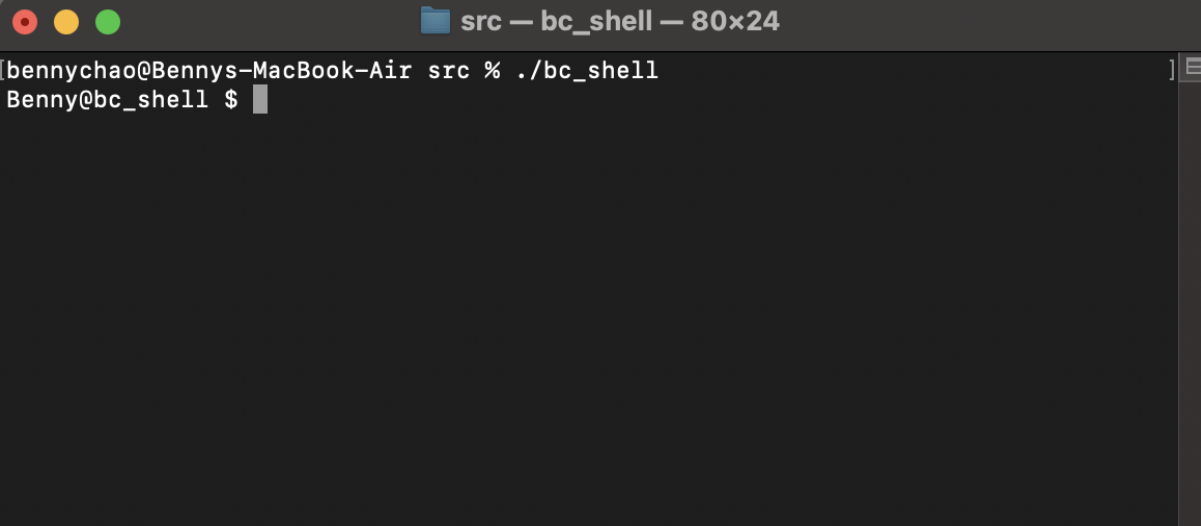
- A program name has a space it cannot be run
- Tab completion is not implemented
- Command history is not implemented

The following command types are not supported:

- Pipelines (|)
- Lists (;, &, &&, ||)
- Compound (if, case, until, while, for, ())
- Functions

