


# UEFI Basics Tutorial (12) - Using the Standard C Library


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 **摘要** This article details how to use the EDKII framework to write and run UEFI applications that include standard C libraries in a UEFI environment. Through specific examples, it shows the entire process from writing source code, configuring the compilation environment, compiling and generating EFI files to running under the UEFI shell. This process not only deepens th...

The summary is generated in [C Know](#) , supported by DeepSeek-R1 full version, [go to experience>](#)

## 1. Write source code

1. Write the UEFI Application
- code C:\edkii\OvmfPkg\MyHelloWorldStdLibC\MyHelloWorldStdLibC.c,

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```
1  #include <stdio.h>
2
3  int main(int args , char ** argv){
4
5      int nums[10] = {4, 5, 2, 10, 7, 1, 8, 3, 6, 9};
6      int i, j, temp, isSorted;
7
8      printf("Before Sorting, ... \n");
9      //排序前
10     for(i=0; i<10; i++){
11         printf("%d ", nums[i]);
12     }
13     printf("\n");
14
15     //优化算法: 最多进行 n-1 轮比较
16     for(i=0; i<10-1; i++){
17         isSorted = 1; //假设剩下的元素已经排序好了
18         for(j=0; j<10-1-i; j++){
19             if(nums[j] > nums[j+1]){
20                 temp = nums[j];
21                 nums[j] = nums[j+1];
22                 nums[j+1] = temp;
23                 isSorted = 0;
24             }
25         }
26         if(isSorted) break; //如果没有发生交换, 说明剩下的元素已经排序好了
27     }
28
29     //排序后
30     printf("After Sorting, ... \n");
31     for(i=0; i<10; i++){
32         printf("%d ", nums[i]);
33     }
34 }
```

```

34 | printf("\n");
35 | return 0;
36 | }

```

收起 ^

2. Write C:\edkii\OvmfPkg\MyHelloWorldStdLibC\MyHelloWorldStdLibC.inf,

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```

1  [Defines]
2  INF_VERSION = 0x00010006
3  BASE_NAME = MyHelloWorldStdLibC
4  FILE_GUID = c912f194-7f0e-4803-b907-b757b806ec73
5  MODULE_TYPE = UEFI_APPLICATION
6  VERSION_STRING = 1.0
7  ENTRY_POINT = ShellCEntryLib
8  VALID_ARCHITECTURES = X64
9
10 [Sources]
11   MyHelloWorldStdLibC.c
12
13 # 添加标准C库头文件
14 [Packages]
15   MdePkg/MdePkg.dec
16   ShellPkg/ShellPkg.dec
17   StdLib/StdLib.dec
18
19 # 添加标准C库
20 [LibraryClasses]
twen   LibC
twen   LibStdio
twen   ShellCEntryLib

```

收起 ^

3. Modify the OvmfPkg/OvmfPkgX64.dsc file and add

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```

1  #####
2  #
3  #  Include Boilerplate text required for building with the Standard Libraries.
4  #
5  #####
6  !include StdLib/StdLib.inc
7  !include AppPkg/Applications/.Sockets/.Sockets.inc

```

## 2. Compile and generate EFI files

Run and `edksetup.bat` compile the entire OvmfPkg Package

## 3. Run UEFI APP **MyHelloWorldStdLibC.efi**

- Copy `C:\edkii\Build\OvmfX64\DEBUG_VS2013x86\FV\OVMF.fd` to `C:\qemu` ; Copy `C:\edkii\Build\OvmfX64\DEBUG_VS2013x86\X64\OvmfPkg\MyHelloWorldStdLibC\MyHelloWorldStdLibC\OUTPUT\MyHelloWorldStdLibC.efi` to virtual disk `HDD_BOOT.img`
- Execute `setup-qemu-x64.bat` , then UEFI SHELL execute in `MyHelloWorldStdLibC.efi` , the result is as follows,  
[External link image transfer failed, the source site may have an anti-hotlink mechanism, it is recommended to save the image and upload it directly

```
QEMU - Press Ctrl+Alt+G to release grab
Machine View

PciRoot (0x0) /Pci (0x1,0x1) /Ata (0x0)
BLK0: Alias(s) :
PciRoot (0x0) /Pci (0x1,0x0) /Floppy (0x0)
BLK1: Alias(s) :
PciRoot (0x0) /Pci (0x1,0x0) /Floppy (0x1)
Press ESC in 1 seconds to skip startup.nsh or any other key to continue.
Shell> fs0:
FS0:\> ls
Directory of: FS0:\
05/07/2019  14:40                76,384  MyHelloWorldStdLibC.efi
               1 File(s)          76,384 bytes
               0 Dir(s)
FS0:\> MyHelloWorldStdLibC.efi
Before Sorting, ...
4 5 2 10 7 1 8 3 6 9
After Sorting, ...
1 2 3 4 5 6 7 8 9 10
FS0:\> MyHelloWorldStdLibC.efi
Before Sorting, ...
4 5 2 10 7 1 8 3 6 9
After Sorting, ...
1 2 3 4 5 6 7 8 9 10
FS0:\>
FS0:\>
FS0:\> _
```

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#### IV. Summary

This article compiles and runs the standard C library program by referencing the StdLib module in EKDII, and runs it under the UEFI SHELL. By using the standard C library, we can write general programs more flexibly and greatly improve development efficiency.

[STDLIBC DEMO source code](#)

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