Name: Alaa Raed

Learn In Depth
Embedded C

App.o header file section :

```
Alaa@DESKTOP-HBNLD17 MINGW32 /c/Program Files (x86)/GNU Tools ARM Embedded/ARM/L
ab1
$ arm-none-eabi-objdump.exe -h app.o

app.o:     file format elf32-littlearm

Sections:
Idx Name          Size      VMA       LMA       File off  Algn
  0 .text         0000001c  00000000  00000000  00000034  2**2
                  CONTENTS, ALLOC, LOAD, RELOC, READONLY, CODE
  1 .data         00000064  00000000  00000000  00000050  2**2
                  CONTENTS, ALLOC, LOAD, DATA
  2 .bss          00000000  00000000  00000000  000000b4  2**0
                  ALLOC
  3 .comment      0000007f  00000000  00000000  000000b4  2**0
                  CONTENTS, READONLY
  4 .ARM.attributes 00000032  00000000  00000000  00000133  2**0
                  CONTENTS, READONLY

Alaa@DESKTOP-HBNLD17 MINGW32 /c/Program Files (x86)/GNU Tools ARM Embedded/ARM/L
ab1
$
```

UART.o header file section :

```
Alaa@DESKTOP-HBNLD17 MINGW32 /c/Program Files (x86)/GNU Tools ARM Embedded/ARM/L
ab1
$ arm-none-eabi-objdump.exe -h UART.o

UART.o:     file format elf32-littlearm

Sections:
Idx Name          Size      VMA       LMA       File off  Algn
  0 .text         00000054  00000000  00000000  00000034  2**2
                  CONTENTS, ALLOC, LOAD, READONLY, CODE
  1 .data         00000000  00000000  00000000  00000088  2**0
                  CONTENTS, ALLOC, LOAD, DATA
  2 .bss          00000000  00000000  00000000  00000088  2**0
                  ALLOC
  3 .comment      0000007f  00000000  00000000  00000088  2**0
                  CONTENTS, READONLY
  4 .ARM.attributes 00000032  00000000  00000000  00000107  2**0
                  CONTENTS, READONLY
```

Startup.o header file section :

```
                CONTENTS, READONLY

Alaa@DESKTOP-HBNLD17 MINGW32 /c/Program Files (x86)/GNU Tools ARM Embedded/ARM/Lab1
$ arm-none-eabi-objdump.exe -h startup.o

startup.o:     file format elf32-littlearm

Sections:
Idx Name          Size      VMA       LMA       File off  Algn
  0 .text         0000000c  00000000  00000000  00000034  2**2
                  CONTENTS, ALLOC, LOAD, RELOC, READONLY, CODE
  1 .data         00000000  00000000  00000000  00000040  2**0
                  CONTENTS, ALLOC, LOAD, DATA
  2 .bss          00000000  00000000  00000000  00000040  2**0
                  ALLOC
  3 .ARM.attributes 00000022  00000000  00000000  00000040  2**0
                  CONTENTS, READONLY
```

Learn-in-depth header file section :

```
Alaa@DESKTOP-HBNLD17 MINGW32 /c/Program Files (x86)/GNU Tools ARM Embedded/ARM/Lab1
$ arm-none-eabi-objdump.exe -h learn-in-depth.elf

learn-in-depth.elf:     file format elf32-littlearm

Sections:
Idx Name          Size      VMA       LMA       File off  Algn
  0 .startup      0000000c  00010000  00010000  00008000  2**2
                  CONTENTS, ALLOC, LOAD, READONLY, CODE
  1 .text         00000070  0001000c  0001000c  0000800c  2**2
                  CONTENTS, ALLOC, LOAD, READONLY, CODE
  2 .data         00000064  0001007c  0001007c  0000807c  2**2
                  CONTENTS, ALLOC, LOAD, DATA
  3 .ARM.attributes 0000002e  00000000  00000000  000080e0  2**0
                  CONTENTS, READONLY
  4 .comment      0000007e  00000000  00000000  0000810e  2**0
                  CONTENTS, READONLY
```

Symbol of app.o :

```
Alaa@DESKTOP-HBNLD17 MINGW32 /c/Program Files (x86)/GNU Tools ARM Embedded/ARM/Lab1
$ arm-none-eabi-nm.exe app.o
00000000 T main
00000000 D string_buffer
         U Uart_Send_String
```

Symbol of UART.o :

```
Alaa@DESKTOP-HBNLD17 MINGW32 /c/Program Files (x86)/GNU Tools ARM Embedded/ARM/Lab1
$ arm-none-eabi-nm.exe UART.o
00000000 T Uart_Send_String
```

Symbol of startup.o :

```
Alaa@DESKTOP-HBNLD17 MINGW32 /c/Program Files (x86)/GNU Tools ARM Embedded/ARM/Lab1
$ arm-none-eabi-nm.exe startup.o
         U main
00000000 T reset
00000008 t stop
```

Symbol of learn-in-depth.elf :

```
Alaa@DESKTOP-HBNLD17 MINGW32 /c/Program Files (x86)/GNU Tools ARM Embedded/ARM/Lab1
$ arm-none-eabi-nm.exe learn-in-depth.elf
0001000c T main
00010000 T reset
000110e0 D stack_top
00010008 t stop
0001007c D string_buffer
00010028 T Uart_Send_String
```

Run on Qemu:

```
Alaa@DESKTOP-HBNLD17 MINGW32 /c/Program Files (x86)/GNU Tools ARM Embedded/ARM/Lab1
$ ../qemu/qemu-system-arm -M versatilepb -m 128M -nographic -kernel learn-in-depth.bin
Learn-in-depth:<Alaa>
```