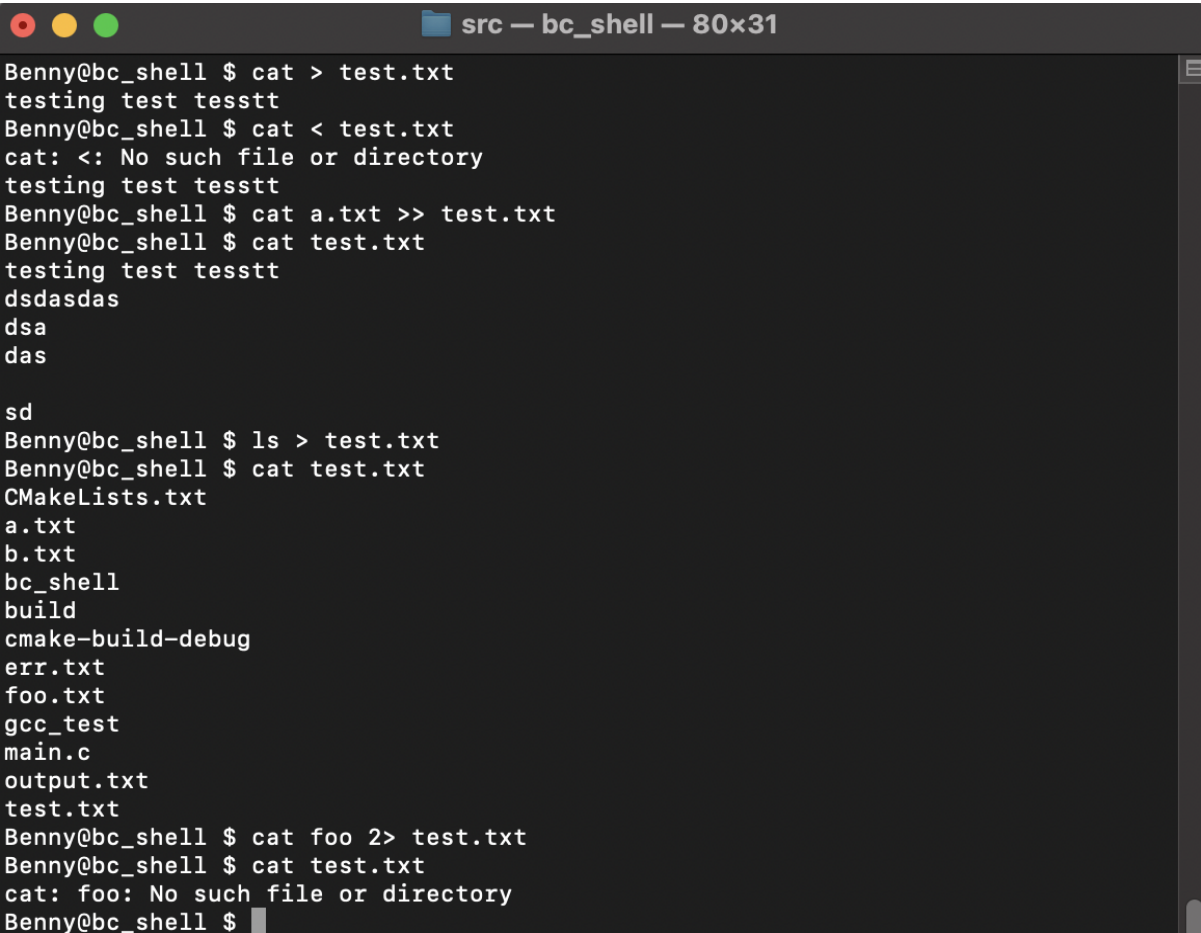
Examples

Running the shell



```
src — bc_shell — 80x24
bennychao@Bennys-MacBook-Air src % ./bc_shell
Benny@bc_shell $
```

I/O redirection



```
src — bc_shell — 80x31
Benny@bc_shell $ cat > test.txt
testing test tesstt
Benny@bc_shell $ cat < test.txt
cat: <: No such file or directory
testing test tesstt
Benny@bc_shell $ cat a.txt >> test.txt
Benny@bc_shell $ cat test.txt
testing test tesstt
dsdasdas
dsa
das

sd
Benny@bc_shell $ ls > test.txt
Benny@bc_shell $ cat test.txt
CMakeLists.txt
a.txt
b.txt
bc_shell
build
cmake-build-debug
err.txt
foo.txt
gcc_test
main.c
output.txt
test.txt
Benny@bc_shell $ cat foo 2> test.txt
Benny@bc_shell $ cat test.txt
cat: foo: No such file or directory
Benny@bc_shell $
```

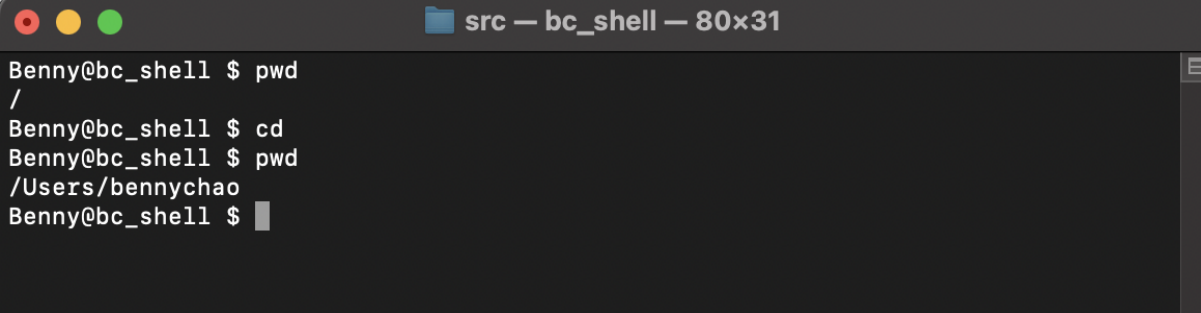
cd /

```
src — bc_shell — 80x31
bennychao@Bennys-MacBook-Air src % ./bc_shell
Benny@bc_shell $ pwd
/Users/bennychao/clionprojects/bc_shell/src
Benny@bc_shell $ cd /
Benny@bc_shell $ pwd
/
Benny@bc_shell $
```

