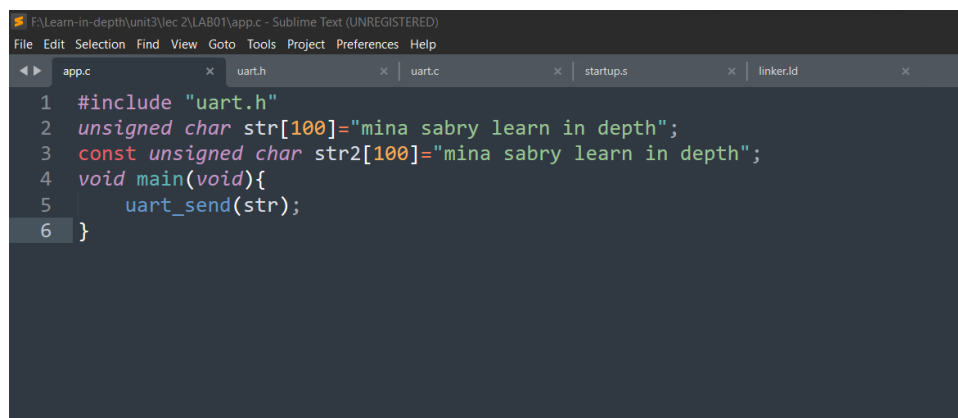


Name: Mina Sabry Abdelmessih

ID:686876

CODES:

App.c



```
F:\Learn-in-depth\unit3\lec 2\LAB01\app.c - Sublime Text (UNREGISTERED)
File Edit Selection Find View Goto Tools Project Preferences Help
app.c x uart.h x uart.c x startup.s x linker.ld x
1 #include "uart.h"
2 unsigned char str[100]="mina sabry learn in depth";
3 const unsigned char str2[100]="mina sabry learn in depth";
4 void main(void){
5     uart_send(str);
6 }
```

Uart.h

```
F:\Learn-in-depth\unit3\lec 2\LAB01\uart.h - Sublime Text (UNREGISTERED)
File Edit Selection Find View Goto Tools Project Preferences Help
app.c uart.h uart.c startup.s linker.ld
1 #ifndef _UART_H
2 #define _UART_H
3 void uart_send(unsigned char* p);
4 #endif
```

Uart.c

```
F:\Learn-in-depth\unit3\lec 2\LAB01\uart.c - Sublime Text (UNREGISTERED)
File Edit Selection Find View Goto Tools Project Preferences Help
app.c uart.h uart.c startup.s linker.ld
1 #include "uart.h"
2 #define UART0DR *((volatile unsigned int *)((unsigned int*)0x101f1000))
3 void uart_send(unsigned char* p){
4     while(*p != '\0'){
5         UART0DR=(unsigned int)(*p);
6         p++;
7     }
8
9 }
```

