Report about lab1

lab1: create a BareMetal software to send

“learn-in-depth:Mostafa-Elshiekh” using UART.

Sections of app.o:

```
PS D:\study\GNU-Tools-ARM-Embedded\7 2017-q4-major\bin> .\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 .rodata       00000064  00000000  00000000  000000b4  2**2
                  CONTENTS, ALLOC, LOAD, READONLY, DATA
  4 .comment      0000007f  00000000  00000000  00000118  2**0
                  CONTENTS, READONLY
  5 .ARM.attributes 00000032  00000000  00000000  00000197  2**0
                  CONTENTS, READONLY
```

Sections of uart.o:

```
PS D:\study\GNU-Tools-ARM-Embedded\7 2017-q4-major\bin> .\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         0000005c  00000000  00000000  00000034  2**2
                  CONTENTS, ALLOC, LOAD, READONLY, CODE
  1 .data         00000000  00000000  00000000  00000090  2**0
                  CONTENTS, ALLOC, LOAD, DATA
  2 .bss          00000000  00000000  00000000  00000090  2**0
                  ALLOC
  3 .comment      0000007f  00000000  00000000  00000090  2**0
                  CONTENTS, READONLY
  4 .ARM.attributes 00000032  00000000  00000000  0000010f  2**0
                  CONTENTS, READONLY
```

Sections of startup.o:

```
startup.o:     file format elf32-littlearm

Sections:
Idx Name          Size      VMA       LMA       File off  Algn
  0 .text         00000010  00000000  00000000  00000034  2**2
                  CONTENTS, ALLOC, LOAD, RELOC, READONLY, CODE
  1 .data         00000000  00000000  00000000  00000044  2**0
                  CONTENTS, ALLOC, LOAD, DATA
  2 .bss          00000000  00000000  00000000  00000044  2**0
                  ALLOC
  3 .ARM.attributes 00000022  00000000  00000000  00000044  2**0
                  CONTENTS, READONLY
```

Sections of learn-in-depth.elf:

```
PS D:\study\GNU-Tools-ARM-Embedded\7 2017-q4-major\bin> .\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      00000010  00010000  00010000  00010000  2**2
                  CONTENTS, ALLOC, LOAD, READONLY, CODE
  1 .data         00000064  000100ec  000100ec  000100ec  2**2
                  CONTENTS, ALLOC, LOAD, DATA
  2 .ARM.attributes 0000002e  00000000  00000000  00010150  2**0
                  CONTENTS, READONLY
  3 .comment      0000007e  00000000  00000000  0001017e  2**0
                  CONTENTS, READONLY
  4 .text         00000078  00010010  00010010  00010010  2**2
                  CONTENTS, ALLOC, LOAD, READONLY, CODE
  5 .rodata       00000064  00010088  00010088  00010088  2**2
                  CONTENTS, ALLOC, LOAD, READONLY, DATA
```

Symbols of app.o

```
PS D:\study\GNU-Tools-ARM-Embedded\7 2017-q4-major\bin> .\arm-none-eabi-nm.exe app.o
00000000 T main
00000000 D string_buffer
00000000 R string_buffer2
         U Uart_send_string
```

Symbols of uart.o

```
PS D:\study\GNU-Tools-ARM-Embedded\7 2017-q4-major\bin> .\arm-none-eabi-nm.exe uart.o
00000000 T Uart_send_string
```

Symbols of startup.o

```
PS D:\study\GNU-Tools-ARM-Embedded\7 2017-q4-major\bin> .\arm-none-eabi-nm.exe startup.o
         U main
00000000 T reset
         U stack_top
00000008 t stop
```

Symbols of learn-in-depth.elf

```
PS D:\study\GNU-Tools-ARM-Embedded\7 2017-q4-major\bin> .\arm-none-eabi-nm.exe learn-in-depth.elf
00010010 T main
00010000 T reset
00020150 D stack_top
00010008 t stop
000100ec D string_buffer
00010088 R string_buffer2
0001002c T Uart_send_string
```

Simulation of code on qemsu:

```
PS C:\Program Files (x86)\qemu> .\qemu-system-arm.exe -M versatilepb -m 128M -nographic -kernel learn-in-depth.bin
learn-in-depth:Mostafa-Elshiekh
```