ls -l

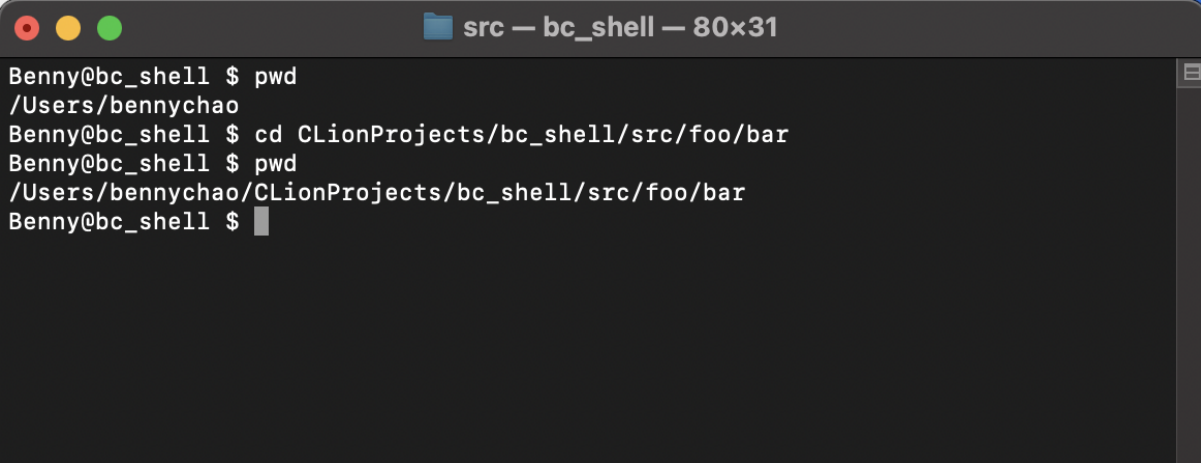
```
src — bc_shell — 80x31
Benny@bc_shell $ ls -l
total 16
drwxrwxr-x  36 root  admin   1152 20 Jan 13:51 Applications
drwxr-xr-x  66 root  wheel   2112 17 Sep 22:42 Library
drwxr-xr-x@  9 root  wheel    288 14 Jul 2022 System
drwxr-xr-x   5 root  admin    160 16 Sep 19:28 Users
drwxr-xr-x   3 root  wheel     96 21 Jan 09:01 Volumes
drwxr-xr-x@ 38 root  wheel   1216 14 Jul 2022 bin
drwxr-xr-x   2 root  wheel     64 14 Jul 2022 cores
dr-xr-xr-x   4 root  wheel   8150  2 Jan 02:03 dev
lrwxr-xr-x@  1 root  wheel     11 14 Jul 2022 etc -> private/etc
lrwxr-xr-x   1 root  wheel     25  2 Jan 02:03 home -> /System/Volumes/Data/home
drwxr-xr-x   3 root  wheel     96 17 Sep 00:00 opt
drwxr-xr-x   6 root  wheel    192  2 Jan 02:03 private
drwxr-xr-x@ 65 root  wheel   2080 14 Jul 2022/sbin
lrwxr-xr-x@  1 root  wheel     11 14 Jul 2022 tmp -> private/tmp
drwxr-xr-x@ 11 root  wheel    352 14 Jul 2022 usr
lrwxr-xr-x@  1 root  wheel     11 14 Jul 2022 var -> private/var
Benny@bc_shell $
```

cd

A terminal window titled "src — bc_shell — 80x31" with a dark background. It shows a series of commands and their outputs: "Benny@bc_shell \$ pwd" followed by "/" on the next line, "Benny@bc_shell \$ cd" followed by a blank line, and "Benny@bc_shell \$ pwd" followed by "/Users/bennychao" on the next line. The prompt "Benny@bc_shell \$" is followed by a cursor.