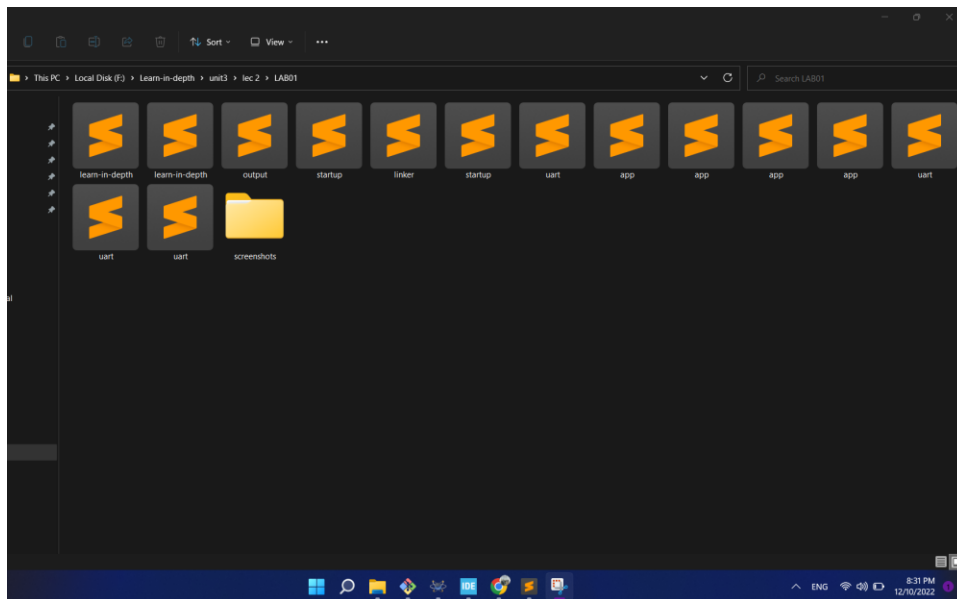
Startup.s

```
F:\Learn-in-depth\unit3\lec 2\LAB01\startups - Sublime Text (UNREGISTERED)
File Edit Selection Find View Goto Tools Project Preferences Help
app.c x uart.h x uart.c x startups x linker.ld x
1 .global reset
2 reset:
3     ldr sp, =start_top
4     bl main
5     stop: b stop
```

Linker.ld

```
F:\Learn-in-depth\unit3\lec 2\LAB01\linker.ld - Sublime Text (UNREGISTERED)
File Edit Selection Find View Goto Tools Project Preferences Help
app.c x uart.h x uart.c x startups x linker.ld x
1 ENTRY(reset)
2 MEMORY
3 {
4     Mem (rw) : ORIGIN = 0x00000000 LENGTH = 64M
5 }
6 SECTIONS
7 {
8     . = 0x10000;
9     .startup . :
10    {
11        startup.o(.text)
12    }>Mem
13    .text :{
14        *(.text)
15    }> Mem
16    .data :{
17        *(.data)
18    }> Mem
19    .rodata :{
20        *(.rodata)
21    }> Mem
22    .bss :{
23        *(.bss)
24    }> Mem
25    . = . + 0x10000;
26    start_top = .;
27 }
```

ALL



RUN

```
minas@DESKTOP-RVLU67U MINGW64 /f/Learn-in-depth/unit3/lec 2/LAB01
$ 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	00008000	2**2
	CONTENTS, ALLOC, LOAD, READONLY, CODE					
1	.text	00000068	00010010	00010010	00008010	2**2
	CONTENTS, ALLOC, LOAD, READONLY, CODE					
2	.data	00000064	00010078	00010078	00008078	2**2
	CONTENTS, ALLOC, LOAD, DATA					
3	.rodata	00000064	000100dc	000100dc	000080dc	2**2
	CONTENTS, ALLOC, LOAD, READONLY, DATA					
4	.ARM.attributes	0000002e	00000000	00000000	00008140	2**0
	CONTENTS, READONLY					
5	.comment	00000011	00000000	00000000	0000816e	2**0
	CONTENTS, READONLY					

```
$ 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	Align
0	.startup	00000010	00010000	00010000	00008000	2**2
	CONTENTS, ALLOC, LOAD, READONLY, CODE					
1	.text	00000068	00010010	00010010	00008010	2**2
	CONTENTS, ALLOC, LOAD, READONLY, CODE					
2	.data	00000064	00010078	00010078	00008078	2**2
	CONTENTS, ALLOC, LOAD, DATA					
3	.rodata	00000064	000100dc	000100dc	000080dc	2**2
	CONTENTS, ALLOC, LOAD, READONLY, DATA					
4	.ARM.attributes	0000002e	00000000	00000000	00008140	2**0
	CONTENTS, READONLY					
5	.comment	00000011	00000000	00000000	0000816e	2**0

```
minas@DESKTOP-RVLU67U MINGW64 /f/Learn-in-depth/unit3/lec 2/LAB01
$ qemu-system-arm -M versatilepb -m 128M -nographic -kernel learn-in-depth.bin
mina sabry learn in depth
```