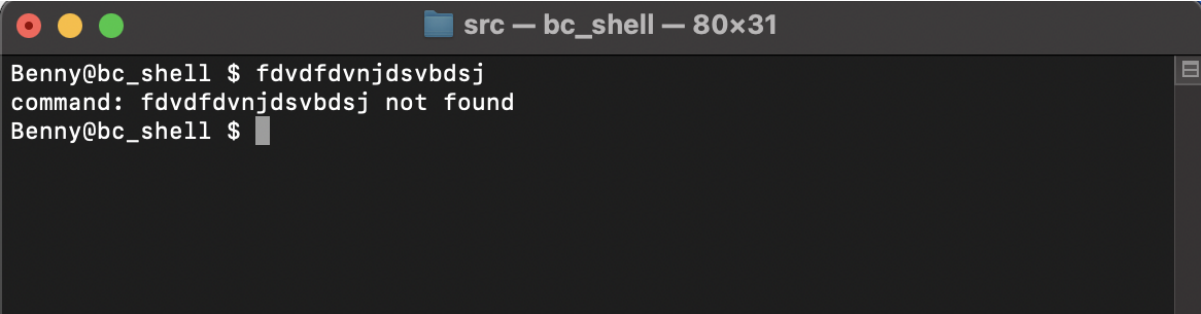
```
Benny@bc_shell $ pwd
/
Benny@bc_shell $ cd
Benny@bc_shell $ pwd
/Users/bennychao
Benny@bc_shell $
```

cd <specified path>

A terminal window titled "src — bc_shell — 80x31" with a dark background. It shows a series of commands and their outputs: "Benny@bc_shell \$ pwd" followed by "/Users/bennychao" on the next line, "Benny@bc_shell \$ cd CLionProjects/bc_shell/src/foo/bar" followed by a blank line, and "Benny@bc_shell \$ pwd" followed by "/Users/bennychao/CLionProjects/bc_shell/src/foo/bar" on the next line. The prompt "Benny@bc_shell \$" is followed by a cursor.

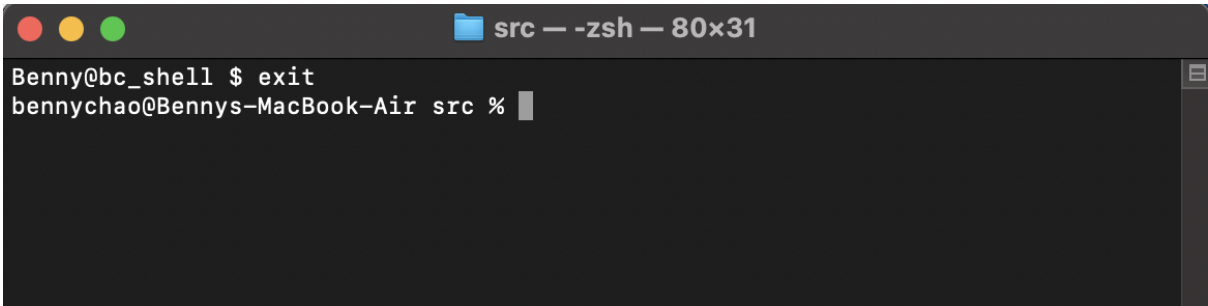
```
Benny@bc_shell $ pwd
/Users/bennychao
Benny@bc_shell $ cd CLionProjects/bc_shell/src/foo/bar
Benny@bc_shell $ pwd
/Users/bennychao/CLionProjects/bc_shell/src/foo/bar
Benny@bc_shell $
```

Invalid command

A terminal window titled "src — bc_shell — 80x31" with a dark background. It shows a command "Benny@bc_shell \$ fdvdfdvndsvbdsj" followed by the error message "command: fdvdfdvndsvbdsj not found" on the next line. The prompt "Benny@bc_shell \$" is followed by a cursor.

```
Benny@bc_shell $ fdvdfdvndsvbdsj
command: fdvdfdvndsvbdsj not found
Benny@bc_shell $
```

exit



```
src — -zsh — 80x31
Benny@bc_shell $ exit
bennychao@Bennys-MacBook-Air src %
```

A terminal window with a dark background. The title bar at the top shows three colored window control buttons (red, yellow, green) on the left, followed by a blue folder icon and the text "src — -zsh — 80x31". The terminal content shows the command "exit" being entered at the prompt "Benny@bc_shell \$". The next line shows the prompt has changed to "bennychao@Bennys-MacBook-Air src %" with a cursor at the end.